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PROPOSAL FOR ENVIRONMENTAL STUDIES AT MAJOR METRO-NORTH RAIL YARDS

RFP No. 9215

February 1995

Prepared for:

Metro-North Railroad Company
347 Madison Avenue
New York, NY 10017

Prepared by:

ERM-NORTHEAST, INC.
175 Froehlich Farm Boulevard
Woodbury, NY 11797



ERM-Northeast's Commitment to Quality

Our Quality Policy

We will fully understand and document our clients' requirements for each assignment.

We will conform to those requirements at all times and satisfy the requirements in the most efficient and cost-effective manner.

Our quality policy and procedures include an absolute commitment to provide superior service and responsiveness to our clients.

Our Quality Goals

To serve you.

To serve you well.

To continually improve that service.

Our Quality Improvement Process

Train each employee.

Establish and implement requirements based on a preventative approach.

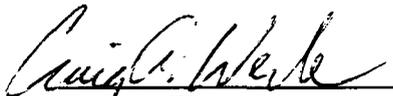
Maintain a standing Quality Improvement Team to ensure continuous improvement.

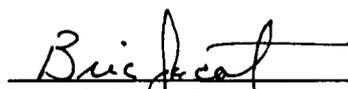
Empower Corrective Action Teams to analyze, correct and eliminate problems.

Continually strive to improve our client relationships.


John A. DeFilippi, President
Chief Executive Officer


Howard Wiseman, Vice President
Chief Operating Officer


Craig A. Werle, Principal


Brian J. Jacob, Principal

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01241.prp

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Section 1

INTRODUCTION

ERM-Northeast (ERM) is pleased to present this proposal to Metro-North Commuter Railroad (Metro-North) in response to the Request for Proposal (RFP) Agreement No. 9215 for Environmental Studies at Major Metro-North Rail Yards. ERM has reviewed the Memorandum of Understanding (MOU) and the Stipulation of Discontinuance (the Stipulation), the documents which govern the work covered in this proposal, and is aware of the history of the documents and the importance of the work to Metro-North and the New York State Department of Environmental Conservation (NYSDEC). Having carefully reviewed the RFP and attended the Harmon Yard site visit, ERM also feels that it is uniquely qualified to undertake the six tasks outlined in the RFP. Not only does ERM have a long established working relationship with Metro-North and a detailed knowledge of Harmon Yard, but ERM also has the multi-disciplinary set of skills, the personnel and the experience to complete all six of the tasks.

The six tasks included in the RFP, which must be implemented at each of the four yards are as follows:

- Task 1) Performance of Environmental Compliance Reviews
- Task 2) Performance of Environmental Management Evaluations
- Task 3) Preparation of Best Management Practices Plans
- Task 4) Performance of Preliminary Site Contamination Studies
- Task 5) Performance of Site Investigation and Remediation Studies
- Task 6) Preparation of Cost Estimates and Schedules for Recommended Facility, Management and/or Operational Changes and Corrective Actions.

The completion of all six tasks at all four yards within the required time frames will require an ability to assemble four teams with a diverse set of skills in all areas of regulatory compliance and environmental management; engineering

evaluations; soil and ground water evaluations; remedial design and remedial construction. Once assembled, these four separate teams must be mobilized, and their work efforts must be efficiently coordinated to ensure timely and cost effective implementation of the tasks. After all of the information has been obtained, it must be clearly and concisely presented in reports for Metro-North's and NYSDEC's review. The reports must provide comprehensive documentation of existing Metro-North work practices and functions. In addition, the project team must be able to synthesize the information and, if necessary, develop practical, cost-effective recommendations for modifications to existing operations. The project team must also be familiar with operations at rail yards and the procedures that must be followed to gain access for observation and/or investigative work.

ERM is exceptionally qualified to provide the services necessary to complete the tasks included in this project. These qualifications arise from ERM's long working relationship with Metro-North and the fact that three of the project team members have been working at Harmon Yard since 1987. The advantages of this involvement at Harmon are several. In the first place, Harmon Yard is by the far the largest and most complex of the yards and could easily require a large level of effort just to come up to speed on the available data. Since ERM is so familiar with Harmon, a significantly smaller level of effort will be required to prepare the reports required by the investigative tasks. Furthermore, our knowledge of Harmon will enable us to propose a more appropriate scope of work. Companies with less familiarity with Harmon may be inclined to recommend unnecessary investigative work because of their unfamiliarity.

Equally as important is ERM's familiarity with both the representatives of Metro-North and NYSDEC who will be involved in the project. As a result of the work ERM has done with Metro-North, a good working relationship has evolved and ERM has developed a sensitivity to the concerns of Metro-North. Moreover, ERM is familiar with the management structure and the responsibilities of

individuals at Metro-North and knows who to contact for information. ERM has also worked with and established credibility with the representatives of NYSDEC who will be involved in the project.

As with any large multi-disciplinary project, the skills that the project team can bring to the table are also critical. ERM is a well established firm with a broad base of experience in all facets of environmental consulting. This experience includes managing and implementing large multi-site compliance audits and management system evaluations; the investigation and evaluation of sites with impacts from petroleum and/or chemical operations including sites with LNAPL and DNAPL; evaluations of air emissions and preparation of air permits; and engineering evaluations and the design and construction of short term and long term corrective actions for soil and ground water.

ERM's project team will also include four subcontractors; two of these subcontractors are Women-Owned Business Enterprises (WBEs) and two of the subcontractors are Minority-Owned Business Enterprises (MBEs). The inclusion of these companies in the project team will ensure that the MBE goal of 10% and the WBE goal of 5% are achieved for this project. The MBE subcontractors are: Mitkem Corporation, the laboratory which will be responsible for all soil and ground water sample analysis and Larsen Engineers, the surveyors who will survey in the monitoring and temporary well locations at each of the yards. The WBEs are: Delta Well and Pump, Inc, a drilling firm and GRB, an environmental consulting firm that will provide assistance in the completion of the BMP plans.

1.1 OVERVIEW OF ERM

This section presents an overview of the ERM Group and ERM-Northeast. It describes the structure and organization of ERM, highlighting the benefits to Metro-North which can be realized through the selection of ERM for this project.

1.1.1

Organization

ERM-Northeast is a member of the Environmental Resources Management (ERM) Group of Companies. The Group is a worldwide association of interdependent environmental consulting companies. Each ERM member is locally owned and managed. This structure puts the premium for performance close to the client and avoids the necessity for expensive and cumbersome corporate overhead. Such arrangements allow us to provide clients with the flexibility and responsiveness of a local/regional firm and access to a large national resource and talent base when that is necessary.

ERM as a group has served approximately 2,500 different clients, in almost every segment of private industry. Our clients include Fortune 500 companies as well as many small to medium-sized manufacturing organizations.

A majority of ERM's project work results from repeat business from, or direct referrals by, our clients. ERM is very proud of the long-term relationships established with clients, relationships that reflect quality work and our dedication to serving the environmental needs of our corporate clients.

The ERM Group has over 2,500 employees in over 60 offices located in principal cities throughout the United States. The staffs include environmental, chemical, civil and mechanical engineers, environmental scientists and specialists, geologists, hydrologists, industrial hygienists and safety specialists.

ERM-Northeast Inc. was founded in 1980. Our geographical area of focus is New York, Connecticut and metropolitan New Jersey. This area is served by six offices located in:

- Woodbury, Long Island, New York
- New York City, New York

- Shelton, Connecticut
- Albany, New York
- Syracuse, New York
- Buffalo, New York

The Project Teams were assembled with personnel from offices which are in close geographic proximity to the rail yards that are part of this RFP. Additionally, ERM's organizational approach minimizes the time that principals and associates need to spend on overhead functions and allows their involvement in the technical aspects of many projects. This approach is illustrated by the dual role being fulfilled by a principal of ERM, H. Wiseman. Mr. Wiseman will serve as the Project Director and also as the coordinator of the Environmental Management Evaluation effort.

ERM principals and associates have worked in the tri-state area for their entire careers and bring to their projects a thorough understanding of the local regulatory issues as well as in-depth technical expertise. ERM has been offering full-service environmental consulting to clients for 15 years and now has approximately 125 employees including environmental, chemical, and civil engineers; geologists and hydrologists; compliance management professionals; air quality specialists; chemists; biologists; and, regulatory managers. ERM is a registered professional engineering company in New York State (through ERM-Northeast Engineer, P.C.) with numerous, individual Professional Engineers licensed in the State of New York. Over 80% of our work is in New York State where we have extensive experience with site investigation and site remediation projects for both private and public clients. ERM-Northeast's client base includes government agencies and chemical, manufacturing, health-care and petroleum industries such as The New York State Department of Environmental Conservation, Metro-North, New York State Department of Health, Northville Industries, General Electric, Westinghouse Electric, Chevron, and Exxon.

1.1.2

Company Philosophy

ERM is committed to offering environmental consulting services of the highest quality with responsive, personal service. We believe that economic progress and a clean environment go hand-in-hand. We believe our task is to define important issues for our clients and to develop solutions which balance the client's economic interests and environmental objectives. Our approach features:

1. A principal who, in addition to being the Project Director, is intensely involved in the technical aspects of the project.
2. Establishment of a Project Management (Core) Team comprised of professionals that will have input into particular components of the project for each identified rail yard.
3. A commitment to maintaining the project team from the start of the project to completion.
4. The selection of project personnel that have extensive experience in the specific technical areas required by the project as well as experience with Metro-North.
5. An interdisciplinary team which, in addition to supplying comprehensive skills, provides quality assurance that stems from varied but coordinated perspectives.
6. The establishment of a Quality Control Team to review project strategies and deliverables ensuring they meet the quality and objectives of the product defined in the scope of work.

ERM's multi-location resources can provide these services to Metro-North in a

timely, cost-effective manner. Moreover, ERM's resources and extensive knowledge of environmental issues at Harmon Yard offer the ability to complete project requirements within the allotted schedule.

1.1.3 Description of Relevant Services

There are a number of technical disciplines which ERM will employ in completing the tasks identified in the RFP. The professional integration of ERM's project organization will ensure the environmental issues are properly addressed. Moreover, the integration of these various professionals in the management and yard teams will foster an ongoing exchange of information which will strengthen the assessment or conclusions in any project deliverable.

The following briefly describes ERM's capabilities in the relevant technical services that will be required on this project.

Management Consulting

The management consulting practice of ERM focuses on environmental audits and compliance reviews as a means of assessing regulatory compliance, and management evaluations to determine whether proper systems are in place to ensure continued compliance.

ERM has worked with national and international corporations and contributed to the development of the environmental audit concept. Therefore, ERM is keenly aware of how the programs should be structured and where emphasis must be placed. ERM staff members have lectured and presented seminars on environmental audits and have authored technical papers dealing with the implementation of audit programs. These presentations and papers have been presented at corporate training seminars, publicly-offered training seminars and at technical and management conferences. ERM has also developed a series of

video tapes that have been designed to instruct client personnel on various aspects of compliance auditing.

ERM has been involved in a broad range of environmental audit projects. During these assignments, we have:

- conducted comprehensive multi-site audits for large multi-national corporations
- conducted multi-media compliance reviews for large production facilities
- served as an independent and objective participant on audit teams that are otherwise internal to the corporation being audited
- developed environmental audit checklists to be used either by the ERM team or a group of corporate auditors (Note: The ERM Group has also developed its own audit checklists that we use on audit projects where our clients do not have their own audit protocols.)
- developed sets of good environmental practices (i.e., standards of performance) that serve as the basis of corporate standards documents for major Fortune 500 corporations, and
- audited internal audit programs to ensure they meet their own policies and procedures.

ERM has conducted over 300 environmental compliance reviews during the past 15 years. ERM has developed a reputation for thoroughness and proficiency in these types of projects. The company and its personnel have been involved with

environmental audits and compliance reviews for numerous industrial corporations in the United States and internationally.

ERM has included personnel on the management and yard teams that are highly experienced auditors, many of whom have over 10 years of experience conducting audits nationally and internationally. They are imminently knowledgeable of the federal, state, and local regulatory issues and have worked for large corporations. They understand how corporations work with their operating units and have experience in developing practical approaches to compliance.

Environmental audit and compliance review capabilities are crucial to this project. They will be cornerstones of the environmental management evaluation and environmental compliance review components of the project.

ERM's environmental management systems work has focused on dual goals:

- To help major industries review their management systems and determine the system's ability to support corporate goals and policies. Hence, we have evaluated the environmental function at all levels in the organization and determined whether the systems function to ensure consistent compliance; and
- To develop corporate programs to fill the needs identified during the management systems evaluation. In this capacity, we have developed new and/or improved corporate policy statements, standards of practice, auditing, and training programs.

ERM has applied this service across the country to industries in various manufacturing and service industries. Many of ERM's clients in this area are Fortune 500 companies.

Site Investigation and Hydrogeologic Services

ERM has performed site investigations and hydrogeologic evaluations at numerous sites in New York State. These have involved the following types of services:

- Remedial Investigations/Feasibility Studies;
- Development of soil, surface water and sediment investigative programs;
- Subsurface contamination investigations;
- Landfill siting studies;
- Ground water remediation;
- Aquifer resource assessment studies;
- Pump testing (performance and data reduction);
- Computer ground water modeling; and
- Municipal water supply evaluations.

The specific site investigative and hydrogeologic services that ERM can provide to a client include: 1) delineation and evaluation of impacts resulting from the presence of organic compounds and inorganic constituents in soil; 2) assessment of potential environmental impacts due to the presence of organic compounds and inorganic constituents in surface water or sediment; 3) evaluation of the potential for the presence of organic compounds and inorganic constituents in soil, sediment or surface water to act as a continuing source; 4) delineation of petroleum product on the water table surface through iterative investigation and field characterization; 5) development of permanent monitoring well emplacement strategies; 6) installation and development of wells; 8) ground water sampling and testing; 9) hydraulic conductivity testing; 10) hydraulic pump testing and evaluation; 11) calculation of aquifer hydraulic parameters; and 12) design of corrective actions for ground water systems, including ground water extraction and treatment systems, if required.

ERM's experience in this area will be applied in the Preliminary Site Contamination/Site Investigation and Remediation Studies. There exists an extensive in-house data base on conditions at Harmon Yard which the project team will be able to utilize in their work at Harmon and at the other rail yards.

Engineering Support

The project will require diverse engineering capabilities to recommend best management practices, develop concept level corrective actions sufficient for cost estimating and scheduling, and transition to detailed engineering design to implement selected corrective actions. ERM possesses strength in all these engineering capabilities.

The application of these engineering capabilities will require close integration between environmental management, concept and design engineering. At ERM the integration between concept and design engineering is a an established protocol typical of ERM's feasibility study (FS) and corrective measures (CM) experience.

Although engineering input is important to each of the project tasks, it will be highlighted in the development of corrective action recommendations and best management plans. Moreover, ERM's engineering expertise will be used to formulate FS or CM level cost and schedule estimates for those recommendations. ERM has the ability to draw on its diverse experience in preparing FS and CM reports as well as its experience in actual design and construction of engineering solutions to environmental problems. This latter capability has enabled ERM to bring "real life" experience to concept level cost estimate and scheduling thereby providing its clients with more meaningful information before moving forward with the next stage of the project.

1.1.4

Proposal Organization

This proposal is organized into seven sections. This first section (1.0) is an introduction which summarizes the objectives of the RFP, provides an overview of the required tasks and describes ERM's approach and relevant qualifications to successfully complete the project in a cost effective and timely manner.

Section 2.0 provides a detailed description of ERM's scope of work. This section begins with an overview of ERM's technical approach and evolves into more specific descriptions of ERM's approach to each task.

Section 3.0 outlines ERM's project management and project team organization. It includes descriptions of management and yard team members, subcontractors and resumes of key personnel. This section also presents the management tools ERM will use to track schedule and budget, compile progress reports and ensure quality control in accordance with the RFP requirements set forth in Attachment B of the Work Statement.

Section 4.0 contains the project schedule. This schedule has been developed to ensure compliance with the previously mentioned agreements between Metro-North and NYSDEC. It identifies time critical components of the work and serves as the guide for allocating personnel on a monthly basis.

Section 5.0 sets forth the labor estimate for the project in person days. This estimate is broken down by task, technical discipline and month for the anticipated duration of the project.

Section 6.0 includes the Metro-North Contract Requirements. These are the specified forms (consultant information and responsibility and EEO-1), MBE/WBE Utilization Plan, certificate of insurance and financial statements.

Section 7.0 contains more detailed information on the qualifications of the project team, including relevant project specific descriptions and references.

Section 2

SCOPE OF WORK

This section presents the specific technical approach that ERM will employ to perform the environmental studies at four of Metro-North's major rail yards. This approach is consistent with Metro-North's request for proposal and is based on ERM's experience providing similar services to other major corporations.

The environmental studies are a major undertaking for Metro-North. Not only does the performance of these studies represent a significant commitment of resources, but the recommendations resulting from the studies will have a profound impact on Metro-North's environmental activities into the future. We have identified the following challenges which must be addressed to ensure the successful completion of this assignment.

- Coordination of comprehensive assessment team activities at the four rail yards;
- Overlapping and inter-related work activities that must be performed concurrently at the four yards;
- The need for consistency of technical approach from location to location;
- A comprehensive list of compliance areas to be reviewed at each yard dictating a project team with broad technical experience.

We have, therefore, concluded that the successful completion of this project will require careful planning and the focused effort of a dedicated team of environmental professionals trained and experienced in cross-media environmental compliance assessment.

OVERVIEW OF TECHNICAL APPROACH

We have developed this technical approach to meet the challenges noted above while meeting Metro North's project needs in the most time and cost effective means possible. Our project team structure is an integral part of our project approach. We have organized our personnel resources into a Core Team of our most senior personnel and yard teams of experienced environmental assessors.

The Core Team's activities will not be restricted to any one yard, but rather, will extend across Metro-North's corporate functions and all four rail yards. The Core Team will be comprised of four senior persons who will serve as team managers in the following four areas:

- Environmental compliance reviews/best management practices;
- Environmental management systems analyses;
- Environmental engineering; and
- Site investigation and remediation.

The Core Team will serve the following project management roles:

- Coordination of project activities to ensure that schedule milestones are met and the required resources are applied to the project;
- Provide specific, detailed instructions to the yard teams to ensure that all technical issues are addressed;
- Serve as technical team leaders in each of the four areas to ensure the consistency of technical approach from yard to yard;
- Transfer knowledge gained and approach developed at one yard to the other locations.

The yard teams will consist of engineers, hydrogeologists and regulatory specialists. They will take direction from the Core Team leaders and perform the reviews and analyses at the four rail yards. We have assembled each team with adequate staff to address all of the issues at each yard, and have sufficient resources to assign a unique team dedicated to each yard (the Core Team leaders will provide the consistency of knowledge from location to location).

We will use the yard visits to gather the data needed to complete the following project tasks:

- Environmental compliance reviews;
- Environmental management evaluation (yard components);
- Best management practices; and
- Preliminary site assessment.

By combining the objectives for these tasks into a single initial site visit, we hope to make efficient use of the time of yard personnel and reduce the disruption to yard activities to the greatest extent possible. Our entire yard team will, therefore, receive its general orientation and yard tour at the same time. As the work of individual yard team members progress, they will work one-on-one with yard personnel and make additional individual visits as required.

This approach has the added benefit of allowing our cross-function team to gain an understanding of all phases of the work. We are sure that this will lead to a more practical and effective work product.

2.2 DETAILED DESCRIPTION OF TECHNICAL APPROACH

2.2.1 Project Initiation Tasks

The project will be initiated by the Core Team through two preliminary subtasks.

While these tasks will not consume a great deal of time or project resources, we believe that they are critical to the successful completion of the project. The two preliminary tasks can be summarized as follows:

Preliminary Task 1

Preliminary Task 1 will consist of a series of meetings between the Core Team and Metro-North corporate personnel. The administrative objectives of the meetings will be to:

- introduce key team members and their respective roles (ERM and Metro North);
- confirm the scope and schedule of the project;
- establish lines of communication and reporting relations; and
- obtain contact names at the rail yard.

The technical objective of the meetings will be to gain an understanding of:

- Metro-North's environmental management structure and systems;
- The range of activities performed at the rail yards and how they are inter-related;
- The availability and location of environmental data, reports, and permits pertaining to the corporate function and each rail yard; and
- Environmental conditions at each yard (permits, remediation projects, outstanding compliance orders).

Preliminary Task 2

During Preliminary Task 2, the Core Team will visit each of the four yards and meet with key Metro-North yard personnel. The objectives of the visit will be to establish a dialogue with yard personnel, inspect yard facilities, and begin to understand the range of issues that the yard teams will face. During this initial

meeting, we will discuss the scope and objectives of the project. The project schedule and data needs will also be discussed at that time.

The Core Team will then review, with key Metro-North yard personnel, the environmental areas covered by the project to gain a preliminary understanding of yard activities in each area. We will then tour the facilities with Metro-North yard personnel to further focus on the issues of concern at each location. We will review the assessment team's general data requirements and establish a firm date for the yard visits.

Following the yard visits, the Core Team will confirm that the proposed yard team meets the requirements of the environmental studies at that location. The Core Team will then disseminate the information to the Yard Team by establishing formal, written investigation guidelines. The written investigation guidelines will include the Core Team's directions to the Yard Teams. This guidance will cover any issue that the Core Team gains knowledge of through the corporate visit and the initial visit to the yards, including: 1) environmental compliance issues to be reviewed; 2) past or present operations, practices or policies that may have contributed to actual contamination or the risk of contamination; 3) specific BMP issues, or 4) circumstances that may result in the violation of an environmental law or regulation. With the Core Team's detailed guidelines regarding environmental compliance issues at the individual yards, the Yard Teams will review the applicable Federal and State regulations so that the yard assessments can be more thoroughly completed. The Yard Teams will use the written investigation guidelines as a reference during its on-site activities.

2.3 *TASK I - ENVIRONMENTAL COMPLIANCE REVIEWS*

2.3.1 *Objectives*

ERM-Northeast will conduct an Environmental Compliance Review (ECR) at

each the four yards. The objectives of the ECR are consistent with those indicated in the RFP and include the following tasks:

1. Assessment of Metro-North's compliance with applicable Federal and State environmental laws;
2. Identification of issues to be addressed in a BMP Plan;
3. Identification of past and present operations, practices, and policies that contribute to actual environmental impacts or the risk of environmental impacts; and
4. Identification of circumstances that may result in environmental impacts or violation of any Federal or State environmental law or regulation unless prompt corrective action is taken.

An overview of the actions required to meet the above objectives is presented in the following sections.

2.3.1.1 *Assessment of Compliance with Applicable Laws and Regulations*

As indicated above, the Environmental Compliance Review will include an assessment of Metro-North's compliance with applicable Federal and State environmental laws, including all relevant statutes, rules, regulations, and permits under the following general environmental categories:

- Air Emissions
- Wastewater Discharges
- Solid Waste Management
- Hazardous Waste Management
- Pesticides/Herbicides/Fungicides
- Special Pollutants (i.e., polychlorinated biphenyls and asbestos)
- Drinking Water
- Oil and Petroleum Spill Prevention

- Hazardous Materials Management
- Underground Storage Tank Management, and
- Wetlands Management.

Table 2-1 details the Federal and State environmental laws and regulations that may be included in ERM's assessment depending upon applicability at each of the four rail yards.

2.3.1.2 *Identification of Issues to be Addressed in a BMP Plan*

Preparation of a BMP Plan is a separate task included in the RFP for Environmental Studies at the four major rail yards, and is discussed in detail in Section 2.5 of this proposal. An objective of the ECR task is to identify issues that will be addressed in the BMP Plan, and to recommend appropriate BMP measures.

Therefore, as part of the ECR and as required by Appendix A of the RFP, ERM will identify all facility locations that handle, store, or use toxic or hazardous pollutants, assess the potential for release of pollutants, and recommend the establishment of BMPs to prevent or minimize the potential for release. ERM will: 1) identify all toxic and hazardous pollutants used on-site; 2) identify facility locations where the pollutants are used, stored, or handled; and 3) evaluate the potential for the release of significant amounts of the pollutants. In areas where the potential for release is significant, as defined in Appendix A, ERM will recommend BMPs. BMPs will include either administrative activities, such as establishment of procedures, training, preventive maintenance measures, and/or structural measures, such as construction of secondary containment devices.

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS

AIR EMISSIONS

Federal Requirements

Clean Air Act Amendments of 1990:

- 40 CFR 50, Primary and Secondary National Ambient Air Quality Standards
- 40 CFR 51 and 52, Prevention of Signification Deterioration of Air Quality (PSD)
- 40 CFR 60, New Source Performance Standards
- 40 CFR 61 and 63, National Emission Standards for Hazardous Air Pollutants
- 40 CFR 70 and 71, Operating Permit Program
- 40 CFR 81, EPA Regulations Designating Areas for Air Quality Planning
- 40 CFR 82, EPA Regulations Pertaining to the Protection of Stratospheric Ozone

State Requirements

New York Environmental Conservation Law:

- Article 19, Air Pollution Control
- Article 38, Chlorofluorocarbon Compounds

New York Air Pollution Control Regulations Parts 200 through 211 and 223 through 254 (6 NYCRR 200-211 and 6 NYCRR 223-254)

New York Ambient Air Quality Standards Part 256 and 257 (6 NYCRR 256 & 257)

WASTEWATER DISCHARGES

Federal

Clean Water Act, Public Law 92-500:

- 40 CFR 122, National Pollutant Discharge Elimination System (NPDES) Permitting
- 40 CFR 403, General Pretreatment Program
- 40 CFR 405 through 471, Categorical Effluent Limitations

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS (CONTINUED)

State

New York Environmental Conservation Law:

Article 17, Water Pollution Control

Article 37, Substances Hazardous or Acutely Hazardous to Public Health,
Safety or the Environment

New York Water Pollution Control Regulations Parts 608 and 610 through 614 (6
NYCRR 608 & 610-614):

6 NYCRR 608, Use and Protection of Waters

6 NYCRR 610, Certification of Onshore Major Facilities

6 NYCRR 611, Environmental Priorities and Procedures in Petroleum Cleanup
and Removal

6 NYCRR 612, Registration of Petroleum Storage Facilities

6 NYCRR 613, Handling and Storage of Petroleum

6 NYCRR 614, Standards for New or Substantially Modified Petroleum
Storage Facilities

New York Regulations on State Pollutant Discharge Elimination System Parts 750
through 758 (6 NYCRR 750-758)

New York Water Classifications and Quality Standards, 6 NYCRR 609 and 700-704

SOLID WASTE MANAGEMENT

Federal

Solid Waste Disposal Act of 1965:

40 CFR 241, Land Disposal of Solid Waste

40 CFR 243, Storage and Collection of Solid Waste

Resources Conservation and Recovery Act (RCRA) of 1976

Hazardous and Solid Waste Amendments of 1984

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS (CONTINUED)

State

New York Environmental Conservation Law - Article 27, Collection, Treatment and Disposal of Refuse and Other Solid Waste

New York Environmental Conservation Law - Article 40, Hazardous Substances Bulk Storage Act

New York Waste Management Facilities Rules Part 360 (6 NYCRR 360):

New York Used Oil Regulations (6 NYCRR 360-14)

New York Medical Waste Regulations (6 NYCRR 360-10)

HAZARDOUS WASTE MANAGEMENT

Federal

Resource Conservation and Recovery Act of 1976 and the Hazardous and Solid Waste Amendments of 1984:

40 CFR 260, Hazardous Waste Management System: General

40 CFR 261, Identification and Listing of Hazardous Waste

40 CFR 262, Standards Applicable to Generators of Hazardous Waste

40 CFR 265, Interim Status Standards for Owners and Operators of
Hazardous Waste Treatment Storage and Disposal Facilities

40 CFR 268, Land Disposal Restrictions

40 CFR 280, Technical Standards and Corrective Action Requirements for
Owners of Underground Storage Tanks

State

New York General Hazardous Waste Management System Regulations Part 370 (6 NYCRR 370)

New York Identification and Listing of Hazardous Wastes Regulations Part 371 (6 NYCRR 371)

New York Hazardous Waste Manifest System Regulations Part 372 (6 NYCRR 372)

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS (CONTINUED)

New York Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements Subpart 373-1 (6 NYCRR 373-1.1)

New York Interim Status Standards for Owners and Operators of Hazardous Waste Facilities Subpart 373-3 (6 NYCRR 373-3.2, 3.3, 3.4, 3.9 & 3.10)

New York Land Disposal Restrictions Regulations Part 376 (6 NYCRR 376)

PESTICIDES/HERBICIDES/FUNGICIDES

Federal

Federal Insecticide, Rodenticide and Fungicide Act (FIFRA):

40 CFR 170 - Worker Protection Standard (for Pesticide Handlers)

State

Title 6, Chapter IV, Subchapter A, Part 325 - Application of Pesticides (6 NYCRR 325)

SPECIAL POLLUTANTS

PCBs - Federal

Toxic Substances Control Act:

40 CFR 761 et. seq. - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and Use Prohibition

PCBs - State

New York Identification and Listing of Hazardous Wastes Regulations Part 371 (6 NYCRR 371)

New York Hazardous Waste Manifest System Regulations Part 372 (6 NYCRR 372)

Asbestos - Federal

Clean Air Act:

National Emission Standard for Asbestos - 40 CFR 61 Subpart M

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS (CONTINUED)

Asbestos - State

New York Air Pollution Control Regulations Parts 200 through 211 and 223 through 254 (6 NYCRR 200-211 and 6 NYCRR 223-254)

DRINKING WATER

Federal

Safe Drinking Water Act of 1974:

40 CFR 141 - National Primary Drinking Water Regulations

State

New York Public Water Supply Regulations, 10 NYCRR Part 5, Subpart 5-1

OIL AND PETROLEUM SPILL PREVENTION

Federal

Clean Water Act, Public Law 92-500:

40 CFR 112, EPA Regulations on Oil Pollution Prevention

40 CFR 110, Discharge of Oil

40 CFR 300, National Oil and Hazardous Substances Pollution Contingency Plan

State

New York Oil Spill, Control and Compensation Act (Navigation Law, Article 12)

New York Regulations on Oil Spill Prevention and Control, Title 17, Chapter I, Parts 30 through 32)

New York Regulations on Handling and Storage of Petroleum, 6 NYCRR 613

HAZARDOUS MATERIALS MANAGEMENT

Federal

Comprehensive Environmental Response, Compensation and Liability Act of 1980 and (CERCLA) and Superfund Amendments and Reauthorization Act of 1986 (SARA):

TABLE 2-1
FEDERAL AND STATE LAWS, RULES AND REGULATIONS (CONTINUED)

40 CFR 370, EPA Hazardous Chemical Reporting and Community
Right-to-Know Requirements
40 CFR 372, EPA Toxic Chemical Release Reporting Regulations

State

New York Rules on Releases, Registration, and Listing of Hazardous Substances:

6 NYCRR 595, Releases of Hazardous Substances - Reporting, Response and
Corrective Action
6 NYCRR 596, Registration of Hazardous Substance Bulk Storage Tanks
6 NYCRR 597, List of Hazardous Substances
6 NYCRR 598, Handling and Storage of Hazardous Substances
6 NYCRR 599, Standards for New or Modified Hazardous Substance Storage
Facilities

UNDERGROUND STORAGE TANKS

Federal

40 CFR 280, EPA Technical Standards and Corrective Action Requirements for
Owners and Operators of Underground Storage Tanks

State

New York Regulations on Registration of Petroleum Storage Facilities Part 612, 6
NYCRR 612

New York Regulations on Handling and Storage of Petroleum Part 613, 6 NYCRR
613

New York Regulations on Standards for New and Substantially Modified Petroleum
Storage Facilities Part 614, 6 NYCRR 614

WETLANDS

State

New York Environmental Conservation Law - Article 24, Freshwater Wetlands

New York Tidal Wetlands Land Use Regulations (6 NYCRR 661)

2.3.1.3 *Identification of Past and Present Issues that Contribute to Environmental Contamination or the Risk of Environmental Contamination*

ERM will identify past and present operations, practices and policies that either contribute to actual environmental impacts or pose a risk of environmental impacts. ERM's identification of present operations, practices and policies that do or may cause impacts will naturally occur through the scope of a compliance assessment and identification of the BMP issues. Past operations, practices and policies that do or may cause impacts to the environment will be identified through the review of historical files and interviews. In addition, the Preliminary Site Contamination Studies described in Section 2.6 of this Proposal, will occur simultaneously to the ECR. Historical information obtained through these efforts will be used to identify past issues.

2.3.1.4 *Identification of Circumstances that May Result in Environmental Contamination or the Violation of any Federal or State Environmental Law or Regulation unless Corrective Action is Taken*

ERM will identify any circumstances that may result in contamination or the violation of regulations unless corrective action is taken. As indicated above, identification of issues that may result in contamination will naturally occur through the scope of a compliance assessment and identification of BMP issues. The identification of circumstances that may result in violation of environmental laws or regulations will also occur through the BMP identification process, because the process identifies good management practices that surpass the requirements of the regulations. ERM will also expand the scope of the compliance assessment to identify not only areas where the yards are in non-compliance, but also areas where there is the threat of non-compliance unless corrective action is taken.

2.3.2 *Approach*

ERM will complete the ECR and meet the above objectives using an approach that is organized into the following three subtasks:

Subtask I-A: Yard Assessment

Subtask I-B: Analysis and Evaluation

Subtask I-C: Reporting.

2.3.2.1 *Subtask I-A: Yard Assessment*

The individual Yard Teams will conduct the detailed yard assessments based on the yard specific directions contained in the written investigation guidelines. The Yard Teams will include a Team Leader, air compliance, BMPs, management evaluation assessors, and one hydrogeologist with expertise in evaluation of environmental impacts. Each team member will be assigned specific areas of responsibility.

During the course of the Yard Teams' site visits, they will collect the on-site information necessary to complete the scope of not only the ECR, but the Environmental Management Evaluation, the BMP Plan and the Preliminary Site Contamination Study. A proposed yard assessment agenda will include the following:

- Opening Conference
- Daily Scheduling Meetings
- Initial Site Tour
- Review of Operations, Practices and Policies
- Review of Documents
- Interviews with Facility Personnel Regarding Present and Previous Operations, Practices and Policies

- Subsequent Site Tour and/or Review of Specific Areas or Operations of Concern
- Debriefing Session.

The purpose of the Opening Conference is to discuss the scope and objectives of the yard assessment. The Opening Conference will also allow the teams to finalize the agenda, as well as schedule and allocate personnel for the planned on-site activities (e.g., identification of appropriate facility personnel for interviews; review of pertinent environmental issues; scheduling of facility tours, and review of documentation, engineering drawings, and permits).

Additionally, meetings will be held with Metro-North personnel on an as-needed basis not only to ensure that the productivity of the Yard Teams' on-site time is maximized, but also to ensure that yard operations are not disrupted. The scheduling meetings are expected to last approximately one half-hour.

After the initial Opening Conference, the team members will tour the yard operations and facilities. The initial site tour will provide the opportunity for each member of the Yard Team to assess operations at the yard as they relate to their areas of responsibility.

Following completion of the initial facility tour, the team members will work independently in their specific areas of responsibility. Each team member will work one-to-one with designated facility personnel, as appropriate, to examine operations in detail and to review applicable files containing engineering drawings, reports, environmental permits, monitoring data, and written programs, policies and procedures. Documents to be reviewed at each yard may include any or all of the following:

- Permit Applications
- Permit Terms and Compliance

- Monitoring Results and Sampling Procedures
- Waste Manifests
- Waste Classifications
- Annual Hazardous Waste Generator Reports
- Waste Minimization Plans
- Spill Plans
- Emergency Response Plans
- Reports of Regulatory Agency Visits/Inspections
- Notices of Violations
- Training Programs and Documentation
- Site Investigation and Remediation Reports
- Site Plans (current and historical)
- Environmental Policies and Procedures

The team members will conduct interviews of facility personnel to obtain additional information regarding current and past environmental operations, practices, policies and procedures. Yard personnel to be interviewed may include the following:

- Senior Yard Managers
- Yard Managers
- Environmental Compliance Manager
- Personnel at Operations Involving Hazardous or Toxic Materials
- Spill Response Personnel
- Maintenance Personnel
- Long-Time Yard Employees

As the Yard Team members' work is underway, subsequent site tours will be required to investigate and review specific operations or areas of concern. The Yard Team will schedule additional tours with yard personnel during the scheduling meetings. The meetings will also be used to keep Metro-North

personnel apprised of the Yard Teams' progress.

2.3.2.2 *Subtask I-B: Analysis and Evaluation*

Immediately following the on-site yard assessments, and in preparation for the close-out meetings with the NYSDEC, the Yard Teams will further evaluate 1) the compliance status of all environmental systems and programs with respect to applicable regulatory requirements, 2) potential BMP issues, and 3) issues that have or may have caused contamination and/or regulatory violations. Any issues that are regarded as "questionable" (i.e., complex issues leading to variable interpretations under differing scenarios) will be further analyzed in this task.

Efforts to clarify "questionable" issues will include: 1) an in-depth analysis of relevant laws, rules, regulations and/or guidelines; 2) an examination of regulatory intent; and 3) discussions with in-house ERM personnel with experience handling similar issues. As our staff has had significant environmental assessment and compliance review experience, in-house consultation typically affords us the benefit of anticipating regulatory judgments.

2.3.2.3 *Subtask I-C: Environmental Compliance Review Reporting*

After completion of the Analysis and Evaluation tasks and prior to the preparation of the draft ECR reports, ERM will conduct close-out meetings with Metro-North and the NYSDEC. The close-out meeting will be attended by all of the members of the Core Team and the Yard Team Leader. ERM will make a presentation detailing the findings and recommendations resulting from the ECR. Findings and recommendations will be presented as regulatory compliance issues, BMP issues, issues that have or may contribute to environmental contamination, and issues that may result in the violation of a regulatory law or regulation unless prompt corrective action is taken.

Concise issues-oriented reports will be prepared to document ERM's findings. The reports will focus on the four objectives of the ECR. The report outline is presented in Table 2-2.

The written reports will be provided to Metro-North and the NYSDEC in draft form. After Metro-North's and the NYSDEC's 60-day review and comment period and prior to finalization of the reports, ERM will meet with Metro-North and NYSDEC to review proposed revisions. The reports will then be finalized and submitted to Metro-North and the NYSDEC. The final report will be submitted within 90 days of the submission of the draft report.

As required by the MOU, sixty (60) days after submission of each Final Report, ERM will meet with Metro-North to discuss and develop a proposal to correct the issues (excluding the BMP issues) identified in the Final ECR Report. ERM will subsequently develop a plan that identifies corrective actions for the regulatory compliance issues and the circumstances that have or may contribute to environmental contamination. After an approximately 30-day Metro-North review and comment period, the plan will be finalized by ERM and submitted to the NYSDEC within 120 days of the submission of the Final Report.

As required by the MOU, approximately nine (9) months after submission of each Final Report, ERM will meet with Metro-North to discuss the corrective actions that have been implemented. ERM will subsequently develop a draft report detailing Metro-North's action to date. After an approximately 30-day Metro-North review and comment period, the report will be finalized by ERM and submitted to the NYSDEC.

2.4

TASK II - ENVIRONMENTAL MANAGEMENT EVALUATION (EME)

The purpose of this task is to evaluate whether Metro-North has adequate systems in place to ensure that it can consistently meet state and federal regulatory

TABLE 2-2
ECR REPORT OUTLINE

1. Introduction
 - Background and Objective
 - ECR Approach
 - ECR Activities

2. Facility Profile
 - Site Environs
 - Facility Operations
 - Brief Description of Environmental Activities

3. Categorical Findings
 - Air Emissions
 - Wastewater Discharges
 - Solid Waste Management
 - Hazardous Waste Management
 - Pesticides/Herbicides/Fungicides
 - Special Pollutants (i.e., polychlorinated biphenyls and asbestos)
 - Drinking Water
 - Oil and Petroleum Spill Prevention
 - Hazardous Materials Management
 - Underground Storage Tank Management
 - Wetlands Management

Each Categorical Findings section will include a citation of each area of non-conformance with Federal or State laws, rules and regulations. This section will include a certification that except as otherwise specified, the facility is in compliance with all applicable Federal and State statutory or regulatory requirements.

4. BMP Issues
 - Issues to be addressed in a BMP Plan
 - Recommendations for Appropriate BMP Measures

5. Facility Issues that Contribute to Environmental Contamination or the Risk of Environmental Contamination
 - Identification of Issues
 - Recommendations for Corrective Action

6. Facility Circumstances that May Result in Environmental Contamination or Regulatory Violations
 - Identification of Circumstances
 - Recommendations for Corrective Action

requirements.

The task will be performed at two levels; at a corporate level initiated during Preliminary Task 1, and at a yard level during the Compliance Reviews.

At a corporate level, an environmental system that will ensure consistent performance must contain the following program elements:

- A corporate policy statement that expresses senior management's performance expectations;
- An environmental program with a direct line of report into the organization at a level high enough to ensure that it can carry out its responsibilities;
- Corporate management systems that include performance measures, management oversight and follow-up, goals and priorities, and a data collection system to monitor performance.
- A system to identify applicable compliance requirements and a method to convey this information to the operating units;
- A set of corporate standards and objectives that implement the environmental policy by providing detailed performance criteria to operating units;
- A performance and compliance training system (including tracking and documentation components);
- A program that will heighten environmental awareness and communicate regulatory requirements down to the operating units;

- An audit program to routinely assess performance at a corporate and operating level; and
- A quality assurance program that extends throughout the organization.

Our environmental management evaluation team will review Metro-North's programs and procedures against each of the program elements listed above. We will accomplish this through a series of interviews at Metro-North's headquarters. Personnel interviewed will include environmental personnel, engineering staff, representatives of the legal department, and senior management.

The performance level for each program element will be evaluated and categorized as "Below Target", "Target Achievement", or "Beyond Target". These levels of performance are generally defined as:

- *Below Target:* Management systems and processes are either informal, incomplete, not fully implemented, or non-existent. Program activities are primarily reactive to issues as they arise. Systems generally do not meet the standards we encounter in similar industrial settings.
- *Target Achievement:* Procedures and practices are well-defined, communicated and fully implemented. Systems are integrated into other business processes.
- *Beyond Target:* Systems in place generally exceed minimum requirements and approach the state-of-the-art for the industry. Systems are fully integrated into all aspects of the business.

The attached table provides an example of how we would evaluate each of the

program elements. The example illustrates our evaluation of the adequacy of a corporation's environmental policy statement. The text in bold italics in the body of the table represents the company's current position. In the example, the company's program has elements that are both below and at target achievement. In most cases, it will be desirable to elevate the company's performance level to target achievement. We will also work closely with Metro-North to determine which program elements require a level of performance beyond target achievement in order to ensure a consistent level of performance.

An important component of the EME will be performed during the period when the yard teams are on-site. Our environmental management evaluation team will interview Metro-North yard personnel and review their environmental systems to determine whether they contain the following program elements:

- A written organization plan that assigns environmental operating responsibility to yard personnel and establishes reporting lines of authority to Metro-North headquarters. It is important that the functions performed at the yard level are coordinated with the corporate functions.
- A series of standard operating practices (SOPs) that establish the performance requirements for the environmental operation.
- A staffing plan that provides adequate personnel resources and sufficient training to carry out the required functions.
- A data management handling system and a method that ensures that compliance, incident, and exception reports are submitted on a timely basis.

Summary Table — Corporate Environmental Policy (#1)

Activity	Below Target	Target Achievement	Beyond Target (TA Plus)
Develop statement	No formal statement exists	<i>Formal statement exists, in relatively up-to-date form.</i>	Stated policies reflect proactive commitment to environmental quality. International operations addressed with minimum standards of performance. Environmental policies included as core element of the company's strategy to gain competitive advantage.
Communicate statement	<i>Statement exists, but is not well communicated to employees, agents, other relevant parties.</i>	Statement formally communicated effectively to all appropriate groups and line employees.	Environmental policies communicated effectively outside the company.
Actions follow statement	<i>Statement exists, but is not fully implemented due to:</i> <ul style="list-style-type: none"> ● <i>inadequate follow-up</i> ● <i>no means to enforce policies</i> ● <i>resources required for implementation not adequate or available</i> 	Management follow-up and oversight ensures that stated environmental policies are actually taken into account when making key corporate decisions. Enforcement of sanctions for failure to incorporate environment policy principles in key decisions. Performance measures for key individuals include attainment of corporate environmental objectives. Adequate resources provided to support key corporate environmental objectives.	Environmental policies are integrated with marketing, human resources, other similar components of the company (rather than focused on pollution control through engineering management).



STATUS: A Corporate Safety and Environmental Policy has been developed which has been signed. The policy has been communicated through publication in the FYI newsletter, during audits, and through EH&S training programs. The draft revision of the Safety and Environmental manual requires each facility to develop a written environmental statement in support of the corporate policy. Currently, the environmental policy has not been fully communicated to all employees, and the facilities have not yet developed a formal environmental policy statement.

RECOMMENDATIONS: Continue the process of communicating the environmental policy to all employees. Ensure that the policy elements are integrated into the companies' business objectives. Each location should develop its own environmental policy statement in support of the Corporate Policy.

- A system that ensures that the yards are kept aware of changes in the regulations and a mechanism to effectively respond to these changes.

We will evaluate and characterize the yard level program elements using the same type of categorization system employed for the corporate level evaluation.

The evaluation of Metro-North's environmental management system will be used to develop a series of recommendations to improve their environmental performance. The recommendations may take the form of improved policies, procedures, or facilities to help ensure consistent environmental performance and reduce the impacts to public health and the environment.

The results of the EME will be documented in a draft report that will be presented to both Metro-North and the DEC in writing and then verbally at a joint meeting. Separate reports will be prepared for each yard. The report will be revised based on comments received by Metro-North and the DEC.

One year following the submission of the reports for the four yards, the management review team will again meet with corporate and yard personnel to evaluate the degree to which they have implemented the recommendations contained in the reports. A report will be prepared for delivery to both Metro-North and the DEC that details the steps taken to implement the recommendations in the final reports.

2.5

TASK III - BEST MANAGEMENT PRACTICES PLANS

ERM will develop a Best Management Practices (BMPs) Plan for each yard. The BMP Plans will meet the requirements of Metro-North's Work Statement and Appendix A, the NYSDEC's BMP Plan technical requirements/ scope of work. An additional guidance source to be used as a reference is the USEPA's NPDES

Best Management Practices Guidance Document (June 1981). This document identifies minimum requirements for BMPs and other features considered desirable in a BMP Plan. It is likely that NYSDEC personnel will refer to this document during their review of submitted BMP Plans.

The BMP Plans will be designed to prevent or minimize the release of reportable quantities of hazardous substances, toxic and hazardous pollutants, and nuisance compounds. The Plans will also include the following hazardous substance spill procedures:

- Spill Prevention
- Spill Response
- Securing and Use of Emergency Equipment
- Identification of Reportable Releases
- Notification of NYSDEC and/or Other Agencies.

ERM's approach to BMP Plan development in this task is to:

- 1) Identify all hazardous substances, toxic and hazardous pollutants and nuisance compounds used on-site;
- 2) Identify facility locations where the substances, pollutants and compounds are used, manufactured, stored or handled;
- 3) Evaluate the potential for the release of significant amounts of the substances, pollutants and compounds;
- 4) Assess current BMPs for which the potential for release is significant; and
- 5) Develop (or revise) BMPs for the locations where BMPs are absent or inadequate.

First, ERM will identify all hazardous substances listed in 6 NYCRR 597, toxic pollutants listed in Section 307(a)(1) of the Clean Water Act, hazardous pollutants listed in Section 311 of the Clean Water Act or "Chemicals of Concern" as listed

by the Industrial Chemical Survey at the yards. The identification of chemicals will be effected through interviews with yard personnel and reviews of operations, chemical inventories, Material Safety Data Sheets and purchasing records. The identified chemicals will be documented.

Once the applicable substances are identified, ERM will then inspect facility locations where these substances are used, stored or handled. Areas to be reviewed will likely include: material storage areas; in plant transfer, process and material handling areas; loading and unloading operations; and sludge and waste disposal areas.

ERM will then conduct a hazard analysis to evaluate the potential for the release of significant amounts of such pollutants. In performing the analysis, ERM will consider such factors as the probability of equipment failure or improper operation, settlement of facility air emissions, the effects of such natural phenomena as freezing temperatures and precipitation, fires and the facility's history of spills and leaks. For hazardous pollutants, the list of reportable quantities as defined in 6 NYCRR Part 597 will be used as a guide in determining significant amounts of releases. For toxic pollutants, the relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

The term "significant release" as used in this proposal means any release which may:

- Cause or contribute to a violation of an effluent limitation in its SPDES permit, or water quality standards; or
- Exceed a Reportable Quantity, pursuant to NYCRR Part 597; or
- Contain a substance that is not an authorized discharge under a SPDES permit.

To effect risk reduction whenever the potential for a significant release of hazardous substances, toxic or hazardous pollutants or nuisance compounds is identified, ERM will:

- Identify the presence or absence of BMPs that have been previously established to prevent or minimize such potential releases;
- Determine the adequacy of existing BMPs; and
- Establish BMPs if existing BMPs are inadequate or if no BMPs exist (i.e., Task 3).

ERM will develop the BMP Plans through the following Subtasks:

2.5.1 Subtask III-A - Data Collection and Evaluation

As described in Section 2.2, ERM's Yard Teams will obtain all information necessary to develop the BMP Plans during their on-site activities at the yards. BMP-specific tasks to be completed during the initial phases of the on-site activities include:

- Review with applicable Metro-North personnel the objectives of the BMP Plan;
- Identify types and sources of information (i.e., chemical inventories, Material Safety Data Sheets, waste characterizations, as well as Metro-North personnel); and
- Identification of pertinent plans and procedures, such as the SPCC or Safety Plans, and spill response, spill notification, employee training, and preventive maintenance procedures, as applicable.

All information obtained during the data collection and evaluation task will be documented on a pre-prepared form and will include the following:

- Building or location at the yard
- Activity and supervisor
- Feature of concern (i.e., process, storage area, transfer point)
- Chemical(s) of concern, amount present
- Potential for release
- Potential receptors
- Sampling necessary
- BMPs present/evaluation

2.5.2 *Subtasks III-B - Hazard Analysis and Risk Reduction Measures*

This subtask will be used to address four inter-related questions related to hazard analyses and risk reductions:

- What are the circumstances through which a release of hazardous substances to the environment are possible?
- What are the consequences of such a release?
- What measures are currently employed to reduce the likelihood of a release?
- What additional measure can be reasonably taken to further reduce the threat of a release or mitigate its impact?

Each of the areas where hazardous materials are used, handled, or stored will be inspected by the Yard Teams using forms developed in the previous task. We will systematically examine each area to determine the potential for a release to the environment. This evaluation will consider potential releases under normal operating conditions as well as releases that could result from a spill, leak, fire, explosion, or other episodic event.

Whenever the potential for a significant release of nuisance compounds, toxic pollutants or hazardous pollutants is determined to be present, ERM will identify if current Best Management Practices ("BMPs") that have been established to prevent or minimize such potential releases are adequate for the characteristics of each specific situation. Where existing BMPs are inadequate or absent, appropriate BMPs will be developed. In selecting appropriate BMPs, ERM shall consider industry practices, such as spill reporting procedures, risk identification and assessment, employee training, inspections and records, preventative maintenance, good housekeeping, materials compatibility and security. In addition, ERM will consider structural measures (such as drain capping or secondary containment devices) where appropriate. The documentation of existing BMPs, their evaluation, and potential BMPs to be developed will take place on the form discussed in Task III-A.

2.5.3

Subtask III-C - Reporting

Prior to developing each draft BMP Plan, ERM will meet with Metro-North to discuss the BMPs to be included in the Plan. The BMP Plans will be formatted in narrative form and will include any necessary plot plans, drawings or maps. Other documents already prepared for the facility such as a safety manual or Spill Prevention, Control and Countermeasure Plan ("SPCC Plan") may be used as part of the plan and/or incorporated by reference.

At a minimum, the plan will include, but not necessarily be limited to elements shown on Table 2-3.

ERM will submit each draft BMP Plan to Metro-North for a 30-day review and comment period. ERM will respond to Metro-North's comments prior to issuing each draft Plan to the NYSDEC. ERM will then respond to NYSDEC comments and finalize the Plans.

TABLE 2-3

PROPOSED BMP PLAN OUTLINE

1. General Facility Description
2. Objectives of the Plan
3. Toxic, Hazardous and Nuisance Substances Identification
 - Use, Generation and Storage Location
 - Material Compatibility
 - Potential Releases
 - Risk Identification and Assessment
4. Best Management Practices
 - Physical Descriptions
 - Preventive Maintenance
 - Good Housekeeping
 - Employee Training
 - Inspections and Recordkeeping
 - Security Measures
5. Management of BMP Plan
 - BMP Committee
 - Management Policy
 - Modification of BMP Plan Procedures
6. Spill Prevention and Response Procedures
 - Spill Prevention Procedures
 - Spill Response
 - Securing and Use of Emergency Equipment
 - Identification of Reportable Releases
 - Notification of NYSDEC and/or Other Agencies.

2.5.4

Subtask III-D - Harmon BMP Plan Follow-Up Report

ERM will prepare a report describing the steps Metro-North has taken at Harmon Yard to implement the features of the final BMP Plan, the improvements made at Harmon as a result of the BMP Plan and the various costs associated with the improvements. The report will also include a detailed description of any planned modifications required to update the BMP Plan. The report will be submitted in draft form to Metro-North 10 months from the date of NYSDEC approval of the Harmon BMP Plan for a 30-day review and comment period. ERM will respond to Metro-North's comments before submitting a final report to the NYSDEC. The final report will be submitted to the NYSDEC within one (1) year from the date of NYSDEC approval of the Harmon BMP Plan.

2.6

TASK IV - PRELIMINARY SITE CONTAMINATION STUDIES

As noted in the Introduction, members of the ERM Project Team have been working at Harmon Yard since 1987. ERM is currently managing two large site investigations at Harmon and is intimately familiar with the environmental conditions at this yard. ERM's familiarity with Harmon Yard will significantly reduce the level of effort required for preparation of the Preliminary Site Contamination Study. The fact that ERM has worked at Harmon Yard will also be advantageous during the work at the other yards. Although ERM has not been to the other yards, the operations will be similar to those at Harmon (albeit at a smaller scale), and ERM may already know many of the personnel that need to be interviewed. ERM's familiarity with Metro-North and the good working relationship that has been established over the years will minimize the administrative burden on Metro-North and should give Metro-North the confidence that they will receive carefully prepared and carefully evaluated reports.

The following sections present a description of the information that ERM has

reviewed and/or prepared on the environmental conditions at each yard and an outline of the approach that will be taken to complete the Preliminary Site Contamination Studies.

2.6.1

Harmon Yard

Harmon Yard is the by far the largest of the four yards and based upon the available information, there has been more environmental work done at this yard than at any of the others. Harmon is approximately 100 acres in size and has functioned as the primary diesel and electric maintenance yard for over 100 years. The yard includes a major diesel/electric shop for maintenance of passenger cars and locomotives, a car wash, a blowshed, a rail car storage yard, a locomotive fueling pad with an above ground storage tank, a 47,500 square foot warehouse facility, an automotive fueling facility, wastewater treatment facilities, and approximately 300,000 square feet of outdoor paved storage and parking areas. The majority of these facilities have been constructed since 1983 when Metro-North was created.

In 1988, NYSDEC split Harmon Yard into two sites: the lagoon and the old treatment plant were combined into one site that was classified a "2" on the Inactive Hazardous Waste Disposal Site and the remainder of the Yard was classified as a "2A", pending further information. In 1992, after the preparation of a Hazard Ranking System (HRS) score for Harmon Yard, the remainder of the Yard was removed from the Inactive Hazardous Waste Disposal Site Registry and is now being managed by the Bureau of Spill Prevention and Response. Based on the file review that ERM did while preparing the Field Investigation/Site Remediation Work Plan, there have been at least seven reports prepared under different regulatory programs for different areas of Harmon Yard. In addition, McLaren/Hart prepared several reports on conditions at the lagoon, Metro-North completed an investigation into areas of concern identified by a former employee and ERM will be preparing reports for the two investigations currently underway

at Harmon Yard: one for the main part of the Yard that is under the Spills Program and one for Operable Unit II of the Stipulation of Discontinuance that is related to the Wastewater Treatment Plant.

ERM has all of the reports and data in-house and has analyzed the data sufficiently to have compiled an inventory of all potential areas of concern at Harmon. This information is summarized in Table 2-4 and will form the basis for preparation of the Preliminary Site Contamination Study. This table contains a summary of the amount of investigative work done at each area of concern, what firm performed the work and when, and whether, to the extent that ERM knows, the area of concern was the result of operations by the previous owners or the current owner. Based upon this list, all of the areas of concern, with the possible exception of the former transformer storage area, at Harmon have been investigated and there is ample data with which to evaluate the subsurface conditions at the yard.

In order to determine the level of effort that would be required for preparation of the Preliminary Site Contamination Study, ERM developed a checklist for each yard. The list identifies all of the components of the Preliminary Site Contamination Study and notes regarding what information is available and what needs to be collected. The completed checklist for Harmon is shown in Table 2-5. In terms of Harmon Yard, ERM believes that all of the information required by the Stipulation of Discontinuance is available. Based on this information, the level of effort required for the Preliminary Site Contamination Study at Harmon will include a site visit, integration of all available data into a Graphic Information System (GIS) and preparation of the report itself. These tasks are discussed in more detail below.

TABLE 2-4

SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT HARMON YARD

Area of Environmental Concern	Investigated By	Date of Investigation	No. of Borings/Samples	No. of Wells/Samples	Pre-1983 Operation	Post-1983 Operation
RCRA Drum Storage Areas						
Site 1/HAR-CSA-01	AET ⁽³⁾	March 1992	9/19		✓	
Site 2	AET ⁽³⁾	March 1992	5/10		✓	
Site 3/HAR-CSA-03	AET ⁽³⁾	March 1992	7/16		✓	
Site 4/HAR-CSA-02	AET ⁽³⁾	March 1992	12/22			✓
Site 5	AET ⁽³⁾	March 1992	8/11			✓
Site 6/HAR-CSA-04	AET ⁽³⁾	March 1992	7/12		✓	
LMS Drum Storage Area	LMS ⁽¹⁾	January 1989	1/1	2/2		
Fueling Pad Area	MNCR/ NYSDEC ⁽¹⁰⁾	December 1985	6/6		✓	
	IEM Sealand ⁽²⁵⁾		8/8	8		
	ERM ⁽²⁾	April/August 1994	4/4	7/7	✓	
1,000,000 Gallon Above Ground Storage Tank	ERM ⁽²⁾	14 April 1994	2/2		✓	
Osborne Pond	MTA ⁽¹⁵⁾	January 1980	4/0		✓	
	M&E ⁽¹⁶⁾	October 1983	14/0		✓	
	DR ⁽¹⁷⁾	December 1985	3/3		✓	
	LMS ⁽¹⁾	January 1989	2/2	1/1 (waste water)	✓	
	ERM ⁽²⁾	April/August 1994	4/4	3/3	✓	
Maintenance-of-Way Storage Building	MNCR ⁽⁹⁾	March 1989	?		✓	
	ERM ⁽²⁾	April/August 1994	3/3	1/1	✓	

TABLE 2-4

SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT HARMON YARD (Continued)

Area of Environmental Concern	Investigated By	Date of Investigation	No. of Borings/Samples	No. of Wells/Samples	Pre-1983 Operation	Post-1983 Operation
Railroad Tie Storage Area/Fuel Supply Line	? ⁽¹¹⁾	March 1988		2/2		✓
	IEM Sealand ⁽²⁶⁾	1994	1	1		
Former Transformer Storage Area						
Sewer Line from Shop to Waste Water Treatment Plant	LMS ⁽¹⁾	January 1989		1/1 (waste water influent)	✓	
	ERM ⁽²⁾	April/August 1994	2/2	2/2	✓	
Electric Shop	ERM ⁽²⁾	April/August 1994		3 temporary wells		
Outfall/Croton Bay	LMS ⁽¹⁾	January 1989	2/2 (sediment)			
	Day ⁽¹⁴⁾	October 1992	5/5 (sediment)			
	ERM ⁽¹⁸⁾	November 1993	3/6 (sediment)			
	ERM ⁽²⁾	April/August 1994	3/3	1/1		
LMS Well GW-5	LMS ⁽¹⁾	January 1989	1/1	1/1		
	ERM ⁽²⁾	April/August 1994	3/3	3/3		
Outdoor Storage Area (Storeroom Lot) Recovery Well	AET/LTR ⁽⁵⁾	October 1990		6/6	✓	
	ERM ⁽²⁾	April/August 1994	3/4	2/2	✓	
LMS Well GW-1	LMS ⁽¹⁾	January 1989		1/1		
	ERM ⁽²⁾	April/August 1994	5/6	3/3		

TABLE 2-4

SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT HARMON YARD (Continued)

Area of Environmental Concern	Investigated By	Date of Investigation	No. of Borings/Samples	No. of Wells/Samples	Pre-1983 Operation	Post-1983 Operation
Distribution Center	ERM ⁽²⁾	April/August 1994	1/2	1/1		
Lagoon						
Pre-Remedial Investigation	Esarco ⁽²⁴⁾	2 April 1983	10/10			
	Esarco ⁽²⁴⁾	12 March 1984	11/11			
	Esarco ⁽²⁴⁾	25 March 1985	?/57			
	Unknown ⁽²⁴⁾	25 April 1985	3/3			
	Hart ⁽²⁴⁾	December 1987	1/1 (wet well and oil skimmer tank)			
Remedial Investigation	Hart ⁽²⁴⁾	May 1989	16 lagoon sludge 56 surface soil 23 treatment plant 11 sludge drying bed	12/17 (oil and water samples)		
	McLaren/Hart ⁽²³⁾	October 1990		14/16		
Post-Remedial Investigation	McLaren/Hart ⁽²²⁾	August 1991	6/14 (soil and sludge)			
	CHEMTECH ⁽²¹⁾	April 1992	7/7 (sludge)			
	ERM ⁽²⁰⁾	April 1993	3/20			
	ERM ⁽¹⁹⁾	_____ 1993	14/78			
Waste Water Treatment Plant Discharge to Outfall	LMS ⁽¹⁾	January 1989	2/2	1/1 (waste water effluent)		

TABLE 2-4

SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT HARMON YARD (Continued)

Area of Environmental Concern	Investigated By	Date of Investigation	No. of Borings/Samples	No. of Wells/Samples	Pre-1983 Operation	Post-1983 Operation
Croton Avenue Bridge	MRCE ⁽⁶⁾	December 1992 January 1993	28 ^(6a)		✓	
	ERM ⁽⁷⁾	January 1993	4/4		✓	
	AET ⁽⁸⁾	September 1993	7/14		✓	
Outfall Oil/Water Separator	LMS ⁽¹⁾	January 1989	1/1 (sediment)	1/1 (surface water)		
Underground Storage Tank Near Platform Extension	AET/ MNCR ⁽¹²⁾	April 1993	2/2		✓	
New Oil/Water Separator	AET/ MNCR ⁽¹³⁾	May 1993	8/8			
Matyi Investigation						
Area 1: Caustic Wash Dump	ERM ⁽²⁷⁾	January 1994	2/2			✓
Area 2: Caustic Wash Dump Pit	ERM ⁽²⁷⁾	January 1994	2/4			✓
Area 3: Ash Pits	ERM ⁽²⁷⁾	January 1994	1/24			✓
Area 4: Waste Oil Above Ground Storage Tank	ERM ⁽²⁷⁾	January 1994	1/2			✓
Area 5: Former Above Ground Waste Oil Tank	ERM ⁽²⁷⁾	January 1994	1/2			✓
Area 6: Anderson's Dump	ERM ⁽²⁷⁾	January 1994	2/2			✓
Area 7: Caustic Wash Pit	ERM ⁽²⁷⁾	January 1994	1/2			✓

TABLE 2-4

SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT HARMON YARD (Continued)

Notes:

- (1) Lawler, Matusky & Skelly Engineers, 1989. *Phase II Investigation - Harmon Railroad Yard, Metro-North Railroad, Site No. 3600019, Croton-on-Hudson, Westchester County.*
- (2) ERM-Northeast, 1994. *Harmon Yard Investigation Progress Meeting Agenda.*
- (3) American Environmental Technologies, Inc., 1991. *Proposal for Recovery of Diesel Fuel at Metro-North Harmon Yard Outdoor Storage Facility.* (4) Also addressed in Day Engineering, 1991. *Information Regarding Potential Hazardous Waste and Hazardous Waste Constituent Releases from Solid Waste Management Units at Harmon Yard, Metro-North Commuter Railroad, Croton-on-Hudson, New York.* Day Engineering, P.C.
- (5) Land Tech Remedial, Inc., 1990. *Hydrogeologic Investigation Report, Metro-North Commuter Railroad, Harmon Yard Outdoor Storage Area, Croton-on-Hudson, New York.*
- (6) Mueser Rutledge Consulting Engineers, 1993. *Geotechnical Data Report - Croton Point Avenue Bridge Replacement, Croton-on-Hudson, New York.*
- (6a) Samples collected by Mueser Rutledge Consulting Engineers were used for a geotechnical, not chemical, evaluation. Samples were split with ERM-Northeast. See Note 7 for ERM-Northeast results.
- (7) York Analytical Laboratories, 1993. *Technical Report, Prepared for ERM-Northeast.*
- (8) York Analytical Laboratories, 1993. *Technical Report, Prepared for American Environmental Technologies.*
- (9) According to the FI/RP Work Plan, Metro-North collected soil samples for TPH analysis during construction of foundation for MOW Building. As a result of the data and visual observations, 225 cubic yard of material was removed. Metro-North's files contain limited records on these activities.
- (10) ERM-Northeast, 1993. *Field Investigation/Remediation Project Work Plan. Harmon Railroad Yard, Croton-on-Hudson, New York.*
- (11) ERM-Northeast, 1993. *Field Investigation/Remediation Project Work Plan. Harmon Railroad Yard, Croton-on-Hudson, New York.* The Work Plan does not indicate who conducted the investigation.
- (12) York Analytical Laboratories, 1993. *Technical Report, Prepared for American Environmental Technologies.*
- (13) York Analytical Laboratories, 1993. *Technical Report, Prepared for Metro-North Commuter, Fisher Lane, White Plains.*
- (14) Day Engineering, 1992. *Interim Report, Outfall Sediment Investigation, Harmon Yard, Metro-North Commuter Railroad, Croton-on-Hudson, New York.*
- (15) Metropolitan Transportation Authority, 1980. Test Borings by The Giles Drilling Corporation.
- (16) Metcalf & Eddy, 1983. Test borings drilled by Jersey Boring Drilling Co. Inc.
- (17) The Firm of Dermot Reddy, P.E., 1985. Project: Harmon Car Wash, Metro-North.
- (18) ERM-Northeast, 1993.
- (19) ERM-Northeast, 1994. *Pre-Design Test Boring Data Summary Report. Harmon Yard Waste Water Treatment Area, Harmon Railroad Yard, Croton-on-Hudson, New York.*
- (20) ERM-Northeast, 1993. *Initial Pre-Design Test Boring Program.*
- (21) CHEMTECH Consulting Group, Inc., 1992. *Village of Croton on the Hudson, Job Name: Metro-North, Location: Harmon Lagoon.*
- (22) McLaren/Hart, 1992. *Pre-Design Investigation Report, Harmon Lagoon Site, Croton-on-Hudson, New York.*
- (23) McLaren/Hart, 1991. *Draft Ground Water Sampling Report, Harmon Lagoon, Croton-on-Hudson, New York.*
- (24) Hart, 1989. *Remedial Investigation Report, Harmon Lagoon, Croton-on-Hudson, New York.* Fred C. Hart Associates, Inc.
- (25) IEM Sealand.....
- (26) IEM Sealand.....
- (27) York Analytical Laboratories, Inc., 1994. *Technical Report, Prepared for ERM-Northeast.*

**TABLE 2-5
HARMON YARD
PRELIMINARY SITE CONTAMINATION STUDY CHECKLIST**

ITEM	STATUS	ADDITIONAL WORK REQUIRED
Summary of previous owners activities leading to discharges	Information is available and in-house at ERM	Information will require some review by Metro-North to ensure that prior owners discharges are correctly identified
Summary of current owners activities leading to discharges	Information is available and in-house at ERM	Information will require some review by Metro-North to ensure that Metro-North's discharges are correctly identified
Facility Site Plan	completed in 1994	none
Aerial Photos	aerial photo search completed in 1994	none
Information regarding spills	Information is available and in-house at ERM	none
Identification and description of available reports	Information is available and in-house at ERM	none
Information adequate to assess subsurface conditions	Information is available and in-house at ERM	none
Adequacy of existing information to complete report	Existing in-house information is more than adequate to complete Preliminary Site Contamination Study	none
Information adequate to define Short Term Corrective Actions	yes	none
Information adequate to define scope of further investigative work	yes	none

2.6.1.1 *Site Visit by Yard Team Members*

The members of the Harmon Yard Team will jointly tour the Yard, interview Metro-North employees regarding past and current operations and verify that all areas of concern at Harmon have been identified. The hydrogeologist on the Harmon Yard team managed the Harmon Yard Investigation and is very familiar with the Yard. It is anticipated that his Yard visit will be completed in one day and that it will take one additional day for him to review the background files at Metro-North to ensure that ERM has not overlooked any documents.

2.6.1.2 *GIS Database Development*

As a result of the size of Harmon and the number of investigations that have been completed at the yard, there is a very large database available for the Preliminary Site Contamination Report. ERM proposes to import all of the soil quality and ground water quality data from the Harmon Field Investigation, which are currently in Excel files, into "Access", which is the database management system that is used in conjunction with our Geographic Information System (GIS). Similarly, the CAD files for the base map will be input into ArcCAD which allows ERM to link the CAD files to the GIS. Obviously, the advantage of the GIS is the ability to manage and analyze large quantities of data and to produce graphic representations of that data. ERM is well acquainted with the size of the database and estimates that this level of effort will require 6 person days. Once all of the data has been input into the GIS system, it can be manipulated in a number of ways to provide good graphical presentations of each area of concern and the data that is associated with that area of concern. The graphics developed during this task will be used in the Preliminary Site Contamination Study.

2.6.1.3 *Report Preparation*

ERM has developed a proposed outline for the Preliminary Site Contamination

Study Reports which is shown in Table 2-6. This outline will be used as the basis for the report for each of the four yards. The introductory section to each report will contain a description of the purpose and organization of the report, a detailed description of the location and physical layout of the yard and a summary of the past and current ownership/operation and the associated years of ownership/operation.

The second and third sections of each report would focus on the operations, chemical and petroleum usage and identification of spills that have occurred at each yard under previous owners and under current owners. These sections will focus on operations or activities that may have resulted in the release of hazardous materials or petroleum to the environment. These sections will also include any available information on the spills themselves, the manner in which they were addressed and the location at which the spill occurred.

The fourth section of the report will contain an analysis of the available aerial photos including a brief description of changes in land use and operations that may show in the photographs. The fifth section will contain a description of the regional and site specific geology and hydrogeology at the yard. This information will be helpful in the evaluation of the areas of concern and in scoping out any potential investigative/remedial tasks.

The sixth section will contained a detailed description of each area of concern. This section will begin with the identification of all reports and documents used to identify and evaluate the areas of concern. The section will also address the origin of each area of concern, contain a summary of the data from each area as well as an enlarged map showing all of the sampling locations and selected data. The last subsection for each area of concern will contain an evaluation of whether the area has been sufficiently characterized.

TABLE 2-6
SAMPLE OUTLINE
PRELIMINARY SITE CONTAMINATION STUDY

- 1.0 INTRODUCTION
 - 1.1 Purpose of Report
 - 1.2 Organization of Report
 - 1.3 Description and Location of Yard, Facility Site Plan
 - 1.4 Identification of Historic and Current Owners/Operators

- 2.0 DESCRIPTION OF HISTORICAL ACTIVITIES
 - 2.1 Operations
 - 2.2 Chemical/Petroleum Usage
 - 2.3 Spills/Response

- 3.0 DESCRIPTION OF CURRENT ACTIVITIES
 - 3.1 Operations
 - 3.2 Chemical/Petroleum Usage
 - 3.3 Spills/Response

- 4.0 AERIAL PHOTO ANALYSIS

- 5.0 SUBSURFACE GEOLOGY/HYDROGEOLOGY
 - 5.1 Regional Information
 - 5.2 Site Specific Information

- 6.0 AREAS OF ENVIRONMENTAL CONCERN
 - 6.1 Existing Reports
 - 6.2 Area of Environmental Concern (AEC)
 - 6.2.1 Origin of AEC
 - 6.2.2 Summary of Characterization Data
 - 6.2.3 Evaluation of Data and Completeness of Characterization

- 7.0 RECOMMENDATIONS FOR FURTHER WORK
 - 7.1 AECs that Need Additional Work
 - 7.2 Proposed Investigative Work
 - 7.3 Short Term Corrective Actions

- 8.0 BIBLIOGRAPHY

The last section of the report will focus on recommendations for further work. The first subsection will contain a list of areas of concern that need additional work and the subsequent sections of each report will provide a description of any proposed investigative work or short term corrective actions. The investigative work identified will form the basis for the Site Investigation and Remediation Work Plan. A bibliography will also be included in the report.

A report for Harmon Yard will be completed by 10 August 1995 and submitted to Metro-North and NYSDEC for review. Once comments are received and if revisions are necessary, the report will be revised and resubmitted within the timeframe requested by Metro-North and NYSDEC. The level of effort estimate for this Preliminary Site Contamination Report assumes that only one day will be required for review of files outside of ERM's in-house files and that one set of revisions will be necessary to finalize the report.

2.6.2

North White Plains

The yard at North White Plains (the NWP Yard) is approximately 25 acres in size and most of the facilities at this yard have been constructed since Metro-North was created. This yard has an Electric Car Maintenance Shop, Maintenance of Way Facility, a new marshalling yard, an automotive fuel station and several other buildings. According to the RFP, several turn of the century facilities were demolished at the NWP Yard in the last ten years during construction of the new facilities.

The fact that there were older facilities at this yard suggest the possibility of some environmental impacts. Based upon available information, there has only been one environmental study done at the NWP Yard and this was conducted by Carddry, Carpenter, Dietz and Zack in 1990 (CCDZ). The environmental work was limited to a soil gas survey and in the report, four potential areas of concern were identified: the north side of the storage building, the area to the north of the

turntable, the area on the southeast side of the roundhouse, and the area around the above ground storage tanks (ASTs). ERM has prepared a table which summarizes the available information on the areas of concern at the NWP Yard and it is shown in Table 2-7. The data from the report does suggest some evidence of impact to the environment, but the report was not detailed enough to allow ERM to determine the magnitude of the impacts or whether there are other areas where impacts may have occurred. Therefore, the Preliminary Contamination Study for this yard will require several additional tasks for the collection of background information prior to preparation of the report.

In order to determine the level of effort required to prepare the report for NWP, ERM prepared a checklist for this yard (Table 2-8). Based on the checklist, the following tasks must be completed prior to preparation of the Preliminary Site Contamination Study:

- Yard Team visit and review of operations
- Interviews with Metro-North
- Review of Metro-North files
- Review of NYSDEC and USGS files
- Aerial Photo and Database Search
- Modifications to Yard Base Map

2.6.2.1 *Yard Team Visit and Interviews with Metro-North Employees*

The members of the NWP Yard Team will jointly tour the yard, interview Metro-North employees regarding past and current operations and verify that all areas of concern at NWP have been identified. ERM will interview Metro-North employees for information about current and/or historical operations and activities at the NWP Yard. The interviews will focus on activities or operations in which petroleum or hazardous materials may have been used and whether any of these operations may have resulted in impacts to the environment. In addition, ERM

TABLE 2-7
SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN AT NORTH WHITE PLAINS

Area of Environmental Concern	Investigated By	Date of Investigation	No. of Borings ⁽²⁾	Compounds Detected	Pre-1983 Operation	Post-1983 Operation
North Side of Turntable (D-6)	CCDZ ⁽¹⁾	August 1990		Elevated PID readings, TCE, Toluene	N/A	N/A
Storage Building	CCDZ ⁽¹⁾	August 1990		Elevated PID readings, TCE, PCE, Toluene, Fuel Fingerprint	N/A	N/A
Roundhouse (C-1.5) (includes Gas Pump Near Temporary Trailers (B-3 and C-1.5) and Scrap Iron Storage Bin (B-5)	CCDZ ⁽¹⁾	August 1990		TCE, Toluene	N/A	N/A
Above Ground Storage Tank Outside Substation (C-7)	CCDZ ⁽¹⁾	August 1990		PCE	N/A	N/A

Notes:

- (1) Carddry, Carpenter, Dietz & Zack, 1990. *Soil Gas Report for Metro-North Commuter Railroad, North White Plains Yard*. Prepared for LS Transit System, Inc., Bloomfield, NJ. August 1990.
- (2) Boring locations shown on site map; no information on borings available.
- N/A Information not available

TABLE 2-8
NORTH WHITE PLAINS
PRELIMINARY SITE CONTAMINATION STUDY CHECKLIST

ITEM	STATUS	ADDITIONAL WORK REQUIRED
Summary of previous owners activities leading to discharges	Available report did not provide sufficient information with which to determine whether the impacts to soil are recent or pre-1983.	yes, information will be obtained during interviews and file reviews
Summary of current owners activities leading to discharges	Available report did not provide sufficient information with which to determine whether the impacts to soil are recent or pre-1983.	yes, information will be obtained during interviews and file reviews
Facility Site Plan	Yard map will be completed by Metro-North in July 1995	none
Aerial Photos	current aerial photo is available	must acquire historical aerial photos
Information regarding spills	no information available	yes, information will be obtained during interviews, file reviews and FOIL requests
Identification and description of available reports	at present, ERM is only aware of one report	yes, determine whether other reports exist
Information adequate to assess subsurface conditions	no	yes, will need to collect additional background information on regional geology and hydrogeology
Adequacy of existing information to complete report	information made available to ERM is not adequate to complete report	yes
Information adequate to define Short Term Corrective Action	information made available to ERM is not adequate to complete report	yes
Information adequate to define scope of further investigative work	information made available to ERM is not adequate to complete report	yes

will have a site map at the interviews so that potential areas of concern can be identified at that time. Depending upon the information collected and whether corroborating information is needed, it may be necessary to interview some employees more than once. A designated representative of Metro-North will be told in advance of the interview so that he or she may attend and all interview notes will be made available to Metro-North.

2.6.2.2 *Review of Metro-North Files*

In addition to interviews with current and/or former employees, ERM will review Metro-North files for other information that may be related to the NWP Yard. For this task, ERM assumed that Metro-North will collate the files and make them available to ERM for review. Since ERM's offices are about 10 blocks from Metro-North, ERM can send a representative to Metro-North to conduct the review.

It was also assumed that the file search could be completed in three person days.

2.6.2.3 *FOIL Requests, Database Searches, Aerial Photo Searches*

ERM also recommends filing a FOIL request with NYSDEC Region 3 so that the NYSDEC files may be reviewed as well. NYSDEC may have information on spills and enforcement actions that predate Metro-North's activities at the site and are therefore not part of Metro-North's files. In addition, ERM would recommend a CERCLIS database search to evaluate whether EPA or NYSDEC have pursued any enforcement actions at the yard or on adjacent properties. The information on adjacent properties will be useful in the event some anomalous field data is obtained during the investigative work. This task would also include the collection of regional and site specific geological and hydrogeological data that can be used to assess the subsurface conditions at the NWP Yard. Lastly, this task would include an aerial photo search. These searches can be done most

cost effectively by outside groups with access to a number of sources for aerial photos. ERM will try to obtain the earliest photo available and then photos at 10 or 15 year increments after that. ERM's experience in obtaining photos for Harmon Yard suggests that we may have to accept the aerials that are available.

2.6.2.4 *Modification of Site Base Map*

Based upon the information supplied in Addendum 1, Metro-North will have final site base maps for each of the four yards by July 1995. For the purpose of this proposal, ERM assumed that it would not be necessary to prepare a base map for NWP or any other yard. ERM presumes that the maps being prepared by Metro-North will have a scale of one inch equal to 50 feet and a one foot contour interval and will show all existing buildings, tracks, storage tanks, and to the extent possible, underground utilities. The base map should be available on Autocad version 11 for use by ERM. ERM assumes that the only modifications to the maps will be the addition of areas of concern and any data that will be included for the report. ERM will input the CAD files into ArcCAD and any available data into Access files in the GIS. This work will not require a large level of effort and will be helpful as more data is collected at NWP.

2.6.2.5 *Report Preparation*

Once these tasks are complete, ERM will prepare the Preliminary Site Contamination Study Report for the NWP Yard. ERM will use the same outline proposed for the Harmon Yard report. In the case of NWP Yard, the analysis and synthesis of the information will require a somewhat greater level of effort than that for Harmon Yard since ERM is not as familiar with the NWP Yard. However, since the NWP Yard is smaller, and since fewer studies have been done at this yard, it is assumed that there will be much less information available for the report. A draft of the report will be completed by 10 May 1996 and submitted to Metro-North and NYSDEC for review. Once comments are

received and if revisions are necessary, the report will be revised and resubmitted within the timeframe requested by Metro-North and NYSDEC. The level of effort estimate for this Preliminary Site Contamination Report assumes that only one set of revisions will be necessary to finalize the report.

2.6.3 *Brewster Yard*

According to the RFP, Brewster Yard is 25 acres in size and virtually all of the structures at Brewster have been constructed by Metro-North subsequent to 1983. The facilities at this yard include a new electric car maintenance facility, a small locomotive maintenance shop, a locomotive fuel pad, a car wash facility, sewer manifold system, oil/water separation facilities and an automotive fueling station. There was only limited information on the environmental conditions at Brewster made available to ERM for review. The information pertained to characterization of the soils that had been excavated at Brewster for treatment in an asphalt batching plant. In addition, Addendum 1 indicated that there was floating product at Brewster. This information confirms that there has been some impact to the soils at Brewster Yard and that there is some information available with which to prepare the Preliminary Site Contamination Study.

Based upon this rather limited knowledge, ERM filled out the checklist to aid in identification of the tasks that would be required for this yard (Table 2-9).

ERM believes that all of the tasks outlined above for the NWP Yard will have to be undertaken at the Brewster Yard as well. These tasks include:

- Yard Team visit and review of operations
- Interviews with Metro-North
- Review of Metro-North files
- Review of NYSDEC and USGS files
- Aerial Photo and Database Search
- Modifications to Yard Base Map

**TABLE 2-9
 BREWSTER YARD
 PRELIMINARY SITE CONTAMINATION STUDY CHECKLIST**

ITEM	STATUS	ADDITIONAL WORK REQUIRED
Summary of previous owners activities leading to discharges	ERM was not given any information on this yard	yes, information will be obtained during interviews and file reviews
Summary of current owners activities leading to discharges	ERM was not given any information on this yard	yes, information will be obtained during interviews and file reviews
Facility Site Plan	Yard map will be completed by Metro-North in July 1995	none
Aerial Photos	current aerial photo is available	must acquire historical aerial photos
Information regarding spills	ERM was not given any information on this yard	yes, information will be obtained during interviews, file reviews and FOIL requests
Identification and description of available reports	ERM was not given any information on this yard	yes, determine whether other reports exist
Information adequate to assess subsurface conditions	ERM was not given any information on this yard	yes, will need to collect background information on regional geology and hydrogeology
Adequacy of existing information to complete report	ERM was not given any information on this yard	yes
Information adequate to define Short Term Corrective Action	ERM was not given any information on this yard	yes
Information adequate to define scope of further investigative work	ERM was not given any information on this yard	yes

Once all of the information is collected, ERM will prepare the Preliminary Site Contamination Study Report for Brewster according to the outline presented in Table 2-6 for the other two yards. A draft of the report will be completed by 10 November 1995 and will be submitted to Metro-North and NYSDEC for review. Once comments are received and if revisions are necessary, the report will be revised and resubmitted within the timeframe requested by Metro-North and NYSDEC. The level of effort estimated for this Preliminary Site Contamination Report assumes that the Yard Team visit and the interviews will take three days, the Metro-North file search will take three days and only one set of revisions will be necessary to the report.

2.6.4

Port Jervis Yard

According to the RFP, Metro-North owns and operates a five acre parcel with very limited facilities at the Port Jervis Yard. Within the area acquired from Conrail in 1986, there is an oil/water separator, which was recently upgraded to address SPDES violations, several yard tracks and a new Welfare Facility. There were no reports on the environmental conditions at this yard made available and ERM has almost no knowledge of existing conditions.

Based on the available information, ERM completed a checklist for the Port Jervis facility which is shown in Table 2-10. ERM believes that all of tasks outlined for the NWP Yard will have to be implemented at Port Jervis as well. These activities include:

- Yard Team visit and review of operations
- Interviews with Metro-North
- Review of Metro-North files
- Review of NYSDEC and USGS files
- Aerial Photo and Database Search
- Modifications to Yard Base Map

TABLE 2-10
PORT JERVIS YARD
PRELIMINARY SITE CONTAMINATION STUDY CHECKLIST

ITEM	STATUS	ADDITIONAL WORK REQUIRED
Summary of previous owners activities leading to discharges	ERM was not given any information on this yard	yes, information will be obtained during interviews and file reviews
Summary of current owners activities leading to discharges	ERM was not given any information on this yard	yes, information will be obtained during interviews and file reviews
Facility Site Plan	Yard map will be completed by Metro-North in July 1995	none
Aerial Photos	current aerial photo is available	must acquire historical aerial photos
Information regarding spills	ERM was not given any information on this yard	yes, information will be obtained during interviews, file reviews and FOIL requests
Identification and description of available reports	ERM was not given any information on this yard	yes, determine whether other reports exist
Information adequate to assess subsurface conditions	ERM was not given any information on this yard	yes, will need to collect background information on regional geology and hydrogeology
Adequacy of existing information to complete report	ERM was not given any information on this yard	yes
Information adequate to define Short Term Corrective Action	ERM was not given any information on this yard	yes
Information adequate to define scope of further investigative work	ERM was not given any information on this yard	yes

Once all of the information is collected, ERM will prepare a Preliminary Site Contamination Report for Port Jervis according to the outline presented in Table 2-3A for the other three yards. A draft of the report will be prepared for review by Metro-North and NYSDEC and will be completed by 10 February 1996. Once comments are received and if revisions are necessary, the report will be revised and resubmitted within the timeframe requested by Metro-North and NYSDEC. The level of effort estimate for this Preliminary Site Contamination Report assumes that the site visit and interviews will take two days to complete, the Metro-North file search will take two days and that only one set of revisions will be necessary to the report.

2.7

TASK V - SITE INVESTIGATION AND REMEDIATION STUDIES

ERM has reviewed all of the reports provided by Metro-North as well as the reports in-house to develop approaches to site investigation work at each of the yards. The assumptions made in this section are based on ERM's knowledge of the sites, the information provided by Metro-North for review and ERM's experience with the Spills Group at NYSDEC. In the event additional background information is available, it is possible that some identified areas of concern will no longer be of concern and conversely that there are other areas of concern that ERM has not identified. In addition, the assumptions made regarding the level of effort for investigative work may prove to be inaccurate in the event additional information is available. Therefore, ERM has tried to document the assumptions as carefully as possible. In the happy event that ERM is selected for the project, all of the assumptions and the proposed scope of work will be carefully evaluated in light of the additional background information.

Another assumption made by ERM in developing the proposed approach to preparation of the Site Investigation and Remediation Study is that the work plan required by the Stipulation of Discontinuance will focus on the manner in which any proposed site investigative activities will be undertaken. The work plan will

also contain a description of the manner in which the soil and ground water quality data will be evaluated to determine whether long or short term corrective actions are required, but the work plan will not contain the actual recommendations for corrective actions. All of the data collected during the investigative activities as well as the recommended short term and long term corrective actions will be presented in the Site Investigation and Remediation Study.

As was the case in the section on the Preliminary Site Contamination Studies, the proposed scope of work for this task is presented on a yard by yard basis.

2.7.1 *Harmon Yard*

2.7.1.1 *Preparation of Work Plan*

Based upon ERM's work at Harmon Yard and the preliminary inventory of areas of concern and available data, it is ERM's judgement that no further investigative work is required at Harmon Yard. There is more than enough information to characterize each area of concern and the ground water at this site. Since no further investigative work is required, the work plan for Harmon Yard will be short and will contain a description of the manner in which the existing data will be evaluated to determine the need for corrective actions. The work plan will be submitted to NYSDEC and Metro-North within 60 days of having received approval of the Preliminary Site Contamination Report. The level of effort for this task assumes that one draft of the work plan and one set of revisions will be requested by Metro-North and NYSDEC.

2.7.1.2 *Preparation of Site Investigation and Remediation Study Report*

The issue at Harmon will be an assessment of the level of effort required to address the presence of Light Non-Aqueous Phase Liquid (LNAPL) present on

the water table and the presence of fuel related compounds in the soil. By the time ERM begins work on this report, it will have completed the Cleanup Plan for Harmon that is required under its current contract with Metro-North. This Cleanup Plan will have addressed the issue of short and long term corrective action at all areas regulated under the Spills Program. Just as ERM proposes to incorporate the information from the Harmon Yard Site Investigation Report into the Preliminary Site Contamination Study, ERM will incorporate the information from the Harmon Yard Cleanup Plan into the Site Investigation and Remediation Study. The incorporation of this information will significantly reduce the level of effort required to complete the report for Harmon. There may be additional areas of concern at Harmon, such as the former drum storage area, that will not be addressed as part of the Harmon Yard Cleanup Plan. Depending upon the conclusion in the Preliminary Site Contamination Study, these areas may need to be addressed in the report.

Therefore, ERM proposes to prepare a report for Harmon Yard that addresses all areas of concern for which some type of short term or long term corrective action is necessary. To the extent that the areas were addressed in the Cleanup Plan, that information will simply be transferred to the Site Investigation and Remediation Study; to the extent an area of concern needs corrective action and was not addressed in the Cleanup Plan, it will also be included in the report.

Based on the work done to date, ERM's approach to corrective action at areas of concern impacted by LNAPL will be removal of the LNAPL from the water table. Once the LNAPL has been removed to the maximum amount practicable, ERM will reevaluate the soils data to determine the need for any additional corrective action work. However, any evaluation of the soils must take into consideration the fact that the yard will remain an operating yard for as far into the future as can be contemplated. Therefore, the most appropriate way to evaluate the soils will be from a risk standpoint. If, after the LNAPL is removed, the residual levels of petroleum related constituents do not create an

exceedance of a ground water standard at a defined point of compliance, than the soils should be allowed to remain in place. If ground water exceedances are identified, then an environmental assessment must be done to determine potential receptors. If there are no receptors, and the ground water exceedances are minimal, as is typical in areas impacted by fuel oil, then no further corrective action will be recommended. This type of approach is typically used by the NYSDEC Spills Group at sites where gasoline and fuel are present. The Site Investigation and Remediation Study Report for Harmon Yard will be completed nine months after approval of the work plan.

The costs for this task were estimated assuming that a short work plan would be prepared and that no field investigative activities would be required. The Site Investigation and Remediation Report itself will contain a summary of the Cleanup Plan and will address the need to implement short or long term corrective actions. However, no costs for the implementation of any corrective actions are included in this proposal.

2.7.2 *North White Plains*

2.7.2.1 *Work Plan Preparation*

As summarized in Section 2.5.2.1, ERM identified four areas of concern based upon the soil gas survey report prepared by CCDZ. These four areas are: the storage building on the north side of the yard; the turntable; the roundhouse; and the area around the Aboveground Storage Tanks (ASTs) on the eastern side of the turntable. In addition, CCDZ noted that there was surface soil staining in a number of areas of the yard. Since the only data available for these areas is soil gas data, these areas of concern will require further investigation.

The first deliverable required under this task is a work plan for conducting the Site Investigation and Remediation Study. The purpose of the work plan is to

present a description of the field investigative techniques that will be used to collect data with which to characterize the yard. In addition, as noted in the description of the work plan for Harmon, the approach that will be used to identify short term and/or long term corrective actions should also be included in the work plan. Metro-North stated in the RFP that the investigative work will be conducted in accordance with the Spills Technology and Remediation Series (STARS) Memo, and this information will be used to guide the level of effort required for the work plan and the field activities.

The work plan will contain a detailed Field Sampling Plan and a Health and Safety Plan. The detailed sampling plan will ensure that the components of the field activities are carefully worked out prior to the start of field activities and that NYSDEC has the opportunity to review and comment on the field activities prior to the start of the work. The field sampling plan will be organized by tasks such as surface soil sampling, test borings, subsurface soil sampling and monitoring well installation. The objective and procedures for each task will be described and sampling locations, depths, analytical parameters and collection techniques identified. ERM will use site maps, area of concern maps and tables to provide summaries of the proposed sampling program.

The investigation of hazardous waste sites requires that a Health and Safety Plan (HASP) be prepared to ensure the health and well-being of the field personnel during the investigative activities. Safety planning requires that team members exercise caution and utilize appropriate protective gear for expected hazards as well as anticipate and plan for emergencies. Based upon ERM's experience during the investigation of the non-lagoon portion of Harmon Yard, ERM presumes that all of the field activities can be conducted in Level D. However, the HASP will contain action levels for upgrading to Level C. The HASP will also contain information regarding planned field activities, potential chemical and physical hazards, responsibilities of key personnel, medical monitoring, site monitoring and personal protective equipment, decontamination of protective

gear, emergency response procedures and Metro-North's safety procedures for contractors working at active rail yards. ERM has already prepared several Health and Safety Plans for our projects at Harmon Yard and the level of effort required to modify these plans for the other rail yards will be minimal. The work plan for the NWP field investigation will be completed within 60 days of approval of the Preliminary Site Contamination Study and the level of effort estimate assumes that one draft and one set of revisions of the report will be prepared for Metro-North and NYSDEC.

2.7.2.2 *Field Investigative Activities*

After approval of the work plan for the field investigation, ERM will implement the field investigative activities. ERM has developed a preliminary scope for those activities based upon the reports Metro-North made available for this RFP. ERM's approach to investigation of NWP will be similar to that used at Harmon Yard, and will be based upon investigation of identified areas of concern. This approach was successful at Harmon and it conforms to the requirements of the Stipulation of Discontinuance.

ERM has identified four potential areas of concern at NWP that, based upon the soil gas survey data, require additional investigation. These areas are: the north side of the storage building; the area to the north of the turntable; the area on the southeast side of the roundhouse and the AST outside of the substation. These areas were selected based upon PID readings, soil gas concentrations of TCE and PCE and analysis of chromatograms that suggested fuel in the soil vapor. In addition, CCDZ alluded to the presence of stained soils at NWP that may also be related to areas of concern. Therefore, the investigative program will address soil, the possible presence of LNAPL and the ground water at each area of concern. Based upon the information supplied in the RFP, the parameters of concern are volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals.

The first task in the investigation will be collection of six surface soil samples from areas of stained surface soils discussed by CCDZ in their report. The surface soil samples will be selected based upon visual observation and yard operations and will be collected with a decontaminated trowel. The next investigative task will be the installation of soil borings at each area of concern. Based upon the size of the yard, ERM proposes three borings each at the turntable, the roundhouse and the storage building; two borings at the AST outside of the substation and one additional boring for background or spatial coverage. ERM proposes to use Delta Well and Pump, Inc., a WBE firm to conduct the drilling work during the field investigation. The boreholes will be drilled to the top of the water table and two samples will be collected from each boring; one at the surface 0 to 2 foot interval and one at the interval just above the water table. All of the drilling and sampling equipment will be properly decontaminated and decontamination water will be discharged to the ground surface or into the storm water system with Metro-North's approval. The soil samples will be sent to Mitkem, a New York State Department of Health (DOH) certified laboratory that is also a MBE firm. The samples will be analyzed for VOCs and SVOCs via SW-846 Method 624 and 625 and the metals will be analyzed via the appropriate SW-846 methods. The laboratory will report the results of the analyses on summary data sheets. As is consistent with the Spills Program, no data packages will be required for this investigative work. A summary of the soil sampling program is shown in Table 2-11.

Once the borings have been sampled, ERM will install temporary wells in all 12 boreholes to make a preliminary evaluation of the presence of LNAPL on the water table. The temporary wells will be constructed of two inch PVC screens and after placement in the borehole, the surrounding annulus will be backfilled with a sand pack. ERM has found that the temporary wells with sand packs

TABLE 2-11
SUMMARY OF SAMPLING PROGRAM AT NORTH WHITE PLAINS

Area of Concern	Surface Soil Samples	Test Borings	Subsurface Soil Samples	Ground Water Wells	Ground Water Samples ⁽¹⁾
Not identified	6				
Round house		3	6	2	2 per round
Turntable		3	6	2	2 per round
Storage Building		3	6	2	2 per round
ASTs		2	4	2	2 per round
Spatial Coverage		1	2	2	2 per round
Total	6	12	24	10	10 per round

⁽¹⁾ In the event LNAPL is present, ERM will also collect 2 LNAPL samples for analysis.

provide better results in a shorter time frame than temporary wells backfilled with soil cuttings.

Once the temporary wells are installed, they will be monitored for 24 to 48 hours for the presence of LNAPL. The data will be used to determine the final locations of a permanent ten well ground water monitoring network. If LNAPL is detected, the wells will be left as temporary wells and alternate locations will be selected for permanent monitoring wells. If LNAPL is not detected, the temporary wells will be removed, the holes will be grouted and permanent wells will be installed in nearby locations. The permanent wells and the temporary wells will be surveyed by Larsen Engineers, an MBE surveying firm who has worked with ERM at Harmon Yard for three years. The surveying data will be used to accurately locate the wells on the base map and to evaluate ground water table elevations at the yard.

Once the permanent monitoring well network is established, and after the wells have been developed, ERM will collect two rounds of ground water samples, three months apart, to characterize ground water quality at NWP. The ground water samples will be sent to Mitkem for analysis of VOCs, SVOCs and metals via SW-846 methods. As noted for the soil samples, the summary data sheets will be provided by the laboratory.

In the event LNAPL is detected in one or more of the wells, ERM proposes to collect samples for analysis by Worldwide Geosciences. Worldwide analyzed LNAPL samples during the yard investigation and will provide the same data for these investigations including: sample type, sediment viscosity, pour point, gravity, level of degradation, and estimated exposure time. For the purpose of this proposal, ERM has assumed that two such samples will be collected.

2.7.2.3 *Preparation of Site Investigation and Remediation Study Report*

Upon completion of the field investigative activities, ERM will prepare the Site Investigation and Remediation Report. The first part of the report will contain a description of the field activities that were implemented, tabulated summaries of all of the soil and ground water sampling data, LNAPL thickness measurements, and water table elevations. The data will be input into the GIS system and ground water flow maps, LNAPL thickness maps, and maps showing the distribution of compounds in the soil and ground water will be developed. The data will be reviewed to ensure that there are no remaining data gaps and to verify that the existing data is sufficient to characterize the soils and ground water and determine the need for short and long term corrective actions.

The second part of the report will focus on an analysis of the data to determine whether any corrective actions will be necessary. The approach to this analysis was described in Section 2.6.1.2. The Site Investigation and Remediation Study Report for NWP will be completed within six months of approval of the NWP work plan. The costs for preparation of this report assume that one draft of the report will be prepared for review by Metro-North and NYSDEC and one set of revisions will be made to the reports based upon comments.

2.7.3 *Brewster Yard*

2.7.3.1 *Work Plan Preparation*

Based upon the report prepared by United Retek on the Asphalt Recycling Plant at Brewster, ERM can only conclude that there have been some impacts to the soils at Brewster. In addition, the RFP noted the presence of LNAPL at Brewster. However, in the absence of any information about the potential areas of concern at Brewster, it is difficult to develop a scope of work for the field investigation. Since Brewster is reported to be the same size as NWP, ERM has

assumed that the same level of effort will be required for the investigation at Brewster.

As at NWP, the first task required will be the preparation of a work plan. The work plan for Brewster will be identical to the one described for NWP in Section 2.6.2.1 and will include a field sampling plan and a HASP. The work plan will be completed within 60 days of approval of the Preliminary Site Contamination Study for Brewster.

2.7.3.2 *Field Investigative Activities*

The proposed level of effort for the field activities at Brewster includes the collection of six soil samples, the installation of 12 soil borings, the collection of 24 subsurface soil samples, the installation of 12 temporary wells, the installation of 10 permanent monitoring wells and the collection of two rounds of ground water samples and two LNAPL samples. ERM will use Delta Well and Pump, Larsen Engineers and Mitkem for the field investigative work at Brewster as well. A summary of the sampling program is shown in Table 2-12. The manner in which this work will be conducted will be identical to that described for NWP in Section 2.6.2.2.

2.7.3.3 *Preparation of Site Investigation and Remediation Study Report*

Upon completion of the field activities, ERM will prepare the Site Investigation and Remediation Study report. The report will be prepared using the same methodology used for NWP and described in Section 2.6.2.3 of this proposal. This report will be completed within six months of approval of the work plan for Brewster.

TABLE 2-12
SUMMARY OF SAMPLING PROGRAM AT BREWSTER

Area of Concern	Surface Soil Samples	Test Borings	Subsurface Soil Samples	Ground Water Wells	Ground Water Samples ⁽¹⁾
Not identified	6	12	24	10	10 per round

⁽¹⁾ In the event LNAPL is present, ERM will also collect 2 LNAPL samples for analysis.

2.7.4 Port Jervis

2.7.4.1 Work Plan Preparation

Like Brewster, little information was provided about environmental conditions at Port Jervis. It is reported that the five acre parcel owned by Metro-North is part of a larger rail yard owned and operated by Conrail. Based upon a review of the site map, there are no obvious areas of concern at Port Jervis. However the fact that this five acre parcel is part of an older active yard suggests that impacts to the soil may have occurred. Furthermore, the background information did indicate that the oil/water separator at this yard was upgraded in 1992 to correct violations of the SPDES permit limits. If oil contaminated stormwater passes through the separator, these exceedances could be related to contaminated surface runoff.

Therefore, ERM believes that additional investigative work might be required at Port Jervis as part of the Site Investigation and Remediation Study Report. The first task will be the preparation of a work plan that outlines the proposed investigative activities. The work plan will consist of a Field Sampling Plan and a HASP and will be prepared in accordance with the procedures outline in Section 2.6.2.1. The work plan will be completed within 60 days of approval of the Preliminary Site Contamination Study for Port Jervis.

2.7.4.2 Field Investigation

ERM developed a scope of work for Port Jervis based upon the size of the property and the need to ensure that any contribution of contamination to the five acre parcel from the remainder of the yard can be quantified. ERM proposes to install seven borings to the top of the water table and will collect two soil samples from each boring; one at the 0 to 2 foot interval and one at the interval just above the water table. The drilling at this yard will also be performed by Delta Well

and Pump, Inc. The soil samples will be sent to Mitkem for analysis of VOCs, SVOCs and metals via SW-846 methods. Subsequently, five monitoring wells will be installed at locations around the perimeter of the property. ERM will try to ascertain the direction of ground water flow prior to installation of the wells to ensure that the upgradient side of the parcel owned by Metro-North is adequately covered with wells. After the wells are installed, two rounds of ground water samples, at three month intervals, will be collected. The ground water samples will be submitted to Mitkem for analysis of VOCs, SVOCs and metals via SW-846 methods. The wells and borings will be surveyed by Larsen Engineers so that they can be accurately located on the base map and water table elevations can be determined. A summary of the proposed sampling program at Port Jervis is shown in Table 2-13.

2.7.4.3 *Preparation of Site Investigation and Remediation Study Report*

Upon completion of the field activities, ERM will prepare a Site Investigation and Remediation Study Report for Port Jervis. The report will be prepared using the same methodology described for NWP and discussed in Section 2.6.2.3 of this proposal. The report will be submitted to Metro-North and NYSDEC within six months of approval of the work plan.

2.8 *TASK VI - PREPARATION OF COST ESTIMATES AND SCHEDULES*

This section presents ERM's approach to preparation of cost estimates and schedules for corrective actions that may be identified in the course of conducting the Environmental Studies. ERM has rapid cost estimating capabilities in the areas of hazardous waste remediation for soil and water, wastewater treatment, waste transportation and disposal, permitting and construction, and facility demolition. In addition to construction cost estimating, ERM-Northeast has experience in estimating completed system operations and maintenance and monitoring costs. Estimates of the costs of ongoing operations are critical in the

TABLE 2-13
SUMMARY OF SAMPLING PROGRAM AT PORT JERVIS

Area of Concern	Surface Soil Samples	Test Borings	Subsurface Soil Samples	Ground Water Wells	Ground Water Samples
Not identified	0	7	14	5	5 per round

development of total project costs since they can typically be significantly greater than the initial capital investment.

ERM uses several computer spread sheet, data base, and project management programs to offer a full range of scheduling and cost estimating capabilities for construction projects. We have licensed copies of numerous software programs (e.g., Lotus, Paradox) that we use for these purposes. The selection of the software will be reviewed with Metro-North prior to the preparation of the estimates.

2.8.1 *Environmental Compliance Review, Environmental Management Evaluation and BMP Plan Development Tasks*

This section discusses the preparation of cost estimates and schedules for corrective actions that may be identified during the Environmental Compliance Review (ECR), the Environmental Management Evaluation (EME) and the development of BMP Plans. ERM has extensive experience in assisting corporations in their response to environmental compliance recommendations and tracking the response to such recommendations.

ERM identified only one task in Tasks I through III of the RFP that will require cost estimation; the corrective action plan required in the ECR. Sixty (60) days after submission of each Final ECR Report, ERM will meet with Metro-North to discuss and develop a proposal to correct the issues identified in the Final ECR Report. ERM will subsequently develop a plan that identifies corrective actions for the regulatory non-compliance issues and the circumstances that have or may contribute to environmental contamination. This corrective action plan may require the development of a cost estimate and schedule. The cost estimates may be for a various activities that could range from obtaining air permits, to the development of written plans, to the construction of secondary containment structures. ERM assumes that a cost estimate required for each yard would take

an average of two-person days to prepare.

2.8.2 *Preliminary Site Contamination and Site Investigation and Remediation Tasks*

For the purposes of preparing a labor estimate for this task, ERM identified the logical points during the Preliminary Site Contamination Study and the Site Investigation and Remediation Study when cost estimates and schedules for corrective actions might be required by Metro-North. The Preliminary Site Contamination Report requires recommendations with respect to short term corrective actions that might be necessary to minimize potential impacts to the environment or to human health. Therefore, it is possible that a cost estimate and a schedule will be needed for the Preliminary Site Contamination Report for each yard. The estimates that would be prepared are construction estimates that can be used for evaluating different alternatives but cannot necessarily be used for budget purposes. In the event Metro-North should require more detailed estimates, ERM has in-house professional estimators that could assist in the preparation of a budget estimate. ERM assumed that one such construction estimate would be required at each yard for a short term corrective action and that each yard estimate would take an average of two person days to prepare.

A second set of estimates will be required as part of the Site Investigation and Remediation Study at each yard. According to the RFP, these estimates may be for short term or long term corrective actions or long term comprehensive site investigations. Preparation of construction estimates for long term corrective actions obviously requires a greater level of effort than those for short term corrective actions. Therefore, ERM assumed that four person days would be required at each yard for preparation of one such long term corrective action cost estimate or schedule.

Section 3

3.0 *PROJECT MANAGEMENT AND STAFFING*

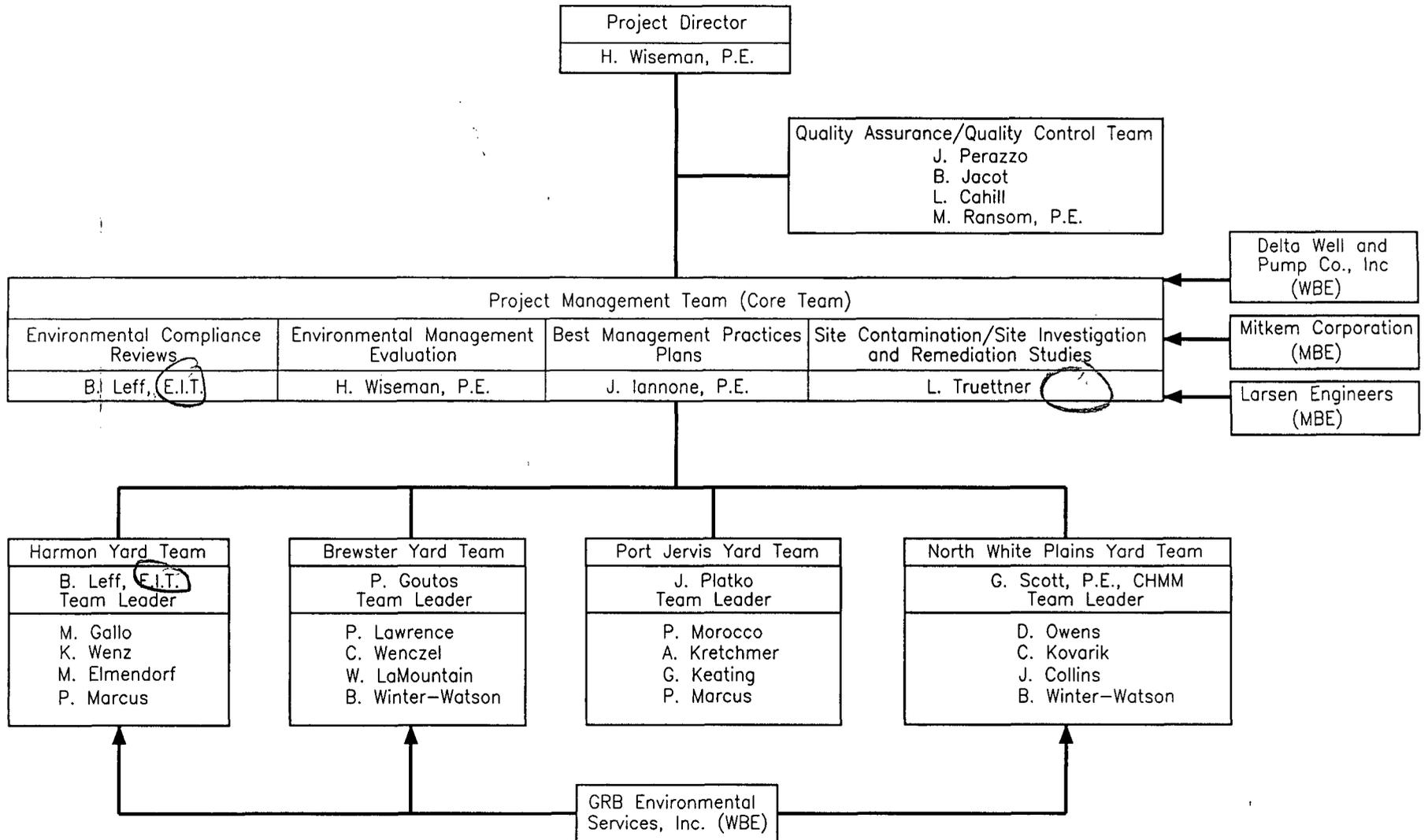
3.1 *ORGANIZATION OF PROJECT TEAM*

This section presents the team of ERM professionals and support subcontractors who will be available to perform the environmental studies. We are pleased to be able to offer Metro-North this team of dedicated and focused professionals whose experience and training is ideally suited for this project. We have staffed this project with personnel who have prior experience with Metro-North. You have worked with these individuals before and you have grown to respect their judgement and professionalism.

Our proposed project team is the most significant resource that we can offer Metro-North. They are the reason that we will be successful on this project. You have our assurance that key project team members will be available to work on their assigned areas of expertise. This is an important part of our commitment to Metro-North.

Figure 3-1 is an organization chart that presents ERM's proposed project team for the Environmental Studies at Major Metro-North rail yards. The organization chart identifies the Project Director, members of the Project Management Team (the Core Team) and members of the Yard Teams. Section 3.1.1 discusses the roles of key Project Management personnel and the qualifications of the individuals filling those roles. Section 3.1.2 presents the personnel who make up the Yard Teams and discusses their responsibilities. Section 3.1.3 identifies the subcontractors to be used by ERM and discusses their qualifications. Section 3.1.4 identifies the projected ERM workload for all personnel and discusses how this workload will impact their efforts on the Environmental Studies.

**Figure 3-1
Proposed Project Management and Staffing
Environmental Studies at Major Metro-North Rail Yards**



3.1.1 *Project Management Team (Core Team)*

As indicated in Section 2.1.1 and presented in Figure 3-1, the Core Team consists of the ERM personnel who will have overall management responsibility for each of the four (4) tasks described in Metro-North's Work Scope. The Core Team's general responsibilities include:

- 1) Obtaining Task-specific information during the visits to Metro-North corporate headquarters and the yards,
- 2) Providing this information to the Yard Teams,
- 3) Establishing with the Yard Teams an investigative approach to assist the Teams in their on-site activities,
- 4) Tracking the progress of the Yard Teams and providing assistance in their assigned areas of responsibility, during the course of on-site activities,
- 5) Ensuring that the milestones associated with the Tasks (i.e., deliverable deadlines) are met, and
- 6) reviewing and commenting on the deliverables associated with the Tasks.

ERM has developed this innovative project management team structure to ensure continuity and a commonality of approach among the four Yard Teams. This structure will ensure the continuity that would occur through the use of one Yard Team to conduct all yard assessments without the scheduling problems that would develop using that approach.

The following lists the members of the Core Team and their area of responsibility:

- *Howard Wiseman, P.E.* - Project Director; Environmental Management Evaluation Manager
- *Laura Truettner* - Site Contamination/Site Investigation and Remediation Studies Manager
- *John Iannone, P.E.* - Best Management Practices Plan Manager
- *Bennett Leff* - Environmental Compliance Review Manager.

The following paragraphs provide information regarding the Core Team Members. Their resumes are included in Appendix A.

Howard Wiseman, P.E. - Project Director/Environmental Management Evaluation Core Team Member

Project Director: As Project Director, Mr. Wiseman will be responsible for ensuring that the entire project is completed within budget and scheduling constraints, all required resources are dedicated to the project, and all work is performed to the quality standard that Metro-North has grown to expect from ERM.

Mr. Wiseman, a registered professional engineer in New York and New Jersey, is Vice President and Chief Operating Officer of ERM-Northeast. In this capacity he is responsible for managing the operations of ERM-Northeast, an approximately 125-person environmental consulting firm with six offices (five in New York State and one in Connecticut). His over 24 years of diversified experience includes working with both private sector industries and government

agencies. While his main area of focus has been the development of programs and systems to enhance the compliance profile of corporations, he has also led large scale investigations and remedial design programs.

Environmental Management Evaluation Core Team Member: As the Core Team Member with responsibility for Task II - Preparation of Environmental Management Evaluations, Mr. Wiseman will be responsible for the environmental management evaluations conducted at all four yards. Mr. Wiseman's management evaluation experience is extensive and includes completion of management evaluation projects such as:

- Benchmarking a Fortune 500 company's environmental management program against the United States Department of Justice Enforcement Policy Statement to determine areas of the company's program that required improvement;
- Reviewing and revising a Fortune 500 company's environmental compliance management program and developing a five-year plan for improvement, to be presented to senior corporate management;
- Developing and implementing corporate auditing and training programs;
- Developing corporate policy statements and standards of performance to guide operating units;
- Developing plant level programs and standard operating procedures to address corporate policy statements and performance standards; and
- Lifecycle analyses of products of two Fortune 500 companies to

determine the environmental impacts caused by the development, manufacture, use and ultimate disposal of the products.

Laura Truettner - Site Contamination/Site Investigation and Remediation Studies Core Team Member

As the Core Team Member with responsibility for Tasks IV and V - Performance of Preliminary Site Contamination Studies and Preparation of Site Investigation and Remediation Studies, Ms. Truettner will have responsibility for each Yard Team's Site Contamination, Site Investigation and Remediation study activities.

Ms. Truettner has 10 years of experience in the management and implementation of hazardous waste site investigations at federal and state Superfund sites. As part of these RI/FS projects, she has designed soil and ground water investigations; prepared and reviewed work plans, remedial investigation reports, risk assessments, feasibility studies and community participation plans; and managed several removal actions. Ms. Truettner has worked at Harmon Yard since 1987 when she wrote the first Site Operations Plan for the Harmon Lagoon Investigation and subsequently co-managed the four year project. More recently, she has managed the Harmon Yard Site Investigation that is being conducted pursuant to the Spills Program at NYSDEC. Ms. Truettner has extensive experience in providing strategic guidance to PRP committees and has conducted negotiations with regulatory agencies regarding investigative scope, performance criteria and remediation. She has reviewed and critiqued documents prepared by EPA subcontractors and prepared documents for the public record. She has worked on Superfund sites in New York, New Jersey, Michigan and Florida.

John Iannone - Best Management Practices Plan Core Team Member

As the Core Team Member with responsibility for Task III - Preparation of Best Management Practices Plans, Mr. Iannone will manage and provide oversight of

each Yard Team's Best Management Practices Plan activities.

Mr. Iannone has over 17 years of experience on civil and environmental engineering projects. These projects have dealt with wastewater sampling and treatment, waste disposal, facility operations, risk assessment, hazardous waste site investigation and remediation and other key environmental issues. His experience on wastewater sampling and treatment projects included managing a two year study of wastewater treatment operations at New York City's treatment plants and a review and evaluation of industrial sources within New York City. The study was used to revise the city's sewer use ordinance to address industrial sources of wastewater. Mr. Iannone also performed a survey and evaluation of the practices, worker training, and infrastructure of New York City's sewer department. This work was performed as part of an overall study of the feasibility of organizing New York City's water supply and wastewater treatment operations into a state authority similar to Metro-North Railroad Company.

Over the last 10 years, Mr. Iannone has been actively involved on numerous hazardous waste site investigation and remediation projects. These projects include federal and state Superfund sites and industrial sites with environmental problems either addressed voluntarily by the owners or to comply with regulatory requirements. Mr. Iannone has prepared feasibility studies and remedial action plans and has been involved in the design and implementation of remedial investigations and the preparation of risk assessments for numerous hazardous waste sites, ranging from small spills at operating industrial facilities to remediation of soil and ground water at inactive hazardous waste disposal sites. Mr. Iannone's experience in dealing with the human health and environmental effects from releases of hazardous substances has been useful in developing a clear understanding of the type of best management practices needed to prevent or mitigate such releases.

In conjunction with his experience at operating facilities, Mr. Iannone has used

his understanding of site investigation, toxicology, and remediation gained on hazardous waste site projects to design structural and procedural measures to prevent released of hazardous substances to the environment. These measures have been designed to comply with environmental regulations, such as Mr. Iannone's experience in preparing RCRA Part B applications for hazardous waste storage, treatment and disposal facilities, or to provide facility owners and operators with environmentally sound approaches to handling hazardous substances. Mr. Iannone's experience at hazardous waste sites has also familiarized him with NYSDEC and USEPA regulatory requirements for the discharge of treated wastewater and the characterization, storage, treatment, and disposal of TSCA and RCRA regulated waste.

Mr. Iannone has worked at the Metro-North Harmon Railroad Yard since 1987 on the RI/FS and remedial design project for the Harmon Railroad Yard Former Wastewater Equalization Lagoon project. He was actively involved in the remedial investigation and risk assessment portions of the project and prepared the Feasibility Study submitted to the NYSDEC. He has worked closely with Metro-North legal and technical staff to design and implement a remedial approach to the lagoon site that complied with NYSDEC and USEPA (TSCA) requirements and satisfied the concerns of the community. He has also worked on various other environmental projects at Metro-North's Harmon Yard, including the design of the existing aboveground wastewater equalization tanks, the vehicle refueling center, the NYSDEC Inactive Hazardous Waste Disposal Site ranking project and various soil and ground water studies conducted at Harmon Yard.

Bennett Leff - Environmental Compliance Review Core Team Member/Team Leader of the Harmon Yard Team

Environmental Compliance Review Core Team Member: As the Core Team Member with responsibility for Task I - Environmental Compliance Review, Mr.

Leff will manage and provide oversight to the Yard Teams at the Brewster, Port Jervis and North White Plains Yards.

Mr. Leff is presently responsible for managing all environmental compliance projects for ERM-Northeast's Metro Region. He currently manages large, multi-site environmental compliance projects for numerous Fortune 500 companies and is responsible for the implementation of ERM's Quality Assurance Program in this practice area.

Mr. Leff has over seven (7) years of experience in environmental consulting and environmental compliance assurance that will enable him to effectively manage the compliance review portion of the project. His experience includes designing, managing and conducting environmental compliance programs for Becton Dickinson and Company, General Signal Corporation, Hoffmann-La Roche, Inc. and other corporations.

Harmon Yard Team Leader: As Team Leader of the Harmon Yard Team, Mr. Leff will provide day-to-day project management for the Yard Team. In Mr. Leff's seven years of environmental consulting experience, he has conducted over 70 environmental compliance reviews in over 20 states and internationally. Mr. Leff has reviewed environmental compliance at facilities operating in the following industries: transportation, chemical, aerospace, electronics, medical, cosmetics, metal working, painting, ceramics, transformers and TSDFs. Mr. Leff has conducted compliance reviews of airports, a transformer manufacturing company on the National Priorities List and chemical manufacturing facilities with multiple sites of contamination and groundwater contamination plumes.

3.1.2

Yard Teams

As indicated in Section 2.1.1, and as shown in Figure 3-1, individual Yard Teams will be established to conduct all on-site activities associated with the

Environmental Studies and prepare all deliverables. The Yard Teams each consist of a Team Leader, an environmental compliance expert (two experts on the Harmon Yard Team), an air compliance expert, a hydrogeologist with expertise in contamination and remediation, and an environmental management evaluation expert. ERM has developed the Yard Team staffing so that, with only one exception, an ERM expert is a member of only one team. The exception is that ERM's two environmental management evaluation experts, Barbara Winter-Watson and Phil Marcus, appear on two teams each. This is not expected to cause any adverse impact as Ms. Winter-Watson is included on the Harmon and Port Jervis Yard Teams and Mr. Marcus is included on the Brewster and North White Plains Yard; therefore, the deadlines for their environmental management evaluation reports are staggered.

3.1.2.1 *Yard Team Leaders*

Team Leaders of the Yard Teams are responsible for the management of the daily activities of the Yard Teams and will be the primary contact between the team and Metro-North yard personnel. Team Leaders will lead the opening meeting and any additional required meetings, ensure that schedule constraints are met, track the progress of the team members in obtaining all necessary information and work in their areas of expertise. Each of the four Yard Team Leaders are senior managers and senior environmental compliance auditors at ERM. ERM is pleased to provide the following senior level personnel as Yard Team Leaders:

Bennett Leff - Harmon Yard Team Leader
Peter Goutos - Brewster Yard Team Leader
John Platko - Port Jervis Yard Team Leader
Greg Scott, P.E., CHMM - North White Plains Yard Team Leader.

The following paragraphs provide information regarding the Yard Team Leaders. Their resumes are included in Appendix A.

Bennett Leff - Harmon Yard Team Leader: A discussion of Mr. Leff's qualifications is provided in Section 3.1.1 of this Proposal.

Peter Goutos - Brewster Yard Team Leader: Mr. Goutos is leader of the Management Consulting Group for the Upstate New York Region of ERM-Northeast. During his eleven years of environmental experience, he has conducted numerous environmental audits and due diligence assessments. Mr. Goutos has designed and implemented Strategic Environmental Management programs for several Fortune 500 companies. In addition, Mr. Goutos has prior industrial experience where he was responsible for plant environmental, safety and health regulatory compliance.

Mr. Goutos has performed or managed over 100 property environmental reviews of properties including metals manufacturing sites, equipment repair facilities, warehouse operations, and transportation facilities including rail networks, trucking terminals and shipping facilities. He has prepared SPCC plans, RCRA Contingency Plans, Emergency Response Plans, BMP's, Hazardous Waste Reduction Plans and various air, water and wastewater permits.

John Platko - Port Jervis Yard Team Leader: Mr. Platko has nine years of diversified environmental management experience, is a the Group Leader for Management Consulting in our Syracuse office. In addition to performing numerous environmental compliance audits since joining ERM, Mr. Platko has over five years of environmental management experience with two Fortune 100 manufacturing companies where he was responsible for corporate and division-level regulatory compliance programs. He recently prepared and presented a comprehensive EH&S compliance program for Hydra-Co Enterprises, a Central New York power generation company.

Mr. Platko has extensive site investigation experience including environmental review of over fifty facilities and sites. Reviews included identification of both

compliance and liability issues with preparation of corrective action plans. Mr. Platko is experienced in the preparation of major regulatory required documents (i.e., SPCC, HWRP, BMP's, etc.) as well as related permit applications.

Greg Scott, P.E., CHMM - North White Plains Yard Team Leader: Mr. Scott is a registered professional engineer in New York and a Certified Hazardous Materials Manager with over nine years of diversified environmental experience. A member of the environmental management group at ERM-Northeast, he has participated in numerous environmental compliance audit projects of R&D and manufacturing facilities in the United States and Puerto Rico for Exxon, Johnson & Johnson, General Signal, and Becton Dickinson and Company.

3.1.2.2 *Yard Team Personnel*

As previously indicated, each Yard Team will include at least one environmental compliance review expert, one air compliance expert, one hydrogeologist with soil and ground water investigation expertise, and an environmental management evaluation expert. The resumes for each Yard Team member are included in Appendix A of this Proposal. The following sections describe the responsibilities and requirements for each category of yard team member.

Environmental Compliance Expert: Each Yard Team (with the exception of the team for Port Jervis) will include two environmental compliance experts. The compliance experts will share responsible for conducting the environmental compliance reviews with the Team Leader, the air compliance expert and the hydrogeologist. In addition, the compliance experts will share responsibility for developing the BMP Plans with the Team Leader and the environmental management evaluation expert.

The environmental compliance experts on the Yard Teams consist of members of ERM and of GRB, a WBE firm that has expertise in engineering evaluation.

Each environmental compliance expert possesses extensive environmental compliance auditing and environmental site assessment experience. The environmental compliance experts include the following personnel:

Harmon Yard:	Matthew Gallo
Brewster Yard:	Peggy Lawrence
Port Jervis Yard:	Peggy Morroco
North White Plains Yard:	Dena Owens

Air Compliance Expert: Each Yard Team will include one air compliance expert who will share responsibility for the environmental compliance reviews with the Team Leader, the environmental compliance expert(s) and the hydrogeologist. The air compliance expert will also be consulted during development of the BMP Plans. The air compliance experts are members of ERM with responsibility for ERM air compliance consulting practice. Mark Elmendorf and Gary Keating manage ERM's air compliance program, and Wendy LaMountain and Jennifer Collins are members of their staff. The air compliance experts are assigned to the following yards:

Harmon Yard:	Mark Elmendorf
Brewster Yard:	Gary Keating
Port Jervis Yard:	Wendy LaMountain
North White Plains Yard:	Jennifer Collins

Hydrogeologist: Each Yard Team will include one hydrogeologist with expertise in the investigation and evaluation of soil and ground water at industrial sites. They will have responsibility for preparing the Preliminary Site Contamination Study and for implementation of the Site Investigation and Remediation Study. In addition, they will share responsibility with the Yard Team Leader, the environmental compliance expert(s) and the air compliance expert for conducting the environmental compliance reviews. The hydrogeologists assigned to this

project are each senior level personnel at ERM and three of them have been involved with the projects at Harmon Yard. Ken Wenz, the hydrogeologist assigned to the Harmon Yard Team, has extensive experience at Harmon Yard as the field team leader on the Harmon Yard Site Investigation; Andrea Kretchmer assisted in preparation of the Field Investigation and Site Remediation Work Plan for Harmon Yard; and Colleen Kovarik is currently managing the OUII Field Investigation. The hydrogeologists assigned to the Yard Teams are:

Harmon Yard:	Ken Wenz
Brewster Yard:	Chris Wenczel
Port Jervis Yard:	Andrea Kretchmer
North White Plains Yard:	Colleen Kovarik

Environmental Management Evaluation Expert: Each Yard Team will include one of two environmental management evaluation experts: Barbara Winter-Watson or Phil Marcus. The environmental management evaluation expert will be responsible for a portion of the environmental compliance reviews and the BMP Plans, but their main responsibility will be development of the environmental management evaluations for each of the yards. Both Ms. Winter-Watson and Mr. Marcus have extensive management evaluation experience.

3.1.3 *Subcontractors*

As discussed in Section 1.4, ERM is committed to meeting Metro-North's goal of 10% participation for Minority-Owned Businesses (MBEs) and 5% participation for Women-Owned Businesses (WBEs). To that end, ERM has incorporated the services of two MBE and two WBE firms into this project. The MBE firms are: Larsen Engineers, a surveying firm and Mitkem Corporation, a DOH approved laboratory. The two WBE firms are: GRB Environmental Services, Inc, a consulting firm and Delta Well and Pump Co. Inc, a drilling company. The following paragraphs provide a brief description of the firms; and

their qualifications are contained in the noted appendices.

Larsen Engineers was established in 1976 and has worked at Harmon Yard since 1993. Larsen prepared the site map that is currently in use at Harmon as part of the Field Investigation/Site Remediation project. They were selected for this project as a result of the professional services they provided and for their experience at rail yards. The qualifications package for Larsen is contained in Appendix H.

Mitkem Corporation is a newly organized employee-owned environmental testing laboratory that was started up in March 1994. Although Mitkem is a start-up laboratory, its founders have a combined experience of 30 years in this industry. ERM worked with a number of the Mitkem founders at their previous laboratory, Ceimic Corporation, and has established a good working relationship with this group. Mitkem is also approved by the NYSDOH Environmental Laboratory Approval Program to perform solid and hazardous waste analyses on soil and ground water samples. The qualifications package for Mitkem is contained in Appendix I.

Delta Well and Pump, Co. Inc. will provide drilling services during the Site Investigation and Remediation Studies at NWP, Brewster and Port Jervis. The qualifications package for Delta Well and Pump Co., Inc. is contained in Appendix J.

GRB Environmental Services is a WBE consulting firm with extensive experience at industrial sites. GRB has worked on site investigation and remediation projects, auditing projects, engineering evaluations and has both developed and reviewed BMP plans. GRB will work with the ERM engineers on the BMP Plans for each of the yards. The qualifications package for GRB Environmental Services, Inc. is contained in Appendix K.

3.1.4

Workload Of Key Personnel

While preparing the workload projections for key ERM individuals for the Environmental Studies, we came to the conclusion that the project schedule extends too far into the future to make an accurate workload evaluation. In lieu of speculating, ERM is prepared to evaluate the required effort of key individuals and commit them to this project should ERM be fortunate enough to be the successful bidder.

ERM has prepared Table 3-1, Workload Projections for Key Personnel. This table presents an evaluation of the total time commitment required for the Project Director, the Core Team Members, and the Yard Team Leaders. In developing this evaluation, ERM considered the total hours required to perform the tasks outlined in this proposal, versus the total available working hours per individual over the appropriate timeframe. For Core Team members, the total length of the project was used since they will be involved in coordinating the efforts at all four yards. For Yard Team Leaders, the duration of the project was considered to be the appropriate timeframe for evaluation. The ratio is expressed as a percentage in the column entitled "Average Percent Workload Required On This Project".

As the percent workload column in Table 3-1 indicates, the requirements for this project range from 8% to 29%. None of the senior level people have current workloads that will prevent them from commitments to this level of effort or from performing the tasks identified within this Proposal in a manner that ensures meeting all milestones. All other Yard Team Staff, though not required on a continuous basis, will also be committed to the work effort presented in this Proposal.

**TABLE 3-1
WORKLOAD PROJECTIONS FOR KEY PERSONNEL**

Core Team Member/ Yard Team Leader	Average Percent Workload Required on this Project	Comments
Howard Wiseman Project Director/ Core Team Member	16%	This figure represents the commitment required by the individual over the total duration of the contract
Laura Truettner Core Team Member	29%	This figure represents the commitment required by the individual over the total duration of the contract
John Iannone Core Team Member	8%	This figure represents the commitment required by the individual over the total duration of the contract
Bennett Leff Core Team Member/ Yard Team Leader	22%	This figure represents the commitment required by the individual over the total duration of the contract
Peter Goutos Yard Team Leader	12%	This figure represents the commitment required by the individual during the work at Brewster
Greg Scott Yard Team Leader	14%	This figure represents the commitment required by the individual during the work at NWP
John Platko Yard Team Leader	15%	This figure represents the commitment required by the individual during the work at Port Jervis

3.2 *PROJECT MANAGEMENT*

3.2.1 *Schedule and Budget Tracking*

ERM will use the project management software "Primavera Project Planner" with "Primavision" as specified in the RFP for critical path scheduling and budget management on this project. ERM routinely uses Timeline for its CPM schedules and so is accustomed to developing and updating CPM schedules for environmental projects. The schedule included in this RFP was generated using Timeline. However, if awarded the project, ERM will purchase Primavera and transfer the Timeline files to this software to accommodate Metro-North's requirements.

3.2.1.1 *Preliminary Project Schedule*

The first submittal that will be prepared under the project management task will be a Preliminary Project Schedule. Six copies of this schedule will be submitted to Metro-North no later than 14 days after Award of Contract. The Preliminary Schedule will consist of a CPM Time-Scaled Network Diagram defining ERM's activities for the first 90 calendar days of the project.

3.2.1.2 *Baseline CPM Schedule Submittal*

Within 30 days of contract award, ERM shall submit six copies of a CPM Baseline Schedule to Metro-North. The baseline schedule will contain the entire project schedule from contract award to contract completion. The schedule will include all of ERM's site visits, file reviews, interviews, data analysis time, report preparation time and submittal dates and field investigative activities. Since some of the field investigative work may take place during the winter, weather conditions will be considered when developing the baseline schedule. The schedule will also show work to be completed by ERM, the subcontractors,

NYSDEC and Metro-North. In addition as part of the baseline schedule submittal, ERM will also submit the following documents as specified in the RFP:

- Detailed CPM Time-Scaled Network Logic Diagram that shows how the start of an activity is dependent upon the completion of the preceding activity. No activity shall have a duration of greater than 30 days.
- Schedule and Logic Reports
- Bar Chart
- Line Item Breakdown in which a dollar value is assigned to each activity and the cumulative total of the line items is equal to the total Contract Amount.
- Cost Report
- Narrative description explaining the schedule and ERM's approach to meeting the deadlines identified in the schedule.

3.2.1.2 *CPM Schedule Monthly Updates and Revisions*

ERM will update the CPM Schedule on a monthly basis to reflect the progress of the project. The update will include the original start and finish dates for activities that have been completed or are in progress, the percent complete on each task and the remaining duration in work days of each uncompleted task. As outlined in the RFP, the monthly CPM report shall consist of the following:

- Updated CPM Tabular Reports
- Updated Logic Reports
- Updated Time-Scaled CPM Network Diagram
- Updated Cost Report
- CPM Narrative Progress Report

As the project proceeds and with the concurrence of Metro-North, ERM may recommend that certain elements of the CPM Monthly Report be generated with less frequency if it is appropriate.

3.2.2 *Monthly Progress Meetings*

The RFP requires that a monthly progress meeting be held with Metro-North to discuss progress during the calendar month. It is ERM's understanding that the purpose of this meeting is to discuss progress on the project and the proposed updates/and or changes to the CPM schedule. Based upon the information discussed at the meeting, Metro-North and ERM will agree on the proposed changes that will then be input into the CPM Schedule. Within ten days of the meeting, the revised schedule and the associated documents described in Section 3.2.1.2 above will be submitted to Metro-North for review and approval. The revised CPM schedule will be the basis for the progress payment.

3.2.3 *Preparation of Progress Reports*

Based upon the information contained in Addendum 1, it will be Metro-North's responsibility to prepare the semi-annual progress reports required by the Stipulation of Discontinuance and the quarterly reports required by the Memorandum of Understanding. Based on the RFP, there are three monthly progress reports that will be prepared by ERM for Metro-North: the monthly CPM update described above, the Consultant's Cost and Progress Report and the Monthly Consultant MBE/WBE Participation Report (Form 15A.3). ERM has been submitting these last two reports to Metro-North on a monthly basis since the initiation of the Harmon Yard contract in November 1992 and is well acquainted the requirements of these monthly reports. The Consultant's Cost and Progress Report contains a summary of the project costs including the total amount of the contract, total amount expended to date, percent expended and the forecast expenditure for the next quarter. This report also includes a narrative

description of the project work on a task by task basis, including: the work completed, any problems encountered during the month and their resolution and anticipated activities for the next month. The MBE/WBE monthly update consists of an accounting of the amounts invoiced by ERM, the amount paid by Metro-North and monthly and cumulative totals for charges by and payments to the MBE/WBE firms that participate in the project.

3.2.4. *Quality Control*

This section presents ERM's Quality Control (QC) Plan providing an overview of the quality systems that will be relied upon during this project. These systems are intended to meet Metro-North's objective that responsibilities are being effectively and systematically accomplished in the most appropriate professional manner. Furthermore, the contract will require that these systems and their effectiveness be demonstrated. Such quality systems must include:

- 1) Written Policies to achieve quality systematically as the work is accomplished (QC Plan).
- 2) Use of written requirements to guide those carrying out work.
- 3) Generation of verifiable evidences that work is being accomplished in the manner prescribed.
- 4) Verification that the written requirements are followed and effective in ensuring that ERM is able to routinely accomplish their work at the quality level intended.

Therefore, in accordance with the RFP and Attachment B of the Work Statement, this QC Plan briefly describes the manner in which the conditions stated in Part 3 of Attachment B will be implemented. This plan also describes sample formats

that may be used to document or control work.

Also in accordance with Attachment B, procedures and guidelines covering the activities that are critical to the quality of deliverables prepared for the project and those which will enable ERM to administratively demonstrate the effectiveness of its quality systems will be provided within 30 days of award.

3.2.4.1 *Management Responsibilities*

The management of ERM is committed to applying the components of this QC Plan to ensure successful completion of the project. ERM's Quality Policy has three inter-related purposes:

"We will fully understand and document our clients' requirements for each assignment".

"We will conform to those requirements at all times and satisfy the requirements in the most efficient and cost-effective manner".

"Our Quality Policy and procedures include an absolute commitment to provide superior service and responsiveness to our clients".

The aforementioned quality policy stems from ERM's adoption of a quality improvement system offered by Philip Crosby Associates, Inc. The Crosby system is a Total Quality Management (TQM) program which is built on the following "four absolutes"

- Quality has to be defined as an absolute conformance to requirements.
- The system for causing quality is prevention.
- The performance standard must be zero defects, not "that's close enough".
- The measurement of quality is the price of non-conformance.

ERM's QC Plan for this project is founded on these "four absolutes" of TQM. The basic objective is to ensure that the quality of the work in each of the project tasks conforms to the requirements that are established at the onset of, or as modified during, the project. Since prevention is the key system for causing quality, the work scopes described in this proposal including work plans generated as part of the Site Contamination/Site Investigations will, in conjunction with the QC Plan, outline the preventative mechanisms for causing quality in during the project. Furthermore, the QC Plan will establish an independent team of ERM professional having related expertise as the core and yard team members to measure quality via conformance to the stated requirements.

3.2.4.2 *Responsibility and Authority*

The project organization previously presented as Figure 3-1 illustrates ERM's approach to defining project responsibility and authority, for its employees as well as subcontractors or consultants. ERM believes its project team organization contains a "built-in" component that will ensure that the requirements of each task are well conceived. The "built-in" QC aspect of the project team organization involves the Project Management or Core Team which provides the overall direction to the various yard teams. Therefore, quality can be measured with regard to conformance to the requirements established by the Core Team.

A Project Director is directly responsible to Metro-North. The Core Team is responsible, in turn to the Project Director, while the Yard Teams report to the Core Team. The identified subcontractors for this project report to one of the Project Management Team members who will be responsible for making use of subcontractors.

3.2.4.3 *Management Representatives*

A QC team consisting of three senior managers has been identified for this contract. These individuals will interface with the Project Management Team and be responsible for conducting independent review of worksopes and project deliverables required in this contract. Moreover, the QC team will initiate third-party evaluations, specifically with respect to the environmental management evaluation, environmental compliance review and site investigation tasks. There are three management representatives identified for this role because of the varied professional disciplines that will be required to complete the project. ERM believes that management responsibility for QC should derive from seasoned individuals with areas of expertise related to the project scope.

James Perazzo is a hydrogeologist with 15 years of experience. Mr. Perazzo is currently working with Metro-North on the OU-1, OU-2 and spills investigation at Harmon Yard. He will provide quality control to the Site Contamination/Site Investigation and Remediation Studies task.

Brian Jacot, P.E. is a licensed engineer in NYS with 17 years of experience. Mr. Jacot will serve on the QC team to ensure conformance with requirements in the Best Management Practices Plan, recommended corrective actions and cost estimating and scheduling those corrective actions.

Mr. Lawrence Cahill is a engineer with over 20 years of experience principally in environmental management. Mr. Cahill is often called upon to undertake third-party evaluations of environmental management evaluations and compliance reviews. As part of the QC team for this project, Mr. Cahill will serve a similar function for this project.

Mark Ransom, P.E. is an engineer with over 15 years of experience in environmental management and in conducting investigations and corrective actions. Mr. Ransom has extensive experience in providing environmental services to major railroads. Mr. Ransom will bring his vast knowledge of railroads to the QC team for this project. His expertise and review will be particularly useful during the compliance reviews, management evaluations and development of the Best Management Practices Plans.

The members of the QC team will rely, if needed, on mid-level technical staff to assist in the review of deliverable reports or participate in third-party evaluations. These mid-level staff individuals will have no direct responsibilities in the preparation of the deliverable which they are reviewing or in actual performance of an activity under evaluation. The results of any review or evaluation will be reported directly to the QC team.

The QC Team will inform the Project Management Team of the quality status of the project throughout its course. The QC team will have input into development of workscopes or work plans to ensure conformance to requirements and make modifications to project procedures, as necessary, to ensure there are zero defects in the quality of work.

3.2.4.4 *Verification Resources and Personnel*

ERM's project staffing, presented in Figure 3-1, provides for specific yard teams comprised of individuals with the required expertise to accomplish the task

objectives. These yard teams will use additional support personnel to complete a specific component of the project (eg. additional field investigation) as needed. The Project Management Team (Core Team), comprised of more senior management personnel with similar areas of expertise as those on the yard team will serve as the primary line of verification which will include:

- 1) supervision of data gathering in the field and checking of data.
- 2) Primary review and checking of submittals, deliverables and process/quality system documentation to Metro-North and NYSDEC.
- 3) Monitoring/management and review of ERM's service quality.

As members of the Project Management team, H. Wiseman, P.E., L. Truettner, B. Leff, E.I.T. and J. Iannone, P.E. will provide the verification of the above-referenced items. Moreover, as supervisors, these individuals will have responsibility and authority over the yard teams to: identify noncompliance or nonconformance with stated requirements; control further work on non-compliant or non-conforming items until the deficiency has been corrected; initiate action to correct and/or prevent the recurrence of noncompliance or nonconformance; and, verify corrective and/or preventative actions. Similarly, the three members of the QC Team identified above will have responsibility and authority over the Project Management Team during the course of this project. These three members of the QC Team will serve as the verifiers that have organization freedom to perform these responsibilities.

As a principal of ERM-Northeast and Chairman of the firms Quality Improvement Team (QIT), Mr. Jacot will also be the designated person to conduct periodic management of the quality of services being provided to Metro-North.

After contract award and Metro-North approval of a final QC Plan, the Project management Team will review it with each of the yard teams and place a copy in each yard project file. Additionally, a copy of the QC Plan will be incorporated into all agreements between ERM and designated subcontractors as a requirement of performance of the subcontractor services.

3.2.4.5 *Procedures and Guidelines*

In accordance with the RFP and Attachment B to the Work Scope, 30 days after award ERM will provide to Metro-North a list of the procedures and guidelines to implement the QC Plan outlined above. A summary of the procedures and guidelines that will be addressed in the QC Plan is included in Table 3-2.

The specific procedures and guidelines for the eight areas noted in Table 3-2 will be provided within 30 days following award of the contract to ERM. Other areas identified in the RFP (Work Scope Attachment B § 3.08, 3.10, 3.11, 3.13 and 3.15) will be addressed in the context of Work Plan documents that will be prepared to establish specific work scopes (eg. site investigations) at one or more of the yards.

TABLE 3-2
QC PLAN SUMMARY

- 1.0 Project Administration
 - 1.1 Invoicing
 - 1.2 Budget tracking
 - 1.3 Schedule tracking
 - 1.4 Change order process
 - 1.5 MBE/WBE reporting (in accordance with RFP)

- 2.0 Environmental Study Control
 - 2.1 Planning
 - 2.2 Study Criteria and Input Information
 - 2.3 Deliverables
 - 2.4 Verification of Deliverables
 - 2.5 Changes to Deliverables

- 3.0 Site Investigation Requirements
 - 3.1 Procedures for Investigative Work Plan Development
 - 3.2 Verification of Data Gathering and Results (Quality Assurance Project Plan-QAPP-and Data Management Plan for Investigative Efforts)

- 4.0 Document Control
 - 4.1 Located in a Central File
 - 4.2 Create a Document Log
 - 4.3 Contain a proper Label (Title Block)
 - 4.4 Include the Initials of Preparer
 - 4.5 Include Initials of the Individual Who Checked the Work
 - 4.6 Include the Date of the Original and Subsequent Revision

- 5.0 Subcontractor Consulting Services
 - 5.1 Subcontractor Agreements (Drilling and Laboratory)
 - 5.2 Verification of Subcontractor Services
 - 5.3 Determination of Subcontract Adherence to quality
 - 5.4 For Laboratories, written certification and protocols for required analyses in accordance with applicable requirements (Testing of Environmental Samples)

TABLE 3-2
QC PLAN SUMMARY (CONTINUED)

- 6.0 Inspection, Measurement and Testing of Equipment
 - 6.1 Documentation of Manufacturers Requirements for Calibration
 - 6.2 Procedure to Ensure Scheduled Calibration and Verification (See QAPP)

- 7.0 Management Review and Corrective Action
 - 7.1 Identify frequency and type of third-party evaluations
 - 7.2 Assign Project management team members or QC Team personnel to specific tasks
 - 7.3 Establish procedures to disseminate corrective actions and verify implementation
 - 7.4 Document QC system outcomes on forms for inclusion in project file and for Metro-North

- 8.0 Personnel Training
 - 8.1 Document project personnel training certifications as appropriate
 - 8.2 Collate project personnel OSHA forms (field investigation) as appropriate
 - 8.3 Retain these records in project file for Metro-North, if requested

Section 4

PROJECT SCHEDULE

ERM will be committed to strictly adhering to the schedule requirements established in the RFP. We are confident that because of the project management and staffing approach developed for the Environmental Studies project, ERM will readily meet all schedule requirements.

Figure 4-1 presents ERM's preliminary schedule for conducting the Environmental Studies.

FIGURE 4-1

PRELIMINARY SCHEDULE FOR THE PERFORMANCE OF ENVIRONMENTAL STUDIES AT MAJOR METRO-NORTH RAIL YARDS

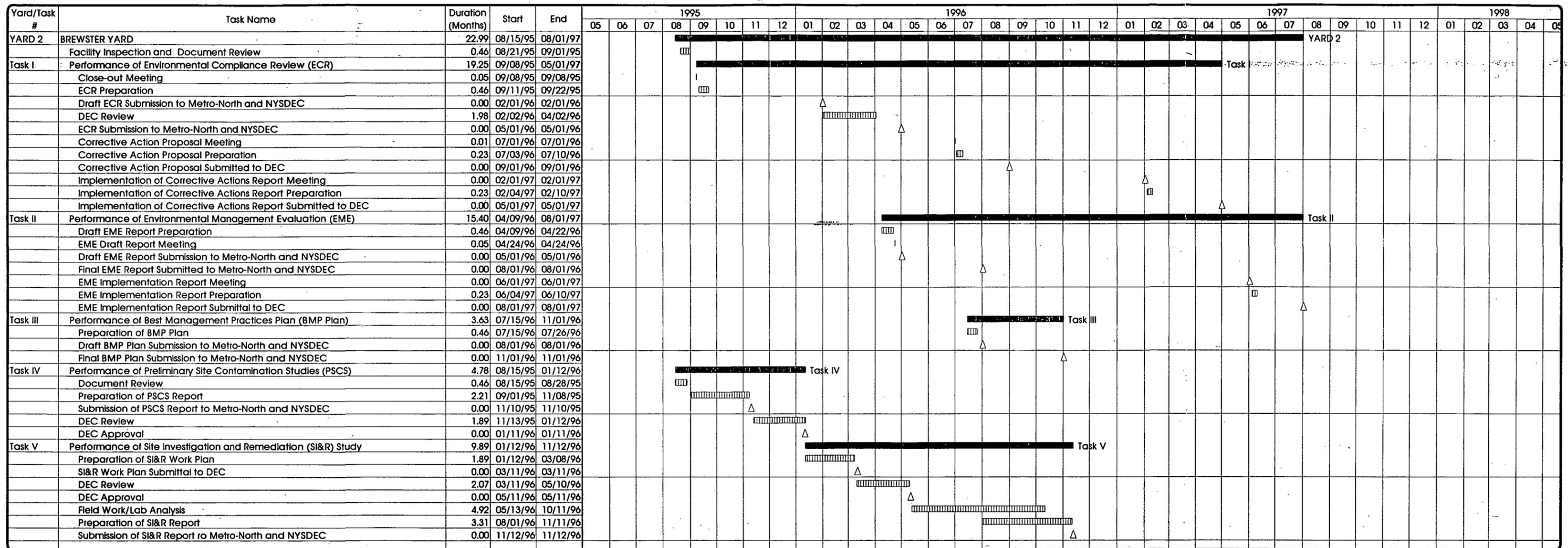


FIGURE 4-1

PRELIMINARY SCHEDULE FOR THE PERFORMANCE OF ENVIRONMENTAL STUDIES AT MAJOR METRO-NORTH RAIL YARDS

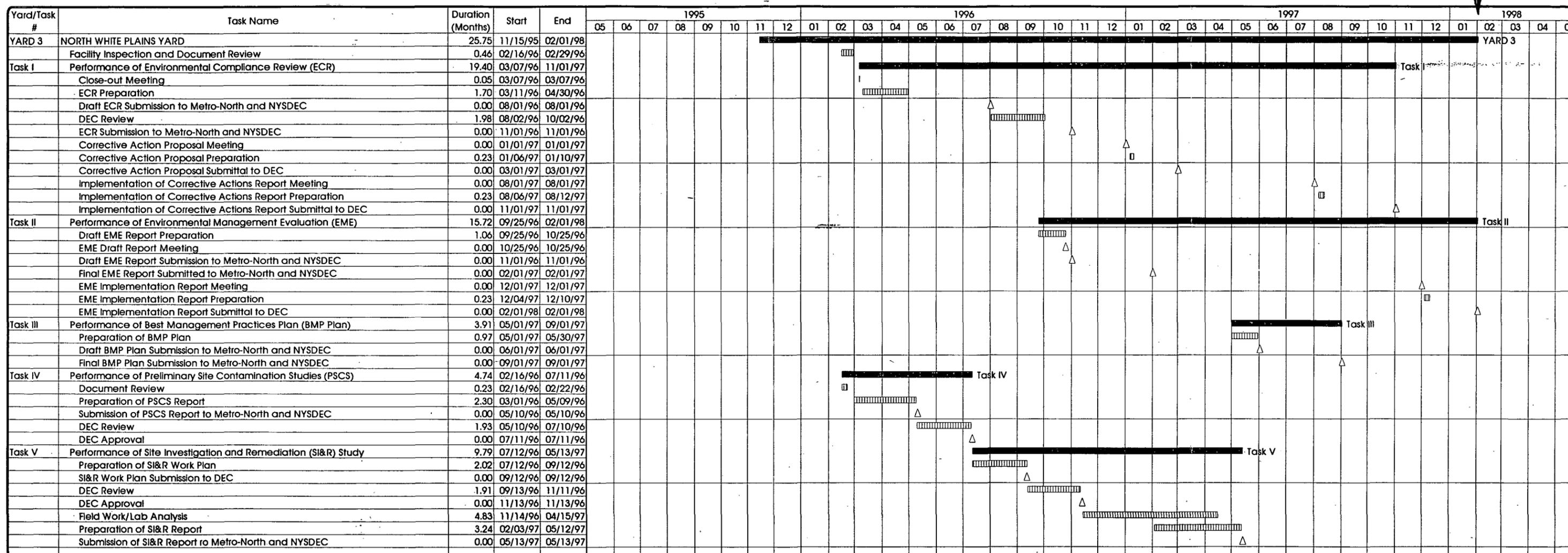
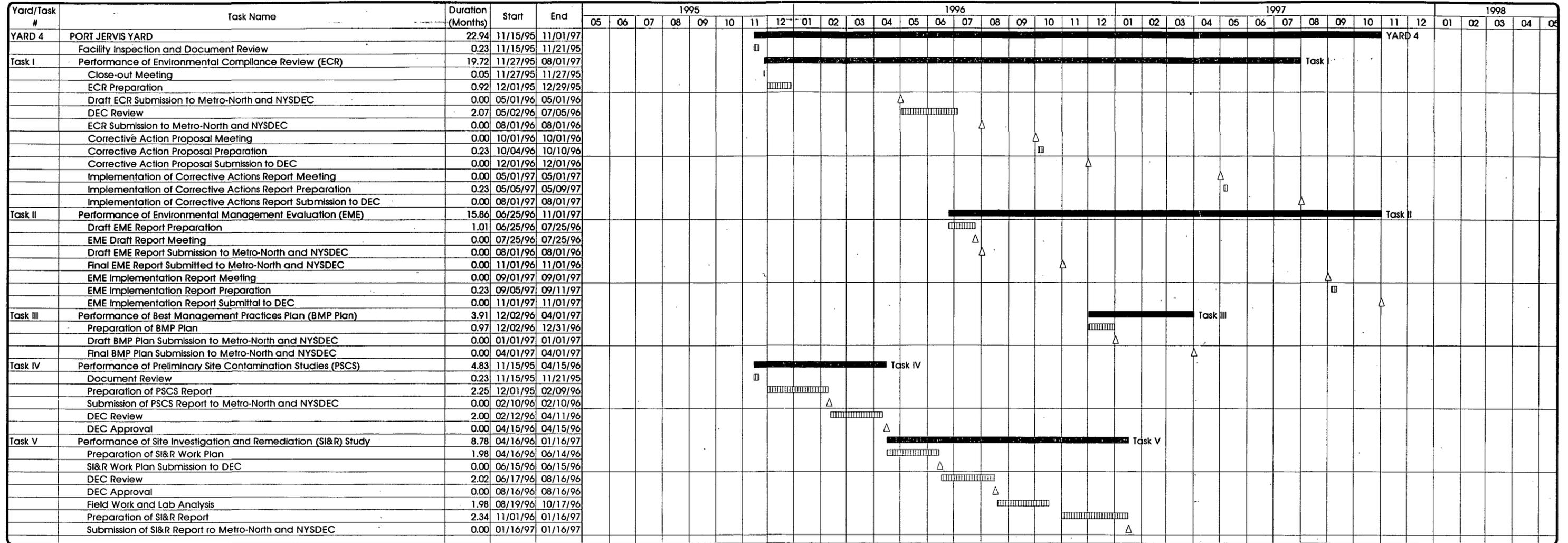


FIGURE 4-1

PRELIMINARY SCHEDULE FOR THE PERFORMANCE OF ENVIRONMENTAL STUDIES AT MAJOR METRO-NORTH RAIL YARDS



Section 5

5.0 *LABOR ESTIMATE*

5.1 *INTRODUCTION*

As requested in the RFP, ERM has developed labor estimates in person/days by task, discipline and by month, with an overall total. ERM has also estimated the total number of person/days for each subcontractor.

5.2 *ESTIMATE OF PERSON/DAYS BY TASK*

Figure 5-1 presents ERM's estimate of person/days by task.

5.3 *ESTIMATE OF PERSON/DAYS BY DISCIPLINE*

Figure 5-2 presents ERM's estimate of person/days by discipline.

5.4 *ESTIMATE OF PERSON/DAYS BY MONTH*

Figure 5-3 presents ERM's estimate of person/days by month.

FIGURE 5-1
LEVEL-OF-EFFORT ESTIMATE BY TASK

(IN PERSON-DAYS)

TASKS	Labor (Person-Days)	Subcontractors			Project (Person-Days)
		Database Co. BMP Sub Laboratory (Person-Days)	Driller (Person-Days)	Surveyor (Person-Days)	
Preliminary Tasks	22				22
Task I - Environmental Compliance Review	282	[13]			282
Task II - Environmental Management Evaluation	99				99
Task III - Best Management Practices Plan	27	[42]			27
Task IV - Preliminary Site Contamination Study	175	[9]			175
Task V - Site Investigation & Remediation Study	331	[128]	[80]	[40]	331
Task VI - Cost Estimates	34				34
Project Management	217				217
Quality Control	119				119
TOTALS	1306	[192]	[80]	[40]	1306

Notes:

Numbers in brackets [] are not included in person-day totals

**FIGURE 5-2
LEVEL-OF-EFFORT ESTIMATE BY DISCIPLINE**

(IN PERSON-DAYS)

TASKS	Hydrogeology				Engineering						Support			Labor (Person-Days)	Subcontractors			Project (Person-Days)
	Core Team Member (Person-Days)	Yard Team Leader (Person-Days)	Project Geologist (Person-Days)	Hydrogeology Subtotal (Person-Days)	Project Director (Person-Days)	Core Team Member (Person-Days)	Yard Team Leader (Person-Days)	Project Engineer (Person-Days)	Project Engineer (Person-Days)	Project Engineer (Person-Days)	Engineering Subtotal (Person-Days)	Drafting (Person-Days)	Word Processing (Person-Days)		Support Subtotal (Person-Days)	Laboratory (Samples)	Driller (Person-Days)	
Preliminary Tasks																		
Preliminary Tasks	5			5	5	10				15	1	1	2	22				22
TOTALS	5			5	5	10				15	1	1	2	22				22
Task I - Environmental Compliance Review																		
Harmon Yard	2	2		4	4.5	3.5	23	28	5.5	64.5	1	5	6	74.5	[5]			74.5
North White Plains	2	2		4	4.5	6	23	22	5.5	61	1	4	5	70	[4]			70
Brewster Yard	2	2		4	4.5	5	20	25	5.5	60	1	4	5	69	[4]			69
Port Jervis Yard	2	2		4	4	6	22	25	4.5	61.5	1	2	3	68.5				68.5
TOTALS	8	8		16	17.5	20.5	88	100	21	247	4	15	19	282	[13]			282
Task II - Environmental Management Evaluation																		
Task II					36	42	8			86		13	13	99				99
TOTALS					36	42	8			86		13	13	99				99
Task III - Best Management Practices Plan																		
Harmon Yard					1.5					1.5	1	2	3	4.5	[20]			4.5
North White Plains					1.5					1.5	1	2	3	4.5	[11]			4.5
Brewster Yard					1.5					1.5	1	2	3	4.5	[11]			4.5
Port Jervis Yard					1.5		3		6	10.5	1	2	3	13.5				13.5
TOTALS					6		3		6	15	4	8	12	27	[42]			27
Task IV - Preliminary Site Contamination Study																		
Harmon Yard (8-10-95)	6	22	12	40		2	1			3	7	7	14	57				57
North White Plains (5-10-95)	7	18	6	31		2	1			3	4	4	8	42	[3]			42
Brewster Yard (11-10-95)	7	18	6	31		2	1			3	4	4	8	42	[3]			42
Port Jervis Yard (2-10-96)	7	15	4	26		1	1			2	3	3	6	34	[3]			34
TOTALS	27	73	28	128		7	4			11	18	18	36	175	[9]			175

FIGURE 5-2
LEVEL-OF-EFFORT ESTIMATE BY DISCIPLINE

(IN PERSON-DAYS)

TASKS	Hydrogeology				Engineering						Support			Labor	Subcontractors			Project
	Core Team Member	Yard Team Leader	Project Geologist	Hydrogeology Subtotal	Project Director	Core Team Member	Yard Team Leader	Project Engineer	Project Engineer	Engineering Subtotal	Drafting	Word Processing	Support Subtotal	(Person-Days)	Laboratory (Samples)	Driller (Person-Days)	Surveyor (Person-Days)	(Person-Days)
	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Person-Days)	(Samples)	(Person-Days)	(Person-Days)	(Person-Days)
Task V - Site Investigation & Remediation Study																		
Harmon Yard	8	22		30		8				8	5	6	11	49				49
North White Plains	8	51	36	95		5				5	6	7	13	113	[52]	[32]	[14]	113
Brewster Yard	7	47	36	90		5				5	6	7	13	108	[52]	[32]	[14]	108
Port Jervis Yard	7	25	16	48		3				3	4	6	10	61	[24]	[16]	[12]	61
TOTALS	30	145	88	263		21				21	21	26	47	331	[128]	[80]	[40]	331
Task VI - Cost Estimates																		
Corrective Action Proposal						4				4		2	2	6				6
PSCS Cost Estimates	4			4		4				4		2	2	10				10
SI&R Cost Estimates	4	4		8		4	4			8		2	2	18				18
TOTALS	8	4		12		12	4			16		6	6	34				34
Project Management and Quality Control																		
PROJECT MANAGEMENT	61	17	50	128		56				56		33	33	217				217
Tasks I - V	36	8		44		31				31		18	18	93				93
Preliminary/Baseline CPM		9		9										9				9
Budget Track./Monthly Prog. Mtg.	25		50	75		25				25		15	15	115				115
QUALITY CONTROL			9	9	14	15	15	9	6	59	2	49	51	119				119
Quality Control Plan Development			6	6	2	2	2	1	6	13	2	8	10	29				29
Harmon Yard					3.5	3	3.75	2		12.25		11	11	23.25				23.25
North White Plains			1	1	2.5	3	2.75	2		10.25		9	9	20.25				20.25
Brewster Yard			1	1	3.5	4	3.75	2		13.25		12	12	26.25				26.25
Port Jervis Yard			1	1	2.5	3	2.75	2		10.25		9	9	20.25				20.25
TOTALS	61	17	59	137	14	71	15	9	6	115	2	82	84	336				336
PROJECT TOTALS	139	247	175	561	78.5	183.5	122	109	33	526	50	169	219	1306				1306

Notes:
Numbers in brackets [] are not included in person-day totals

Section 6

METRO-NORTH CONTRACT REQUIREMENTS

ERM has executed the required forms that were included in the RFP. These forms are included in this Proposal as Appendices. The forms and the Appendices in which they can be found are:

- Consultant Required Information Form - Appendix B
- Consultant Responsibility Form - Appendix C
- Proposer MBE/WBE Utilization Plan Form - Appendix D
- Employer Information Report Form EEO-1 - Appendix E
- Certificate of Insurance - Appendix F
- Financial Statements for 1992, 1993 and 1994 - Appendix G.

Section 7

7.0 *ERM QUALIFICATIONS AND EXPERIENCE*

7.1 *ENVIRONMENTAL MANAGEMENT SERVICES QUALIFICATIONS AND EXPERIENCE*

ERM is well suited to provide Metro-North with the scope of work outlined in the request for qualifications. ERM's qualifications, training and capabilities are presented in the following paragraphs.

Experience

ERM-Northeast has provided environmental management services including compliance reviews, management evaluations and BMP Plan development to numerous clients. We have developed a reputation for thoroughness and proficiency in these types of projects. The company and its personnel have provided environmental management services to numerous industrial corporations in both the United States and overseas. ERM has conducted over 200 environmental compliance reviews during the past ten years (see Figure 7-1).

Approximately eighty percent of all ERM projects are performed for major industrial clients. Our experience includes environmental audits and evaluations of multi-plant chemical and pharmaceutical corporations.

ERM-Northeast has been involved in a broad range of environmental management projects. During these assignments, we have:

- Assisted corporations in developing or improving their environmental compliance auditing programs
- Conducted comprehensive multi-site audit programs for multi-national corporations

SELECTED ENVIRONMENTAL AUDIT EXPERIENCE

Project	FACILITY OPERATION TYPE									SERVICES									REGULATORY PROGRAM						
	Railyards	Aviation	Manufacturing	Petroleum Bulk Storage	Chemical Storage	TSDf	Garage/Vehicle Maintenance	Warehouse	Office Building	Compliance Audit	Industrial Hygiene Audit	Audit Checklist Development	Environmental Protocol Development	BMP	SEM*	Training	Multi-Media Sampling	Permit Review	Hazardous Waste Management	Chemical Product Importation (TSCA)	Waste Water Discharge	Air Emissions	Solid Waste Management	TSCA/PCBs	UST/AST
Martin Marietta, Utica, New York		✓	✓							✓				✓				✓	✓			✓	✓		
Nepera, New York			✓		✓					✓	✓	✓		✓					✓					✓	
Power Plant, New York			✓							✓											✓	✓			✓
Aerospace Electronics Manufacturer, New York		✓	✓		✓			✓		✓	✓							✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Electronics Manufacturer, Binghamton, New York		✓	✓					✓		✓	✓							✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Electronics Manufacturer, Utica, New York		✓	✓					✓		✓	✓							✓	✓	✓	✓	✓	✓	✓	✓
Browning-Ferris Industries, New York						✓				✓									✓				✓		
Aerospace Electronics Manufacturer, Syracuse, New York		✓	✓				✓			✓	✓			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Atchison, Topeka & Santa Fe Railway Co., CA (Barstow, Hobart, San Bernadino Railyards)	✓			✓	✓					✓		✓							✓		✓				✓
Southern Pacific Transportation Company, California	✓															✓			✓						
Millville Airport Audit, Millville, New Jersey		✓	✓		✓		✓			✓		✓					✓	✓	✓	✓	✓		✓	✓	✓
Air National Guard Environmental Compliance		✓		✓	✓		✓			✓		✓						✓	✓	✓	✓	✓	✓	✓	✓
Western Airlines Multiple Airports		✓		✓			✓			✓	✓	✓				✓	✓	✓	✓						✓
Delta Airlines L.A. International (LAX), Atlanta International (ATL)		✓		✓			✓			✓							✓								✓
Republic Airlines L. A. International (LAX)		✓		✓			✓										✓								✓
TWA San Francisco International Airport (SFO)		✓		✓			✓										✓								✓
Waste Site Inspection Group 36 TSDfS			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
General Signal 40 Facilities			✓	✓	✓			✓	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓
Energy Coatings Co.			✓		✓			✓	✓	✓	✓		✓					✓	✓						
NASA Compliance Audit Training		✓		✓	✓		✓	✓	✓							✓			✓	✓	✓	✓	✓	✓	✓

* SEM = Strategic Environmental Management

FIGURE 7-1

SELECTED ENVIRONMENTAL AUDIT EXPERIENCE

Project	FACILITY OPERATION TYPE									SERVICES									REGULATORY PROGRAM						
	Railyards	Aviation	Manufacturing	Petroleum Bulk Storage	Chemical Storage	TSDf	Garage/Vehicle Maintenance	Warehouse	Office Building	Compliance Audit	Industrial Hygiene Audit	Audit Checklist Development	Environmental Protocol Development	BMP	SEM*	Training	Multi-Media Sampling	Permit Review	Hazardous Waste Management	Chemical Product Importation (TSCA)	Waste Water Discharge	Air Emissions	Solid Waste Management	TSCA/PCBs	UST/AST
American Cyanamid Multiple Facilities			✓	✓	✓			✓	✓	✓		✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
Chrysler Corp. Worldwide			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
E.I. du Pont de Nemours & Co., Inc.			✓		✓									✓						✓					
Ford Motor Company, Worldwide			✓	✓	✓		✓	✓	✓	✓		✓	✓	✓		✓		✓	✓			✓			
U.S. Air Force 15 Airport Facilities		✓		✓	✓		✓	✓	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓
Becton Dickinson Worldwide (35 Facilities)			✓		✓			✓	✓	✓					✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
TWA Logan International Airport		✓		✓					✓		✓					✓		✓							✓
U.S. Air PIT, MCO, LAX		✓		✓			✓									✓		✓							✓
Sebring Airport Authority Highlands County, Florida		✓	✓		✓				✓							✓	✓	✓			✓				
Dade County Aviation Department (6 Airports), Florida		✓			✓				✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Miami International Airport (Eastern Airline Maint. Base) Miami, Florida		✓					✓		✓	✓		✓				✓		✓		✓		✓	✓	✓	✓
United Airlines SFO		✓					✓			✓						✓		✓			✓				
Louis Dreyfus Eastern U.S.				✓	✓		✓		✓	✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Airline Maintenance Facility, Seattle, Washington		✓	✓		✓	✓		✓		✓	✓				✓			✓	✓	✓	✓	✓	✓	✓	✓
Aircraft Brake Manufacturer Pueblo, Colorado			✓						✓	✓	✓			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Electronics and Weapons, Massachusetts		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓
Satellite Manufacturing Facility New Jersey		✓	✓		✓				✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Manufacturing Business Ohio		✓									✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Electronics Manufacturer Daytona Beach, Florida		✓	✓		✓			✓		✓	✓							✓	✓	✓	✓	✓	✓	✓	✓
Aircraft Gauge Manufacturer Vermont		✓							✓	✓								✓	✓	✓	✓	✓	✓	✓	✓
Aerospace Weapons Manufacturer Vermont		✓	✓					✓	✓	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓

* SEM = Strategic Environmental Management

- Conducted multi-media compliance reviews for large production facilities
- Served as an independent and objective participant on audit teams that are otherwise internal to the corporation being audited
- Developed environmental audit checklists to be used either by the ERM team or a group of corporate auditors
- Developed sets of best management practices (i.e., standards of performance) that serve as the basis of corporate policy documents for major Fortune 500 corporations
- Audited internal audit programs to ensure they meet their own policies and procedures, and
- Conducted environmental management evaluations that have included benchmarking against the Department of Justice Sentencing Guidelines, other voluntary guidelines or the industry standard.

A partial list of our environmental management services clients is provided in Table 7-1.

Knowledge of Requirements

ERM-Northeast's geographical area of focus is New York, Connecticut and Northern New Jersey. A large percentage of the work completed by ERM-Northeast in our Albany, Buffalo, New York City, Syracuse and Woodbury, New York offices is based in New York state. Day to day work with the New York state laws, regulations, guidelines and memorandums ensure that ERM-Northeast

TABLE 7-1
ENVIRONMENTAL COMPLIANCE AUDITING
PARTIAL LIST OF ERM CLIENTS

Allied Signal	Fisher Scientific
American Cyanamid Company	Ford Motor Company
Anheuser-Busch Companies	General Signal
Aristech	General Electric
Bank South	General Tire
BASF	General Motors
Bausch & Lomb	Greyhound Corporation
Becton Dickinson and Company	GTE
Bethlehem Steel Manufacturing	Honeywell
Champion International	IBM
Chemical Bank	Johnson & Johnson
Chevron U.S.A., Inc.	Mennen
Chrysler Corporation	Merck
CIBA-GEIGY	Northern Telecom
Coca-Cola	Northwestern Mutual Life
Coleman Corporation	Pfizer Inc.
Degussa	Revlon Corporation
Delta Air Lines	Shell Oil Company
DuPont	Sun Oil
Exxon USA	U.S. Chemical
Firestone Tire & Rubber	Union Carbide
	Velsicol Chemicals
	Westinghouse Credit Corp.

is well-versed in all applicable criteria.

However, hands-on work with the regulations in New York is not the only method for ensuring up-to-date working knowledge. ERM-Northeast maintains ERM Computer Service's well-respected Enflex Info software that provides quarterly updates to federal and state regulations using CD-ROM technology. ERM-Northeast also maintains ERM-Computer Service's Federal Register CD-ROM services. Each member of the Environmental Management group at ERM-Northeast is provided with a copy of the ERM Weekly Update, a summary of key environmental, health and safety notices published in the Federal Register and in the New York State Register.

Internal seminars at ERM-Northeast are encouraged. Informal lunch-time seminars have been presented on regulatory topics.

Technical Training

Every member of ERM-Northeast's environmental management group has received and will continue to receive annual regulatory training. Formal training began in 1993 with the presentation of a auditor training program developed by ERM. The auditor training program is currently being presented as a college-level course in the California State University system. The training included the following topics:

- Audit Scope
- Organizing the Audit
- Pre-Visit Tasks
- On-Site Tasks
- Reviewing Written Plans and Documents
- Reviewing Management Systems
- Evaluating Audit Results

- Post-Audit Tasks
- Trends in Auditing.

Training provided in 1994 to the environmental management staff included:

- An overview of the 1993 environmental auditing topics and a discussion of new trends in auditing,
- An overview of safety and industrial hygiene auditing presented by ERM-Northeast's Health and Safety Program Director,
- Case studies of recent environmental management projects such as benchmarking against Department of Justice Sentencing Guidelines, development of corporate environmental guidelines for two Fortune 500 companies, and various Clean Air Act Amendments of 1990-related projects.

Commitment to Providing Quality Services

ERM-Northeast has recently provided and continues to provide Metro-North with environmental services that have mainly involved investigation and remedial design. During this time, we are confident that Metro-North has come to expect and appreciate the high quality services ERM provides in a professional manner. ERM's commitment to providing this type of service extends throughout the entire company. We strongly urge Metro-North to discuss ERM's environmental management services capabilities, and our commitment to quality with any or all of the following environmental management clients. ?

Mr. Glenn Barbi
Director, Corporate Safety and Environment
Becton Dickinson and Company
(201)847-6974

Mr. Daniel McGrade
Director of Environmental Affairs
General Signal Corporation
(203)357-8800

Ms. Renee Bobal
Manager, Corporate Environmental Affairs
Hoffmann-La Roche
(201)235-2438

Lorelei Borland, Esq.
Vice President and Special Counsel for Environmental Affairs
MacAndrews & Forbes Holdings, Inc.
(212)527-5603

Susanne Yellin, Esq.
Corporate Counsel
Lambda Electronics Inc.
(516)694-4200

Mr. Richard A. Schulman
Environmental Analyst
Niagara Mohawk Power Corporation
(315)474-5911

Mr. Robert Accarino
Director, Environmental Health and Safety
BFGoodrich Company
(216)374-2726

Ms. Jane Wolf
Vice President
Hydra-Co
(315)471-2881

Summary of Relevant Projects

This section presents capsule summaries of projects relevant to the scope of work presented in the previous sections of this Proposal.

***Becton Dickinson & Company
Worldwide Facilities***

ERM-Northeast is conducting a multi-year audit program of this

company's 35 worldwide medical apparatus facilities. Following the audit visits, we prepared and presented a series of seminars for B-D's environmental staff. These seminars allowed us to address common problem areas and bring the staff up to date on current regulatory trends.

The current auditing program includes development of a computer-generated management action plan that is left with plant management. ERM subsequently provides a root cause analysis to assist in the facility's development of appropriate mechanisms to address the compliance issues identified during the audit.

***Atchison, Topeka &
Santa Fe Railway Company
Southern California***

ERM conducts, on an annual basis, environmental compliance audits of the San Bernardino and Barstow System Maintenance Terminals. The System Maintenance Terminals are involved in the repair and maintenance of locomotives for our client. Facility operations include material storage, painting, electric and mechanical repair, cleaning, testing, and assembly areas. Chemical use typically involves oils, non-halogenated solvents, paints, and varnish. Primary wastes generated include oily sludges, grit blast, solvents, brake wicks, and waste oils. The audits are comprehensive in scope and cover the following areas: hazardous waste management, wastewater discharges, SARA Title III and Community Right-to-Know, air emissions, spill prevention and control, asbestos identification and notification, and hazardous material management.

***Johnson & Johnson
International & International
Facilities***

ERM-Northeast has participated in Johnson & Johnson's corporate auditing program since the mid 1980's. During that time ERM worked with J&J corporate environmental staff to develop their international Standards of Practice for environmental procedures, and assisted in development of J&J's computerized audit protocol/data management system. This computerized system is used as the basis of J&J audits

worldwide. Detailed environmental compliance audits have been conducted at more than 50 facilities worldwide. This audit program was managed by ERM-Northeast, utilizing personnel from regional affiliates for local regulatory expertise, as needed.

***General Signal Corporation
Multiple Sites, U.S.***

ERM is performing a multi-year environmental audit program for the General Signal Corporation. To date, approximately 40 site audits have been performed. General Signal is a leading producer of control systems (process, transportation, and electronics), with manufacturing facilities throughout the U.S. ERM-Northeast has managed this program from its Woodbury location and has used regional affiliate personnel where appropriate.

***GE Aerospace Division
Multiple Sites, U.S.***

ERM conducted a comprehensive environmental, industrial hygiene, and safety audit of thirteen GE Aerospace facilities across the United States. The audit was performed utilizing the Auditmaster computerized environmental auditing program developed by Utilicom. The audit's environmental areas of interest included solid and hazardous waste, water and wastewater, TSCA, Community Right-to-Know, spill prevention, storage tanks, air quality, and hazardous materials transportation. The utilization of the Auditmaster program produced an extremely detailed auditing package which was found to be not only suitable for a single site audit but to add increased uniformity and consistency across a multiple site audit program.

***Atchison, Topeka &
Santa Fe Railway Co.
California***

Atchison, Topeka and Santa Fe Railway Company retained ERM to prepare an Integrated Emergency Response and Prevention Manual that addressed and integrated federal, state, and

local environmental regulations. Our client's objective in requesting the development of the Integrated Emergency Response and Prevention Manual was to meet the numerous regulatory requirements in an efficient manner. An integration of various regulatory requirements into one program afforded employees with a more comprehensive understanding of their responsibilities and simplified management oversight.

The Integrated Manual combined the requirements of the following regulations: RCRA Contingency Plan; RCRA General Facility Standards; RCRA Preparedness and Prevention Plan; Toxic Substances Control Act; Underground Storage tanks; SARA Emergency Planning and Community Right-to-Know; CERCLA Hazardous Substances Spill Reporting; OSHA Hazard Communication Standard; OSHA 1910.120; Hazardous Materials Transportation Act; and the Clean Water Act (SPCC).

***Confidential Client
New Jersey***

ERM conducted a comprehensive environmental management systems review and evaluation for this

Fortune 250 manufacturing corporation. ERM initially reviewed the corporation's environmental management systems as perceived by corporate management. ERM next interviewed personnel and reviewed documentation at a randomly-chosen manufacturing facility to obtain the facility's view of the management systems. Using all information obtained, ERM reviewed criteria such the corporation's written standards and procedures; reporting relationships; environmental staffing; environmental training programs; and communications systems in comparison with the Department of Justice Federal Sentencing Guidelines.

ERM then made recommendations for the client to improve its management systems. Recommendations included: better establishing the roles of the corporate environmental group in comparison with that of the facilities'

environmental staff; improving lines of communication between the corporate group and the facilities; and developing formal corporate environmental guidelines and guidance documents.

***E.I. du Pont de Nemours and Co
Best Management Practices Plan
Development/Wastewater
DE/Seaford***

ERM provided a multi-discipline team to evaluate several 'special conditions' of a newly issued NPDES permit. We prepared a Best Management Practices (BMP) Plan for control of contaminated storm water runoff, and we prepared feasibility estimates and a conceptual design of the selected system to collect and treat coal pile runoff. ERM evaluated alternatives and prepared a process design for an air stripper to remove chloroform from the treated wastewater discharge. We also developed and implemented an analytical program which demonstrated that cyanide violations were actually false-positive results caused by analytical interference. Cyanide limits were subsequently dropped from the NPDES permit. ERM also evaluated several alternatives to routine chlorination of once-through cooling water. The problem of routine biofouling control was complicated by the fact that Asiatic Clams (*Corbicula*) historically created plugging problems in the cooling water heat exchangers. ERM eventually recommended a system of chlorination and dechlorination based on safety, effectiveness, and ability to control outbreaks of Asiatic Clams.

***Browning-Ferris Industries Inc.
New York, Illinois, Ohio***

ERM conducted a comprehensive evaluation of environmental issues relative to solid and hazardous waste management operations in several states that were being considered for acquisition by BFI. This evaluation entailed numerous discussions with facility staffs, as well as state and federal regulatory personnel, to assess the following: the technology and effectiveness of the treatment and disposal operations; the degree of compliance with state and federal regulations; and inherent environmental assets and liabilities of each disposal site.

***Atchison, Topeka &
Santa Fe Railway Company
California***

Atchison, Topeka, and Santa Fe Railway Company retained ERM to update existing Spill Prevention Control and Countermeasure Plans for its bulk-storage facilities located at Barstow, Hobart, and San Bernardino rail yards. Plans had previously been prepared for each facility, which conducted aboveground fuel and oil storage and dispensing to railcars, in accordance with RCRA and the Clean Water Act.

ERM evaluated existing regulatory information regarding spill control and containment procedures. We then reviewed and assessed current operations to identify changes in operations and methods of system improvements.

ERM prepared a report summarizing recommendations and modifications to existing plans to facilitate compliance with regulations. We also provided professional engineering certification as required for Spill Prevention Control and Countermeasure Plan updates.

***Coal Power Plant
Syracuse, New York***

A full environmental compliance and liability assessment was performed to establish the environmental status of an operating power plant. Applicable New York State and Federal regulations were researched and compared to ongoing operations. Specific regulatory evaluation of New York State Petroleum Bulk Storage, Air Emissions and Wastewater Discharge (i.e., SPDES) regulations was accomplished. The regulatory implication of on-site spill/release issues was also reviewed.

***Reynolds Metals Company
New York***

ERM prepared a best management practices manual for the client's aluminum manufacturing process. Additionally, ERM set-up an ambient monitoring station for sulfur dioxide as well as representing the client before the NYSDEC.

***Nepera
New York***

ERM performed a thorough Health and Safety audit of this chemical manufacturer's facility along with an environmental audit. The facility had not been audited by an independent third party in a number of years and an assessment was needed to determine compliance status. The facility had predominantly relied on internal audits using an audit protocol developed by ERM to assess internal audits using an audit protocol developed by ERM to assess compliance. Two environmental professionals and one industrial hygienist conducted the audit during a four-day period on-site. A checklist was used to assess compliance with regulatory requirements and best management practices on topics including process safety, general safety, industrial hygiene, TSCA, DOT, and RCRA. Written programs were reviewed and numerous tours were taken of the facility to determine the level of implementation in the plant. A written report was prepared for the client using root-cause analysis to identify the most likely causes of identified problems.

Cambrex Corporation

ERM's experience with Cambrex Corporation includes New Jersey TCPA compliance program assistance to CasChem, environmental auditing at CasChem and the development of environmental health, safety and product safety related self-auditing protocols for Cambrex and several due diligence projects.

***United Technologies Corporation
Hartford, CT***

ERM-Northeast designed and prepared an extensive compliance manual for UTC corporate environmental personnel. The manual addressed federal regulatory compliance requirements for all environmental media and management systems applicable to operations at UTC facilities nationwide. Fifteen major compliance categories were addressed in the manual. These included air emissions, wastewater discharges, solid and hazardous waste management, special pollutants, land ban restrictions, drinking water, SPCC plans, USTs, waste reduction, training,

recordkeeping and reporting. The format of the manual was designed for in-house compliance assessments by UTC facility personnel.

***Atchison, Topeka &
Santa Fe Railway Co.
San Bernardino, CA***

Atchison, Topeka, and Santa Fe Railway Company retained ERM to design and implement a waste minimization program for the System Maintenance Terminal. The terminal contained locomotive maintenance and repair facilities and conducted operations, such as painting, varnishing, and sand blasting, which resulted in waste streams.

ERM developed a two-phased approach for the program implementation. In the first phase, ERM inventoried waste, collected waste samples, classified wastes, evaluated costs of waste handling and disposal, and prioritized 15 major waste streams. In addition, an inventory system was implemented to track material use by shop. Based on this information, ERM prepared a report prioritizing alternative handling and disposal methods. In addition, we created a Waste Minimization Guidance Manual for shop personnel use in reducing waste at the source. The manual is divided into sections which pertain to specific waste types and shops.

***Confidential Client
New York***

ERM conducted a multifaceted environmental compliance program for several facilities of a Fortune 500 company. The program began with environmental audits to identify the company's specific waste streams and satisfactory and unsatisfactory waste management procedures. We used information obtained from the audits to develop a compliance strategy for: hazardous waste management, PCB and asbestos management, water discharges, air emissions, Right-to-Know legislation, and underground tank requirements. ERM also presented a corporate-wide seminar, followed by individual plant seminars for those supervisors and managers responsible for hourly employees' training. We presented detailed

compliance manuals for use in conjunction with the seminars. The seminars and manuals presented overviews of the pertinent environmental legislation and step-by-step procedures for proper waste management and overall environmental compliance. In addition, ERM prepared a videotape for use in training hourly employees.

***Scholle Corporation
Environmental Compliance
Audit/Best Management Practices***

A comprehensive environmental, health, and safety audit was conducted following a reportable quantity spill of acid at the site. Thirty-five regulatory and good management practice findings indicated the need for improvement in the areas of material handling procedures, employee training, environmental file management, material storage structures, hazardous waste AST storage, treated wastewater discharge practices, emergency response planning, PCB/asbestos recordkeeping, storm water management/permitting, and pollution prevention planning. ERM also assisted the facility with follow-up projects related to the development of a storm water pollution prevention plan and implementation of plan-recommended structural BMPs.

***Power Producing Company
TSDF Auditing
Central New York***

ERM performed a series of comprehensive, multi-media environmental compliance audits of treatment storage and disposal facilities on behalf of a central New York power producer. Audits addressed all aspects of environmental compliance and liability of these operating reclamation and disposal facilities. These audits permitted the power producer to make informed decisions regarding disposal operations for PCB materials, hazardous wastes and waste oils.

***Martin Marietta
Utica, NY***

ERM conducted a comprehensive environmental compliance audit during 1993 of an aerospace

manufacturing facility. The audit's environmental areas of interest included: solid and hazardous waste management, water and wastewater, Toxic Substances Control Act, SARA Title III and Community Right-to-Know, spill prevention and control, storage tank management, air quality and permitting, and hazardous materials transportation. Findings were categorized as regulatory issues and best management practice issues.

***Confidential Client
Connecticut***

This large industrial conglomerate designed an innovative self-appraisal system to monitor compliance in the areas of safety, hygiene, industrial medicine and environmental protection. To implement the program, ERM developed materials which provided technical, regulatory, and program management information. Two program management video tapes, a program manual, self-appraisal questionnaire, and seminars were produced.

***Gardinier, Inc.
BMP Manual
Tampa, Florida***

ERM prepared input to Gardinier's Best Management Practices (BMP) Plan. Eight chemicals were covered: sodium hydroxide, sulfuric acid, sulfur, phosphoric acid, fluosilic acid, sodium bicarbonate, and urea. Gardinier (a fertilizer manufacturer) provided accurate IDs and flow diagrams, as well as accurate plant layouts or aerial photos. ERM indicated on previously prepared (by ERM) site layout drawing, probable directions of flow in the event of a chemical spill.

***Confidential Client
Connecticut***

ERM provided technical assistance to this audio-tape manufacturer with its RCRA compliance and state property transfer restrictions. The client wished to sell its manufacturing facility which was contaminated by solvents. ERM completed a site investigation and remedial action plan for manufacturing operations and a hazardous waste storage area. In

addition, ERM worked closely with the clean-up contractor and acted as liaison between the client and the controlling regulatory agency.

***Power Producing Company
Upstate New York***

ERM is developing a comprehensive environmental, health and safety management system for an upstate Independent Power Producer. The focus of this system is to ensure that the various IPP sites maintain, at a minimum, operational compliance with all Federal, State and local regulations. This management system includes a review of applicability of environmental regulations affecting power producers, formulation of a plan of implementation of compliance driven activities (i.e., Air, Wastewater, Tanks, Aquifer Protection, etc.), and a method of measurement and improvement (i.e., auditing) to ensure compliance. Project aspects include performance of audits, preparation of a management manual, administration of training, and program implementation.

***Confidential Client
New York***

ERM-Northeast performed a comprehensive environmental compliance audit of this electronic component manufacturing plant (Fortune 50 company). This facility encompassed more than one million square feet of manufacturing support facilities. The audit not only served as the basis of assessing current compliance with state and federal regulations but to facilitate the preparation of a plant level self audit program. The self audit program was structured into two tiers. The first tier was a quarterly audit that could readily be performed by an individual over one or two days. The second tier was more comprehensive and intended to be performed annually by a group of 2 to 3 environmental professionals over a three day period. Together the two tier program would allow the plant to ascertain their compliance with applicable regulations.

The self audit program contained plant specific checklists, a mechanism for

tracking audit findings to their resolution and recommendations for staffing and scheduling audits. The checklist portion of the audit manual also contains regulatory summaries and plant fact sheets. These were intended to assist future auditors in their assignments.

***Confidential Client
Connecticut***

For this well-known client in the media and entertainment business, ERM conducted comprehensive regulatory compliance audits at three of its manufacturing facilities. ERM then presented the results of the audits to corporate management. In addition, ERM provided assistance in the implementation of a number of projects intended to correct deficiencies uncovered during the audit.

***Confidential Client
Personal Care Products
New York, NY***

ERM-Northeast conducted comprehensive environmental compliance audits at five manufacturing facilities for this New York City based personal care products company. The facilities were located in New Jersey, North Carolina, Arizona and Florida. Our review included a hydrogeological evaluation of potential liabilities at several of the facilities.

***Confidential Client
Outdoor Recreation Equipment
New York, NY***

ERM-Northeast conducted comprehensive environmental audits at 5 corporate facilities located in Kansas, Nebraska and Texas. We made extensive use of the ERM Group affiliate personnel to supplement ERM-Northeast staff. At the conclusion of the site visits we developed self audit documents to allow the facilities to perform periodic internal audits in the future.

SITE INVESTIGATION AND REMEDIATION QUALIFICATIONS AND EXPERIENCE

This section contains an overview of ERM's qualifications in hazardous waste site investigation and remediation. ERM has extensive experience in the management and implementation of RI/FS investigations at State and Federal sites. These projects have included every phase from development of the Remedial Investigation Work Plan through to start up of the final remedy. A summary of our project experience is shown in matrix form in Figure 7-2. Maps, showing the locations of our projects on Long Island and in New York state follow the matrix. It is obvious from the maps that we have conducted many projects at a wide variety of sites in New York.

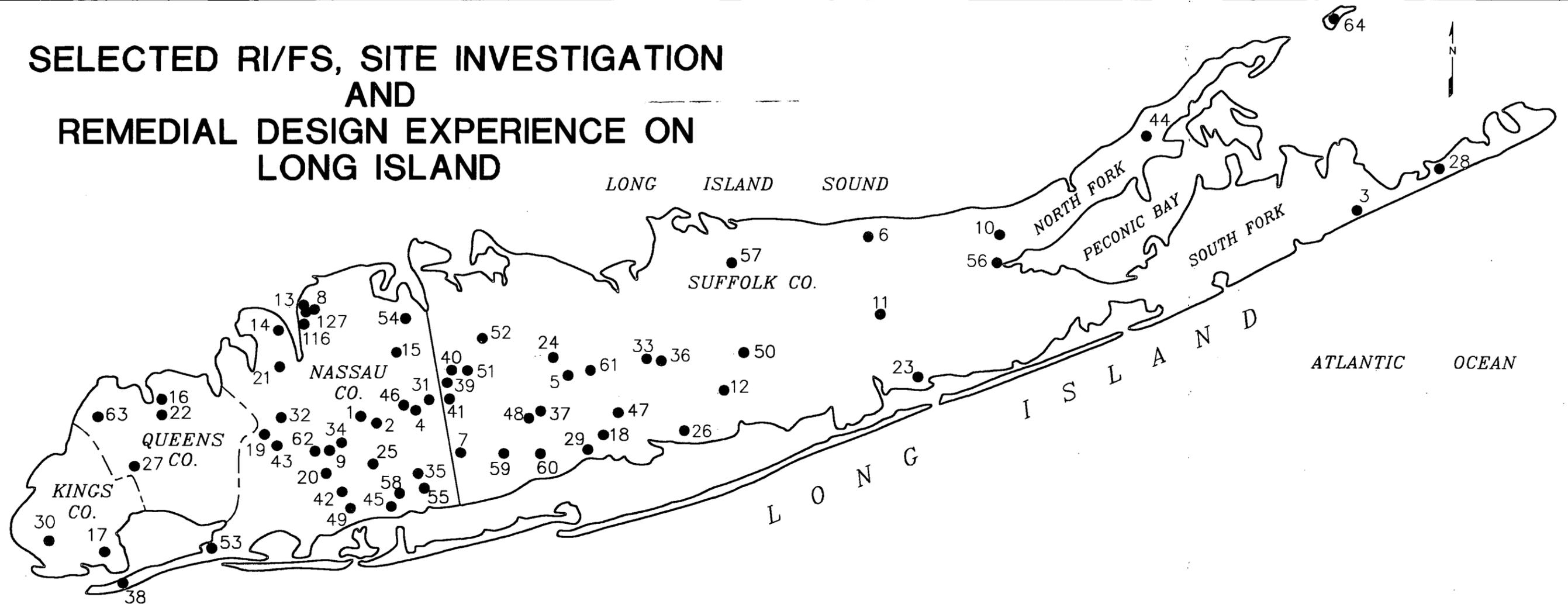
Following the map are several in-depth project profiles which provide a more detailed description of the services we have provided for Metro-North and for other clients. The last page in this section is a list of references that ERM would encourage Metro-North to contact with any questions.

SITE INVESTIGATION and REMEDIATION PROJECT EXPERIENCE MATRIX

Project	NPL or State Site	SITE INVESTIGATION				DESIGN EXPERIENCE				CONSTRUCTION MANAGEMENT						
		Site Investigation	Conduct Human Health or Ecological Risk Assessment	Cleanup Plan	Provide Negotiation Support	Concept Design	Design Investigation	Pilot Testing	Preliminary & Final Design	Prepare Bid Contract Documents	Pre-Bid Meeting, Bid Evaluation, Contractor Selection	Contract Administration	Contract Inspection	O&M Manual	As-Built Drawings	System Start-Up
Duane Marine Perth Amboy, NJ	State	✓	✓	✓	✓											
Suffern Village Well Field Suffern, NY	NPL	✓	✓	✓												
Gold Disc Site Holbrook, NY	NPL and State	✓	✓	✓												
Facet Enterprises, Inc Elmira, NY	NPL	✓	✓	✓	✓											
Wadsworth Laboratories Albany, NY	State	✓	✓	✓	✓											
Norton Company Watervliet, NY	State	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Van der Horst Plants 1 and 2 Olean, NY	State	✓	✓	✓												
Champion Paper Waste Pits Brewster, NY	State	✓	✓	✓	✓											
Allied Bendix Inactive Waste Site Sidney, NY	State	✓	✓	✓												
Allied Chemical Site Tonawanda, NY	State	✓		✓	✓											
Konica Imaging USA, Inc. Glen Cove, NY	State	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Harmon Railroad Yard Croton-on-Hudson, NY	State	✓	✓	✓	✓	✓	✓		✓	✓	✓					
Chenango Industries Binghamton, NY	NPL				✓	✓	✓	✓	✓							
Liberty Plating Farmingdale, NY	NPL	✓	✓	✓												
Farrell Road Geddes, NY	State	✓	✓													
Booth Oil Buffalo, NY	NPL				✓											
Purex Industries Millville, NJ	State					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Becton-Dickinson East Rutherford, NJ	State	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Northville Industries NY Statewide	State	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
BTR Kenilworth, NJ	State					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Red Devil Facility Mount Vernon, NY	State	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EnvironCom NY/NJ Statewide	State					✓	✓		✓	✓	✓	✓		✓		
Holtsville Terminal Holtsville, NY	State	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Louis Dreyfus Baltimore, MD	State					✓	✓		✓	✓		✓	✓	✓	✓	✓
ER&E Florham Park, NJ	State					✓			✓	✓	✓	✓	✓	✓	✓	✓
Crown Cork & Seal Edison, NJ	State	✓		✓		✓	✓	✓	✓	✓	✓	✓		✓		

FIGURE 7-2

SELECTED RI/FS, SITE INVESTIGATION AND REMEDIAL DESIGN EXPERIENCE ON LONG ISLAND



RI/FS

SITE/LOCATION	AGENCY
5. GIBSON CHEMICAL (THERM-X), COMMACK	DEC
8. POWERS CHEMCO, GLEN COVE	DEC
12. GOLDISC, HOLBROOK	EPA/DEC
13. LI TUNGSTEN, GLEN COVE	EPA/DEC
19. CELLU-CRAFT, NEW HYDE PARK	NCDOH
116. GARVIES POINT, GLEN COVE	DEC
127. KONICA, GLEN COVE	EPA

LANDFILLS

SITE/LOCATION	AGENCY
3. EAST HAMPTON LANDFILL, EAST HAMPTON	DEC
10. RIVERHEAD LANDFILL, RIVERHEAD	DEC
14. PORT WASHINGTON LANDFILL, PORT WASHINGTON	EPA/DEC
15. SYOSSET LANDFILL, SYOSSET	EPA/DEC
27. CYPRESS HILLS CEMETERY, QUEENS/BROOKLYN	CLIENT
43. NEW HYDE PARK LANDFILL, NEW HYDE PARK	DEC

HYDROGEOLOGICAL INVESTIGATIONS

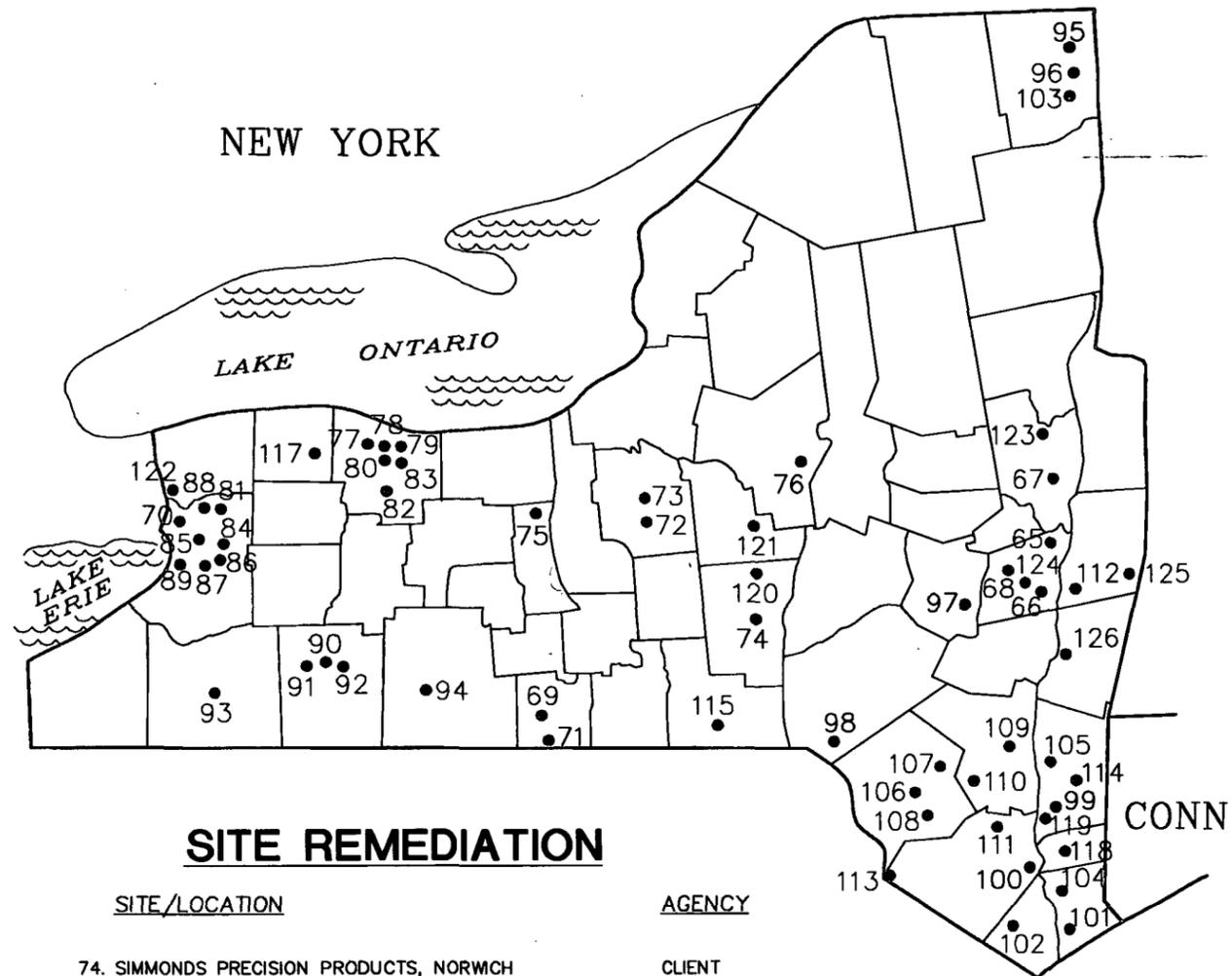
SITE/LOCATION	AGENCY
2. ALSY MANUFACTURING, INC., HICKSVILLE	DEC
4. FIRE TRAINING CENTER, OLD BETHPAGE	DEC
6. PEERLESS PHOTO, SHOREHAM	DEC
7. POLYCOM HUNTSMAN, FARMINGDALE	DEC
11. BROOKHAVEN NATIONAL LAB, UPTON	EPA/DEC
21. CHRISTOPHER MORLEY PARK, PORT WASHINGTON	EPA/DEC
26. CUMBERLAND FARMS GAS STATION, OAKDALE	EPA
28. DUNE ASSOCIATES, HITHER HILLS	CLIENT
30. EXXON GAS STATION, BROOKLYN	CLIENT
31. EXXON GAS STATION, FARMINGDALE	DEC
32. EXXON GAS STATION, GARDEN CITY PARK	DEC
33. EXXON GAS STATION, RONKONKOMA	DEC
34. FRED COLIN PROPERTY, GARDEN CITY	DEC
35. FRED COLIN PROPERTY, SEAFORD	DEC
36. GARRET AVIATION, RONKONKOMA	SCDHS
39. I.W. INDUSTRIES, MELVILLE	DEC
42. NASSAU COUNTY-COES NECK ROAD, ROOSEVELT	NCDPW
44. NORTH FORK WATER SUPPLY STUDY, NORTH FORK	SCDHS
45. NORTHVILLE GAS STATION, BELLMORE	DEC
48. NORTHVILLE GAS STATION, DEER PARK	DEC
49. NORTHVILLE GAS STATION, FREEPORT	DEC
51. NORTHVILLE GAS STATION, HUNTINGTON	DEC
52. NORTHVILLE GAS STATION, HUNTINGTON STATION	DEC
56. NORTHVILLE GAS STATION, RIVERHEAD	DEC
61. PHARMAFAIR, HAUPPAUGE	SCDHS
64. US DEPT. OF AGRICULTURE, PLUM ISLAND	USDA

SITE REMEDIATION

SITE/LOCATION	AGENCY
1. AIR TECHNIQUES, HICKSVILLE	DEC
9. PUREX-MITCHELL FIELD, GARDEN CITY	DEC
16. ATLANTIC PETROLEUM, FLUSHING	DEC
17. ATLANTIC PETROLEUM, KINGS PLAZA	DEC
18. ATS, BAY SHORE	SCDHS
20. CHEVRON, GARDEN CITY	DEC
22. COASTAL OIL, FLUSHING	DEC
23. CUMBERLAND FARMS GAS STATION, CENTER MORICHES	EPA
24. CUMBERLAND FARMS GAS STATION, COMMACK	EPA
25. CUMBERLAND FARMS GAS STATION, LEVITTOWN	EPA
26. CUMBERLAND FARMS GAS STATION, OAKDALE	EPA
29. EXXON CORP., BAY SHORE	DEC
37. GARSITE PRODUCTS, DEER PARK	DEC
38. JACOB RIIS PARK, FAR ROCKAWAY	DEC
40. MERGENTHALER LINOTYPE, MELVILLE	CLIENT
41. MOBIL OIL, FARMINGDALE	DEC
46. NORTHVILLE GAS STATION, BETHPAGE	DEC
47. NORTHVILLE GAS STATION, BRENTWOOD	DEC
50. NORTHVILLE TERMINAL, HOLTSVILLE	DEC
53. NORTHVILLE GAS STATION, INWOOD	DEC
54. NORTHVILLE GAS STATION, LAUREL HOLLOW	DEC
55. NORTHVILLE GAS STATION, MASSAPEQUA	DEC
57. NORTHVILLE TERMINAL, SETAUKET	DEC
58. NORTHVILLE GAS STATION, WANTAGH	DEC
59. NORTHVILLE GAS STATION, WEST BABYLON	DEC
60. NORTHVILLE GAS STATION, WEST ISLIP	DEC
62. TEXACO, GARDEN CITY	DEC
63. TUBULAR TEXTILES, WOODSIDE	DEC



SELECTED RI/FS, SITE INVESTIGATION AND REMEDIAL DESIGN EXPERIENCE IN NEW YORK



RI/FS

SITE/LOCATION	AGENCY
66. NYSDOH-WADSWORTH LAB, ALBANY	DEC
67. MALTA ROCKET FUEL, MALTA	DEC/EPA
68. GE-VATRANO ROAD, ALBANY	DEC
69. PUROLATOR, ELMIRA	DEC/EPA
84. WESTINGHOUSE, BUFFALO	DEC
90. VANDERHORST CORP. PLANT 1, OLEAN	DEC
91. VANDERHORST CORP. PLANT 2, OLEAN	DEC
96. TERMINAL, PLATTSBURGH	DEC
101. INSILCO, MT. VERNON	DEC
102. SUFFERN WELL FIELD, SUFFERN	DEC
103. ATLANTIC OIL, PLATTSBURGH	DEC
114. CHAMPION PAPER, BREWSTER	DEC/EPA
115. CHENAGO INDUSTRIES, BINGHAMTON	DEC/EPA
118. BREWSTER WELLFIELD, PUTNAM CO.	DEC
120. GLADDING CORDAGE, CHENANGO CO.	DEC
121. HITEMAN LEATHER, MADISON CO.	DEC
123. G.E. MOREAU, SARATOGA CO.	GE

SITE REMEDIATION

SITE/LOCATION	AGENCY
74. SIMMONDS PRECISION PRODUCTS, NORWICH	CLIENT
75. U.S. FORESTRY SERVICE, SENECA FALLS	USFS
76. UTICA COLLEGE OF SYRACUSE, UTICA	DEC
88. C&D BATTERIES, BUFFALO	CLIENT
95. A.F.M.C. INC., PLATTSBURGH	CLIENT
97. SPAIN OIL, CORNWALL	CLIENT
98. BDAC REMEDIAL DESIGN, HANCOCK	CLIENT
99. SPAIN OIL, MT. KISCO	CLIENT
100. EXXON, YONKERS	DEC

LANDFILLS

SITE/LOCATION	AGENCY
65. NORTON COMPANY, COLONIE	DEC
71. PUROLATOR PRODUCTS CO., ELMIRA	DEC
72. GE AEROSPACE, SYRACUSE	DEC
85. RIVER ROAD, TONAWANDA	DEC
86. ALTIFT LANDFILL, BUFFALO	DEC
87. ALLIED SPECIALTY PRODUCTS, TONAWANDA	DEC
112. GE SILICONES, WATERFOED	DEC

HYDROGEOLOGICAL INVESTIGATIONS

SITE/LOCATION	AGENCY
70. PYRAMID STEEL (GE), BUFFALO	DEC
73. ELECTROMAGNETICS, SYRACUSE	DOD
77. BAUSH & LOMB, ROCHESTER	CLIENT
78. BAUSH & LOMB, ROCHESTER	CLIENT
79. BAUSH & LOMB, ROCHESTER	CLIENT
80. AUTOMATION GAUGES, ROCHESTER	CLIENT
81. SUN OIL, BUFFALO	CLIENT
82. MELVIN SIMON, VICTOR	CLIENT
83. GENERAL CIRCUITS, ROCHESTER	CLIENT
89. SUN OIL, TONAWANDA	CLIENT
92. CATTAVOGOUS COMPANY, OLEAN	DEC
93. DOW CHEMICAL, JAMESTOWN	CLIENT
94. SUN OIL, CORNING	CLIENT
104. TEXACO OIL, WHITE PLAINS	DEC
105. EXXON, POUGHKEPSIE	DEC
106. NORTHVILLE GAS STATION, LIBERTY	DEC
107. NORTHVILLE GAS STATION, WOODBOURNE	DEC
108. NORTHVILLE GAS STATION, MONTICELLO	DEC
109. NORTHVILLE GAS STATION, ROSEDALE	DEC
110. NORTHVILLE GAS STATION, ELLENVILLE	DEC
111. NORTHVILLE GAS STATION, WALDEN	DEC
113. C & D BATTERIES, HUGUENOT	DEC
117. GENESEE-LEROY STONE, ORLEANS CO.	CLIENT
119. TEXACO-BEACON, DUTCHESS CO.	CLIENT
122. OCCIDENTAL DUREZ PLANT, NIAGRA CO.	CLIENT
124. GE PLASTICS, ALBANY CO.	CLIENT
125. BEDMINISTER CO. COMPOSTING, RENSSELAER CO.	CLIENT
126. INDEPENDENT CEMENT CORP., COLUMBIA CO.	CLIENT



***Becton Dickinson & Company
E. Rutherford, NJ***

Becton Dickinson and Company (B-D) owns a 40-acre former medical apparatus manufacturing facility in East Rutherford, New Jersey. Soil and ground water were contaminated by the disposal and processing wastes on site over a 20-year period.

Environmental Remedial Investigation/Site Assessment

The environmental assessment of the BD property was based upon a series of thorough site investigations including approximately 100 wells. After preparing detailed Sampling and Analysis Plans (including QA/QC) and a Health and Safety Plan (HASP), ERM obtained more than 2500 soil, sediment and ground water samples in order to fully characterize the nature and extent of the contamination. Data and information resulting from the investigations was organized and evaluated with the use of computer data management programs.

The site investigations identified contamination in soil, ground water and some buildings. Soil contamination included heavy metals, base/neutral extractable organic compounds (primarily polynuclear aromatic hydrocarbons), PCBs and petroleum hydrocarbons. Ground water constituents include chlorinated hydrocarbon compounds (primarily trichloroethylene and its breakdown products) and, to a lesser degree, petroleum hydrocarbon compounds and associated semi-volatile organic compounds. A final Site Assessment Report was prepared.

Feasibility Study

ERM prepared a Remedial Action Plan (RAP), which documented the development of cleanup objectives, identified Remedial Action areas, presented a feasibility study of remedial alternatives and discussed cleanup procedures. The results of the site investigations were used to perform an environmental risk assessment of on-site and off-site impacts of contamination from the facility.

Computer modeling was used to delineate and predict the movement of five separate ground water contaminant plumes identified in the upper unconfined aquifer unit.

The feasibility study of remedial soil alternatives included in-situ soil treatment (chemical fixation and solidification), encapsulation, excavation and off-site disposal, and no actions. Ground water alternatives included pump and treat by carbon adsorption, biological treatment and UV/peroxidation. Technical and cost effectiveness of the various options were evaluated.

The feasibility study selected soil excavation and off-site disposal. For ground water remediation, the choice was a trench system and UV/peroxidation treatment with discharge of the effluent to the local POTW. Following NJDEPE approval of the RAP, ERM conducted a three-month on-site Ground Water Treatment Pilot Study and pump test to verify the effectiveness of the collection and treatment concepts, identify operation and maintenance parameters and provide data for the final design.

Remedial Design

Site plans, project specifications, soil erosion control plans, project schedules and health and safety plans (HASP) were prepared by ERM for the remedial subcontractors. Special consideration was given to coordinating and scheduling the soil excavation, building decontamination and building demolition contractors according to a rigorous schedule.

Using the results of the ground water modeling, feasibility study, and Pilot Plant Study, ERM designed the ground water interceptor trench network and a 95,000 gpd UV/peroxidation treatment system, and prepared plans and specifications.

Upon completion of the designs, ERM prepared bid specifications, coordinated

contract procurement, obtained all necessary state and local permits (e.g., construction permits, NJPDES permits, etc.) for the building decontamination, soil and ground water remedial projects.

Construction Management

ERM coordinated and supervised all aspects of the site work including construction of the ground water collection and treatment systems, excavation of approximately 2000 cubic yards of soil and disposal of hazardous and non-hazardous soils, sediments, contaminated demolition debris, decontamination water and liquid wastes. ERM was responsible for ensuring that all requirements of the RAP, project specifications and contracts, schedules and HASP were fulfilled. All site activities were carefully documented. At the completion of each project phase, ERM reviewed invoices and "as-built" plans submitted by the various contractors. ERM is currently responsible for the operation and maintenance of the treatment facilities.

***Purex Industries
Milville, NJ***

Airwork Corporation, located in Millville, NJ, a former subsidiary of Purex Industries, operated an aircraft engine maintenance and repair facility at the City of Millville's Municipal Airport for over 40 years. During that time, contaminants entered the environment. Contaminant sources appear to be from gasoline, jet fuel, varsol, metal plating shop, and solvents. Apparent discharges to the environment have resulted in a 1,000 foot wide, 2,500 foot long, ground water plume migrating off-site.

Remedial Investigation

Investigative activities included the following: 1) geophysical studies including downhole, magnetometry and ground penetrating radar to characterize site stratigraphy and to ascertain the presence of any buried drums; 2) subsurface studies including drilling and installing 70 monitoring wells at three different horizons, drilling of several 200 foot borings to obtain a comprehensive stratigraphic profile, performance of 40 slug tests, development and performance of a 72 hour pump test to obtain and assess aquifer hydrologic parameters. The monitoring wells were sited based on current and historical site operations, location of above and underground storage tanks, location of underground jet fuel line, location of jet engine test cells, and results of soil gas surveys. The pump well was located in an area known to contain free product fuel in order to be utilized as a recovery well after testing. Environmental monitoring and sampling included several rounds of ground water collection, product sampling, water table measurements, product thickness measurements, drum sampling, end point sampling in soil cleanup excavations for verification purposes, soil gas sampling, measurement of pneumatic responses in wells from Soil Vapor Extraction (SVE) technology, soil and waste sampling for TCLP characterization to meet land ban disposal requirements, and air quality monitoring during investigative activities (PID, FID, total combustible gases, oxygen content, CO₂ content) to comply with HASP and data (DQO) requirements.

Physical testing included slug tests, pump tests, grain size distribution analysis, and permeability tests on shelly tubes to ascertain aquifer hydrologic properties. Measurement of pneumatic responses in SVE monitoring wells were obtained to characterize the Vadose Zone's response to and effectiveness of SVE technology.

Data validation was performed on ground water and soil quality data. Field QA/QC samples such as trip blanks, duplicates and field blanks were obtained for data validation purposes. A site specific health and safety plan (OSHA 1910.120

requirements) was developed for investigative activities and another for site remediation activities.

Computer support included the use of EXCEL and Lotus 1,2,3 for data management; CAD for the generation of geologic cross-sections, iscon maps, and ground water contour maps; MODFLOW was utilized to perform 3-D flow modeling to characterize the local and regional ground water flow patterns, predict Capture Zones, quantify withdrawal volumes, and to locate 15 extraction wells for ground water treatment purposes; transport modeling was performed via Random Walk to track particle movement, ascertain cleanup time for operation and maintenance budgeting, characterize changes in plume configuration over time, and to estimate initial and changes in influent concentrations for remedial design purposes.

In addition to site specific data, numerous other tools were used for site assessment such as, historical and current aerial photographs, site specific topographic surveys, data search to identify and locate wells within 5 miles of the site, acquisition of various ecologic maps to identify and locate wetlands and other sensitive natural resources, acquisition of regulatory file data and performance an area environmental audit of facilities to identify an located potential pollution sources within one mile of the site. A final Remedial Investigation report was prepared which fully characterized on-site and off-site conditions, assessed health and environmental concerns, recommended recovery well locations, and assessed impacts from the ground water recovery system on plume configuration and influent concentrations over time.

Feasibility Study

The FS defined site background, contaminants of concern, ARAR's, areas of environmental concern and location and quantification of soil and ground water contamination. Alternatives identified and screened for ground water remediation

included air stripping, U/V-Peroxidation, and activated carbon adsorption and for soil excavation with off-site disposal, bioremediation and Soil Vapor Extraction. The evaluation process assessed capital and O&M costs, site specific cleanup levels (ARARs), environmental effectiveness, technology efficiency and effectiveness, and compliance with effluent discharge requirements. Large scale on-site treatability tests were performed on ground water utilizing in series and in parallel air stripping, U/V-peroxidation and activated carbon adsorption technologies over a 4 week period. In addition, bench scale studies were also performed in a laboratory. A risk assessment was performed to quantify risks and to recommend cleanup levels for soil. A detailed comparative cost analysis was performed on all alternatives including capital costs, design costs, and operation and maintenance costs over 15 and 20 year periods. The recommended alternative for ground water treatment was U/V-Peroxidation for a 180 gpm system followed by ground water recharge; and for soil remediation excavation with off-site treatment and disposal and in-situ soil vapor extraction for deeply contaminated soils.

Design

ERM's design activities included plans, specifications and contracts for the following:

1. Air Contamination Control Systems - Vapor phase carbon (GAC)/
2. Surface Water Control
3. Leachate and Ground Water Control - Plume management and ground water recovery facilities.
4. Gas Migration Control Equipment.

5. In-situ Treatment - Soil vapor extraction in areas with high levels of volatile organics.
6. Physical Treatment - of contaminated ground water including filtration of suspended solids, UV peroxidation to breakdown unsaturated organics particularly PCE, followed by air stripping and polishing via GAC carbon.
7. Installation of high yield (1,000 gpm) public supply well.
8. QA/QC and a comprehensive Site Health and Safety Plan (HSP), meeting OSHA requirements.

Construction Management

Construction management was provided for soil remediation, ground water recovery and discharge system, construction of 1000 gpm public supply well, and for on-site large scale ground water treatment pilot systems.

Each remedial response was scheduled and tracked via a bar chart. Shop drawing review and approval for each remedial response was performed. Full time inspectors managed each aspect of the remedial activities to ensure compliance with specifications. Soil, water, waste and material testing was conducted to ensure compliance with approved site specific cleanup standards and specifications.

A QA/QC plan was developed to ensure validity of analytical data. Data validation was conducted on all post excavation samples. A site specific Health and Safety Plan was developed and implemented throughout all remedial actions.

Record keeping included daily logs, tracking quantities of contaminated soil

excavated, inspection of contractor remedial equipment, decontamination procedures, reviewing bills of lading, and manifests, etc. Change orders and claims processed included material substitution, add on work and increase in unit quantities.

Payment review included review of contractor daily logs to verify invoiced unit quantities, mob-demob charges, and lump sum items prior to approval.

***Konica Imaging USA, Inc.
Glen Cove, NY***

Konica purchased the Powers Chemco plant in Glen Cove, New York which contained a Class 2 New York State Inactive Hazardous waste site. The hazardous waste site is a two acre parking lot where the former Columbia Ribbon and Carbon Company disposed of waste solvents from its manufacturing process. These waste solvents were disposed of by dumping and crushing drums into open pits and/or pumping waste liquids directly into open pits. Powers Chemco discovered the problem in 1984, reported it to the NYSDEC which promptly listed the site. At the time, ERM-Northeast personnel assisted Powers Chemco in negotiations with the NYSDEC and supervised a field investigation and the development and implementation of an interim remedial program.

Field Investigations

The investigation employed soil vapor surveys and surface geophysics to identify anomalous areas and characterize subsurface lithology. The results of these indirect techniques were corroborated through the installation of a series of deep test borings that permitted visual inspection of the complex glacial lithology common in this area of Long Island. ERM-Northeast project personnel used field GC screening procedures in order to determine the vertical extent of extent of the groundwater problem which resulted from Columbia's disposal practices.

Based on the initial investigative findings, Powers Chemco entered into an Administrative order on Consent (ACO) with the NYSDEC which specified certain interim remedial actions at the site. These actions involved excavation of soil and drums, field characterization and removal from the site to an approved hazardous waste landfill. The project personnel were involved in the development and implementation of the interim remedial action plan and negotiated with the NYSDEC regarding details in the ACO. ERM-Northeast project personnel also managed the field effort while coordinating with the NYSDEC field representative to maintain project progress.

A supplemental hydrogeologic investigation, done pursuant to a second ACO negotiated with the NYSDEC, expanded upon the initial definition of the environmental problem and confirmed the horizontal and vertical boundaries of soil and groundwater problems at the site. The findings presented in the supplemental report were accepted by the NYSDEC as meeting the requirements of the second ACO.

Remedial Investigation/Feasibility Study

ERM-Northeast project personnel assisted the client in negotiating a third ACO with the NYSDEC which specified a focused RI/FS for the site. The RI/FS concentrated on FS related items since the site had been adequately characterized during the previous investigations. ERM-Northeast project personnel completed the initial draft FS and successfully negotiated a final document with the NYSDEC. The final FS served as the basis for a RAP and ROD which was signed by the Commissioner of the NYSDEC in March 1991.

ERM-Northeast prepared a pilot study work plan, approved by the NYSDEC, which specified actions to be taken to determine requirements for a full-scale combined groundwater and vacuum extraction remedial program which was identified as the preferred remedial alternative in the FS.

Site Remediation Services

ERM is presently involved in a major site remediation project at this New York State Superfund site on the north shore of Long Island. As part of the remedial design process and as required by the site's Record of Decision (ROD), a large pilot testing program was implemented to make the final selection of the preferred remedial program. The test involved four aspects: (1) a pumping test to determine aquifer characteristics at the site; (2) a combination dewatering/soil vapor extraction (SVE) test to determine the feasibility of applying SVE in a dewatered aquifer segment; (3) pilot and treatability testing for VOC (primarily toluene) removal from pumped ground water; and (4) pilot and treatability testing for VOC removal from extracted soil vapors. The primary objective of the pilot test was to select between ground water pump-and-treat versus a combined program of dewatering and SVE for the final remedial solution.

The initial aquifer test demonstrated the presence of significant heterogeneity across the site. In the next phase of the test, aquifer dewatering was accomplished in a localized area by simultaneous pumpage of three small diameter recovery wells. Once the target aquifer segment was dewatered, vapor extraction was initiated from a pilot extraction well located in the center of the dewatered area. The SVE radius of influence was defined by monitoring negative pressure in eight observations wells. It was determined that each extraction well would have an 80 foot radius of influence.

The results of the aquifer test were used to design a conceptual pump-and-treat system for the site. This information was also used together with the results of the SVE test to design a conceptual combined dewatering/SVE system. Both systems were compared to the judging criteria set forth in the ROD which resulted in the combined dewatering/SVE system being selected for the full-scale site remediation.

Detailed Engineering Design

ERM-Northeast designed the full-scale combined ground water and vacuum extraction remedial systems. The design was approved by NYSDEC in the summer of 1993. Each wellpoint of the ground water recovery system is expected to yield between 0.25 and 1.0 gallons per minute (gpm) and will be fitted with a submersible pump that will be controlled by manually set speed controllers, located in the proposed treatment building, and level switches in the well casing. The remote speed controllers negated the requirement for installing local throttling devices in a manhole, thus reducing the amount of soil being disturbed and simplifying the installation.

The recovered ground water will be treated by two low profile air strippers configured for operation in series or parallel mode. The low profile tray aerators, which do not contain plastic packing, were selected in order to minimize required maintenance typically associated with iron/manganese fouling. The off-gas from the strippers will be conveyed to the catalytic oxidizer unit for treatment prior to release to the atmosphere.

The soil vapor extraction system will consist of 12 extraction wells and 18 passive air injection wells. A header pipe will then convey the air flow through a moisture separator and then out to an explosion-proof SVE blower assembly. The condensate that accumulates in the moisture separator will be automatically pumped to the ground water treatment system upstream of the two strippers. A fresh air inlet will be available to provide dilution air to reduce the % LEL of the raw soil vapor being transferred to the catalytic oxidizer. The total design soil vapor extraction rate is 240 cfm.

Treatment of the extracted soil vapor and the off-gas from the ground water treatment system will be accomplished by a catalytic oxidizer. The catalytic vapor treatment module includes a 7-1/2 hp booster fan and separate control panel. Propane is used a supplemental fuel to ensure continuous destruction of

VOCs. The unit is capable of treating up to 1,000 cfm including dilution air.

The construction contract was awarded in November 1993 and ERM-Northeast is currently performing construction supervision activities. ERM's duties include review of construction supervision activities. ERM's duties include review of shop drawings and providing office support to administer both technical construction issues and contractual issues between Konica and the remedial contractor. ERM personnel review all contractor invoices, prepare technical memoranda and change order documents, conduct progress meetings, issue monthly reports, and perform miscellaneous troubleshooting activities. Field oversight is provided by ERM's Resident Project Engineer and an on-site geologist who also acts as the site Safety Officer. ERM will also provide start-up and testing services.

The remedial system began operation in July 1994 and ERM is currently preparing the operations and maintenance manual for the system and will provide as-built drawings.

***Norton Company
Colonie, NY***

ERM-NE performed the Phase II Investigation, RI/FS, remedial design and construction management services at this ten-acre landfill which is a New York State superfund site. The Norton Restoration Site Project was initiated as a result of past waste disposal practices by Norton Company. The Coated Abrasives Division of the Norton Company, located in Watervliet, New York, manufactures several hundred types of sandpaper, abrasives, and tapes for industrial and commercial uses. Over a 25-year period, off spec products, adhesives, solvents, waste oils, waste phenol/formaldehyde resins, sludges, and other chemicals were buried, both uncontained and in drums, in a ten-acre landfill owned by the Norton Company and located in nearby Colonie, New York. As a result of these disposal practices, the NYSDEC placed this site on its list of Inactive Hazardous Waste

Sites, and negotiated an Order on Consent with the Norton Company. Under terms of the Consent Order, the Norton Company was required to begin an environmental evaluation of the site, beginning with a NYSDEC Phase II investigation. Task efforts performed by ERM included:

Preparation of an RI/FS Work Plan

ERM-NE prepared and negotiated an RI/FS Work Plan for inclusion in the NYSDEC Consent Order. A key item negotiated with the NYSDEC was the inclusion of a site risk assessment to help determine the remedial requirements at the site.

NYSDEC Phase II Investigation

The Phase II investigation consisted of a magnetometer survey, the excavation of test pits, the installation of several monitoring wells, and extensive soil, surface water, and sediment sampling. The Phase II investigation revealed extensive contamination at the site, and resulted in a NYSDEC request for an RI/FS investigation.

Remedial Investigation and Baseline Risk Assessment

Analytical data collected during the RI was used to perform a baseline risk assessment to determine the potential effects of site conditions on human health and the environment. Potential human exposure pathways evaluated included: inhalation of volatilized contaminants from soil, inhalation of fugitive dust emissions from surface soils, direct contact with soils by site employees, direct contact with surface water and sediments from an adjacent stream by neighboring children, and ingestion of ground water from a hypothetical future domestic well in the site vicinity.

An ecological risk assessment was also performed using NYSDEC's Habitat

Based Assessment methodology. A detailed cover type map was prepared of the site, including a description of flora and fauna observed or expected to occur at the site. Potential impacts to ecological resources were evaluated based on the results of a site survey and analysis of surface water and sediment quality data. Sensitive environmental resources in the site vicinity (e.g., wetlands, regulated streams, significant habitats) were also identified and potential impacts evaluated.

Feasibility Study

Based on the results of the RI and the baseline risk assessment, an FS was performed. As part of this effort, the risks associated with each of the proposed remedial alternatives were quantitatively evaluated (Remedial Alternatives Evaluation) and compared to the risks associated with current conditions (baseline risk assessment), to assess the degree of additional protection afforded by each alternative.

The objective of the FS phase of the project was to permanently isolate the landfill from potential receptors. The options evaluated included containment, as well as in-situ and off-site treatment alternatives. The study resulted in the determination that activities related to removal and treatment would pose a greater threat than containing the waste. The selected alternative consisted of a modified containment system with ground water recovery.

Preliminary Design

The preliminary design consisted of the following items: a slurry wall to prevent the migration of contaminated ground water out of the landfill, and to prevent ground water flow through the landfill; a low-permeability cap to prevent the infiltration of storm water into the contained landfill, and to isolate the contamination from above-ground receptors; a ground water recovery and storage system; and a vapor recovery and treatment system. This remedy was selected and approved by the NYSDEC in the Record of Decision.

Final Remedial Design

ERM performed all engineering design, including structural, civil, process, and electrical power and control. The preliminary design was finalized to include the following:

- a 2000 linear-foot slurry wall, approximately 3 feet wide and 15-20 feet deep, to completely encircle the landfill.
- an impermeable cap constructed of a 40-mil very low density polyethylene (VLDPE) geomembrane.
- a ground water recovery system consisting of six wellpoints set into three recovery trenches. The wellpoints are installed in localized low spots of the confining bedrock.
- a ground water storage system which includes two 5000-gallon tanks, allowing for one week of storage. Ground water is stored, sampled, and transported to an appropriate disposal facility, based on sample analysis. Future on-site treatment and disposal of ground water may be considered, based on ground water quality and disposal costs.
- a landfill vapor recovery system, which convey recovered vapors to an on-site thermal oxidation unit for treatment. The system is configured to recover either 500 cfm from any of three zones in the landfill, or 1000 cfm from any two of the three zones in the landfill. The system will recover industrial solvents and methane, which is generated from a naturally occurring layer of organic material.

Construction Cost Estimates

When the remedial design was nearly completed, ERM prepared construction cost

estimates to assist the Norton Company in budgeting the construction phase of the project. ERM prepared contract documents, performed reproduction of documents and distribution to bidders, responded to bidders questions, prepared and issued addendums as needed, and assisted Norton in the review of bids and the selection of contractors.

Construction Management Services

ERM performed construction oversight services during the construction phase of the project. ERM was responsible for the contractors at the site, implementing site-specific health and safety, reviewing shop drawings, issuing change orders, and preparing record drawings.

ERM staffed this phase of the project with a full time resident engineer and technician assistants at the site, as well as health and safety professionals, when appropriate.

ERM also provided office support services in the form of managerial oversight and technical support. The majority of shop drawing review and all project administrative work was performed through this office support task.

Operations and Maintenance Manual

ERM prepared draft and final versions of the operations and maintenance manual (O&M) for this project. The O&M manual addressed the process operation and instrumentation support systems; regulatory monitoring and sampling requirements; site maintenance for the cap and drainage systems; health and safety requirements; emergency procedures; record keeping requirements; and personnel requirements.

***Croton-Harmon Railroad Yard
Croton-On-Hudson***

The Harmon Railroad Site is a 100 acre railroad yard currently operated by Metro-North Commuter Railroad (MNCR). There is an approximate 7.5 acre area within the yard which includes a former wastewater lagoon containing residual PCB contamination. This approximate 7.5 acre area is a designated inactive hazardous waste site in New York State.

ERM-Northeast was retained by MNCR in October 1992 to prepare a remedial design for the former wastewater lagoon which is one operable unit of the inactive hazardous waste site. ERM-Northeast was also retained to prepare and implement a Remedial Investigation and Feasibility Study (RI/FS) at a second operable unit of the inactive hazardous waste site which addresses ground water, soil and sediment in the adjacent Croton Bay and portions of the Hudson River. An investigation of environmental impacts resulting from the presence of petroleum related constituents will be conducted by ERM-Northeast in the remaining 90 acres of the railroad yard.

Remedial Design and Remedial Action

ERM-Northeast completed an RD/RA work plan for operable unit one (OU-1) in February 1993. This work plan presents the approach to remediation of the 1.3 acre former wastewater lagoon containing sludge contaminated with PCBs. The program involves the excavation of soil around the lagoon and removal of sludge from the base of the lagoon. ERM-Northeast integrated TSCA, RCRA and state requirements for the removal and handling of these materials. A construction approach was adopted in the work plan to ensure removal and segregation of the sludge, which is considered a TSCA waste, followed by surface soil excavation, building decommissioning/demolition and closure of the former lagoon area.

Pre-Design Investigation

Additionally, ERM-Northeast designed and implemented a pre-design test boring program to clearly define the volume of material to be remedied in OU-1. This program, which was implemented in July 1993, entailed ERM-Northeast establishing ramps on the base of the lagoon to drill 14 test borings to depths of 15 to 26 feet below the sludge. ERM-Northeast collected soil samples from the borings and subjected them to specific indicator chemical analysis to evaluate the vertical extent of contamination.

Community Air Monitoring Plan

ERM-Northeast also prepared a community air monitoring plan to assure protection of the community during remedial activities at OU-1. This plan presents action levels for chemicals that may be present in vapor or particulates generated during the course of remediation. Monitoring techniques were specified which relied on instrumentation and surrogate measurements to ensure collection of real-time data and implement corrective action, if needed.

Remedial Investigation and Feasibility Study (OU-II)

As part of the ERM-Northeast contract with MNCR, a scope of work for an RI/FS was developed to address OU-II in November 1993. This work plan, which is to be implemented by ERM-Northeast, focuses on ground water quality in the area of the lagoon; light non-aqueous phase liquids (LNAPL) on the water table surface in the area of the lagoon; soil quality adjacent to the former wastewater treatment plant discharge line; and, sediment quality in the bay which received the former treatment plant discharge. ERM-Northeast outlined field methodologies which emphasized real-time data acquisition to permit rapid assessment of the presence of various chemicals in different environment media.

Petroleum Spill (LNAPL) Investigation

To address the remaining 90 acre yard complex, ERM-Northeast developed an investigative plan in June 1993 to delineate the extent of LNAPL in areas of concern within the yard. This investigation was developed after a comprehensive review of historic information to identify potential areas of concern. ERM-Northeast integrated the other investigative components being conducted in the yard into the LNAPL investigation and relied upon field methods which emphasized real time data acquisition to assist in LNAPL delineation.

? ERM-Northeast is providing consulting engineering services to MNCR under an existing contract for \$1,000,000. As specific investigation and remedial programs are developed and finalized, the contract amount will be adjusted.

***Northville Industries Corp.
Holtsville, NY***

This project demonstrates ERM-NE's ability to provide large-scale ground water remediation services. For this project, ERM-NE performed the following tasks:

- A multi-aquifer regional scale hydrogeologic investigation;
- Sophisticated three dimensional flow and salute transport ground water modelling to develop and optimize a 10 well 800 gpm recovery system;
- A Feasibility Study, including a treatability study with pilot plant operation;
- Final design of a ground water recovery and treatment system;
- Construction assistance activities;
- Recovery system and treatment plant start-up;
- Prepared a recovery system and treatment plant operations and maintenance (O&M) manual;
- Currently performing on-going operations management; and,
- Conducted, negotiated, and coordinated all aspects of the project with NYSDEC;

In the fall of 1986, free phase gasoline was detected in monitoring wells located at the Northville Industries petroleum bulk storage terminal in Holtsville, New York. ERM-NE performed a Remedial Investigation in order to determine the magnitude and extent of subsurface impacts. Significant subsurface contamination resulting from free phase and dissolved phase hydrocarbons was documented and a large scale product recovery and ground water remediation program was initiated. ERM-NE has provided Northville with a full range of services to satisfy Northville's objective of minimizing the environmental effects of the hydrocarbon spill.

Remedial Investigation

ERM-NE conducted a Remedial Investigation in order to determine the magnitude and three dimensional extent of the free phase and dissolved phase hydrocarbon plumes. The investigation included the installation of over 150 ground water monitoring wells, and the use of geophysical techniques to identify hydrogeologic and soil characteristics at the site. ERM-NE identified a subsurface free product plume approximately 1000 ft. long and 600 ft. wide, made up of approximately 650,000 to 750,000 gallons of gasoline. ERM-NE also delineated a dissolved product plume, primarily benzene, toluene, ethylbenzene, and xylene (BTEX), approximately 3200 ft. long and over 300 feet thick including both the upper glacial and magothy aquifers.

Feasibility Study/Pilot Study

ERM-NE conducted a Feasibility Study to evaluate a variety of recovery and ground water treatment technologies. The FS involved the construction and operation of a pilot plant which included air stripping, liquid and vapor phase carbon adsorption, pH adjustment, and metals precipitation. The FS identified air stripping preceded by pH depression, to keep naturally occurring iron in solution, as the treatment technology of choice. The FS also provided valuable data for final design of the full-scale remediation system.

Final Design of Ground Water Recovery and Treatment System

ERM-NE conducted both the hydrogeologic design and treatment system design for this site. Hydrogeologic design of a multi-well recovery system consisted of aquifer tests, two and three dimensional ground water modeling, and the evaluation of well capture zones for optimal well placement. Final design of the recovery system and treatment plant included plans and specifications for ten recovery wells (including 5 two-pump recovery wells), product and ground water force mains, a recovered product storage tank, dual air strippers, a sulfuric acid feed system for pH adjustment, and a treated ground water recharge basin. The overall design encompassed civil, structural, mechanical, and electrical engineering. A flow rate of 995 GPM was used as the design basis.

Construction Management/Operations Oversight

During construction of the recovery and treatment system, ERM-NE provided construction assistance which included shop drawing review, change order review and justification, project coordination, cost estimating, field inspection, and response to field construction issues. ERM-NE conducted all aspects of recovery system and treatment plant start-up in August 1988, including adjustment and optimization of individual recovery well flow rates, fine-tuning of sulfuric acid dosing for pH adjustment, and optimization of stripping tower air-to-water ratio. ERM-NE also prepared a comprehensive operation and maintenance (O&M) manual for the recovery and treatment system.

ERM-NE has been performing on-going operations management of the treatment system since start-up. ERM-NE acts on behalf of Northville in matters concerning vendor service contracts, supply requisitions, and invoice approvals. Furthermore, ERM-NE maintains an extensive computer database on the progress of the cleanup activities, including recovery well and treatment plant influent and effluent BTEX concentrations. Since system start-up, over 115,000 gallons of product have been recovered, while the treatment plant handles an average of 600

gpm of recovered ground water on a continuous basis.

Regulatory coordination and negotiation has been a significant aspect of ERM-NE's responsibilities for this project. ERM-NE has assisted Northville in satisfying various requirements of NYSDEC and the New York State and Suffolk County Department of Health, particularly with respect to air and wastewater development of contiguous properties potentially impacted by the dissolved product plane and vapor migration.

***Van der Horst Corporation
Plants 1 & 2
Olean, NY***

The Van der Horst Corporation operated two plants in the City of Olean. These plants were electroplating facilities that were in operation from 1940 to 1987. At both plants, the recirculation of chromic acid through unlined pits and the disposal of spent acid solutions onto the ground surface resulted in significant soil and ground water contamination. An industrial well that was nearby Plant 1 was shut down because of high concentrations of chromium, and the plant became a listed hazardous waste site (NYSDEC #9-05-008). Plant 2 was also used for electroplating; however the major environmental problems at this facility are due to on-site landfilling and burial on the plant's 17.5 acres.

ERM-Northeast was awarded a contract with the NYSDEC (Contract Number D002172) in 1988 to perform an RI/FS at Plant 1, and was awarded an RI/FS contract for Plant 2, as an addendum to the Plant 1 contract, after Plant 2 became a listed hazardous waste site (NYSDEC #9-05-022). Specific contaminants at each Plant include chromium and chlorinated solvents. At Plant 2, aromatic hydrocarbons are also present in the soil and ground water.

Remedial Investigation

ERM initially performed a thorough site walk-through and geophysical survey at each of the two plants. On the basis of the site screening, ERM prepared a Work

Plan, QA/QC Plan, and Health And Safety Plan (including community safety) for all RI/FS activities. A geophysical survey (magnetometer and terrain conductivity) was performed to locate past on-site burial locations at each of the two plants prior to performing any sampling activities.

At each plant, three general areas of contamination were investigated: 1) numerous below-grade acid vats within the plant buildings; 2) areas where spent fluids were discharged onto the ground surface; 3) storm sewer lines which received discharges from the plant buildings. At Plant 2, a large burial area was also investigated. To delineate these areas of contamination, ERM installed 56 monitoring wells (26 at Plant 1, 30 at Plant 2), collected 525 surface and subsurface soil samples (255 at Plant 1, 270 at Plant 2), collected 52 storm sewer and creek samples (33 at Plant 1, 19 at Plant 2).

The RI investigation was conducted in three separate phases, so that the second and third phases could be a cost-effective method of filling specific data gaps at specific locations for a select number of analytes. During phase 2, a pump test was conducted to obtain aquifer hydraulics, and to enable ground water modelling for simulating recovery well positioning. The third phase was conducted with each plant building after the USEPA removed the unsecured chemicals within the plant buildings. Numerous wipe samples of building materials were conducted at this time to evaluate the costs of building demolition/disposal.

Feasibility Studies

After defining the site background, numerous alternatives were identified and screened and then evaluated relative to achieving the remedial objectives: 1) no action/limited action; 2) capping the sources; 3) excavate and remove contaminated materials; 4) excavate and solidify contaminated materials; 5) excavate and solidify less contaminated materials and remove highly contaminated materials; 6) excavate and remove highly contaminated materials and cap the remaining sources; and 7) encapsulation of contaminated materials. Treatability

studies were performed on carbon adsorption of hexavalent chromium from ground water and soil washing and solidification of soils contaminated with heavy metals. The results of a pumping test and a site-specific ground water model were used to evaluate various ground water extraction scenarios. Degrees of hazard were evaluated (qualitative) and environmental assessments were made including potential toxicological effects. Each of the alternatives were evaluated using the scoring tables included in the May 1990 NYSDEC-TAGM. Comparative cost estimates were prepared, conceptual designs prepared and feasibility reports written.

The NYSDEC adopted the recommended remedial alternative which included: 1) decontamination and demolition of the plant building and off-site disposal; 2) storm sewer cleaning and on-site consolidation of sediments for solidification; 3) dredging of Olean Creek sediments and on-site consolidation for solidification; 4) excavation of on-site and off-site soil and on-site solidification; 5) limited ground water pumping at the core of the contamination plume, pretreatment with carbon adsorption and discharge to the local POTW; and 6) long-term ground water monitoring. ERM was directly involved in the presentation of the selected remedial alternative at the public meeting and the Record of Decision is expected in the Spring of 1992.

Budget and Schedule

At each of the plants, three phases of RI work and a final FS were all completed on schedule and within a three-year time frame. A third phase of the RI work (sampling and drilling within the plant buildings) was needed only because of an USEPA delay securing and removing chemicals within dipping vats. The contract was also completed under budget.

Design and Construction Supervision

A Design and Construction Supervision agreement exists in our present contract

with the NYSDEC, and we have been informed that ERM-Northeast will be retained for these services after the Record of Decision for remediation at each of the two Van der Horst plants.

***Allied Bendix Corporation
Inactive Hazardous Waste Site
Eatontown, NJ***

Following the discovery of abandoned waste disposal pits containing PCBs, chlorinated organics and heavy metals, ERM was retained to conduct a hydrogeologic assessment, evaluate and select appropriate remedial measures, negotiate with state regulatory officials, develop design documents and direct and oversee clean-up activities. Thus, ERM was responsible for an RI, FS, Design, and Construction Supervision.

Specific waste compounds included PCBs (1248, 1254), trichloroethene, 1,1,1-trichloroethane, trans- 1,2-dichloroethane, ethylbenzene, toluene and cadmium.

Remedial Investigation/Feasibility Study

The RI and FS were combined and began with a review of all of Bendix's records to determine past waste disposal practices. Personnel were interviewed who were familiar with past site activities. An attempt was made to identify the types and quantities of waste disposed of at the site.

Local geologic reports were studied and all water supply wells in the area were located. A general geologic reconnaissance was then performed.

Nineteen monitoring wells were installed to determine ground water flow directions and to provide background and contaminated ground water samples. Several dozen soil borings were taken and backhoe test pits were dug; the site was surveyed and mapped; soils and ground water were sampled; a Quality Assurance/Quality Control (QA/QC) plan was developed, satisfactory to the NJDEPE; health and safety considerations were analyzed; soils were tested; desk top ground water models were utilized and an RI Report was prepared.

Six comprehensive alternatives were identified and screened:

1. Monitoring of ground water and surface water upgradient and downgradient of the contaminant sources. This concept was considered by itself and in combination with other concepts.
2. Source removal of contaminant sources from their current locations.
3. On-site treatment/disposal of source material by landfill, incineration and treatment; treatment and disposal would be accomplished on-site. This concept was considered in conjunction with alternatives #2 and #6.
4. Off-site treatment/disposal of source material by landfill, incineration and treatment; source material is treated or disposed of at off-site locations. This concept was considered in conjunction with alternative #2.
5. On-site management by capping, slurry wall and stabilization; contaminant sources are managed on-site in their current locations.
6. Ground water recovery by removal of ground water from beneath the site for subsequent treatment. This was considered with and without a slurry wall to aid in recovery.

The alternatives were evaluated based upon detailed cost analyses (present worth and cost effectiveness analyses); environmental impacts (positive and negative); and health risks and assessment, including degree of hazard. An approach was recommended (excavate and remove source, pump and treat ground water) and a conceptual design and engineering report were prepared.

Design

ERM designed the source removal and off-site disposal program (which included soil removal and drum and tank removal) and is currently designing the ground water pump and treat program. Final capping is included as well as physical/chemical treatment. ERM is also developing operation and maintenance

(O&M) procedures. A detailed cost estimate was included in the design as well as a Health and Safety Plan (HASP) for the excavation and removal activities. Specific design activities included excavation limits, excavation procedures and sequencing, transportation and disposal, equipment decontamination, backfill and final grading for surface water control and scheduling.

Construction Supervision

ERM directed and provided construction supervision for the excavation and removal of contaminated soil; the removal of drums and tanks; and the filling and placing of a final cover on the old waste disposal pits. ERM controlled schedule, soil/material testing, health and safety, QA/QC, record keeping and payment review.

***Exxon Chemicals America
Linden, NJ***

ERM was retained to develop and implement Interim Remedial Measures (IRM) and RI work plans for a 75-acre research and development facility in Linden, New Jersey. These work plans were prepared in response to an NJDEPE Administrative Consent Order (ACO).

ERM project personnel worked closely with client representatives to access historic site information and formulate practical and cost-effective interim remedial measures and investigative activities to evaluate potential areas where chemicals might have been released into the environment. In the process of developing the RI work plan, New Jersey promulgated the *Technical Requirements for Site Remediation (NJAC 7:26E)*. ERM responded on behalf of the client and negotiated reasonable application of these requirements to the scope of work which had already been presented in the work plan.

The IRM work plans addressed a laboratory/process waste sewer and light non-aqueous phase liquids (LNAPL) if found to be migrating beyond the site boundary. Each IRM work plan set forth investigative methods and outlined

actions which would be implemented to correct situations uncovered during the course of work which indicated an on-going environmental problem.

The IRM work plan for the laboratory/process waste sewer involved the video inspection and engineering assessment of two miles of active underground pipes ranging from four to 12 inches in diameter. As potential problems were uncovered during the course of the survey (eg. off-set joints or failures), ERM and the client directed investigations outside the pipe and performed repairs. This IRM work was completed and a report was issued to NJDEPE.

The IRM work plan for LNAPL was to be activated in the event LNAPL was found to be migrating across the site boundary during any of the ongoing investigations. LNAPL was found during the implementation of the RI and ERM responded with an assessment that including bail-down tests to establish that migration across the site boundary was not occurring. ERM undertook characterization of the LNAPL to assist in subsequent evaluations of dissolved phase contamination identified during the RI.

The RI work plan developed by ERM on behalf of the client was approved by the NJDEPE. It combined investigative activities that evaluated specific areas of the site where there was a potential for environmental problems while simultaneously providing the necessary data to establish baseline soil and ground water quality across the site. The RI work plan included: test borings; soil sampling; monitoring well installation (overburden and bedrock); survey of underground structures to provide insight to the shallow ground water flow regime; rock coring, air permeability testing; and, ground water sampling.

ERM implemented the RI work plan in accordance with the schedule and organized the field and laboratory data into a RI report in accordance with the New Jersey Technical Requirements.

REFERENCES

Mr. Charles Tozzo
Konica Imaging USA, Inc.
71 Charles Street
Glen Cove, NY
(516) 674-2500

Mr. Christopher K. Bennett, P.E.
Metro-North Commuter Railroad
347 Madison Avenue
New York, NY 10017
(212) 340-2243

Ms. Troy Meyer
Insilco Corporation
425 Metro Place North
Suite 555
Dublin, OH 43017
(614) 791-3103

Mr. Joseph T. Chikowski
AT&T
131 Morristown Road, Rm B-2173
Basking Ridge, NJ 07920
(908) 204-8249

Mr. Thomas Maus
Northville Industries
25 Melville Park Road
Melville, NY 11747
(516) 293-4700

Mr. Jeffrey Smith
Purex Industries
c/o Sedgewick, Deter, Moran
& Arnold
3701 Wilshire Blvd., 9th Floor
Los Angeles, Ca 90010
(213) 386-2833

QUALIFICATIONS AND EXPERIENCE OF SUBCONTRACTORS

ERM will use four subcontractors on this project. The names of the subcontractors and the appendix in which their qualifications can be found is shown below:

Larsen Engineers	MBE Firm	Appendix H
Mitkem Corporation	MBE Firm	Appendix I
Delta Well and Pump Co., Inc.	WBE Firm	Appendix J
GRB Environmental Services	WBE Firm	Appendix K

Appendices

Appendix A

Resumes

Howard Wiseman, P.E.

Registration

Registered Professional Engineer in the states of New York and New Jersey

Fields of Competence

Hazardous waste management, site assessment and remedial designs

Environmental management and auditing

Strategic Environmental Management (SEM)

Wastewater and ground water treatment, water supply and treatment, water resources management

Solid waste management

Environmental impact assessment

Experience Summary

Nineteen years of environmental consulting experience in hazardous waste management, facility auditing, strategic environmental management, water and wastewater treatment, site assessments, remedial designs and environmental impact assessments. Four years' experience with a state regulatory agency in the fields of water supply and treatment, control and disposal of hazardous waste and ground water pollution. Two years' experience teaching water and wastewater treatment plant operations.

Credentials

B.S., Chemical Engineering, City College of New York, 1971

M.S., Environmental Engineering, New Jersey Institute of Technology, 1976

Key Projects

Remedial investigations and feasibility studies for industrial sites on both state and federal Superfund lists.

Concept design of commercial hazardous waste landfills; secure landfill cells; liner system; wastewater treatment system and support facilities.

Industrial Site Recovery Act (ISRA) reviews of industrial sites in New Jersey. Major projects include a multi-year program for a 40-acre, turn-of-the-century manufacturing facility.

Environmental compliance reviews and audits of over 125 facilities worldwide.

Development and implementation of corporate audit programs for major chemical, petrochemical and pharmaceutical corporations.

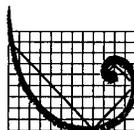
Evaluation of corporate environmental program for major tool manufacturing and medical device companies.

Product life cycle analysis for medical device company.

State and regional level hazardous waste planning studies to evaluate existing management facilities and determine future needs.

Preparation of hazardous waste permit applications (Part B) for container and tank storage facilities, surface impoundments, landfills, incinerators and hazardous waste treatment facilities.

Preparation of hazardous waste management plans (contingency, preparedness and prevention, personnel training, inspection, closure and waste analysis) for chemical and petrochemical facilities.



ERM

Key Projects (continued)

Development and presentation of RCRA personnel training programs for corporate and plant level environmental staff.

Assessment of environmental impacts and constraints to the development of numerous industrial sites, including the preparation of environmental impact statements for six major office and industrial complexes.

Local and regional solid waste management plans; evaluation of long term disposal needs, investigation of materials and energy recovery concepts, landfill planning and design.

Preparation of applications for air, potable water and wastewater discharge permits for numerous industrial facilities.

Laura E. Truettner

Fields of Competence

Federal and State RI/FS projects
 Strategic and technical support to PRPs
 Regulatory agency negotiations
 Hydrogeologic Assessments
 Soil and ground water investigations

Experience Summary

Ten years of environmental consulting experience in hazardous waste site investigations, data analysis and site remediation. Management and implementation of both federal and state RI/FS projects including design of soil and ground water investigations, data interpretation, work plan and RI/RA/FS report preparation, community participation plans, and regulatory agency negotiations. Oversight of pre-design studies and development of performance criteria during RD/RA phase of projects. Also provide technical and strategic support to PRPs including reviews and critiques of agency reports and RODs, assistance during remedy selection and preparation of documents for the administrative record.

Credentials

B.A., Geology, Smith College, 1980
 M.S., Geology, University of Massachusetts, 1984
 EPA Hazardous Materials Incident
 Response Operations Course

Professional Affiliation

Sigma XI
 Association of Groundwater Scientists and Engineers
 Association of Women Geoscientists

Publications

Truettner, L., Morahan, T., and Mackie, B., 1986 Downhole Packer Assembly for Bedrock Groundwater Sampling, proceedings of the Surface and Borehole Geophysical Methods and Groundwater Instrumentation Conference and Exposition, October 15-17, 1986, Denver, CO, p. 29-39.
 April, R., Newton, R., and Truettner, L., 1986. Chemical Weathering in Two Adirondack Watersheds: Past and Present Day Rates. GSA Bulletin, v. 97, p. 1232-1238.

Key Projects

Project manager for a 120-acre landfill Superfund project in Grand Rapids, MI. Project work included negotiations with EPA Region V on investigative scope of work, preparation of RI/FS reports and management of a \$750,000 PCB-contaminated soil removal action.

Management of RI/FS project at a former paint formulation facility on the NYSDEC Inactive Hazardous Waste Site List. Project involved soil, ground water, river and air sampling, a community participation program and design of an Interim Remedial Measure for NAPL recovery.

Management of soil and ground water investigation at 100 acre rail yard. Work done under NYSDEC Spills Program and entailed delineation of product and an evaluation of impact of product and historical operations at yard on soil and ground water. Prepared work plan and report for state approval.

Provided technical and strategic support to PRP at EPA Superfund Site in Binghamton, NY. Project involved critique of EPA RI/FS documents, settlement negotiations, preparation of RD/RA statement of work and implementation of RD/RA phase of project pursuant to a 106 order.

Provided technical and strategic support to large PRP committee at Superfund Site in Michigan. Project involved review and critique of documents prepared by EPA, development of RA and FS reports for the administrative record, development of an alternative remedy, preparation of statement of work and settlement negotiations with EPA.

Management and implementation of ISRA projects for American Can, Litton Industries and other industrial clients. Projects include comprehensive site investigations, preparation of reports, and cleanup plans and negotiations with NJDEPE.



John J. Iannone, P.E.

Registration

Registered Professional Engineer in the states of New York and Connecticut

Fields of Competence

CERCLA Feasibility Studies
 Hazardous waste site remediation
 Remedial Action Plans
 Sewer System Evaluation Surveys
 Ground water treatment and remediation
 Industrial and municipal wastewater treatment

Experience Summary

Fifteen years of environmental consulting experience in hazardous waste site assessment and remediation, concept design of ground water and wastewater treatment systems, sewer system evaluation surveys, and industrial pretreatment studies. Two additional years experience in construction management. Responsible for providing: technical direction of projects, technical support to industrial clients during property transfer negotiations, negotiations with regulatory agencies, and project cost and schedule control.

Credentials

B.E., Civil Engineering, Manhattan College, 1971
 M.S., Civil Engineering, Polytechnic Institute of New York, 1980

Publications

"Remedial Design Needs to Consider in Planning Hazardous Waste Site Investigations"; J. Iannone, J. Mack, and J. Perazzo; Haztech International, St. Louis, MO; August 26-27, 1987.

"Organic Priority Pollutants in New York City Wastewater"; J. Iannone and M. Pai; Industrial Waste Symposium, 57th WPCF Conference; October 1984.

"Environmental Aspects of Solid Waste Management in Synthetic Fuel From Coal Facilities"; W. Chesner, J. Iannone and M. Pai; 54th WPCF Conference; October, 1981.

Key Projects

Hazardous waste site remediation projects for Ford, AT&T, Upjohn, Metro-North Railroad Company, Warner-Lambert, Owens-Illinois, Cooper Industries, General Motors, and the United Technologies Corporation. Preparation of CERCLA Feasibility Studies for the Rose Township Site (MI); Barceloneta Tank Farm Incident (PR); LDI Site (MI); and the C&D Recycling Site (PA). Preparation of feasibility studies and remedial action plans for industrial clients at state lead sites.

Technical support, work plans, and Feasibility Study preparation leading to the successful delisting of the M&T DeLisa Landfill Superfund Site, Asbury Park, NJ from the National Priorities List.

Project Manager, prepared feasibility study for Metro-North Railroad Company PCB Lagoon at Harmon Railroad Yard in Croton-on-Hudson, New York. Developed seven remedial action alternatives and evaluated each under state and federal Superfund Feasibility Study guidance. Provided technical support during post-ROD phase, developed community air monitoring plan and developed NYSDEC-approved alternate remediation approach for soil. Total remedial costs are estimated to be over ten million dollars.

Provided expert witness testimony in successful cost-recovery action for a chromium contaminated site in Toledo, Ohio. Reviewed site operations records and investigation results, evaluated remedial actions and evaluated consistency of investigation and remedial actions with the NCP.

Concept design of an approved soil flushing and ground water remediation system for the removal of TCE at the McGraw-Edison Facility, Albion, MI.

Evaluation of remedial design measures, including landfill cover alternatives, gas venting, and surface water treatment, and design of cost reduction alternatives for the PRP Committee at the 60-acre GEMS Landfill Site, Gloucester, NJ.



Bennett A. Leff

Registration

Engineer-in-Training, State of New York

Fields of Competence

Environmental Compliance Assurance Auditing
Environmental Management System Development
Property Transfer Site Assessments
Hazardous Waste Site Investigation and Remediation
Waste Minimization
Environmental Permitting
Industrial and Municipal Wastewater Treatment

Experience Summary

Seven years of environmental consulting experience including national and international compliance assurance auditing; property transfer site assessment; hazardous waste site investigation, remediation planning, and on-site implementation; hazardous waste management, disposal and reduction planning; permit application preparation; industrial and municipal wastewater treatment plant design.

Credentials

B.S., Civil Engineering/Engineering and Public Policy - Carnegie Mellon University, 1987
M.S., Environmental Engineering, Polytechnic University, 1991

Key Projects

Conducted over 50 environmental compliance audits in 22 states and internationally. Audited industries have included aerospace, electronics, medical, cosmetics, metal working, painting, ceramics, transformers, and TSDF's.

Designed environmental compliance audit programs where site specific audit manuals were developed, and facilities were assisted in implementing self-auditing.

Performed computer-based environmental compliance audits and computer-based environmental/health and safety audits where audit debriefings included presentation of computer-generated action plans.

Developed corporate environmental standards for a Fortune 500 company. Worked closely with corporate environmental department.

Conducted numerous pre-acquisition and pre-divestiture, environmental site assessments for varied clients including banks, holding companies, industrial clients and small business owners. Designed and implemented follow-up site investigations, where necessary, that included underground tank investigations, soil and ground water sampling programs and asbestos-containing material surveys.

Co-authored and directed the implementation of an ISRA remedial action plan at a 40-acre, turn-of-the-century manufacturing facility.

Developed a hazardous waste minimization plan for a large electronics manufacturer. Plan included evaluation of reduction options that included technical feasibility and economic practicability.

Obtained varied environmental permits for industrial clients. Permits were obtained for air emissions, wastewater discharges, storm water discharges and freshwater wetlands.



Peter C. Goutos

Fields of Competence

Industrial and commercial compliance/liability audits
Environmental assessment preparation
Hazardous waste management and minimization
OSHA hazard communication
Environmental compliance and permitting
Concept design and specification of industrial production equipment
Emergency response management
Strategic Environmental Management

Experience Summary

Five years of project management experience in environmental compliance and liability consulting including staff management. Four years experience as an Environmental Engineer in a large fabricated metals manufacturing company. Areas of responsibility included plant environmental, safety and health regulation compliance, process design and system installation. Two years research experience in resource recovery, energy conservation and environmental reclamation projects.

Credentials

B.S., Biology, State University College, Fredonia, New York, 1981
B.S., Environmental Engineering, Syracuse University, 1983
M.E., Environmental Engineering, Rensselaer Polytechnic Institute, in progress

Professional Affiliation

Environmental Auditing Roundtable
Water Environment Federation
New York Water Pollution Control Association
Environmental Conservation Commission, Glenville, New York

Key Projects

Project Manager for a \$350,000 Phase I and II environmental liability investigation of a twenty acre industrial property located in northeast New Jersey. An innovative project design allowed this investigation to satisfy lender liability and New Jersey ISRA requirements.

Project Manager for a two million dollar paint finishing facility and equipment upgrade. Responsibilities included budget, specification, construction management, process prove-out and training for a large scale paint finishing system.

Sampling and analysis plans/performance for PCB's, asbestos, RCRA hazardous wastes and other environmental/health contaminants.

Project Director for a twenty-five site multi-state property transfer audit program conducted to establish baseline environmental conditions. Facilities audited included photographic laboratories, printing operations, and aged multi-use manufacturing facilities. Project completed on an expedited basis to satisfy contract negotiations.

Coordinator of a multiphase property transfer audit of seven building material production facilities in support of an acquisition by a Fortune 500 aluminum company. Soil, ground water, water, asbestos, and underground tank testing activities with commensurate cost estimates for remediation were performed.

Environmental liability and property transfer audits for over thirty-five commercial and industrial properties including papermaking, extruding plastics, wood products manufacture, metal machining, printing, textile, non-woven fabrics and pigment manufacturing.



John R. Platko, II

Fields of Competence

Industrial compliance and liability audits
Compliance assessment program development and implementation
Industrial wastewater and storm water management
Solid/hazardous waste management
Environmental management - TQM techniques
Information Management Systems for environmental, health and safety professionals

Experience Summary

A total of eight years of professional environmental management experience in industry. Five years of environmental management experience for two multinational Fortune 100 manufacturing companies. Principal areas of responsibility included corporate and division-level program management for regulatory compliance issues with emphasis on wastewater discharges and solid waste disposal. Activities included compliance assessment/enhancement, permitting, project management, and program development. Three years as an Environmental Engineer and Safety Director for a multi-facility printed circuit board plating and manufacturing operation. Responsible for environmental, health and safety program development and implementation including staff management. Two years of research experience associated with wetlands ecology of the Florida Everglades.

Credentials

B.S., Aquatic Environments, Allegheny College, Meadville, PA, 1984

M.S., Environmental Science, Florida Institute of Technology, Melbourne, FL, 1986

Professional Affiliations

Air and Waste Management Association
Water Environment Federation

Key Projects

Environmental compliance and liability audits conducted for over 30 sites, including electronics manufacturing, plating, pulp and papermaking, polystyrene foam, non-woven fibers, timberland operations, pharmaceutical manufacturing, retail properties and RCRA TSDFs.

Corporate program coordinator for solid waste and wastewater issues. Activities included: federal/state regulatory analysis; RCRA, NPDES and state level permit negotiation and compliance support; corrective action and UST remediation; lobbying/litigation support; pollution prevention and technical training.

Developed and implemented a formal program to manage 500 TPY of hazardous waste generated at a printed circuit board plating and manufacturing operation. Developed and implemented a site waste minimization plan including projects associated with alternative solvent use and heavy metals reclamation.

Managed a 300,000 gpd wastewater pretreatment system. Applied technologies included metal precipitation, filter press dewatering, ion exchange and electrowinning. Reduced pretreatment plant hydraulic loading through the application of countercurrent rinsing techniques and point of use water reclamation.



ERM

Gregory K. Scott, P.E., C.H.M.M.

Registration

Registered Professional Engineer, New York State
Certified Hazardous Materials Manager

Fields of Competence

Regulatory compliance audits and programs
Air pollution permitting and compliance evaluations
Air emission estimates and inventories
RCRA Part B permits and closure plans
Hazardous waste characterization & reduction plans
SPCC plans
Hazardous waste site evaluations
SARA RI/FSs and ISRA site cleanups

Experience Summary

Eleven years consulting experience in environmental engineering as Project Manager and Project Engineer; 6 years experience preparing permit applications for hazardous waste facilities and air emission sources pursuant to state regulations for a variety of industrial facilities, including petroleum and chemical R&D pilot plants and support equipment, personal products and vitamin manufacturing, electronics, and aircraft support facilities; 3 years experience performing environmental compliance audits and preparing manuals; 5 years experience in the investigation and cleanup of affected industrial sites.

Credentials

A.B., Chemistry, St. Louis University, 1976
B.S., Chemical Engineering, Washington University, 1978
Air Pollution Training Institute - Dispersion Modeling, Effective Stack Height/Plume Rise, Gaseous & Particulate Emissions, APC Systems for Industry, Air Pollution Meteorology, 1990-1991

Professional Affiliations

American Institute of Chemical Engineers
American Chemical Society
Institute of Hazardous Material Managers
Air & Waste Management Association

Key Projects

Prepared numerous successful air permit applications for Exxon, American Cyanamid, Mennen and other companies in New Jersey; including APCDs, process vents, complex polymer and pesticide pilot plant operations, boilers, generators, spray coating.

Project Manager for hazardous waste characterization and reduction plan for a large electronics manufacturer with more than 80 separate waste streams.

Managed or participated in more than 40 compliance audits for petroleum and chemical R&D, personal products, medical devices, pharmaceutical, aerospace, metal fabricating facilities in the U.S., Canada, and Puerto Rico. Audits addressed all regulatory areas including RCRA, SARA, CWA, CAA, and TCSA. Clients included Exxon, IBM, GE, Johnson & Johnson, Becton Dickinson, Revlon, Hoffman-LaRoche, General Signal, and Coleman.

Project Manager for air emissions inventory of large R&D facility with more than 100 sources.

Project Manager for Phase I property assessments of six solid waste recycling facilities.

Project Engineer for preparing RCRA Part B applications for three hazardous waste storage facilities in New Jersey.

Project Engineer and Project Manager for ISRA site cleanups of four facilities for Continental Can and U.S. Can; including a \$1.5 million project completed in 6 months with multiple underground storage tank excavations, RCRA storage pad closure, delineation of soil and ground water contamination extent and removal, building decontamination, asbestos management, and risk assessment.



James A. Perazzo

Fields of Competence

CERCLA RI/FS and removal actions
 RCRA (RFA, RFI CMS and CMI)
 UST assessment and hydrocarbon remediation
 Indirect/direct investigative techniques
 Soil and ground water investigations
 Hydrogeological assessments
 Regulatory negotiation and strategic guidance
 Expert witness

Experience Summary

Fourteen years of experience in the environmental field in hazardous waste site investigation, data analysis and remediation. Managed and directed hydrogeologic efforts for RI/FS and RCRA-related projects. Completed investigations and assessments at over 60 National Priority List (NPL) sites. Responsible for integrating various technical personnel into projects to ensure the investigative and remedial design elements are incorporated into site evaluations. Developed strategic guidance and conducted negotiations relating to investigations and remediations.

Credentials

B.S., Geology, SUNY at Stony Brook, 1978
 M.S., Earth Science, Adelphi University, 1981

Publications

"Technical Overview of State Superfund Program," New York Hazardous Regulations Course, Executive Enterprises, Inc., November 16-17, 1990.
 "Remedial Investigation and Feasibility Study Process," New York Hazardous Regulation Course, Executive Enterprises, Inc., November 16-17, 1990.
 "Groundwater Remediation; Performance Goals," Haztech International, Cleveland, Ohio, September 20-22, 1988.
 "Remedial Design Needs to Consider in Planning Hazardous Waste Site Investigations," with J. Iannone and J. Mack; Haztech International, St. Louis, Missouri, August 26-27, 1987.
 "Long Term Confidence in Ground Water Monitoring Systems," Groundwater Monitoring Review, Vol. 4, No. 4, Fall 1984.

Key Projects

As part of a multi-disciplined technical team, developed a comprehensive remedial program at the dioxin contaminated Hyde Park landfill in western New York. The program involved collection and treatment of dissolved and non-aqueous phase liquids (NAPLs) in overburden and bedrock.

Project Director for a high profile NPL site containing lead. Project responsibilities included work plan preparation; RI implementation; and technical coordination of human health risk and ecological assessments and feasibility study. Coordinated negotiations and strategic support through all phases of the project. Also served as expert witness in third party litigation.

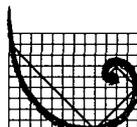
Project Manager for a multi-transaction industrial property transfer subject to New Jersey ISRA. Negotiated financial assurance bond in the ACO to permit transaction while cleanup occurred.

Developed a tank management program for 36 locations in New York and Connecticut. Planned site assessment and remedial programs. Formulated monitoring programs for early warning of potential environmental problems.

Project Director for two removal actions pursuant to an ACO under 106 provisions.

Coordinated removal of an anhydrous ammonia tank, laboratory chemicals, drums, PCB oils and transformers. Characterized contents in over 200 unknown tanks. Coordinated a radiological survey with a health physicist to locate and remove materials exhibiting anomalous levels of radiation.

Developed technical approach to ongoing cases for the New York State Environmental Protection Bureau of the Attorney General's office. Prepared scientific reports and represented the Attorney General in adversarial discussions, public meetings and court hearings.



ERM

Lawrence B. Cahill

Senior Program Director

Fields of Competence

Environmental auditing
Compliance management
Environmental training
Program development and evaluation
Environmental site assessments

Experience Summary

More than 20 years of professional environmental experience both directly with industry and as a consultant to industry, trade associations, and federal, state and local governments. In addition to managing large government contracts, served as technical director on small, highly analytical studies. Before becoming a consulting engineer, worked three years as a Project Environmental Engineer for Exxon Research and Engineering Company. He is a recognized expert in the field of environmental auditing.

Credentials

B.S., Mechanical Engineering, Northeastern University, 1970
M.S., Environmental Engineering, Northwestern University, 1974
M.P.A., Environmental Management and Economics, University of Pennsylvania, Wharton School, 1976

Professional Affiliation

American Management Association
Environmental Auditing Roundtable

Honors and Awards

Appointed Environmental Commissioner, Camden, New Jersey, 1975-76
Pi Tau Sigma - Mechanical Engineering Honor Society
Distinguished Instructor, Government Institutes, Inc.
Editorial Advisory Board, Total Quality Environmental Management Journal, J. Wiley and Sons, Inc.

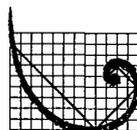
Key Projects

Provided training in environmental auditing and compliance management nationwide for companies including E.I. DuPont, duPont Canada, Hughes Aircraft, Hoechst Celanese, SmithKline Beecham, Rohm & Haas, AMP Inc., and Union Carbide. Training was conducted in the U.S., Canada, Mexico, Europe, Japan, South America, and Australia.

For Rohm & Haas, Hoechst Celanese, Eastman Kodak, E.I. DuPont and duPont Canada, evaluated worldwide corporate environmental management and audit programs. These evaluations resulted in significant program improvements and in third-party program "certifications."

Provided management support to a Fortune 100 electronics firm. Responsibilities performed included preparation of a comprehensive environmental audit manual, evaluation and review of corporate environmental policies and completion of several audits. Trained approximately 1000 staff ranging from plant engineers to the Chief Executive Officer.

Assisted a major medical center in developing programs to ensure continuous environmental compliance. The project involved an infectious/solid waste audit of the 100-bed complex, development of an infectious waste handbook, asbestos assessment, and the design and construction of an on-site 750 pound/hour incinerator.



ERM

Publications

Mr. Cahill has published more than 50 papers and articles and has been quoted on environmental issues in periodicals such as *The Wall Street Journal*, *The New York Times*, *Engineering News Record*, *Pollution Engineering*, and *The Environment Reporter*. Recent key publications/presentations include:

Editor and principal author, *Environmental Audits*, Government Institutes, Inc., Rockville, MD; Second Edition, November 1983; Third Edition, April 1984; Fourth Edition, December 1985; Fifth Edition, March 1987; Sixth Edition, August 1989.

With S. Engelman, "Bolstering the Board's Focus," *Directors & Boards*, A Division of Investment Dealers' Digest, New York, NY, Volume 18, Number 1, Fall 1993, pp. 23-25.

With R.W. Kane, "Corporate Environmental Performance Expectations in the 1990s: More Than Just Compliance," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 3, Number 4, Summer 1994.

"Benchmarking Environmental Audit Programs: Best Practices and Biggest Challenges," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 3, Number 4, Summer 1994.

"Preparing Quality Audit Reports: Ten Steps (and some Leaps) to Improve Auditing," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 3, Number 3, Spring 1994.

"Environmental Auditor Qualifications: Meeting New, Rigorous Demands for Quality Audits," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 3, Number 3, Spring 1994.

With R.W. Kane, "The Top Ten Reasons Why Phase I Environmental Assessment Reports Miss the Mark," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 2, Number 4, Summer 1993.

Publications (continued)

"Issues in Environmental Auditing," *Petroleum Independent*, Independent Petroleum Association of America, Washington, DC, Volume 62, Number 9, November/December 1992.

"Evaluating Management Systems as Part of Environmental Audits," *Total Quality Environmental Management*, Executive Enterprises, Inc., New York, NY, Volume 2, Number 2, Winter 1992/93.

Cahill, L.B., "Environmental Audits: How to Evaluate Your Reporting and Recordkeeping Requirements," Chapter in *Environmental Reporting and Recordkeeping Requirements*, 2nd Edition, Government Institutes, Inc., Washington, DC, December, 1991.

Key Projects (continued)

Directed the completion of an environmental audit program for a Fortune 100 corporation's food products company. The audits were conducted at 80 facilities nationwide and included bakeries, canning plants, and other food processing operations.

For an Exxon coal and minerals subsidiary, conducted an environmental management audit of two major coal service mines in Wyoming. The audit focused on the company's ability to respond to environmental incidents.

Brian J. Jacot, P.E., DEE

Registration

Registered Professional Engineer in New York, Connecticut and Vermont

Fields of Competence

Program and major project management
 CERCLA: RI/FS, design and construct
 RCRA Corrective Action Process: RFI, CMS, CMI

Experience Summary

Seventeen years of varied environmental and geotechnical engineering experience including project management of multidisciplinary remedial investigations and feasibility studies and RCRA corrective actions; PRP Committee support and strategic guidance; design and implementation of hydrogeologic studies and toxic emissions sampling and monitoring systems; development of soils and ground water remediation programs; review and approval of industrial process and emission control design; regulatory agency negotiations; and environmental auditing.

Credentials

B.S., Civil and Environmental Engineering, Clarkson University, 1977
 M.S., Geotechnical Engineering, Clarkson University, 1985

Professional Affiliation

American Society of Civil Engineers
 National Society of Professional Engineers
 Diplomate, American Academy of Environmental Engineers

Publications

Motan, E. Sabri, and Jacot, B. "Cohesionless Soil Parameters in Lateral Direction Related to Flat Dilatometer Data." Presented at the Annual Transportation Research Board Meeting in Washington, D.C., January 12-15, 1987.

Lipsky, D., and Jacot, B. "Hazardous Waste Emissions from Sanitary Landfills." Presented at the Annual APCA Meeting in Detroit, MI, June 1985.

Key Projects

Project Director for multi-million dollar remedial investigation/feasibility study (RI/FS) for the Northern Division NAVFAC. Responsible for contract negotiations, staffing, scheduling, budget control, internal and interagency coordination, and technical review.

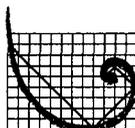
Project Manager for \$7 million statewide, multi-site RI/FS for the Connecticut Department of Transportation. Responsible for program development, technical review, scheduling, budget control, and subcontractor coordination.

Principal in Charge for NPL site RI for major private and public sector PRP committee. RI and Phase II RI costs expected to be approximately \$2,000,000. Responsible for contract negotiations, scope negotiations with EPA Region II, and overall quality of project and project deliverables.

Principal In Charge for turn key RI/FS/design/construct for a private sector PRP under New York State Superfund Program. Four year, \$4,000,000 project resulted in first complete Class 2 site remediation in NYSDEC Region 4. Responsible for all aspects of project and took lead role during all regulatory negotiations and contracting issues.

Principal In Charge for long term, multi-million dollar RCRA corrective action at a chemical landfill. Lead negotiator on behalf of private sector client. Corrective measures currently being implemented include leachate recovery, hydraulic controls in deep aquifer, soil vapor extraction and capping.

Technical consultant to PRP committee for the investigation and remediation of municipal landfills.



ERM

Publications (Continued)

Jacot, B. "OVA Field Screening at a Hazardous Waste Site." Presented at the 4th National HMCRI Conference on Management of Uncontrolled Hazardous Waste Sites in Silver Springs, MD, October 31 - November 2, 1983.

Lipsky, D., and Jacot, B. "Impacts of Vinyl Chloride Emissions from Sanitary Landfills." Presented at the MASS APCA Conference on "Clean Air Act and RCRA: Interactions and Conflicts" in Wilmington, DE, April 18, 1983.

Jacot, B., and Burton, C., "Chemical Landfill Remediation - An Innovative Approach." Presented at the 66th Annual Water Environmental Federation Conference in Anaheim, CA, October 3-7, 1993.

Mark E. Ransom, P.E.

Principal

Registration

Registered Civil Engineer, California

Fields of Competence

Superfund RI/FS program management
RCRA corrective action programs
Hazardous waste site remediation
Hazardous waste investigations/management
Regulatory agency negotiations
Environmental audits
Due diligence investigations
Property transfer assessments
Hazardous waste/RCRA training
Environmental compliance program development and management

Experience Summary

Mr. Ransom has more than 15 years of experience in waste management with private industry, engineering consulting, and state government. While at ERM, Mr. Ransom has directed several key large-scale hazardous waste site investigations. Specifically, he has served as Project Director/Professional Engineer for three major RI/FS investigations of state Superfund sites in California. All sites have involved negotiation of consent agreements with regulatory agencies and fast-track investigation and remediation of redevelopment parcels that have required immediate sale. In addition, Mr. Ransom served as Project Director/Professional Engineer for the closure of eight surface impoundments in southern California pursuant to a Cleanup and Abatement Order from the California Regional Water Quality Control Board.

Prior to joining ERM, his experience highlights include supervision of engineering and remedial contractors in the investigation and remediation of hazardous waste sites. Mr. Ransom served as key liaison in several negotiations with state and federal agencies and provided regulatory compliance training for industry and government personnel.

Key Projects

Managed RI/FS/RAP investigations at state Superfund sites in Roseville, Sacramento, and San Francisco, California. Project director for state Superfund site in Sacramento that is undergoing large-scale redevelopment with the City of Sacramento.

Project Director for PA/SI and RI/FS program for state Superfund and formerly used defense site in Fresno, California.

Performed several investigations and remedial actions for large California-based redevelopment corporation.

Project Director for remediation project involving ground water sparging and soil vapor extraction in Sparks, Nevada.

Project Director for closure of eight surface impoundments in Barstow, California.

Project Director for large-scale bioremediation soil treatment project near Fresno, California.

Developed environmental due diligence system for real estate holdings for a major railroad.

Managed RI/FS/ROD investigations for federal Superfund sites in Richmond, California and Houston, Texas.

Managed tank removal program for over 400 tanks in California for major railroad.

Managed investigations and cleanups of major train derailment sites in California, Arizona, Louisiana, Arkansas, Texas, Oregon, and Nevada.



Experience Summary (continued)

Mr. Ransoms's additional responsibilities have included: directing an Environmental Management Program for a major railroad and developing environmental review process for real estate holdings; and directing large-scale investigations/remediations for emergency response situations involving railroad accidents and providing instruction in large-scale training programs for both facility operational personnel and real estate property managers.

Credentials

B.S. Environmental Engineering, Humboldt State University, 1978

Publications

"Methodology for Locating Abandoned Hazardous Waste Sites," 1980

"Cost Analysis for Applying the EPA Hazardous Ranking System," 1982

"Site Assessment and On-site Treatment of a Pesticide Spill in the Vadose Zone," 1985

Key Projects (continued)

Developed RCRA training materials and implemented training program for refinery in San Francisco Bay Area.

Developed and implemented RCRA training program for major railroad in 16 states.

Managed large-scale hazardous waste impoundment remediations in Sacramento, Roseville, Los Angeles, Tracy, Dunsmuir, and Oakland, California.

Conducted routine hazardous waste audits of operating facilities for transportation company in 16 states.

Managed due diligence investigation of a treatment, storage, and disposal facility in San Francisco Bay Area.

Provided technical assistance to San Bernardino County Environmental Health Services related to the Lake Arrowhead Landfill and one of the San Bernardino County Sanitary Landfills.

This included permitting, and engineering surveys.

Provided technical assistance to Contra County County Health Agency related to remediation of the Acme Landfill.

Philip A. Marcus

Fields of Competence

Development of environmental management systems which improve compliance and competitive advantage for Fortune 500 corporations, including benchmarking, strategic plans, worldwide standards of practice, program support tools, and measurement and improvement.

Management of regulatory compliance programs, including RCRA, CERCLA, Clean Air Act, SARA, emergency response planning, and air modeling.

Experience Summary

Associate & Program Director at ERM. Nineteen years of experience in environmental analysis and regulatory compliance, dealing with Clean Air Act implementation, hazardous waste management, site remediation, SARA Title III, and emergency response planning. Technical project manager at U.S. Geological Survey.

Member of U.S. Delegation to United Nations Conference on Renewable Energy, 1981.

Member of U. S. Delegation to ISO Technical Committees to establish Environmental Management Systems Standard and Environmental Performance Evaluation Standard, 1993.

Credentials

B.A., Biological Conservation, University of Wisconsin, 1972
M.S., Environmental Planning, University of Wisconsin, 1975
MBA, University of Illinois, 1984

Professional Affiliation

Air and Waste Management Association

Honors and Awards

Tribute of Appreciation (1981), U.S. State Department for participation in U.S. Delegation at United Nations Conference on Renewable Energy, Nairobi, 1981.

Publications

Author of over 15 publications dealing with air management, waste disposal, facilities siting, land use planning and impact assessment, plus numerous presentations delivered at technical conferences on air and waste management.

Key Projects

Benchmark of Fortune 50 company performance against international environmental standards.

Strategic environmental plan for a major diversified company, to capture multimillion dollar competitive advantages.

Environmental management system developed for major pharmaceutical firm.

Environmental management system assessment of a major manufacturing corporation against U.S. Department of Justice Sentencing Guidelines.

Corporate policies and international environmental performance standards.

TQM-based facility compliance manuals.

Comprehensive environmental guidance manual for diversified manufacturer.

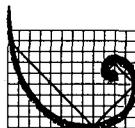
Assessed regulatory impacts of Clean Air Act Amendments on Fortune 500 corporations.

Clean Air Act Amendments Awareness Seminars and compliance manuals for Fortune 100 companies.
OSHA HAZWOPER emergency response programs for major facilities.

Comprehensive RCRA compliance manual and video materials for regulatory awareness and training effort of a major chemical manufacturer.

Remedial Investigations and Feasibility Study Guidance Manual for major chemical, automotive, and aerospace company.

Spill control program for a coke oven by-products plant at a major steel facility.



ERM

Barbara Winter-Watson

Fields of Competence

Legislative and regulatory analysis
Hazardous wastes and hazardous substances
Hazardous materials transportation
Air and water pollution
Community Right-to-Know

Experience Summary

Previously employed as an air pollution regulatory and legislative analyst with the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials. Prepared Congressional testimony; edited report on state and local air toxics programs; and reported on trends in Congress, EPA, the states and municipalities.

Credentials

B.A., Political Science, Amherst College, 1982
Coursework on the Principles and Practice of Air Pollution Control,
U.S. EPA Air Pollution Training Institute, 1985

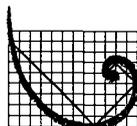
Key Projects

Coordinator of the internal Regulatory Awareness Program at ERM. Responsibilities include keeping staff up-to-date on changes in environmental regulations under RCRA, CERCLA, and other environmental statutes. Oversee preparation of internal regulatory alerts.

Develop regulatory alerts covering environmental regulations for corporate clients. Alerts vary from two-to- five pages and offer a quick overview and analysis of new and proposed requirements.

Developed 300-page manual on complying with the federal Community Right-to-Know requirements. Manual includes worksheets, flow diagrams, compliance checklists and implementation schedules. Also includes examples to help facility personnel comply with the new federal regulations under Title III of the 1986 Superfund Amendments.

Developed slide program on RCRA and accompanying 215-page manual for a two-and-one-half day training program on the fundamentals of RCRA for a large chemical manufacturer. The program provided comprehensive review of RCRA requirements for hazardous waste generators and TSD facilities, including underground storage tanks, waste minimization, land disposal restrictions, recordkeeping, inspections, emergency preparedness, and closure/post-closure.



ERM

Key Projects (continued)

Established computerized inventory of hazardous substances for large steel facility to comply with Community Right-to-Know reporting requirements.

Developed corporate policy on handling hazardous waste for a chemical manufacturer. Conducted workshops at site locations throughout the country to train staff on the new policy and assist in its implementation.

Prepared 40-page manual on emerging RCRA issues for a corporate client. Manual covered issues such as: recycling, waste-as-fuel, training requirements, RCRA inspections, listing and delisting, landfill bans, and the spent solvent mixture rule.

Prepared overviews of the Clean Air Act and Clean Water Act part of a two-volume regulatory guide for a corporate client. Reviewed the Code of Federal Regulations to develop annotated abstracts of relevant regulations.

Participated in one-day training session for corporation personnel on emerging issues under RCRA; developed slide program and 35-page manual.

Created 20-page manual and slide program on waste minimization, the Toxicity Characteristic Leaching Procedure, and storage tanks for a corporate client.

Developed regulatory alerts covering environmental regulations for a corporate client. Alerts varied from two to five pages and offered a quick overview and analysis of new and proposed requirements under RCRA.

Updated RCRA generator compliance manuals for corporate clients.

Developed 100-page manual on requirements for small quantity generators for the State of Montana. Manual was used for training sessions held throughout state. Topics included used oil handling and underground storage tanks.

Mark Elmendorf

Fields of Competence

Air quality issues management
 Clean Air Act compliance
 Air toxic compliance
 Air emissions evaluation programs
 Strategic Environmental Management (SEM)
 Compliance and liability auditing
 Legislative and regulatory analysis and strategic planning
 Environmental regulatory permitting
 Hazardous waste management

Experience Summary

Six years of experience in environmental consulting with an emphasis on regulatory analysis, air quality issues and environmental permitting. Two years experience with an acid rain research laboratory in an academic setting. Responsible for designing and implementing research into acid deposition in the northeast.

Extensive experience in preparing air quality permit applications, conducting criteria and hazardous air pollutant emissions inventories and evaluating air pollutant control technologies. Manages Clean Air Act and state air program compliance assessments for pharmaceutical, batch chemical, petrochemical and consumer product manufacturing facilities. Presented seminars on CAA operating permit issues throughout northeast.

Additional experience includes management of multisite storage tank system remedial efforts, compliance auditing and hazardous waste management issues. Projects have included detailed regulatory compliance evaluations of various industrial facilities. Broad base of experience developing integrated spill prevention and response documents for petrochemical industries.

Credentials

B.S., Environmental Science S.U.N.Y. College of Environmental Science and Forestry, Syracuse, NY.

M.S., Environmental Health Science, Hunter College, New York, NY, in progress.

Air Pollution Training Institute - Control of Particulate Emissions, Control of Gaseous Emissions, Atmospheric Dispersion Modeling, 1991-1992.

Massachusetts Institute of Technology-Negotiating Environmental Agreements, 1994.



ERM

Key Projects

Project Manager for Clean Air Act compliance review of manufacturing facilities throughout the U.S. Prepared comprehensive review of facilities and developed a strategic planning guide for each facility to attain compliance with current and future Clean Air Act regulations.

Prepared comprehensive air emissions evaluations for various major industrial operations throughout the United States. Data generated was utilized to advise clients on present and future liabilities that are likely to be encountered due to federal, state and local regulatory programs. Projects included developing information and guidance regarding the Clean Air Act Amendments of 1990.

Project Manager for completion of a Title V Operating permit at a major pharmaceutical R&D facility. The project included over 400 point sources including pilot plant batch operations involving a variety of unit operations. Process equipment included filtration units, centrifuges, reaction and evaporation vessels, dryers and heat exchangers as well as specialized organic synthesis processing equipment.

Prepared numerous successful air permit applications for a variety of industrial operations. Source types have included batch systems, coating lines, printing systems, storage vessels and various manufacturing/production lines.

Project manager for completion of Leak Detection and Repair (LDAR) program at a major chemical manufacturing facility. The program involved classifying, tagging and coding over 10,000 fugitive emission sources. A comprehensive database was developed using ERM ENFLEX software to allow computerized monitoring and reporting functions. Additional tasks included updating and coding approximately 450 PID drawings and providing training for plant personnel.

Gary M. Keating

Fields of Competence

Air pollution regulation and control
Environmental permitting
State and national water pollutant discharge elimination system compliance
Storage tank registration and regulatory compliance
Asbestos abatement and management
Environmental compliance and liability audits for industrial and commercial sites

Experience Summary

Seven years of diversified environmental regulatory compliance experience as both a state regulatory official and as an environmental consultant.

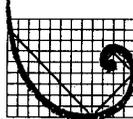
Environmental consulting experience includes multi-media environmental regulatory compliance auditing; air emission permitting; air emission control evaluation; emission source testing oversight; clean air act implementation; Reasonably Available Control Technology (RACT) evaluations; industrial wastewater and stormwater permitting; environmental liability/property transfer assessments; hazardous waste characterization and remediation; above ground and underground storage tank compliance; underground storage tank removal oversight; spill prevention control and countermeasure (SPCC) plans; asbestos surveys; asbestos abatement oversight.

Regulatory agency experience includes: technical evaluation of permit applications to construct and operate industrial, commercial and institutional air pollution sources; ensuring regulatory compliance with all applicable state and federal pollution control requirements by developing permit terms and conditions that establish operational guidelines and allowable emission rates; conducting physical inspections of air pollution sources and their control equipment; observing and evaluating stack emission tests; providing technical support for litigations; directing ambient air monitoring studies to assess the impact of specific air pollution sources on air quality.

Credentials

B.S., Environmental Engineering Technology (minor in Industrial Engineering Technology), University of Dayton, 1987

New York State Asbestos Inspector
(AHERA Inspector) #AH-90-00494



ERM

Key Projects

State regulatory official responsible for writing permits, inspecting and overseeing compliance efforts for all of the following air pollution sources: utility power plants and all related processes including large fossil fuel boilers, ash handling systems and coal conveying operations; surface coating operations for a wide variety of products; ferro alloy manufacturing facility including electric-arc furnaces, crushing systems, ladle treating, and sizing systems; solvent degreasing operations including coal cleaning, open top vapor and conveyor vapor degreasing; above and below ground storage tanks, gasoline dispensing facilities, petroleum bulk plants, and petroleum terminals; small fossil fuel-fired boilers; paint dispersing operations; major chemical manufacturing facility including reactors and capture equipment; plastic reinforced fiberglass production, including bulk and sheet molding; lime manufacturing including kilns, transfer and sizing equipment; asbestos brake shoe fabricating plants and asbestos disposal sites; landfill, flyash disposal sites, roadways and aggregate storage pile fugitive dust emissions; infectious waste incinerators and solid waste incinerators; calcium carbide production; and dry cleaning facilities.

Performed multi-media environmental compliance audits for over fifteen major industrial facilities throughout the Northeastern United States.

Conducted over thirty environmental liability/property transfer assessments for a variety of industrial and commercial properties.

Provided technical oversight during the removal of underground storage tanks, and during subsequent soil remediation activities.

Jennifer E. Collins

Registration

Registered Engineer-In-Training

Fields of Competence

Air quality engineering and management

Regulatory permitting and compliance

Clean Air Act compliance

Risk assessment

Air quality impact and control technology assessment

Environmental impact assessments covering air, water, and land

Compliance and liability auditing

Dispersion modeling

Hazardous waste management

Power plant siting and permitting

Remedial Investigations/Feasibility Studies

Experience Summary

Six years of environmental consulting experience for public sector and private industry with an emphasis on air quality issues.

Extensive experience in preparing air quality impact analyses and risk assessments for major industrial and transportation projects.

Performed dispersion modelling for numerous stationary and mobile sources using EPA approved models. Prepared environmental permits for industrial sources and hazardous waste handling facilities. Experienced with compliance audits and remedial investigation/feasibility studies.

Credentials

B.S., Materials Engineering, Brown University, 1988

M.S., Environmental Engineering, University of California, Berkeley, 1993

Professional Affiliation

Air and Waste Management Association

Key Projects

Managed the air quality, public health and risk of upset analyses for major modifications at three petroleum refineries in response to federal and state reformulated gasoline regulations. Conducted critical review of air permit, risk assessment, and risk of upset analysis, and estimated criteria pollutant and air toxic emissions and impacts. Worked with refinery engineers to develop mitigation measures to reduce impacts to humans and the environment. Participated in public hearings and responded to comments regarding the refineries' ability to meet reformulated gasoline regulations without adverse environmental impacts.

Prepared the air quality impact analysis and risk assessment for a gas turbine power plant at a university located in a urban setting. Major issues included close proximity of sensitive receptors, modelling of receptors located on hillside above stacks, and refining of proposed plant operations to reduce potential health impacts. Assessed air quality control equipment to meet NO_x control requirements. Assisted in development of air permit application.

Project engineer for environmental analysis of an Air Quality Management Plan for a large metropolitan air basin in California. Analysis included environmental consequences and benefits of stationary source and transportation control measures. Areas of review included air quality, energy, and public health.

Prepared numerous successful air permit applications for a variety of industrial operations. Source types have included planting operations, laboratories, power plants, and various manufacturing/production lines.

Conducted numerous compliance audits, site investigations, and remedial investigation/feasibility studies. Clients included financial institutions, U.S. Government agencies, and private industry.



Wendy La Mountain

Fields of Competence

Air quality issues management;
Clean Air Act compliance;
Air toxic compliance;
Air emissions evaluation programs;
Hazardous waste management;
Industrial safety and industrial hygiene in manufacturing and chemical process industries;
Compliance and liability auditing;
Permit organization and application;
Property transfer assessment;
Industrial wastewater treatment.

Experience Summary

Five years of experience in environmental consulting with an emphasis on regulatory analysis, air quality issues, environmental permitting, hazardous waste management and regulatory compliance.

Experienced in preparing air quality permit applications, conducting criteria and hazardous air pollutant emission inventories and evaluating air pollution control technologies.

Extensive experience developing contingency plans for hazardous waste generators, integrated spill prevention and response documents for petrochemical and manufacturing industries. Has written several health and safety plans for site remediation activities.

Two years hazardous waste management for a major microwave manufacturing facility. Two years supervising employee utilization of hazardous materials in production processes. Six years maintenance, trouble shooting and technical support of chemical production process systems.

Credentials

B.S., Engineering Chemistry, SUNY at Stony Brook, 1990

Key Projects

Developed comprehensive environmental and health and safety compliance auditing manuals. Manuals included both broad based documents for use in national corporate auditing programs and facility specific compliance manuals for eleven states, Puerto Rico, and Ontario, Canada.

Supervised site activities at a hazardous waste TSD facility as an environmental monitor working under the directive of the NYSDEC and Nassau County Department of Health.

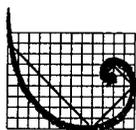
Developed contingency plans for large quantity generator facilities and prepared Spill Prevention Control and Countermeasure (SPCC) Plans for facilities meeting oil storage capacities requiring these plans.

Prepared New Jersey Discharge Prevention, Containment and Countermeasure Plans and Discharge Cleanup and removal plans for petroleum storage and manufacturing facilities.

Prepared numerous successful air permit applications for a variety of industrial operations. Source types have included coating lines, wastewater treatment systems, storage vessels and various manufacturing/production lines.

Implemented and managed the installation of Leak Detection and Repair (LDAR) program at a major chemical manufacturing facility. The program involved classifying, tagging and coding over 10,000 fugitive emission sources. A comprehensive database was developed using ERM ENFLEX software to allow computerized monitoring and reporting functions. Additional tasks included updating and coding approximately 450 PID drawings and providing training for plant personnel.

Managed the preparation of OSHA Process Safety Plan for a complex toll batch production chemical plant. Applicable processes at the facility included high pressure, high heat reactors, distillation reactors and vacuum systems. In addition, existing programs were updated as part of the project.



ERM

Matthew P. Gallo

Fields of Competence

Compliance Audits
Environmental Permitting
Field Sampling
Habitat Assessments
Storm Water Management
Environmental Impact Statements
Property Transfer Assessments

Experience Summary

Performed compliance assessments at industrial facilities nationwide, including papermills, foundries, and electronic components manufacturers. Performed storm water sampling and permitting at multiple facilities including landfills, airports, and transportation facilities. Also performed analysis of airport aircraft deicing procedures and drainage system with relation to NPDES permit violations. Directed the field sampling program and report preparation for a study of potential sources

Credentials

B.A., Biology, S.U.N.Y., Albany, 1988
M.A., Environmental Management, L.I.U., C.W. Post, 1989

Professional Affiliation

Water Environment Federation
New York Water Environment Association

Key Projects

General Signal Audits.

Northville-Holtsville data management and SPDES reporting.

Stormwater permits/sampling at all Westchester County facilities.

Study of potential sources of heavy metals entering the City of Glen Cove wastewater treatment plant.

Westchester County Airport - Analysis of deicing drainage system.

Town of North Hempstead Transfer Station - Part 360 permit.

Habitat Assessments, Town of Walkill
Landfill, River Road Site, GE-Hornell.



Mary M. (Peggy) Morocco

Fields of Competence

Air Pollution/Toxics Regulation and Control
 Air Pollution Emission Estimates and Inventories
 Environmental Data Management
 Risk Management and Prevention Programs
 Property Transfer Assessments
 Environmental Compliance and Liability Audits
 Hazardous Materials Management and Minimization
 Spill Contingency Planning

Experience Summary

Seven years of environmental experience including two years of process engineering/regulatory compliance experience, primarily in the fields of air quality and hazardous materials management. Has participated in air emission inventories, environmental data management, air dispersion modeling, ambient air monitoring, risk management and prevention, spill contingency planning, and hazardous waste minimization.

Five years as a Naval Officer which included developing tailored environmental products for fleet use. Manipulated and analyzed environmental data to provide sound propagation and meteorological information in support of underwater operations. Presented product performance summaries for technical staff briefings. Also, managed an extensive training program designed to convey the importance of environmental parameters in tactical decision making.

Credentials

B.S., Naval Engineering/Oceanography, United States Naval Academy, 1986
 Professional Certificate, Hazardous Materials Management, University of California, 1992

Professional Affiliation

Air and Waste Management Association

Key Projects

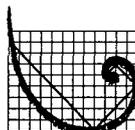
Directed air toxics inventory plans and reports for California air toxic regulations at two military installations. Aside from project management duties, was responsible for the development of appropriate emission estimating techniques, compilation of air toxic emission factors, customization of the data management system, preparation of required reporting forms, and report generation.

Provided technical support for California Air Toxics and SARA 313 reporting requirements for a major West Coast refinery. Duties included developing appropriate emission estimating techniques, preparation of required reporting forms, and report generation for the refinery's Sulfur Recovery Plant and Bulk Loading Terminals.

Provided technical assistance to research and evaluate hazardous waste minimization options for an electrical power plant. Activities included determining and implementing methods to reduce the generation of and maximize the reuse and recycling of oily waste.

Performed property transfer assessments and environmental compliance audits at various industrial and commercial facilities. Responsibilities included on-site inspections, reviewing regulatory agency files and facility documentation, and report writing.

Provided technical support to Risk Management and Prevention Programs for several acutely hazardous materials (AHMs) handled at various chemical and processing plants. Task elements included hazard evaluations, consequence analysis, quantitative risk analysis, and report documentation. Consequence analysis included identifying accident release scenarios, air dispersion modeling of AHM releases, and evaluating potential public health impacts based on toxicological information.



ERM

Margaret A. Lawrence

Fields of Competence

Pollution prevention/waste minimization of chemical production operations.
 Conceptual design of soil and groundwater remediation systems.
 Compliance and liability auditing of manufacturing and hazardous waste management facilities.
 Soil and hazardous waste management, including biological wastewater treatment, medical waste management.
 RCRA Part B permits.
 Wasteload allocations for NPDES permits.

Experience Summary

Margaret Lawrence is a chemical engineer with ten years experience in industrial facility management and environmental consulting. Ms. Lawrence specialized in understanding the generation and management of waste streams in manufacturing and chemical operations.

Ms. Lawrence served for several years as the Manager of Safety and Environmental at the BASF Corporation facility in Kearny, New Jersey, maintaining facility compliance with local, state and federal regulations.

Ms. Lawrence developed remediation plans for several industrial facilities and has worked at a CERCLA site in Michigan. She has worked on over ninety hazardous waste sites. Her work includes auditing domestic and international hazardous waste generating, treatment, storage and disposal facilities for regulatory compliance and good engineering practices. Ms. Lawrence prepared waste minimization programs for ten chemical manufacturing facilities. In addition, she has managed the preparation of at least ten RCRA Part B applications including automobile assembly facilities.

Ms. Lawrence has remedial design experience and has experience in CERCLA Remedial Investigation/Feasibility Studies.

Credentials

B.E., Chemical Engineering, Manhattan College, 1982
 M.E., Environmental Engineering, Manhattan College, 1984

Key Projects

Conducted a pollution prevention study of a pharmaceutical manufacturing facility which resulted in a forty percent decrease in hazardous material usage.

Conducted an intensive review of wastewater generation points at manufacturing operations. Developed program resulting in a twenty-five percent reduction of the quantity of wastewater generated.

Developed a Facility Remediation Plan for 100 year old manufacturing facility. The plan included review of 31 areas which required investigation and 17 areas requiring remediation.

Developed a Remedial Action Plan for the remediation of a site containing free phase volatile organics in the soils and groundwater.

Prepared drawings and specifications for excavation and removal of over 4,000 cubic yards of hazardous waste.

Supervised removal of underground storage tanks including post-excavation sampling and monitoring well installation.

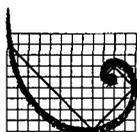
Developed plans and specifications for excavation and removal of soil containing solvents, nitrobenzene and fuel oil.

Obtained a final RCRA permit for a container storage area and hazardous waste incinerator, including supervising two trial burns for the incinerator under three operational conditions.

Managed compliance audit of automotive parts assembly facility.

Managed sampling programs from development of the sampling plan through supervising field activities and negotiating with regulatory officials on remedial work.

Permitted a number of TSD facilities. Processes included waste oil recovery, cyanide destruction, container storage, tank storage, wastewater treatment, surface impoundments and stabilization/fixation.



ERM

Dena M. Owens

Fields of Competence

Process engineering
Waste minimization and process control
Compliance and liability management
Clean Air Act Compliance and RACT analyses
Environmental permitting

Experience Summary

Two years of process engineering and environmental engineering experience in manufacturing. Responsibilities included technical service and process improvement for a chemical production line, including waste minimization efforts. Also served on the compliance management and auditing team for a major agrichemical manufacturer. Managed air compliance including monitoring, SARA emissions reporting and RACT analysis.

Consulting experience includes project engineering for a hazardous waste delisting project, and multi-media sampling.

Credentials

B.S., Chemical Engineering-Bioscience Option
North Carolina State University, 1992
Engineer-in-Training

Professional Affiliations

American Institute of Chemical Engineers

Key Projects

Managed air compliance for 1.7 MLb/yr agricultural chemical production line including air license maintenance, air pollution control device installation and monitoring, SARA emissions reporting and Pennsylvania State RACT analysis.

Coordinated RACT proposal for 190 MLb/yr multiproduct specialty chemical plant. Provided technical and regulatory advice for feasibility determination and economical analysis. Designed and prepared final RACT proposal.

Designed and performed studies using PHAST, an air dispersion modeling program, to model major incident scenarios of a Nitric Acid storage facility.

Provided technical service, troubleshooting, and process improvement engineering for 1.7 MLb/yr agricultural chemical production line. Activities included: process control optimization, yield increase program, preventative maintenance and intensive operator training.

Project engineer for a hazardous waste delisting project at a major upstate New York manufacturing facility. Responsibilities included: sludge sampling, process assessment, petition preparation, and task coordination.



Kenneth P. Wenz, Jr., C.P.G.

Registration

Certified Professional Geologist

Fields of Competence

Design and implementation of soil and ground water investigations

Design, installation and sampling of monitoring well and soil boring networks

Geophysical techniques

Analysis of ground water flow systems

In-situ permeability testing

Data interpretation, reduction, and management

Compliance with Federal, State, and Local statutes and regulations

Experience Summary

Project geologist and hydrogeologist for ground water and soil assessment and remedial activities in New Jersey, New York, Connecticut and Vermont. More than two years experience in evaluation of environmental and remedial assessments, plans and activities, preparation of technical documentation, and grants management with a Federal regulatory agency.

Credentials

B.A., Geology, Colgate University, 1983.

M.S., Geology, University of Massachusetts, 1988.

Professional Affiliation

American Institute of Professional Geologists

Association of Ground Water Scientists and Engineers, National Ground Water Association

American Geophysical Union

Key Projects

Hydrogeologic investigation at a major petroleum storage and distribution facilities, including installation and sampling of monitoring well network, analysis of tidal effects, to define three-dimensional ground water flow characteristics.

Installation and sampling of soil boring and monitoring well networks in a former drum disposal area (reportedly containing 500 buried drums), including work in Level B protection.

Installation of monitoring wells and the performance and interpretation of in-situ permeability tests at an oil packaging facility, in order to delineate the extent of a product plume.

Closure of a RCRA storage facility at an industrial site, including oversight of soil excavation, collection of confirmation samples, installation of monitoring wells, and report preparation.

Preparation of the siting report for a 1,000 GPM public water supply well, involving analysis of flow patterns and zones of contribution, assessment of environmental hazards, and recommendation of the well location, based on environmental, regulatory, and Wellhead Protection criteria.

Various ISRA, property transfer and tank abandonment investigations, including preparation and implementation of sampling plans, installation and sampling of monitoring well and soil boring networks, geophysical surveys, performance and interpretation of in-situ aquifer tests, and report preparation.

Review of more than 55 projects, including more than 25 Superfund investigations, for compliance with Federal environmental statutes and regulations.



Key Projects (Continued)

Assistant Project Manager for a major ISRA investigation and remediation at an aircraft engine repair and testing facility, including installation and sampling of monitoring wells and soil borings, delineation of soil contamination, geophysical surveys, performance and analysis of in-situ permeability and pump tests, interpretation of site stratigraphy and its effect of contaminant fate and transport, interaction with regulatory personnel, oversight and management of soil remediation activities, evaluation of site and regional ground water flow patterns, delineation of ground water contamination, performance and management of quarterly ground water monitoring, preparation of recovery well specifications, coordination and oversight of remedial recovery and recharge system installation, and preparation of work plans, remedial plans, remediation reports, progress reports, and permit application packages.

Assistant Project Manager and field team leader for Remedial Investigation at a former electronics manufacturing facility and NPL site, involving VOC, TPHC, and metals contamination.

Activities performed included soil boring and monitoring well installation and sampling, collection of surface soil samples, drywell sampling, installation and sampling of subsurface trenches, sampling of wetlands sediments and surface water, air sampling, and Health and Safety monitoring. Additional tasks performed included data evaluation, preparation of technical reports and regulatory correspondence, subcontractor supervision, and negotiations with Federal and State regulatory personnel.

Field team leader for New York State Remedial Investigation at an active pharmaceutical research and development facility. Activities included soil boring and monitoring well installation and sampling, Health and Safety monitoring, and subcontractor oversight.

Christopher W. Wenczel

Fields of Competence

Geologic and hydrogeologic analyses and interpretation
In-situ aquifer testing
Design and installation of monitoring well networks
Stratigraphic analysis, correlation and interpretation
Analysis of surface and ground water flow systems
Surface and ground water quality monitoring
Applied geophysics
Multi-media sampling work plan/report preparation
Health and safety management and planning

Experience Summary

More than five years of diversified experience in the environmental consulting field specializing in hydrogeology, hazardous waste management and water supply. Diverse experience includes the development and implementation of complex remedial investigation and feasibility study (RI/FS) plans for USEPA and NYSDEC Superfund sites in both New York and New Jersey, ISRA and NJPDES, compliance site investigations and environmental quality site assessments. Operated at eight National Priority List (NPL) sites.

Credentials

B.S., Geology, State University of New York, College at Oneonta, 1985
M.S., Earth Sciences (Hydrogeology), Adelphi University, 1990

Professional Affiliation

Association of Ground Water Scientists and Engineers

Key Projects

Coordination and supervision of a remedial investigation at a NYSDEC State Superfund site (the Pfohl Brothers uncontrolled landfill), Williamsville, NY. Delineated and mapped over 450 radioactive hot-spots using a Ludlum Model No. 2220 scintillometer using alpha/beta and gamma probes. Radionuclides found at the site included radium-226, thorium-232, cesium-132 and uranium-238 in the form of discarded machine parts, radioluminescent badges, and are rocks. In addition to radionuclide characterization of the site investigation of Pfohl Brothers Lanfill included: geophysical surveys using terrain conductivity, magnetometry and ground penetrating radar, soil borings, well installation in both bedrock and overburden aquifers, soil sampling, sludge sampling, surface water sampling, ground water sampling, leachate sampling, test pitting and drum sampling.

Management and supervision of hydrogeologic investigation at a drum landfill, Fords, New Jersey.

Management and supervision of remedial investigation at a former hazardous waste salvage facility, Perth Amboy, New Jersey. Responsible for the coordination and performance of a comprehensive environmental assessment at a petroleum refinery, San Nicholas, Aruba, N.V.

Participated in two NPL site remedial design programs, Vestal, New York and Pitman, New Jersey. Included the design of an automated extraction/injection well network and a 300 gpm production well.

Implemented landfill gas sampling with summa canisters at NPL site (municipal landfill), Port Washington, New York. Coordinated and conducted a ground water exploration/well rehabilitation program which included multiple pump tests, data analysis and exploratory drilling in both glacial and bedrock terrain for the Town of Fallsburg, NY.



Andrea Kretchmer

Fields of Competence

Soil and ground water quality investigations, CERCLA and NYSDEC remedial investigations, field investigation procedures, preparation of health and safety plans and quality assurance project plans, wetland vegetation monitoring programs, computer spreadsheets and database management, bid preparation and evaluations, and Hazard Ranking System scoring.

Experience Summary

Over seven years of diversified experience in a wide scope of soil, surface water, ground water and ecological investigations associated with industrial sites, petroleum storage facilities, wetlands, landfills, hazardous waste sites, resource recovery facilities, and municipal water supply and sewer systems; design and implementation of wetland vegetation monitoring programs; delineation of ground water contaminant plumes; soil, ground water, and vegetation sampling programs; environmental impact statements; RCRA facilities assessments; and site assessment and HRS scoring.

Credentials

B.S., Geology, Colgate University, 1984
 M.S., Geology, University of California, Los Angeles, 1987
 OSHA 40-Hour Health and Safety Training; 8-Hour Supervisory Training; and 8-Hour Annual Refresher Training

Professional Affiliation

Association for Ground Water Scientists and Engineers, Division of National Ground Water Association
 Association for Women Geoscientists

Key Projects

Project Geologist for Phase II Investigation at NYSDEC Inactive Hazardous Waste Disposal Site in Hicksville, NY. Responsibilities included installing and sampling test borings and ground water monitoring wells, preparing Phase II report, and developing a Hazard Ranking System score.

Participated in a phased investigation of contamination at active rail yard and wastewater lagoon (former NYSDEC Inactive Hazardous Waste Site). Developed work plans to investigate soil, ground water, surface water and sediment. Prepared remedial investigation work plans, field investigation plans, quality assurance plans and health and safety plans. Responsible for subcontractor procurement.

Participated in hydrogeologic investigation at NYSDEC Inactive Hazardous Waste Site. Responsibilities included ground water monitoring and soil gas sampling in association with pilot study for full scale ground water and vacuum extraction remedial program.

Designed and implemented a long-term wetland vegetation and ground water monitoring program to identify potential hydrologic and ecologic impacts of a sewer system in western Suffolk County, New York. Responsibilities included conducting annual sampling events at four wetland sites, monitoring ground water levels, stream base flow and flooding events, statistical analysis of hydrologic and ecologic data, report preparation and client interaction.

Participated in the investigation and remediation of a large petroleum spill at a distribution terminal near Stony Brook, New York. Responsibilities included vapor sampling and ground water monitoring at more than 250 wells, monitoring well installation, pump testing, and geophysical logging.



Colleen A. Kovarik

Fields of Competence

Management of ground water pollution investigations including the installation of monitoring well networks and development of site-specific drilling and sampling strategies

ISRA, RCRA, and Superfund soil and ground water compliance evaluation

Analysis of ground water flow systems

Surface and subsurface water quality monitoring

Stratigraphic analysis, correlation and interpretation

Geotechnical subsurface analysis and characterization

Experience Summary

Eight years of diversified experience in hydrogeological and geological studies. A principal and project manager for geological investigation projects in the Midland, Texas, area. Seismic, downhole geophysical and sample log analysis and correlation. Team member of People to People Ambassador Program's delegation to the People's Republic of China. Staff geologist and hydrogeologist for ground water monitoring and contamination on Long Island and in New Jersey and Pennsylvania. Project hydrogeologist for projects related to ISRA, RCRA, and Superfund ground water and soil compliance.

Credentials

B.S., Geology, State University of New York at Stony Brook, 1980

Professional Affiliation

National Water Well Association

Geological Society of America

American Association of Petroleum Geologists

Key Projects

Hydrogeologic site evaluation and delineation of a subsurface petroleum spill in New York.

ISRA site investigations including design and installation of monitoring well and soil boring network.

RCRA closure investigation.

Superfund site investigation including installation of monitoring well and soil boring network.

Environmental site evaluations at gas stations, and gas/oil terminals including monitoring well design and installation, development of soil boring networks, and soil gas analysis.

Management and supervision of geological investigation at over 60 sites.



Appendix B

Consultant Required Information Form

1. **CONSULTANT REQUIRED INFORMATION FORM**

A. NOTICES

The undersigned hereby designates the following office as its office for the purpose of receiving any written notice permitted or required to be served upon the Consultant by any provision of the Agreement, including, without limitation, Notice of Award of the Agreement:

ERM-Northeast

175 Froehlich Farm Boulevard

Woodbury, NY 11797

Attention: Howard Wiseman, P.E.

The Proposer acknowledges that such address may be changed only upon written notice executed and acknowledged by the undersigned and delivered to Metro-North.

Personal service or process in any action, suit or proceeding instituted by Metro-North against the undersigned on or in connection with this Quotation or the Agreement may be made by Certified Mail Return Receipt Requested addressed to the undersigned at the above address.

B. ADDENDA ACKNOWLEDGEMENT

Acknowledge receipt of the following Addenda:

Addendum No. 1	Dated	1 February 1995
Addendum No.	Dated	
Addendum No.	Dated	

Appendix C

Consultant Responsibility Form

CONSULTANT RESPONSIBILITY

Information To Be Furnished By a Proposer:

1. The following questions pertaining to criminal activity shall be answered by the Proposer. In the event of a "Yes" answer to any of the questions, Metro-North reserves the right to inquire further with respect thereto. The proposer shall furnish to Metro-North all relevant documents or information relating hereto as requested by Metro-North. Failure to answer any of these questions will result in a follow-up investigation by Metro-North to determine why the question was not answered. While a "Yes" answer to any such question will not automatically result in a negative finding on the question of the Proposer's responsibility, it would merit further inquiry by Metro-North.

A. During the past ten years, has your firm, or any principal, director, officer, or shareholder owning 10 percent or more of the stock of the corporation or managerial employee thereof, in connection with the business of the firm or any other firm which is related by common ownership, control or otherwise, been convicted in the State of New York, or any other jurisdiction, of any crime?

(Check "Yes" or "No", as appropriate.)

"Yes" _____ "No" xx

B. Does your firm, or any principal, director, officer, or shareholder owning 10 percent or more of the stock of the corporation or managerial employee thereof, in connection with the business of the firm or any other firm which is related by common ownership, control or otherwise, have pending an indictment in the State of New York or any other jurisdiction for the commission of a crime which has not been terminated in favor of the firm, principal, director, officer, shareholder or managerial employee?

(Check "Yes" or "No", as appropriate.)

"Yes" _____ "No" xx

C. To the best of your knowledge, is your firm or any principal, director, officer, or shareholder owning 10 percent or more of the stock of the corporation, or managerial employee thereof, in connection with the business of the firm or any other firm which is related by common ownership, control or otherwise, the subject of any pending investigation by any grand jury, commission, committee or other entity or agency or authority in the State of New York or any other jurisdiction in connection with the commission of a crime?

(Check "Yes" or "No", as appropriate.)

"Yes" _____ "No" xx

- D. Is your firm currently disqualified from selling to or submitting bids to or receiving awards from or entering into any contracts with any public agency or authority for goods, work or services, or have any contracts made with any public agency or authority during the preceding five years been cancelled or terminated by such authority by reason of any member, partner, director or officer of your firm refusing to testify or to answer any relevant question concerning a transaction or contract with a public agency or authority when called before a grand jury or other agency which is empowered to compel the attendance of witnesses and examine them under oath, upon being advised that neither his nor her statement nor any information or evidence derived from such statement will be used against that person in any subsequent criminal proceeding?

(Check "Yes" or "No", as appropriate.)

"Yes" _____ "No" xx

2. List contracts completed during the last three (3) years, or if less than three (3) contracts have been completed during the last three (3) years, list the last three (3) contracts completed. For each contract, provide a brief description of the work performed, the contract number, the initial contract amount, the dollar amount at completion, date completed, and the name and telephone number of the owner's representative. Appendix C
3. List contracts entered into by you during the last three (3) years, or if less than three (3) contracts have been entered into in the last three (3) years, list the last three (3) contracts entered into which the owner has terminated for default, sued you for misfeasance or errors or omissions or otherwise moved against you to recover damages because of an alleged failure on your part to perform as required by your contract. NONE
4. Provide certified financial statements for your last three (3) fiscal years. Appendix G
5. Provide resumes for key personnel that will be assigned to the work. SEE PROPOSAL
6. List all present or former employees of Metropolitan Transportation Authority or any of its subsidiary or affiliated agencies (NYCTA, MABSTOA, SIRTOA, TBTA, MNCRR, LIRR & MSBA) now serving you in a management, advisory or professional capacity who have worked or will be working on the subject matter of the Contract. NONE
7. Furnish your Federal Employer ID No. (or Social Security No. if the proposer is an individual): 11-2534806

Becton Dickinson and Company
East Rutherford, NY
Reference Contact: Glenn Barbi
(201) 847-6974
Contract Value: \$275,000

Becton Dickinson and Company (B-D) owns a 40-acre former medical apparatus manufacturing facility in East Rutherford, New Jersey. Soil and ground water were contaminated by the disposal and processing of wastes on Site over a 20-year period. Soil

contaminants included heavy metals, PCBs, polynuclear aromatic hydrocarbons, and petroleum hydrocarbons. Groundwater contaminants included chlorinated hydrocarbons and petroleum hydrocarbons. After performing a remedial investigation, feasibility study, and remedial design, ERM was responsible for supervision and inspection of all aspects of the remediation construction project.

ERM coordinated and supervised all Site work including 1) excavation of approximately 2000 cubic yards of soils, 2) off-Site disposal of hazardous and non-hazardous soils, sediments, contaminated demolition debris, decontamination washwater, and liquid wastes, and 3) construction of a groundwater interceptor trench network and 95,000 gallon per day groundwater treatment system.

ERM's specific duties for ensuring that all requirements of the project plans and specifications were fulfilled by the contractor included the following:

- providing and supporting two full-time on-Site personnel to perform resident engineer and inspector services.
- coordination and scheduling of soil excavation, building decontamination and demolition, and manifesting of wastes for off-Site disposal.
- review and approval of design and shop drawing submittals.
- enforcement of the Health and Safety Plan.
- review and approval of contractor invoices and as-built drawings.
- preparation of meeting minutes, progress reports, and punchlists.

Construction management was performed over an eight month period from January to August, 1990.

Purex Industries
Millville, NJ
Reference Contact: Jeffrey Smith
(213) 480-9225
Contract Value: \$390,000

Purex Industries formerly owned Airwork Corporation, an aircraft engine maintenance and repair company operating at the Millville Municipal Airport Site in Millville, NJ. Soil and ground water were contaminated by the disposal and

processing of wastes on Site over a 40-year period. Soil and groundwater contaminants appear to be from discharges of gasoline, jet fuel, metal plating

wastes, varsol, and chlorinated solvents and degreasers. After performing a remedial investigation, feasibility study, and remedial design, ERM was responsible for supervision and inspection of all aspects of the remediation construction project.

ERM coordinated and supervised all Site work including 1) excavation and off-Site disposal of soil contaminated by petroleum hydrocarbons, 2) construction of vapor recovery and treatment systems for soils contaminated by chlorinated hydrocarbons and varsol, 3) construction of a thirteen well groundwater recovery system, 4) construction of a groundwater treatment plant consisting of ultraviolet (UV) oxidation and air stripping equipment, and 4) construction of a new, high yield (1,000 gallons per minute) public drinking water supply well.

ERM's specific duties for ensuring that all requirements of the project plans and specifications were fulfilled by the contractor included the following:

- providing and supporting a full-time on-Site resident engineer.
- scheduling and coordinating construction activities with the operation of the active Airwork plant and the airport.
- coordination and scheduling of soil excavation, soil transportation, and manifesting of wastes for off-Site disposal.
- review and approval of design and shop drawing submittals.
- enforcement of the Health and Safety Plan, including the provision of full-time health and safety professionals on Site during stages of the project requiring intrusive work by the contractor.
- sampling of soil, groundwater, and waste material to ensure compliance with the regulatory approved cleanup standards.
- review and approval of contractor invoices and as-built drawings.

Construction management was performed over an eighteen month period from September, 1992 to March, 1994.

***Exxon Research and
Engineering Company
Florham Park, NJ
Reference Contact: Glen Bates
(201) 765-1192
Contract Value: \$300,000***

Exxon Research and Engineering owns an office and laboratory complex in Florham Park, NJ. Sanitary wastewater from the facility is treated by an on-Site sewage treatment plant. In order to ensure that the treatment plant consistently meets effluent discharge criteria,

Exxon commissioned a Wastewater Treatment Plant Improvement Project in 1991.

ERM performed the design of the improvement project, including the addition of influent equalization and effluent holding tanks, the addition of sand and carbon filtration systems, and the design of a new plant building to house the new equipment. After preparing the construction documents and assisting with bid evaluation, ERM assisted Exxon with supervision and inspection of all aspects of the construction of the wastewater treatment plant improvement project.

ERM's specific duties for ensuring that all requirements of the project plans and specifications were fulfilled by the contractor included the following:

- providing and supporting one individual full-time on-Site to perform resident engineer services.
- response to contractor requests for clarification of the requirements of the contract documents.
- review and approval of design and shop drawing submittals.
- coordination of major equipment deliveries by outside vendors with the overall construction schedule.
- review, justification, and estimating for claims, change orders, and extra work requests.
- preparation of progress reports.
- review and approval of as-built drawings.

Construction management assistance for Exxon was performed over a ten month period from June, 1991 to March, 1992.

Northville Industries Corp.
Holtsville, NY
Reference Contact: Tom Maus
(516) 293-4700
Contract Value: \$1,500,000

Northville Industries owns and operates a petroleum bulk storage terminal in Holtsville, New York. In 1986, gasoline was detected in groundwater monitoring wells located on the Site. Leaking underground distribution piping was responsible for

significant groundwater contamination. After performing a remedial investigation, feasibility study, and remedial design, ERM was responsible for supervision and inspection of all aspects of the groundwater remediation construction project.

ERM coordinated and supervised all Site work including 1) construction of ten groundwater recovery wells, five of which are equipped with both pure product and groundwater recovery pumps, 2) construction of a high capacity (1,000 gallon per minute) groundwater treatment system consisting of air strippers and pH adjustment equipment, and 3) construction of recharge basins for treated groundwater.

ERM's specific duties for ensuring that all requirements of the project plans and specifications were fulfilled by the construction contractor included the following:

- review and monitoring of contractor's schedule, and coordination of deliveries of treatment equipment.
- review and approval of design and shop drawing submittals.
- inspection of contractor's work for conformance with the requirements of the contract documents.

Construction management was performed over a six month period from March to August, 1988.

***Norton Company
Colonie, NY
Reference Contact: Paul Rappleyea
(518) 266-2200
Contract Value: \$550,000
(included Construction
Management)***

Norton Company owns a four acre landfill on a twenty two-acre Site in Colonie, New York. Over a period of years, off spec products and wastes from the manufacture of sandpaper, coated abrasives, and tapes were buried in the landfill, both uncontained and contained in drums.

The contaminants include solvents, waste oils, waste phenol/formaldehyde resins, sludges, and other chemicals. After performing a remedial investigation, feasibility study, and remedial design, ERM was responsible for supervision and inspection of all aspects of the remediation construction project.

ERM coordinated and supervised all Site work including 1) construction of a 2000 linear foot slurry wall 20 feet deep encircling the landfill, to prevent the migration of leachate out of the landfill, 2) construction of a very low density polyethylene (VLDPE) geomembrane cap to prevent infiltration of stormwater into the landfill, 3) construction of a ground water/leachate recovery and storage system, and 4) construction of a landfill vapor recovery and treatment system.

ERM's specific duties for ensuring that all requirements of the project plans and specifications were fulfilled by the contractor included the following:

- providing and supporting a full-time on-Site resident engineer and assistant.
- review and monitoring of contractor's construction schedule.
- enforcement of the Health and Safety Plan, including the provision of full time health and safety professionals on Site during stages of the project involving intrusive work by the contractor (e.g. excavation for the slurry wall).
- review and approval of design and shop drawing submittals.

- review and approval of contractor invoices and as-built drawings.
- preparation of meeting minutes, progress reports, and punchlists.

Construction management was performed over an nine month period from July, 1992 to March, 1993.

Appendix D

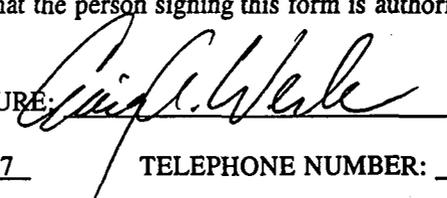
Proposer MBE/WBE Utilization Plan Form

Proposer MBE/WBE Utilization Plan Form
(Form 15A.1)

Name, Address, Telephone Number of MBE/WBE (include name of contact person and Federal ID #)	MBE/WBE	Description of Work, Products, and/or Services to be provided	Agreed Dollar Amount of MBE/WBE Subcontract	MBE/WBE Estimated Percent of Total Contract	MBE/WBE Project Start and Completion Date
Larsen Engineers, Inc 700 West Metro Park Rochester, NY (716-272-7310 Contact: Vern Celestino FID # 10-1066373	MBE	Monitoring well surveys at each yard	N/A	3%	start upon award of contract and complete within four years
Mitkem Corporation 175 Metro Center Boulevard Warwick, Rhode Island 02886-1755 (401) 732-3400 Contact: Jim Bennett FID# 05-0476460	MBE	Laboratory analysis of soil and ground water samples for volatiles, semi-volatiles and metals via SW-846 methods	N/A	8%	start upon award of contract and complete within four years
Delta Well & Pump Co., Inc. 97 Union Avenue Ronkonkoma, NY 11779-0760 (516) 981-2255 Contact: Donna L. Bensin FID # 11-2841186	WBE	Drilling services at each of three yards, including split spoon sampling, temporary well installation and permanent well installation	N/A	6%	start upon award of contract and complete within four years
GRB Environmental Services 15 Pleasant Lane Oyster Bay, NY 11771 (516) 922-0099 Contact: Rose Barbour FID # 11-2803614	WBE	Assistance in preparation of BMP Plans	N/A	2%	start upon award of contract and complete within four years

If the proposer is a corporation, partnership or joint venture, this form must be signed respectively, by the president of the corporation, a general partner, or the president/general partner of one of the joint ventures. If it is signed by anyone else, you must include appropriate proof (such as a certified copy of the by-laws, partnership agreement or joint venture agreement) which confirms that the person signing this form is authorized to do so. By signing below, the Proposer authorizes the authority to verify all of the information provided on this form.

PROPOSER: ERM-Northeast

AUTHORIZED SIGNATURE: 

TITLE: Principal

ADDRESS: 175 Froehlich Farm Boulevard, Woodbury, NY 11797

TELEPHONE NUMBER: (516) 921-4300

Appendix E

Employer Information Report Form (EEO-1)

**METROPOLITAN TRANSPORTATION AUTHORITY
AFFIRMATIVE ACTION**

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO-1

Section A - TYPE OF REPORT

1. Indicate by marking in the appropriate box the type of reporting unit for which this copy of the form is submitted (MARK ONLY ONE BOX.)

- | | |
|--|---|
| <p>(1) <input type="checkbox"/> Single-establishment Employer Report</p> | <p>Multi-establishment Employer:
 (2) <input checked="" type="checkbox"/> Consolidated Report (Required)
 (3) <input type="checkbox"/> Headquarters Unit Report (Required)
 (4) <input type="checkbox"/> Individual Establishment Report (submit one for each establishment with 50 or more employees)
 (5) <input type="checkbox"/> Special Report</p> |
|--|---|

2. Total number of reports being filed by this Company (Answer on Consolidated Report only) 2

SECTION B - COMPANY IDENTIFICATION (To be answered by all employers)

Office
Use
Only

1. Parent Company <u>ERM-NORTHEAST</u>					a.
a. Name of parent company (owns or controls establishment in item 2) omit if same as above					
Address (Number and street) <u>175 FROEHLICH FARM BLVD.</u>					
City or town <u>WOODBURY</u>		State <u>NY</u>	ZIP code <u>11797</u>		b.
2. Establishment for which this report is filed. (Omit if same as above)					c.
a. Name of establishment					
Address (Number and street)		City or Town	County	State	
b. Employer Identification No. (IRS 9-DIGIT TAX NUMBER) <u>11-2534806</u>					d.
c. Was an EEO-1 report filed for this establishment last year? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					e.
					f.

METROPOLITAN TRANSPORTATION AUTHORITY

AFFIRMATIVE ACTION

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO-1 Section C - EMPLOYMENT DATA

Page 2

Employment at this establishment-Report all permanent full-time and part-time employees including apprentices and on-the-job trainees unless specifically excluded as set forth in the instructions. Enter the appropriate figures on all lines and in all columns. Blank Spaces will be considered as zeros.

Job Categories	NUMBER OF EMPLOYEES										
	Overall Totals (Sum of Col. B thru K) A	MALE					FEMALE				
		White (Not of Hispanic Origin) B	Black (Not of Hispanic Origin) C	Hispanic D	Asian or Pacific Islander E	American Indian or Alaskan Native F	White (Not of Hispanic Origin) G	Black (Not of Hispanic Origin) H	Hispanic I	Asian or Pacific Islander J	American Indian or Alaskan Native K
Officials and Managers 1	6	6									
Professionals 2	86	68			3		15				
Technicians 3											
Sale Workers 4											
Office and Clerical 5	26	5					20			1	
Craft Workers (Skilled) 6											
Operatives (Semi- Skilled) 7											
Laborers (Unskilled) 8											
Service Workers 9											
TOTAL 10	118	79			3		35			1	
Total employment reported in previous EEO-1 report 11	116	78			3		34			1	

NOTE: Omit questions 1 and 2 on the Consolidated Report.

1. Date(s) of payroll period used: _____ 2. Does this establishment employ apprentices?
1 Yes 2 No

**METROPOLITAN TRANSPORTATION AUTHORITY
AFFIRMATIVE ACTION**

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO-1

Page 3

Section D -ESTABLISHMENT INFORMATION (Omit on the Consolidated Report)

1. What is the major activity of this establishment? (Be specific, i.e., manufacturing steel castings, retail grocer, wholesale plumbing supplies, title insurance, etc. Include the specific type of product or type of service provided, as well as the principal business or industrial activity).	OFFICE USE ONLY
CONSULTING ENGINEERING/HYDROGEOLOGY	g.

Section E-REMARKS

Use this item to give any identification data appearing on last report which differs from that given above, explain major changes in composition or reporting units and other pertinent information.

Section F-CERTIFICATION

- Check 1 All reports are accurate and were prepared in accordance with the instructions (check on consolidated only)
 one 2 This report is accurate and was prepared in accordance with the instructions.

Name of Certifying Official HOWARD WISEMAN	Title VICE PRESIDENT	Signature <i>Howard Wiseman</i>	Date 2/13/95
Name of person of contact regarding this report (type or print) Patricia Kosubinsky		Address (Number and Street) 175 FROEHLICH FARM BLVD. WOODBURY, NY 11797	
Title Human Resources Coordinator	City and State Woodbury, NY	ZIP Code 11797	Telephone Number (Including Area Code) 516/921-4300

All reports and information obtained from individual reports will be kept confidential as required by Section 709(e) of Title VII. WILLFULLY FALSE STATEMENTS ON THIS REPORT ARE PUNISHABLE BY LAW, U.S. CODE, TITLE 18, SECTION 1001.

**METROPOLITAN TRANSPORTATION AUTHORITY
AFFIRMATIVE ACTION**

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO-1

Section A - TYPE OF REPORT

1. Indicate by marking in the appropriate box the type of reporting unit for which this copy of the form is submitted (MARK ONLY ONE BOX.)

- | | |
|---|--|
| (1) <input type="checkbox"/> Single-establishment Employer Report | Multi-establishment Employer:
(2) <input type="checkbox"/> Consolidated Report (Required)
(3) <input checked="" type="checkbox"/> Headquarters Unit Report (Required)
(4) <input type="checkbox"/> Individual Establishment Report (submit one for each establishment with 50 or more employees)
(5) <input type="checkbox"/> Special Report |
|---|--|

2. Total number of reports being filed by this Company (Answer on Consolidated Report only) _____

SECTION B - COMPANY IDENTIFICATION (To be answered by all employers)

Office
Use
Only

1. Parent Company ERM-NORTHEAST

a. Name of parent company (owns or controls establishment in item 2) omit if same as above a.

Address (Number and street) 175 FROEHLICH FARM BLVD. b.

City or town <u>WOODBURY</u>	State <u>NY</u>	ZIP code <u>11797</u>	c.
------------------------------	-----------------	-----------------------	----

2. Establishment for which this report is filed. (Omit if same as above)

a. Name of establishment d.

Address (Number and street)	City or Town	County	State	ZIP code	e.
-----------------------------	--------------	--------	-------	----------	----

b. Employer Identification No. (IRS 9-DIGIT TAX NUMBER) 11-2534806 f.

c. Was an EEO-1 report filed for this establishment last year? YES NO

METROPOLITAN TRANSPORTATION AUTHORITY
AFFIRMATIVE ACTION
EQUAL EMPLOYMENT OPPORTUNITY
EMPLOYER INFORMATION REPORT EEO-1
Section C - EMPLOYMENT DATA

Page 2

Employment at this establishment-Report all permanent full-time and part-time employees including apprentices and on-the-job trainees unless specifically excluded as set forth in the instructions. Enter the appropriate figures on all lines and in all columns. Blank Spaces will be considered as zeros.

Job Categories	NUMBER OF EMPLOYEES										
	Overall Totals (Sum of Col. B thru K) A	MALE					FEMALE				
		White (Not of Hispanic Origin) B	Black (Not of Hispanic Origin) C	Hispanic D	Asian or Pacific Islander E	American Indian or Alaskan Native F	White (Not of Hispanic Origin) G	Black (Not of Hispanic Origin) H	Hispanic I	Asian or Pacific Islander J	American Indian or Alaskan Native K
Officials and Managers 1	3	3									
Professionals 2	44	36				8					
Technicians 3											
Sale Workers 4											
Office and Clerical 5	17	3				13			1		
Craft Workers (Skilled) 6											
Operatives (Semi-Skilled) 7											
Laborers (Unskilled) 8											
Service Workers 9											
TOTAL 10	64	42				21			1		
Total employment reported in previous EEO-1 report 11											

NOTE: Omit questions 1 and 2 on the Consolidated Report.

1. Date(s) of payroll period used: 1/31/95 2. Does this establishment employ apprentices?

1 Yes 2 No

Appendix F

Certificate of Insurance

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)
01/18/95

PRODUCER

JOHNSON & HIGGINS
TWO LOGAN SQUARE
PHILADELPHIA, PA. 19103

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY
A RELIANCE INSURANCE COMPANY

COMPANY
B N/A

COMPANY
C

COMPANY
D

INSURED

ERM NORTHEAST INC (WB)
175 FROELICH FARM BOULEVARD
WOODBURY NY 11797

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY	QB253278301	10/15/94	10/15/95	GENERAL AGGREGATE	\$ 1,000,000
	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	\$ 1,000,000
	<input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR				PERSONAL & ADV INJURY	\$ 1,000,000
	<input type="checkbox"/> OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	\$ 1,000,000
					FIRE DAMAGE (Any one fire)	\$ 1,000,000
					MED EXP (Any one person)	\$ 5,000
A	AUTOMOBILE LIABILITY	QB253278501	10/15/94	10/15/95	COMBINED SINGLE LIMIT	\$ 1,000,000
	<input checked="" type="checkbox"/> ANY AUTO				BODILY INJURY (Per person)	\$
	<input type="checkbox"/> ALL OWNED AUTOS				BODILY INJURY (Per accident)	\$
	<input type="checkbox"/> SCHEDULED AUTOS				PROPERTY DAMAGE	\$
	<input type="checkbox"/> HIRED AUTOS	DEDUCTIBLES:				
	<input type="checkbox"/> NON-OWNED AUTOS	COMP: \$250				
	<input checked="" type="checkbox"/> AUTO PHYSICAL DAMAGE	COLL: \$1,000				
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	\$
	<input type="checkbox"/> ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	\$
					AGGREGATE	\$
	EXCESS LIABILITY				EACH OCCURRENCE	\$
	<input type="checkbox"/> UMBRELLA FORM				AGGREGATE	\$
	<input type="checkbox"/> OTHER THAN UMBRELLA FORM					\$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	QB253282800	10/15/94	10/15/95	STATUTORY LIMITS	
	<input type="checkbox"/> THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE:				EACH ACCIDENT	\$ 1,000,000
	<input type="checkbox"/> INCL <input type="checkbox"/> EXCL				DISEASE - POLICY LIMIT	\$ 1,000,000
					DISEASE - EACH EMPLOYEE	\$ 1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

SEE NEXT PAGE FOR ADDITIONAL INFORMATION.

CERTIFICATE HOLDER

METRO-NORTH COMMUTER RAILROAD COMPANY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
MARTIN J SAMCHALK



ADDITIONAL INFORMATION

ISSUE DATE (MM/DD/YY)
01/18/95

PRODUCER

JOHNSON & HIGGINS
TWO LOGAN SQUARE
PHILADELPHIA, PA. 19103

CERTIFICATE HOLDER

METRO-NORTH COMMUTER RAILROAD COMPANY

INSURED

ERM NORTHEAST INC (WB)
175 FROEHLICH FARM BOULEVARD
WOODBURY NY 11797

TEXT

THE FOLLOWING ARE INCLUDED AS ADDITIONAL INSUREDS ONLY AS RESPECT THE LIABILITY ARISING OUT OF THE CONTRACT BETWEEN THE CERTIFICATE HOLDER AND THE INSURED:

- . ALL AGREEMENTS: METRO-NORTH AND MTA
- . AGREEMENTS INVOLVING GRAND CENTRAL TERMINAL: APU AND CDOT
- . AGREEMENTS INVOLVING THE HARLEM OR HUDSON LINES: APU, CRC, CDOT, AMTRAK AND DANBURY
- . AGREEMENTS INVOLVING THE NEW HAVEN LINE: CDOT, AMTRAK, CRC, B&M, DANBURY AND P&W
- . AGREEMENTS INVOLVING THE PORT JERVIS OR PASCACK VALLEY LINES: NJT AND CRC

ACORD. CERTIFICATE OF INSURANCE

DATE (MM/DD/YY)
01/18/95

PRODUCER
WRITTEN ON A DIRECT BASIS

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY
A UNITED ENVIRONMENTAL INSURANCE CO

COMPANY
B

COMPANY
C

COMPANY
D

INSURED
ERM NORTHEAST INC (WBY)
175 FROELICH FARM BOULEVARD
WOODBURY NEW YORK 11797

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR <input type="checkbox"/> OWNER'S & CONTRACTOR'S PROT				GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ PERSONAL & ADV INJURY \$ EACH OCCURRENCE \$ FIRE DAMAGE (Any one fire) \$ MED EXP (Any one person) \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EACH ACCIDENT \$ AGGREGATE \$
	EXCESS LIABILITY <input type="checkbox"/> UMBRELLA FORM <input type="checkbox"/> OTHER THAN UMBRELLA FORM				EACH OCCURRENCE \$ AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/PARTNERS/EXECUTIVE OFFICERS ARE: <input type="checkbox"/> INCL <input type="checkbox"/> EXCL				STATUTORY LIMITS EACH ACCIDENT \$ DISEASE - POLICY LIMIT \$ DISEASE - EACH EMPLOYEE \$
A	OTHER PRIMARY PROFESSIONAL LIABILITY	PL9401	10/15/94	10/15/96	\$2,000,000 PER CLAIM \$2,000,000 AGGREGATE

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
PROFESSIONAL LIABILITY INCLUDES POLLUTION LIABILITY.

CERTIFICATE HOLDER

METRO-NORTH COMMUTER RAILROAD COMPANY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
MARCY WATERFALL *Marcy Waterfall*

Appendix G

*Financial Statements for
1992, 1993 and 1994*

ERM-NORTHEAST, INC.
(An S Corporation)

FINANCIAL STATEMENTS

Years Ended March 31, 1994, 1993 and 1992

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**ALBRECHT, VIGGIANO, ZURECK
& COMPANY, P.C.**

CERTIFIED PUBLIC ACCOUNTANTS
25 SUFFOLK COURT
HAUPPAUGE, NY 11788
(516) 434-9500

INDEPENDENT AUDITORS' REPORT

To the Board of Directors and Stockholders
ERM-Northeast, Inc.
Woodbury, New York

We have audited the accompanying balance sheet of ERM-Northeast, Inc. (an S Corporation) as of March 31, 1994, and the related statements of income, stockholders' equity, and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of ERM-Northeast, Inc. as of March 31, 1994, and the results of operations and its cash flows for the year then ended in conformity with generally accepted accounting principles.

The 1993 and 1992 financial statements were reviewed by us, and our reports thereon, dated June 4, 1993 and May 6, 1992, stated we were not aware of any material modifications that should be made to those statements for them to be in conformity with generally accepted accounting principles. However, a review is substantially less in scope than an audit and does not provide a basis for the expression of an opinion on the financial statements taken as a whole.

Albrecht, Viggiano, Zureck Company, P.C.

Hauppauge, New York
July 15, 1994

ERM-NORTHEAST, INC.
BALANCE SHEETS
 March 31, 1994 and 1993

	1994	1993
		(Unaudited)
ASSETS		
Current Assets		
Cash	\$ 229,623	\$ 187,802
Accounts receivable	6,481,048	5,046,674
Loans receivable	58,000	30,133
Prepaid expenses	236,054	398,661
Total Current Assets	7,004,725	5,663,270
Property and Equipment - at cost, net of accumulated depreciation and amortization of \$1,033,701 and \$807,881	471,322	479,075
Other Assets		
Security deposits	20,316	18,204
Investments	102,497	102,497
	122,813	120,701
	\$ 7,598,860	\$ 6,263,046
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Note payable	\$ 1,250,000	\$ 1,000,000
Current portion of long-term debt	249,338	43,730
Accounts payable	359,801	2,857
Accrued expenses and other current liabilities	209,978	127,446
Total Current Liabilities	2,069,117	1,174,033
Long-Term Debt, less current portion	924,112	24,259
	2,993,229	1,198,292
Commitments and Contingencies (See Note 9)		
Stockholders' Equity		
Common stock, \$.10 par value, 10,000 shares authorized and issued, 7,695 and 10,000 shares outstanding, respectively	1,000	1,000
Additional paid-in capital	14,550	14,550
Retained earnings	5,783,620	5,049,204
	5,799,170	5,064,754
Less: Treasury stock, at cost, 2,305 shares	(1,193,539)	-0-
	4,605,631	5,064,754
	\$ 7,598,860	\$ 6,263,046

See independent auditors' report and notes to financial statements.

ERM-NORTHEAST, INC.
STATEMENTS OF INCOME
 Years Ended March 31, 1994, 1993 and 1992

	1994	1993 (Unaudited)	1992 (Unaudited)
Revenue	<u>\$ 19,021,715</u>	<u>\$ 15,907,274</u>	<u>\$ 15,434,497</u>
Direct Expenses			
Direct labor	3,729,758	3,374,583	3,281,760
Outside contractors	5,739,827	3,883,719	4,192,472
Other direct expenses	<u>532,739</u>	<u>436,106</u>	<u>454,255</u>
Total Direct Expenses	<u>10,002,324</u>	<u>7,694,408</u>	<u>7,928,487</u>
Gross Profit	<u>9,019,391</u>	<u>8,212,866</u>	<u>7,506,010</u>
General and Administrative Expenses			
Salaries and wages	3,972,263	3,937,162	2,895,251
Other general and administrative expenses	<u>4,332,766</u>	<u>3,764,592</u>	<u>3,488,983</u>
Total General and Administrative Expenses	<u>8,305,029</u>	<u>7,701,754</u>	<u>6,384,234</u>
Income From Operations	<u>714,362</u>	<u>511,112</u>	<u>1,121,776</u>
Other Income (Expenses)			
Interest expense	(11,231)	(14,720)	(22,503)
Interest income	28,905	41,329	26,660
Investment income	2,380	2,379	2,380
Gain (loss) on sale of fixed assets	<u>-0-</u>	<u>1,239</u>	<u>(1,443)</u>
Total Other Income	<u>20,054</u>	<u>30,227</u>	<u>5,094</u>
Net Income	<u>\$ 734,416</u>	<u>\$ 541,339</u>	<u>\$ 1,126,870</u>

See independent auditors' report and notes to financial statements.

ERM-NORTHEAST, INC.
STATEMENTS OF STOCKHOLDERS' EQUITY
Years Ended March 31, 1994, 1993 and 1992

	<u>Common Stock</u>	<u>Additional Paid-in Capital</u>	<u>Retained Earnings</u>	<u>Treasury Stock</u>	<u>Total</u>
Balance - March 31, 1991 (unaudited)	\$ 1,000	\$ 14,550	\$ 3,380,995	\$ -0-	\$ 3,396,545
Net Income	<u>-0-</u>	<u>-0-</u>	<u>1,126,869</u>	<u>-0-</u>	<u>1,126,869</u>
Balance - March 31, 1992 (unaudited)	1,000	14,550	4,507,864	-0-	4,523,414
Net Income	<u>-0-</u>	<u>-0-</u>	<u>541,340</u>	<u>-0-</u>	<u>541,340</u>
Balance - March 31, 1993	1,000	14,550	5,049,204	-0-	5,064,754
Net Income	-0-	-0-	734,416	-0-	734,416
Purchase of 2,305 shares of common stock for treasury	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>(1,193,539)</u>	<u>(1,193,539)</u>
Balance - March 31, 1994	<u>\$ 1,000</u>	<u>\$ 14,550</u>	<u>\$ 5,783,620</u>	<u>\$(1,193,539)</u>	<u>\$ 4,605,631</u>

See independent auditors' report and notes to financial statements.

ERM-NORTHEAST, INC.
STATEMENTS OF CASH FLOWS
 Years ended March 31, 1994, 1993 and 1992

	1994	1993 (Unaudited)	1992 (Unaudited)
Cash Flows From Operating Activities			
Net income	\$ 734,416	\$ 541,339	\$ 1,126,870
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	225,821	224,527	221,192
Loss (gain) on sale of equipment	-0-	(1,239)	1,443
Increase in current assets and other assets	(1,301,746)	(228,785)	(1,345,344)
Increase (Decrease) in current liabilities	439,476	(337,083)	139,335
Net Cash Provided by Operating Activities	97,967	198,759	143,496
Cash Flows From Investing Activities			
Purchase of property and equipment	(218,068)	(173,394)	(216,988)
Proceeds from sale of fixed assets	-0-	3,800	-0-
Net Cash Used by Investing Activities	(218,068)	(169,594)	(216,988)
Cash Flows From Financing Activities			
Net borrowings:			
Short-term	1,250,000	100,000	900,000
Debt reduction:			
Short-term	(1,000,000)	-0-	(800,000)
Long-term	(44,539)	(49,558)	(51,151)
Purchase of treasury stock	(43,539)	-0-	-0-
Net Cash Provided by Financing Activities	161,922	50,442	48,849
Net Increase (Decrease) in Cash	41,821	79,607	(24,643)
Cash Balance at Beginning of Year	187,802	108,195	132,838
Cash Balance at End of Year	\$ 229,623	\$ 187,802	\$ 108,195

(continued)

See independent auditors' report and notes to financial statements.

ERM-NORTHEAST, INC.
STATEMENTS OF CASH FLOWS
 Years ended March 31, 1994, 1993 and 1992

	1994	1993	1992
		(Unaudited)	(Unaudited)
Supplemental Disclosures of Cash Flows Information			
Cash paid during the year for:			
Interest	\$ 11,231	\$ 14,720	\$ 22,503
Income taxes	5,271	425	425
Supplemental Schedule of Noncash Investing and Financing Activities			
Acquisition of property and equipment:			
Cost of equipment	\$ -0-	\$ -0-	\$ 250,301
Loans	-0-	-0-	(30,700)
Adjusted basis of trade-in	-0-	-0-	(3,443)
Loss on trade-in	-0-	-0-	1,443
Cash payments for property and equipment	\$ -0-	\$ -0-	\$ 217,601
Supplemental Schedule of Noncash Investing and Financing Activities			
Acquisition of treasury stock:			
Treasury stock	\$ 1,193,539	\$ -0-	\$ -0-
Loan	(1,150,000)	-0-	-0-
Cash paid	4 43,539	\$ -0-	\$ -0-

See independent auditors' report and notes to financial statements.

ERM-NORTHEAST, INC.
NOTES TO FINANCIAL STATEMENTS
March 31, 1994 and 1993

Note 1 - Organization

The Company was organized under the laws of the State of New Jersey in 1980. The Company is authorized to do business in the States of New York, New Jersey and Connecticut, and maintains its main office in Woodbury, New York. The Company provides environmental consulting services to industry and government.

Note 2 - Summary of Significant Accounting Policies

Accounts Receivable

The Company uses the allowance method for bad debts. The allowance at March 31, 1994 and 1993 was determined to be zero.

Property and Equipment

Property and equipment are recorded at cost. Maintenance and repairs which do not improve or extend the useful lives of the respective assets are expensed currently. Depreciation is computed using primarily accelerated methods, and the estimated useful lives are five to seven years for all property and equipment. Leasehold improvements are amortized over five years or the life of the lease, whichever is less.

Income Taxes

The Company has elected under the Internal Revenue Code to be an S Corporation effective April 1, 1987 for Federal, New York State and Connecticut purposes. In this status, the Company is not a taxable entity and elements of income and expenses flow through and are taxed to the shareholders on an individual basis. The State of New Jersey does not recognize S Corporation status and, accordingly, a New Jersey Corporation Business Tax Return is filed and tax, if any, paid.

The Company, in order to retain its fiscal year, is required under Section 444 of the Internal Revenue Code to make certain required payments approximately equal to the amount of tax being deferred by reporting on a fiscal year as opposed to reporting on a calendar year. The amount of the total required payments will fluctuate annually based on the amount of tax being deferred by the shareholders.

See independent auditors' report.

ERM-NORTHEAST, INC.
NOTES TO FINANCIAL STATEMENTS
March 31, 1994 and 1993

Note 3 - Property and Equipment

Property and equipment at March 31 consist of the following:

	<u>1994</u>	<u>1993</u> (Unaudited)
Equipment	\$ 936,601	\$ 761,131
Transportation equipment	138,240	133,272
Leasehold improvements	147,319	145,319
Furniture and fixtures	<u>282,863</u>	<u>247,234</u>
	1,505,023	1,286,956
Accumulated depreciation and amortization	<u>1,033,701</u>	<u>807,881</u>
	<u>\$ 471,322</u>	<u>\$ 479,075</u>

Note 4 - Investments

Investments, at cost, at March 31 consist of the following:

	<u>1994</u>	<u>1993</u> (Unaudited)
ERM Insurance Holding Company, Inc.	\$ 40,000	\$ 40,000
ERM Program Management Company (a partnership)	2,497	2,497
Municipal Assistance Corp. Bond 6.8%	35,000	35,000
Certificate of deposit	<u>25,000</u>	<u>25,000</u>
	<u>\$ 102,497</u>	<u>\$ 102,497</u>

The Municipal Assistance Corp. bond is held by the lessor of the Woodbury, New York, office as a security deposit.

Note 5 - Note Payable

At March 31, 1994, the Company has a line of credit with European American Bank at prime, interest payable monthly, secured by accounts receivable and maturing August 31, 1994.

See independent auditors' report.

ERM-NORTHEAST, INC.
NOTES TO FINANCIAL STATEMENTS
 March 31, 1994 and 1993

Note 6 - Long-Term Debt

Long-term debt at March 31 is summarized as follows:

	1994	1993 (Unaudited)
Various installment loans secured by the related equipment; payable in 48 monthly installments ranging from \$250 to \$1,667 plus interest ranging from prime plus 1.25% to 1.50%; final payments maturing November, 1995.	\$ 23,450	\$ 67,989
Installment loan with a bank to repurchase stock from various stockholders; payable in 60 equal monthly installments of \$19,167 plus interest at prime plus one percent; maturing March 1999.	1,150,000	-0-
	1,173,450	67,989
Less: Current portion	249,338	43,730
	<u>\$ 924,112</u>	<u>\$ 24,259</u>

The maturities of long-term debt are as follows:

Year ending March 31, 1995	\$ 249,338
1996	234,121
1997	230,004
1998	230,004
1999	229,983

Note 7 - Related Party Transactions

The Company conducts business with various entities related through common ownership. During the year ended March 31, 1994 and 1993, the amount of billings to related parties was \$2,143,300 and \$1,184,042, respectively, and \$784,199 and \$579,100, respectively was billed to the Company from related parties.

Included in accounts receivable at March 31, 1994 and 1993 is approximately \$233,000 and \$273,000, respectively, due from these related parties and included in accounts payable is approximately \$194,000 and \$-0-, respectively, due to these related parties.

See independent auditors' report.

ERM-NORTHEAST, INC.
NOTES TO FINANCIAL STATEMENTS
March 31, 1994 and 1993

Note 8 - Profit Sharing Plan

The Company has a salary reduction plan pursuant to Section 401(k) of the Internal Revenue Code which provides for the accumulation of funds for employees' retirement. All full-time employees over twenty-one years of age are eligible to participate after six months of service.

Participants are permitted to make voluntary contributions through salary deductions, in accordance with the terms of the plan. The Company's matching contribution is determined annually by the Board of Directors. The contributions were \$147,879 and \$97,034, respectively, for the years ended March 31, 1994 and 1993.

Note 9 - Commitments and Contingencies

The Company leases various warehouse and office spaces at six different locations. These leases expire beginning April, 1994 with the last lease expiring October, 2001. During the year ended March 31, 1994 and 1993, rent expense under long-term lease obligations was \$704,123 and \$665,018, respectively.

The Company leases various transportation equipment under operating lease agreements expiring through December 1999.

Future minimum lease payments under long-term lease obligations are as follows:

Year ending March 31, 1995	\$ 807,000
1996	783,000
1997	740,000
1998	707,000
1999	625,000
thereafter	951,000

A substantial portion of the Company's gross revenues is derived from work involving hazardous materials, toxic wastes and other pollutants, which involve significant risks of liability for environmental damage, personal injury and fines and costs imposed by regulatory agencies. A number of the Company's contracts with its clients require the Company to indemnify the client for claims, damages or losses for personal injury or property damage relating to the Company's performance of the contracts unless such injury or damage is solely the result of the client's negligence or willful acts. The Company has been able to insure against most liabilities it may incur in this regard. The Company's professional liability insurance coverage includes most of its affiliates. As a result, a claim made against an affiliate could have the impact of reducing the amount of insurance coverage available to the Company.

The Company is subject to certain claims and lawsuits in connection with work performed in the ordinary course of business. In the opinion of management, all claims currently pending are either adequately covered by insurance or will not have a material adverse effect on the financial position of the Company.

The Company has an outstanding letter of credit in the amount of \$30,115 as of March 31, 1994.

See independent auditors' report.

ERM-NORTHEAST, INC.
SCHEDULE IX - SHORT-TERM BORROWINGS
Year Ended March 31, 1994

	<u>Balance March 31,</u>	<u>Weighted Average Interest Rate</u>	<u>Maximum Amount Outstanding During the Period</u>	<u>Average Amount Outstanding During the Period (1)</u>	<u>Weighted Average Interest Rate During the Period (2)</u>
Amounts payable to bank for borrowings - 1994	\$ 1,150,000	6.42%	\$ 1,150,000	\$ 100,684	6.37%

1. The average amount outstanding during the period was computed by dividing the sum of the daily weighted average outstanding principal balance by 365.
2. Amount determined by dividing total interest expense on short-term borrowings during the period by the average amount outstanding during the period.

See independent auditors' report and notes to financial statements.

Appendix H

*Qualifications and Experience Statement
for Larsen Engineering*

1. Firm Name / Business Address:

Larsen, P.E., L.S., P.C.
700 West Metro Park
Rochester, NY 14623

2. Year Present Firm Established:

1976

3. Date Prepared:

3/05/94

4. Specify type of ownership & check below, if applicable.

Minority Business Enterprise

A. Small Business

B. Small Disadvantaged Business

C. Woman-owned Business

1a. Submittal is for Parent Company Branch or Subsidiary Office

5. Name of Parent Company, if any:

5a. Former Parent Company Name(s), if any, and Year(s) Established:

6. Names of not more than Two Principals to Contact: Title / Telephone

- 1) S. Ram Shrivastava, P.E., President, CEO, 716-272-7310
- 2) Richard N. Passero, P.E., Executive Vice President 716-272-7310

7. Present Offices: City / State / Telephone / No. Personnel Each Office

7a. Total Personnel 56

Larsen Engineers, Rochester, NY 55
(716) 272-7310

Larsen Engineers, Boston, MA 1
(617) 452-1025

8. Personnel by Discipline: (List each person only once, by primary function.)

<u>10</u> Administrative	<u>2</u> Electrical Engineers	<u> </u> Oceanographers	<u>1</u> Environ. Analyst
<u> </u> Architects	<u> </u> Estimators	<u>2</u> Planners: Urban/Regional	<u>1</u> Asbestos Abatement
<u> </u> Chemical Engineers	<u> </u> Geologists	<u>5</u> Sanitary Engineers	<u>1</u> Energy Conservation
<u>6</u> Civil Engineers	<u> </u> Hydrologists	<u>1</u> Soils Engineers	<u>1</u> Recycling/Composting
<u>5</u> Construction Inspectors	<u> </u> Interior Designers	<u> </u> Specification Writers	<u>1</u> Indust. Safety & Hyg
<u>4</u> Draftsmen	<u>1</u> Landscape Architects	<u>5</u> Structural Engineers	<u> </u>
<u>1</u> Ecologists	<u>1</u> Mechanical Engineers	<u>5</u> Surveyors	<u> </u>
<u> </u> Economists	<u> </u> Mining Engineers	<u>3</u> Transportation Engineers	<u>56</u>

9. Summary of Professional Service Fees Received: (Insert index number)

Last 5 Years (most recent year first)

	19_93	19_92	19_91	19_90	19_89
Direct Federal contract work, including overseas	<u> </u>				
All other domestic work	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>
All other foreign work*	<u> </u>				

*Firms interested in foreign work, but without such experience, check here:

Ranges of Professional Service Fees INDEX

- 1. Less than \$100,000
- 2. \$100,000 to \$250,000
- 3. \$250,000 to \$500,000
- 4. \$500,000 to \$1 million
- 5. \$1 million to \$2 million
- 6. \$2 million to \$5 million
- 7. \$5 million to \$10 million
- 8. \$10 million or greater

Experience Profile Code Numbers
for use with questions 10 and 11

- | | | |
|---|--|---|
| 001 Acoustics; Noise Abatement | 042 Harbors; Jetties; Piers; Ship Terminal Facilities | 086 Radar; Sonar; Radio & Radar Telescopes |
| 002 Aerial Photogrammetry | 043 Heating; Ventilating; Air Conditioning | 087 Railroad; Rapid Transit |
| 003 Agricultural Development; Grain Storage; Farm Mechanization | 044 Health Systems Planning | 088 Recreation Facilities (<i>Parks, Marinas, Etc.</i>) |
| 004 Air Pollution Control | 045 Highrise; Air-Rights-Type Buildings | 089 Rehabilitation (<i>Buildings; Structures; Facilities</i>) |
| 005 Airports; Nav aids; Airport Lighting; Aircraft Fueling | 046 Highways; Streets; Airfield Paving; Parking Lots | 090 Resource Recovery; Recycling |
| 006 Airports; Terminals & Hangars; Freight Handling | 047 Historical Preservation | 091 Radio Frequency Systems & Shieldings |
| 007 Arctic Facilities | 048 Hospital & Medical Facilities | 092 Rivers; Canals; Waterways; Flood Control |
| 008 Auditoriums & Theatres | 049 Hotels; Models | 093 Safety Engineering; Accident Studies; OSHA Studies |
| 009 Automation; Controls; Instrumentation | 050 Housing (<i>Residential, Multi-Family; Apartments; Condominiums</i>) | 094 Security Systems; Intruder & Smoke Detection |
| 010 Barracks; Dormitories | 051 Hydraulics & Pneumatics | 095 Seismic Designs & Studies |
| 011 Bridges | 052 Industrial Buildings; Manufacturing Plants | 096 Sewage Collection, Treatment and Disposal |
| 012 Cemeteries (<i>Planning & Relocation</i>) | 053 Industrial Processes; Quality Control | 097 Soils & Geologic Studies; Foundations |
| 013 Chemical Processing & Storage | 054 Industrial Waste Treatment | 098 Solar Energy Utilization |
| 014 Churches; Chapels | 055 Interior Design; Space Planning | 099 Solid Wastes; Incineration; Land Fill |
| 015 Codes; Standards; Ordinances | 056 Irrigation; Drainage | 100 Special Environments; Clean Rooms, Etc. |
| 016 Cold Storage; Refrigeration; Fast Freeze | 057 Judicial and Courtroom Facilities | 101 Structural Design; Special Structures |
| 017 Commercial Buildings (<i>low rise</i>); Shopping Centers | 058 Laboratories; Medical Research Facilities | 102 Surveying; Platting; Mapping; Flood Plain Studies |
| 018 Communications Systems; TV; Microwave | 059 Landscape Architecture | 103 Swimming Pools |
| 019 Computer Facilities; Computer Service | 060 Libraries; Museums; Galleries | 104 Storm Water Handling & Facilities |
| 020 Conservation and Resource Management | 061 Lighting (<i>Interiors; Display; Theatre, Etc.</i>) | 105 Telephone Systems (<i>Rural; Mobile; Intercom, Etc.</i>) |
| *021 Construction Management | 062 Lighting (<i>Exteriors; Streets; Memorials; Athletic Fields, Etc.</i>) | 106 Testing & Inspection Services |
| 022 Corrosion Control; Cathodic Protection; Electrolysis | 063 Materials Handling Systems; Conveyors; Sorters | 107 Traffic & Transportation Engineering |
| 023 Cost Estimating | 064 Metallurgy | 108 Towers (<i>Self-Supporting & Guyed Systems</i>) |
| 024 Dams (<i>Concrete; Arch</i>) | 065 Microclimatology; Tropical Engineering | 109 Tunnels & Subways |
| 025 Dams (<i>Earth; Rock</i>); Dikes; Levees | 066 Military Design Standards | 110 Urban Renewals; Community Development |
| 026 Desalinization (<i>Process & Facilities</i>) | 067 Mining & Mineralogy | 111 Utilities (<i>Gas & Steam</i>) |
| 027 Dining Halls; Clubs; Restaurants | 068 Missile Facilities (<i>Silos; Fuels; Transport</i>) | 112 Value Analysis; Life-Cycle Costing |
| 028 Ecological & Archeological Investigations | 069 Modular Systems Design; Pre-Fabricated Structures or Components | 113 Warehouses & Depots |
| 029 Educational Facilities; Classrooms | 070 Naval Architecture; Off-Shore Platforms | 114 Water Resources; Hydrology; Ground Water |
| 030 Electronics | 071 Nuclear Facilities; Nuclear Shielding | 115 Water Supply, Treatment and Distribution |
| 031 Elevators; Escalators; People-Movers | 072 Office Buildings; Industrial Parks | 116 Wind Tunnels; Research/Testing Facilities Design |
| 032 Energy Conservation; New Energy Sources | 073 Oceanographic Engineering | 117 Zoning; Land Use Studies |
| 033 Environmental Impact Studies, Assessments or Statements | 074 Ordnance; Munitions; Special Weapons | 201/221 Environmental Audits |
| 034 Fallout Shelters; Blast-Resistant Design | 075 Petroleum Exploration; Refining | 202/234 Legal Expert Witness |
| 035 Field Houses; Gyms; Stadiums | 076 Petroleum and Fuel (<i>Storage and Distribution</i>) | 203 /243 Municipal Engineering |
| 036 Fire Protection | 077 Pipelines (<i>Cross-Country—Liquid & Gas</i>) | 204 /257 Value Engineering |
| 037 Fisheries; Fish Ladders | 078 Planning (<i>Community, Regional, Areawide and State</i>) | 205 /205 Asbestos Abatement |
| 038 Forestry & Forest Products | 079 Planning (<i>Site, Installation, and Project</i>) | 206 /265 Roofing Consulting Services |
| 039 Garages; Vehicle Maintenance Facilities; Parking Decks | 080 Plumbing & Piping Design | |
| 040 Gas Systems (<i>Propane; Natural, Etc.</i>) | 081 Pneumatic Structures; Air-Support Buildings | |
| 041 Graphic Design | 082 Postal Facilities | |
| | 083 Power Generation, Transmission, Distribution | |
| | 084 Prisons & Correctional Facilities | |
| | 085 Product, Machine & Equipment Design | |

* 021 has been changed to 199 for Construction Management

10. Profile of Firms's Project Experience, Last 5 Years

Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)
1) 011	32	339	11) 088	9	68	21) 109	3	783
2) 017	43	364	12) 089	15	78	22) 114	5	48
3) 032	44	462	13) 090	11	156	23) 115	121	1,556
4) 033	33	435	14) 096	83	2,553	24) 199	31	2,947
5) 046	31	809	15) 097	9	193	25) 205	13	128
6) 050	16	376	16) 099	25	1,039	26) 221	98	307
7) 054	8	74	17) 101	13	707	27) 243	80	1,446
8) 078	11	167	18) 102	137	3,316	28)		
9) 079	36	508	19) 104	21	183	29)		
10) 080	11	108	20) 107	7	14	30)		

11. Project Examples, Last 5 Years

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
011 107 046 023	P	1 North Greece Road Bridge Bridge Design Town of Greece, Rochester NY	Monroe County Dept. of Eng. 350 E. Henrietta Road Rochester, NY 14620	400	12/90
011 023 101 047	C	2 Hulberton Road Canal Bridge Town of Murray Orleans County, NY	NYS Dept. of Transportation 1220 Washington Ave. Albany, NY 12232	FEE 75	09/94
017 079 043 080	P	3 Southtown Plaza Reconfiguration Outlet Center Mall, Relocation and Construction Rochester, NY	Southtown Plaza Associates 2975 Brighton/Henrietta TL Rd Rochester, NY 14623	4,000	12/92
032 023 043	P	4 Lockport Memorial Hospital NYS Energy Office Lockport, NY 14094	Lockport Memorial Hospital 521 East Avenue Lockport, NY 14094	FEE 40	03/94
033 001 023 258	C	5 Lockport Expressway Extension I-990 Environmental Impact Studies/Statements Amherst, NY	NYS Dept. of Transportation 125 Main Street, Region 5 Buffalo, NY 14203	FEE 310	12/89
036 039 080 023	C	6 Babcock Street Bus Garage Fire Protection and Plumbing Design Buffalo, NY	Niagara Frontier Trans. Auth. 181 Ellicott Street Buffalo, NY 14205	1,000	12/89
046 104 062 101	P	7 MP454-MP467 Roadway Rehabilitation Chautauqua County	New York State Thruway Auth. 200 Southern Blvd. Albany, NY 12201	16,000	12/93

054 040 080 043	P	8 Dunkirk Ice Cream Co., Inc. Process Wastewater Pretreatment Facility Dunkirk, NY	William M. Wells One Ice Cream Drive Dunkirk, NY 14048	2,000	12/92
078 114 079 033	C	9 NYS Canal Recreationway Master Plan Upstate New York	NYS Thruway Authority 200 Southern Blvd. Albany, NY 12209	FEE 65	12/94
078 020 033 015	P	10 Master Plan Update Perinton Town of Perinton Perinton, NY	Town of Perinton 1350 Turk Hill Road Fairport, NY 14450	FEE 103	12/91
079 027 036	P	11 Elks Club Feasibility Study and Site Design B.P.O. Elks Club Henrietta, NY	B.P.O. Elks Club 3525 E. Henrietta Road Henrietta, NY 14467	458	01/90
080 029 036 040	C	12 The Science Magnet School #59 Plumbing and Fire Protection Buffalo, NY	Buffalo Board of Education Science Magnet School #59 Buffalo, NY 14202	1,200	01/90
088 021 023 046	P	13 Town Park Development, Parma Hilton/Parma Parks & Recreation Hilton, NY	Town of Parma 1300 Hilton-Parma Corners Rd. Hilton, NY 14468	631	01/90
089 076	P	14 Underground Fuel Storage Rehabilitation Mobil Oil Various Mobil Oil Facilities	Mobil Oil Corporation 675 Brooks Avenue Rochester, NY 14619	1,000 Various	12/93
090 023	P	15 Village of Bergen Facility Anaerobic Composting Facility Comstock Foods	Village of Bergen 11 Buffalo St. Bergen, NY 14416	485	12/94
096 023 009 021	P	16 Forest Hills Sanitary Sewer Town of Perinton, NY	Town of Perinton 1350 Turk Hill Road Fairport, NY 14450	2,600 Over 2 Yrs	12/94
097 099 033 102	P	17 Galen-Lyons Landfill Expansion Prelim. Eng. & Feasibility Landfill Committee Clyde, NY	Town of Galen 106 Glasgow Street Clyde, NY 14433	200	12/93
099 096 080 043	P	18 Amsterdam WWTP Sludge Facility City of Amsterdam Quist Rd., Amsterdam, NY 12010	Amsterdam Municipal Leasing 52 Corporate Circle Albany, NY 12212	480	12/95
099 033 096 080	P	19 Steuben County Landfill Final Design & Site Remediation Bath, NY	Steuben County 3 East Pultney Square Bath, NY 14810	121	01/90

101 109 096 104	C	20 DP-28 Bypass Tunnel & Bldgs. Massachusetts Water Resource Auth., Deer Island Boston, MA	Mass. Water Resource Auth. Charlestown Navy Yard, 100 First Ave, Boston, MA 02129	60,000	07/95
102	C	21 ROW Mapping, Route 7, NYSDOT Region 1, Wade Rd to St. David Albany-Schenectady County	NYS Dept. of Transportation 1220 Washington Ave. Campus Bldg. Albany, NY 12232	750	08/91
104 096 046 023	P	22 Drainage Study/Culvert Design Monroe County DOE Salt Rd./Schlegel Rd. Webster	Monroe County DOE 350 E. Henrietta Road Rochester, NY 14620	400	12/93
107 011 046	P	23 SUNY Buffalo Traffic Signal Improvements Amherst Campus	State Univ. Construction Fund PO Box 1946 Albany, NY 12201	386	10/92
109 096 104 101	C	24 DP-6 Ocean Outfall Tunnel 9.5 miles Mass. Water Resource Authority Boston, MA	Mass. Water Resource Auth. Charleston Navy Yard, 100 First Ave. Boston, MA 02129	200,000	12/90
114 028 037 023	C	25 Rochester Embayment Remedial Action Plan Water Quality Inventory Rochester, NY	Monroe Co. Dept. of Planning 47 S. Fitzhugh Street Rochester, NY 14614	FEE 14	01/92
115 009 080 023	P	26 Geneseo Water Plant Improv. Village of Geneseo Geneseo, NY	Village of Geneseo 119 Main Street Geneseo, NY 14454	1,500	10/93
199 102	P	27 Broadway Reconstruction 1.3 miles, Construction Insp. Buffalo, NY	NYS Dept. of Transportation 1220 Washington Avenue Albany, NY 12232	Fee 619	12/94
205 080 032 043	C	28 Rte. 55 Improvements Poughkeepsie, NY	NYS Dept. of Transportation 1220 Washington Avenue Albany, NY 12232	2,500	12/94
221 033 205	P	29 Environmental Audits of Properties Throughout Upstate NY Approximately 40 per year	Various Clients Throughout Upstate New York Confidentially Required	80	03/94
243 015 033 104	P	30 Municipal Eng. Svcs. Perinton Town of Perinton	Town of Perinton 1350 Turk Hill Road Fairport, NY 14450	5,000 Yearly	12/94

12. The foregoing is a statement of facts

Signature:



Typed Name and Title:

S. Ram Shrivastava, P.E., Pres

Date:

3/05/94

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

a. Name & Title:

LaVern R. Celestino, P.L.S
Vice President

b. Project Assignment:

Survey Director

c. Name of Firm with which associated:

Larsen Engineers

d. Years experience: With This Firm 20.0

With Other Firms 13.0

e. Education: Degree(s) / Year / Specialization

3 Yr. Engineering Study at University of Kansas
Cont. Education: National Geodetic Survey, Storm
and Sanitary Sewer Design, Flood Plain Mgmt.

f. Active Registration: Year First Registered / Discipline

Licensed Professional Land Surveyor, NYS 1974
Health & Safety Training Hazardous Waste Sites

g. Other Experience and Qualifications relevant to the proposed project:

Mr. Celestino has overall responsibility for the Larsen Engineers Survey Group. He has over 25 years of experience in Surveying and Engineering, including Road and Bridge Construction, Right-of-Way Mapping, Foundation Layout and Stormwater Detention Facilities. Mr. Celestino was the Project Director for these and many other NYSDOT Projects.

NYS DOT Region 4, Rte. 98 over Marsh Creek, Town of Carlton, Orleans County, 1992 - 1993

Phases V-VI: Directed Horizontal and Vertical Control establishment for Project Design; and Photo Mapping Control necessary to locate Photo Horizontal and Vertical Control Points along 1.5 mile Project Route. Obtained Hydraulic Cross Sections necessary for HEC-2 Modeling and developed ARM and ROW Plan. Directed ROW Mapping.

NYS DOT Region 5, Rte. 62 Frewsburg to NY 394, Chautauqua County, 1992 -

1993

Provided Base Mapping along 12 mile Project Route. This Project required Survey procedures necessary to Develop Digital Terrain Modeling (DTM) for 9 miles of the Project Route, and the obtaining of Field Pick Up necessary to complete the three mile Photo Mapped Area as a DTM file. Mr. Celestino directed this effort.

NYS DOT Region 1, St. David Lane to Wade Road, Schenectady & Albany Counties, 1990 - 1992

Mr. Celestino directed the Control Mapping along 7 mile Project Route. Phases I-IV included Location and Verification of Existing Utilities. Phases V-VI consisted of preparation of ARM; ROW Plans and 600+ ROW Maps. Due to the tight Project Schedule, all ROW Maps needed to be completed in a short three month period. This required Extraordinary Coordination with DOT Survey/Mapping Dept. and ultimately earned Larsen Engineers a Letter of Commendation from Region 1 Survey/Mapping Dept.

NYS DOT Region 3, PIN 3042.08.101 - NY Rtes. 26, 41, and 221, Town of Willet, Cortland Co., NY 1994

Provide NGS Vertical & Horizontal control along the 10.5 mile project Route. Provide Microstation DTM files for (Rte. 26 MP 1019-1021 & MP 1036 - 1040),(Rte. 41 MP 1004-1008 & George Town - German Road Intersection). Provide sign inventory for all signs located in ROW showing XYZ location of sign and station & offset along with sign photos and project sign report. Provide guide rail location, station & offset, X-section and plots.

NYS DOT Region 3, PIN 3104.14.101 - NY Rte. 298, Town of Dewitt, College Road to Chrysler Drive, 1995

Provide four (4) GPS control points and Horz. control control traverse along 9700M project Rte. tied to NGS system. Provide project vertical control tied to NGS system. Provide Aero Photo control for 1:500 & 1:250 mapping.

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

a. Name & Title:

Laurence A. Zander, P.L.S.
Survey Project Manager

b. Project Assignment:

Lead Surveyor

c. Name of Firm with which associated:

Larsen Engineers

d. Years experience: With This Firm 14.0

With Other Firms 4.0

e. Education: Degree(s) / Year / Specialization

2 Yrs. Architectural and Engineering Study
Indiana State University, Survey and Mathematics
Courses, Rochester Institute of Technology

f. Active Registration: Year First Registered / Discipline

Licensed Professional Land Surveyor, NYS 1989
Health & Safety Training Hazardous Waste Sites

g. Other Experience and Qualifications relevant to the proposed project:

Mr. Zander joined Larsen Engineers in 1980. He has managed many types of Survey work : Horizontal & Vertical Alignment; Right-of-Way Mapping tied to either County Monumentation or U.S. Geological Survey System as required for the Project; Numerous Property Line Projects; Deed Research and Evaluation as well as Determination of Property Lines; Sanitary Collection Systems; Subdivision Development which included Property Line & Right-of-Way; Calculations on all Phases of Construction; Preparation of Easement Maps; and State Photo Control Projects.

Some of Mr. Zander's Representative Projects are as follows:

NYS DOT, Region 5, Route 20 & 78 over Slate Bottom Creek in Erie County 1990 - 1992

Supervised Field Crews who established Project Horizontal & Vertical Control over 1 mile Project Route. Compiled Survey Data for preparation of Project Base

Mapping and prepared Project ARM.

NYS DOT, Region 4, Route 98 over Marsh Creek, Town of Carlton in Orleans County 1992-1993

Supervised Field Crews who established Horizontal & Vertical Control over 1.5 mile Project Route. Assisted in the Location and Computation of Photo Horizontal / Vertical Control Points and Location of Hydraulic Cross Sections necessary for HEC-2 Modeling.

NYS DOT, Region 5, Route 62 Frewsburg to NY 394, Chautauqua County, 1992 - 1993

Supervised Field Crews who obtained String Line Survey Data necessary for Digital Terrain Modeling (DTM). Analyzed Field Data and Record Plan Data to establish Asbuilt Center Line along the 12 mile Project Route.

NYS DOT, Region 1, St. David Lane to Wade Road, Schenectady & Albany Counties, 1990 - 1992

Supervised Field Crews who Located and Verified Existing Utilities along 7.5 mile Project Route. Field Located Existing Monuments along Project Route and assisted in development of Project ARM.

NYS DOT, Region 6, East Church Street, Under Conrail in Chemung County, 1989 - 1990

Supervised Field Crews who established Project Horizontal & Vertical Control. Assisted in the Location of Railroad Bridge and developed Project Base Mapping, ROW Locations and Utility Locations.

NYS DOT, Region 7, Hydraulic Cross Sections Survey (TASS), Jefferson, St. Lawrence, Lewis, Franklin & Clinton Counties, 1990 - 1991

Supervised Field Crews in setting Project Horizontal & Vertical Control to obtain Hydraulic Cross Sections and Profiles necessary for HEC-2 Modeling for 70+ Bridges throughout NYS Region 7.

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

a. Name & Title:

Robert Bradley, P.L.S.

NYS DOT Region 1 Survey / ROW Dept.

b. Project Assignment:

Assistant Survey Manager

NYS DOT, Region 5, Rte. 20 & 78 Transit Road over Slate Bottom Creek, Erie County, NY, 1990 - 1992

c. Name of Firm with which associated:

Larsen Engineers

Project Manager responsible for preparation of project Base Mapping along 1 mile project route and development of project ARM, ROW plan and ROW mapping.

d. Years experience: With This Firm 6.0

With Other Firms 8.0

NYS DOT, Region 6, East Church Street under Conrail, Chemung County, NY, 1989 - 1990

e. Education: Degree(s) / Year / Specialization

A.A.S. SUNY at Alfred, NY - Surveying Technology
 Attended ACSM Short Course - Legal Aspects of Surveying, Denver, CO.

Project Manager responsible for preparation of project Base Mapping, Utility locations, Bridge location, ROW location for 1 mile project route.

f. Active Registration: Year First Registered / Discipline

Licensed Surveyor, State of New York #049847
 Licensed Surveyor, State of Wyoming #5144

NYS DOT, Region 4, Rte. 88 over Conrail, Village of Newark, Wayne County, NY, 1992 - 1993

g. Other Experience and Qualifications relevant to the proposed project:

Mr. Bradley joined Larsen Engineers in 1986. He has experience in Boundary Surveying, Subdivision Design, Topographic Surveying, and Construction Surveying. He has performed a wide variety of office procedures including: the use of AutoCad and D.C.A. Engineering Software as an aid for the determination of Property Line location for a number of projects.

Project Manager responsible for preparation of project Base Mapping, Utility locations, Bridge locations, project ARM, ROW plan and ROW mapping.

NYS DOT, Region 1, St. David Lane to Wade Rd., Schenectady & Albany Counties, NY, 1990 - 1992

NYS DOT, Region 4, Rte. 98 over Marsh Creek, Town of Carlton, Orleans County, NY 1992 - 1993

Project Manager responsible for preparation of ARM, ROW Plan, Property Line location of 350 parcels along 7.5 mile project route and the preparation of 600+ ROW maps. Due to delays in approval of funding the preparation of the 600+ ROW maps had to be completed in a 3 month period. This required extraordinary coordination between Larsen Engineers and DOT Region 1 Survey / ROW Review Dept. The project was completed within the 3 month period and Larsen Engineers and Bob Bradley received a Letter of Commendation from

Project Manager responsible for Data Collection and Tabulation necessary for project Horizontal / Vertical control for Design and for Photo control point locations. Developed projected ARM, ROW plan and project ROW Mapping along with establishment of Hydraulic X-Sections & Profile data necessary for HEC-2 modeling.

NYS DOT, Region 7, Hydraulic X-Sections Survey, (TASS), Jefferson, St. Lawrence, Lewis, Franklin and Clinton Counties, 1990 - 1991

Development of project X-Section Plots and Profiles and Tabulation of data necessary for HEC-2 Modeling for 70+ bridge throughout NYS DOT Region 1.

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

a. Name & Title:

Norm Ahrens

b. Project Assignment:

Chief of Parties

c. Name of Firm with which associated:

Larsen Engineers

d. Years experience: With This Firm 10.0

With Other Firms 2.0

e. Education: Degree(s) / Year / Specialization

Environmental School of Science & Forestry
Forestry/Survey - A.A.S. Tompkins, Cortland
Community College 1983, Liberal Arts Math/Science

f. Active Registration: Year First Registered / Discipline

OSHA Certified - 40 hr. Health and Safety Training
for work on Hazardous Waste Sites

g. Other Experience and Qualifications relevant to the proposed project:

Mr. Ahrens joined Larsen Engineers in 1984. He has been Party Chief on many projects with diversified experience in Horizontal and Vertical control, Deed Research, Topo Mapping, Boundary Calculations and Hazardous Waste Sites.

Some of Mr. Ahrens Representative Experience is as follows:

NYS DOT, Region 5, Rte. 62, Frewsburg to NY 394, Chautauqua County, NY, 1992 - 1993

Chief of Parties - overseeing crews and assisting crews in gathering String Line Survey data necessary to develop Digital Terrain Model (DTM) for 9 miles of the 12 mile project route. Field edited the 3 mile Photo Mapped portion of the project and assisted in location of Record Plan data.

NYS DOT, Region 5, Rte. 20 & 78 over State Bottom Creek, Erie Co., NY, 1990 - 1992

Party Chief - responsible for establishing project Horizontal and Vertical control over 1 mile project route. Located existing Utilities, ROW data and assisted in Layout of Base Mapping.

NYS DOT, Region 4, Rte. 98 over Marsh Creek, Town of Carlton, Orleans County, NY, 1992 - 1993

Party Chief - responsible for establishing project Horizontal & Vertical control over 1.5 mile project route and location of Photo Vertical and Horizontal control points and Field Survey for obtaining Hydraulic X-Sections necessary for HEC-2 Modeling.

NYS DOT, Region 1, St. David Lane to Wade Rd., Schenectady & Albany Counties, NY, 1990 - 1992

Party Chief - responsible for Field checking Photo Base Mapping, location of existing Utilities and location of existing ROW monumentation, throughout the 7.5 mile project route.

NYS DOT, Region 6, East Church Street, Under Conrail, Chemung County, NY, 1989 - 1990

Party Chief - responsible for establishing project Horizontal & Vertical control necessary for Base Mapping, Railroad Bridge locations, ROW & Utility locations.

NYS DOT, Region 7, Hydraulic X-Section Survey (TASS), Jefferson, St. Lawrence, Lewis, Franklin, and Clinton Counties, 1990 - 1991

Chief of Parties - overseeing crews and assisting crews who established Horizontal & Vertical control to obtain Hydraulic X-Sections and Profiles necessary for HEC-2 Modeling for 70+ bridges throughout NYS DOT Region 7.

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

a. Name & Title:

Robert Pixley

b. Project Assignment:

Instrument Survey Person

c. Name of Firm with which associated:

Larsen Engineers

d. Years experience: With This Firm 17.0

With Other Firms 0.0

e. Education: Degree(s) / Year / Specialization

I.C.S. Job related courses

On-going Home Study

f. Active Registration: Year First Registered / Discipline

OSHA Certified - 40 hr. Course

Health & Safety Training - Hazardous Waste Sites

g. Other Experience and Qualifications relevant to the proposed project:

Mr. Pixley joined Larsen Engineers in 1976. His responsibilities have included Drafting, Survey Work, and Construction Inspection work. He has received Health and Safety Training for work on Hazardous Waste Sites. He was a member of the Survey crew on the Black & Bergholtz Creek Hazardous Waste Site project.

Some of Mr. Pixley's Representative experience is as follows:

NYS DOT, Region 5, Rte. 16 over Cazenovia Creek, Erie County, NY, 1990 - 1992

Party Chief responsible for establishing project Horizontal & Vertical control along 1+ mile project route. Obtained project X-Section, Topo ROW data and Hydraulic X-Sections necessary for HEC-2 Modeling.

NYS DOT, Region 4, Rte. 88 over Conrail, Village of Newark, Wayne County, NY, 1992 - 1993

Party Chief responsible for establishing project Horizontal & Vertical control along project route. Obtained project X-Sections, checked existing Topo, located existing utilities and alignment / Vertical location of Conrail system relative to existing and proposed structure.

NYS DOT, Region 5, Rte. 62 over Mill Creek, Cattaraugus County, NY, 1990 - 1992

Horizontal and Vertical control. Performed Field Survey to Map project 1+ mile route and obtained Hydraulic X-Sections necessary for HEC-2 Modeling.

NYS DOT, Region 5, US Rte. 62, Bailey Ave., 1988 - 1991

Party Chief responsible for establishing Horizontal & Vertical control necessary to Map 2+ mile project route. Obtained project X-Sections, Existing Utility data, Railroad location and location of Existing NYSTA Bridge overpass.

NYS DOT, Region 5, Rte. 394 over Indian Brook, Chautauqua County, NY, 1990 - 1992

Party Chief responsible for establishing project Horizontal & Vertical control necessary to prepare Base Mapping along 1+ mile project route. Obtained project X-Sections, existing Utilities, Railroad location and Hydraulic X-Sections necessary for HEC-2 Modeling.

NYS Thruway Authority - MP 466+96 to 485+55, 1990 - 1993

Party Chief responsible for Re-establishing NYSTA stations along 20+ mile project route and obtaining pavement X-Sections and critical bridge data. Also located XYZ 300+ existing Drainage structures and Photo Vertical / Horizontal control points which were used to provide X-Section data outside of the pavement areas.

8. Work by firm or joint-venture members which best illustrates current qualifications relevant to this project
(list not more than 10 projects).

SOLID AND HAZARDOUS WASTE SURVEY PROJECTS PAGE 1 1/94		c. Project Owner's Name and Address	d. Comp. Date ACTUAL OR EST.	e. Estimated cost in Thousands	
				Entire Project	Work for which firm was responsible
a. Project Name and Location	b. Nature of Firm's Responsibility				
{1} Miscellaneous Military and Civilian Hazardous Waste Clean Up Fort Drum, NY	Establish baseline, benchmarks and locate monitoring wells for topographic mapping of eight (8) existing haz. waste sites within the Fort Drum boundaries. Level D, C Protection Required.	Subconsultant to: Camp Dresser & McKee Corps of Engineers District Commander U.S. Army Engineers District 26 Federal Plaza New York, NY 10278-0090	1991	1,000	92
{2} Existing Landfill Ft. Drum, NY	Topo mapping of hazardous site 120+/- AC to provide 50 scale mapping with 1' contours and location xyz of 12 wells.	Subconsultant to: CDM Fed. Programs Corp. Owner: Corp of Engineers	1993	15	15
{3} Hammon Railroad Yards Westchester Co., NY	Topo survey of hazardous site covering 300 +/- acres to provide 100' scale mapping with 2' contours and locate xyz 32 wells.	Subconsultant to: ERM Northeast Owner: Metro North Westchester County Hawthome, NY	1993	50	50
{4} Love Canal 93rd Street School	Topo mapping of hazardous site, 10 +/- acres, provide 20 scale contour mapping with 1' contours, and as built during construction phase.	Subconsultant to: Loureiro Engineering Assoc., P.C. Owner: EPA/DEC	1992	100	100
{5} Love Canal Base Mapping	Control survey to map hazardous site at 50 scale with 1' contours covering 200 +/- AC site.	Subconsultant to: TAMS Consultants, Inc. Owner EPA/DEC	1987	50	50

8. Work by firm or joint-venture members which best illustrates current qualifications relevant to this project
 (list not more than 10 projects).

SOLID AND HAZARDOUS WASTE SURVEY PROJECTS PAGE 2 1/94			d. Comp. Date ACTUAL OR EST.	e. Estimated cost in Thousands	
				Entire Project	Work for which firm was responsible
a. Project Name and Location	b. Nature of Firm's Responsibility	c. Project Owner's Name and Address			
{6} Love Canal Black & Bergholtz Creek Niagara Falls, NY	Establish survey baseline and benchmarks for construction control of remediation work. Cross sections of existing streams. Grid, cross sections and utility location within the fenced haz. waste area. Easement mapping, property locations and strip map preparation along creeks and within the disposal area.	Subconsultant to: TAMS CONSULTANTS, INC. The TAMS Building 655 Third Avenue New York, NY 10017	1989	101	101
{7} Pfohl Brothers Landfill Erie Couty, NY	Establish survey baseline, benchmarks and locate test wells; also establish horizontal and vertical control for aerial photomapping of an existing 120 acres haz. waste site. The perimeter of the landfill was located and the entire area was grid staked at 50 ft. intervals. Level D.C & B Protection Required.	Subconsultant to: Camp Dresser & McKee 105 Main Street Niagara Falls, NY 14301	1989	750 (Engineering Fee)	250
{8} Pfohl Brothers Landfill Erie County, NY	XYZ well location on 120 acres hazardous site	Subconsultant to: CDM Owner: EPA/DEC	1990	20	20
{9} Schreck's Scrapyard Erie County	XYZ well locations on 20 +/- acres site.	Subconsultant to: Eder Associates Owner: EPA/DEC	1988	5	5
{10} Buffalo Port Erie County	Topo survey of hazardous site to provide 100 scale mapping with 1' contours and location of 15 wells.	Subconsultant to: Empire Soils Owner: NFTA	1988	15	15



New York State Department of Economic Development

Division of Minority & Women's Business Development
One Commerce Plaza
Albany, New York 12245 518 474-6346

FAX: 518 473-0665

RECEIVED
DEC 14 1992
Larsen Engineers

December 9, 1992

FED ID # 16-1066373

Mr. S. Ram Shrivastava, President
Larsen Engineers, PE, LS, PC
700 West Metro Park
Rochester, NY 14623

Dear Mr. Shrivastava:

On behalf of New York State Department of Economic Development, the Division of Minority and Women's Business Development has completed its review of your application for State certification as a Minority-owned Business Enterprise and has determined that your firm meets eligibility requirements pursuant to Executive Law, Article 15-A.

We are pleased to inform you that the firm of Larsen Engineers, PE, LS, PC has been granted status as a Minority-owned Business Enterprise.

Your business will be listed in the State's Directory of Certified Businesses with the following principal product or service:

- #113 Engineering - Civil
- #915 Engineering - Environmental
- #246 Environmental Consultants
- #241 Engineering Consultants
- #380 Land Use Planning

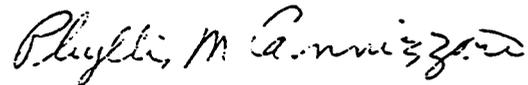
Certification status is not intended to imply that the State of New York guarantees your company's capability to perform on contracts, nor does it imply that your company is guaranteed any State business.

This certification remains in effect for a period of generally two years from the date of this letter or until such time as you are selected by this Office for recertification. Please remember that any changes in your company that affect ownership, managerial and/or operational control must be reported to this Office within 30 days of such changes; including changes of company name, business address, telephone numbers, principal products/services, and bonding capacity. At such time as it is necessary for your company to be recertified, you will be notified by this Office.

If your certification status is questioned by any public or private entity, please direct the inquiry to this Office for clarification.

Thank you for your cooperation. On behalf of the State of New York I wish you luck in your business endeavors, particularly in those involving State agencies.

Sincerely,



Phyllis M. Cannizzaro
Certification Supervisor
Business Services

PMC/lvb
cc: Eloisa Perez-Spencer

Appendix I

*Qualifications and Experience Statement
for Mitkem Corporation*

**MITKEM CORPORATION
STATEMENT OF QUALIFICATIONS**

1/95 Ed.

**MITKEM CORPORATION
ENVIRONMENTAL TESTING LABORATORY**

Table of Contents

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INTRODUCTION

The Mitkem Corporation is a newly organized employee-owned environmental testing laboratory dedicated to providing quality analytical data together with exceptional customer service. Although Mitkem is a start-up laboratory established in March 1994, its founders have a combined experience of 30 years in this industry. The laboratory staff includes some of the most accomplished business and technical people in the field. Previously, the owners were partners in another highly successful US EPA Contract Laboratory Program (CLP) laboratory in Narragansett, Rhode Island. Our chemists and analysts abide by rigid testing protocols with the maintenance of a quality assurance program. We are equipped with the latest models of state-of-the-art instrumentation from Hewlett Packard and Perkin-Elmer.

Another unique aspect of the company is that we are one of the few minority enterprises in the US EPA CLP Program. As such, Mitkem can assist clients in achieving federal and state procurement requirements for MBE participation. Mitkem participates in various national proficiency testing studies and anticipates certifications by the federal agencies including the Army Corps of Engineers, HAZWRAP, and AFCEE. The company also participates in the WP (non-potable water) and WS (potable water) Performance Evaluation Studies.

The laboratory is an approved analytical laboratory in the following states:

- Rhode Island
- Massachusetts
- Connecticut
- Florida
- New York

Approval is pending in the following areas:

- New Jersey
- Pennsylvania

The laboratory management team takes customer service seriously. At Mitkem, clients will deal exclusively with the owners of the company. We believe this is the most effective way to ensure quality analysis in a timely manner.

Mitkem offers a wide range of routine EPA testing services for the following sample matrices:

- Soils, Sediments, Sludges
- Hazardous Waste
- Groundwater
- Municipal Wastewater
- Potable Water
- Industrial Discharges

Mitkem's staff also has extensive experience in performing non-routine analyses including method developments and method validation.

In support of analytical testing, Mitkem provides sample containers, sample pick-up and disposal of unused sample aliquots, fast turn-around time, consultation and interpretation of laboratory results, and report delivery by FAX on request.

We are confident that the Mitkem Corporation can meet any and all analytical testing needs you may have.

CAPABILITIES

CAPABILITIES

Mitkem Corporation offers a full suite of US EPA approved chemical analyses for the characterization of environmental samples.

Organic Analyses:

- Volatile Organics by GC/MS and GC/PID/HECD
- Gasoline Range Organics by GC/FID, GC/PID/HECD and GC/MS
- Semivolatile Organics by GC/MS
- Pesticides and PCB's by GC/ECD
- Herbicides by GC/ECD
- Petroleum Hydrocarbon Fingerprinting by GC/FID
- Diesel Range Organics by GC/FID and GC/MS

Inorganic Analyses:

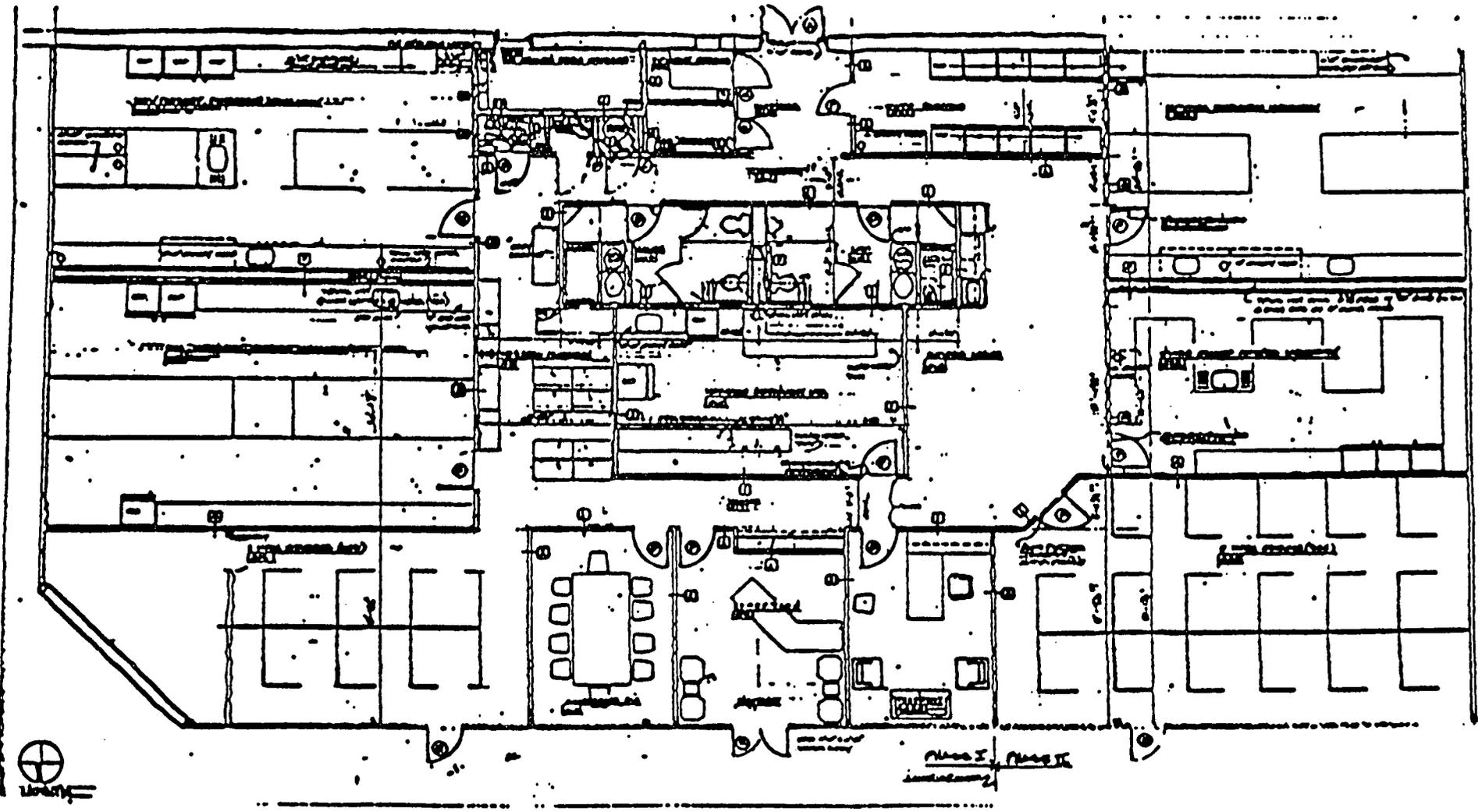
- Metals Analysis by ZEEMAN Graphite Furnace
- Metals Analysis by Inductively Coupled Argon Plasma (ICAP)
- Cold Vapor Analysis (Mercury)
- Wet Chemistry Analysis

Our newly built facility consists of 7,500 square feet, 65% of which is dedicated to laboratory space. With over 300 linear feet of bench space, Mitkem is designed for high throughput and efficient laboratory operations. Separate secure areas are dedicated to sample receipt and storage. Mitkem has individual sample preparation laboratories for organic and inorganic analyses and individual instrumentation rooms for semi-volatiles/pesticides/PCB, volatiles and metal analyses.

Mitkem recognizes the importance of controlling in-house cross contamination. The organic preparation area and the volatile organic instrument room are at opposite ends of the laboratory to minimize solvent contamination of the volatile analysis. To further reduce the risk of contamination, the walls of the organic preparation lab, the semi-volatile organics instrument room and the volatile organic instrument room reach through the plenum to the roof, thereby effectively isolating these laboratories from one another.

Mitkem's state-of-the-art instrumentation from Hewlett-Packard and Perkin-Elmer are connected to a Local Area Network (LAN) to enhance sample through-put and facilitate quality control procedures.

FLOOR PLAN



Laboratory Floor Plan



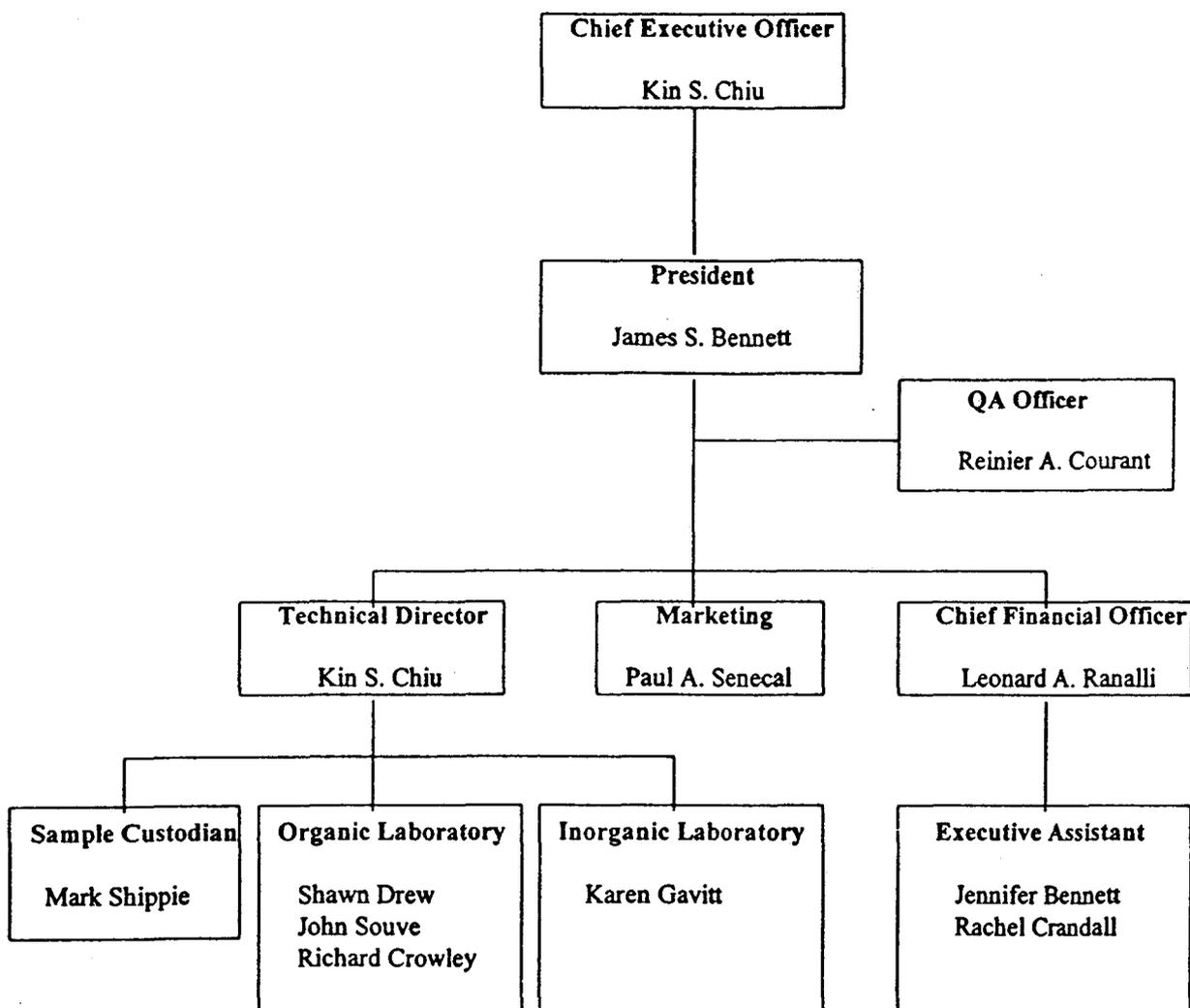
EQUIPMENT LISTING

MAJOR INSTRUMENTATION LISTING

Instrumentation and Analytical Method	Vendor and Model Number
601/602 GC for Volatile Organics	Hewlett Packard Model 5890 GC with Tandem OI PID/HECD Detectors; with Tekmar Purge and Trap sample Concentrators and autosampler
GC for Pesticides/PCB's and Herbicide Analysis	Hewlett Packard Model 5890 GC with dual Electron Capture Detectors and autosampler
GC for Gasoline Range Analysis and Petroleum Hydrocarbon Fingerprinting	Hewlett-Packard Model 5890 GC with Flame Ionization Detector and autosampler
GC/MS System for Volatile Organics Analysis	Hewlett-Packard Model 5872 GC/MS with Tekmar Purge and Trap sample concentrator and autosampler
GC/MS System for Semivolatile Organics Analysis	Hewlett-Packard Model 5872 GC/MS with autosampler
Inductively Coupled Argon Plasma (ICAP) Spectrophotometer for Metals Analysis	Perkin-Elmer Optima 3000XL Transaxial ICAP with autosampler
Graphite Furnace Atomic Absorption (GFAA) Spectrophotometer for Low Level Metals Analysis	Perkin-Elmer 4100ZL ZEEMAN HGFAA with autosampler
Flow Injection Atomic Absorption Spectrophotometer (FIAS) for Mercury Analysis	Perkin-Elmer FIAS with autosampler
Gel Permeation Chromatograph for Sample Cleanup for Organics Analyses	ISCO Corporation
Purge and Trap sample Concentrators for Organics Analysis	Tekmar Model ALS 2016 16 place Purge and Trap System

ORGANIZATIONAL STRUCTURE

MITKEM CORPORATION ORGANIZATIONAL CHART



PERSONNEL

KIN S. CHIU

Chief Executive Officer

Dr. Chiu is a MIT trained mass spectroscopist with extensive experience in the trace level analyses of organic hazardous waste compounds in environmental samples. He has accumulated extensive laboratory management experience through various managerial positions in Contract Laboratory Program (CLP) laboratories.

MITKEM is his second environmental laboratory start-up. The first, CEIMIC Corporation was highly successful. He was an active partner in both start-ups.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Cambridge, Massachusetts
Chemistry, PhD

RUTGERS UNIVERSITY
New Brunswick, New Jersey
Environmental Sciences, MS

UNIVERSITY OF MARYLAND
College Park, Maryland
Chemistry, BS

RELATED EXPERIENCE

1993-Present

MITKEM CORPORATION
Warwick, Rhode Island
- Chief Executive Officer

1993

COAST TO COAST ANALYTICAL
Westbrook, Maine
- Director of Laboratory Operations

1991-1993

**MASSACHUSETTS WATER RESOURCES
AUTHORITY**
Boston, Massachusetts
- Laboratory Superintendent

1988-1992

CEIMIC CORPORATION
Narragansett, Rhode Island
- Vice President Organic Laboratory Operations and
Technical Director

1983-1988

ENSECO/ERCO DIVISION
Cambridge, Massachusetts
- Head of Research and Development

JAMES S. BENNETT

President

Mr. Bennett is one of the most experienced entrepreneurs in the environmental testing arena. He has over 15 years experience in running both privately held and publicly traded companies. Mitkem Corporation is the second environmental testing laboratory Bennett has founded.

EDUCATION

BROWN UNIVERSITY
Providence, Rhode Island
Classics, BS

RELATED EXPERIENCE

1994-Present

MITKEM CORPORATION
Warwick, Rhode Island
- President

1993-1994

COAST-TO-COAST ANALYTICAL
Camarillo, California
- Chief Operating Officer

1988-1991

CEIMIC CORPORATION
Narragansett, Rhode Island
- Vice President of Marketing

1986-1988

ALBERT, BENNETT & COMPANY, INC.
Providence, Rhode Island
- President

1985-1986

PRUDENTIAL - BACHE SECURITIES
Providence, Rhode Island
- Account Executive

1981-1985

KIDDER, PEABODY & CO., INC.
Providence, Rhode Island
- Account Executive

1979-1981

ATLANTA FLAMES HOCKEY CLUB, INC.
Atlanta, GA
- Professional Athlete

REINIER A. COURANT

Vice President

Mr. Courant has over twenty years of experience in the environmental sciences. He has managed a number of large scale multi-disciplinary environmental baseline studies. These studies involved the collection and analysis of samples and the interpretation of the generated data.

In the past ten years he has been involved in the start-up of four environmental laboratories and has been a partner in the last two of them.

EDUCATION

UNIVERSITY OF RHODE ISLAND
Graduate School of Oceanography
Kingston, Rhode Island
Chemical Oceanography, MS

NORTHEASTERN UNIVERSITY
Boston, Massachusetts
Mathematics, MS

DELFT INSTITUTE OF TECHNOLOGY
Delft, Netherlands
Chemistry

RELATED EXPERIENCE

1994-Present

MITKEM CORPORATION
Warwick, Rhode Island
- Vice President

1991-1994

CC CORPORATION
Lexington, Massachusetts
- President

1987-1991

CEIMIC CORPORATION
Narragansett, Rhode Island
- Vice President

1985-1987
1980-1983

**ENERGY AND ENVIRONMENTAL
ENGINEERING, INC.**
Cambridge, Massachusetts
- Vice President

1983-1985

RESEARCH PLANNING INSTITUTE

Columbia, South Carolina

- Senior Chemist Niger Delta Baseline Studies

1978-1980

**INTERSTATE ELECTRONICS
CORPORATION**

Anaheim, California

- Senior Oceanographer USEPA Studies of US
Offshore Dumpsites

1976-1978

ENERGY RESOURCES COMPANY, INC.

Cambridge, Massachusetts

- Field Operation Manager and Senior
Oceanographer Georges Bank Region
Environmental Baseline Studies

1972-1976

UNIVERSITY OF RHODE ISLAND

Kingston, Rhode Island

- Research Specialist/Graduate Student

1969-1972

**WOODS HOLE OCEANOGRAPHIC
INSTITUTE**

Woods Hole, Massachusetts

- Research Assistant/Graduate Student

LEONARD A. RANALLI

Chief Financial Officer

Mr. Ranalli has an extensive financial and business background. He brings to the Mitkem Corporation 13 years of banking experience. His expertise is in operations and financial management.

EDUCATION

BROWN UNIVERSITY
Providence, Rhode Island
Sociology, AB

RELATED EXPERIENCE

1994-Present

MITKEM CORPORATION
Warwick, Rhode Island
- Chief Financial Officer

1992-1994

OLD STONE BANK
Providence, Rhode Island
- Assistant Vice President/
Commercial Real Estate Officer

1990-1992

EASTLAND BANK
Woonsocket, Rhode Island
- Assistant Vice President/
Commercial Loan Officer

1981-1990

RHODE ISLAND HOSPITAL TRUST
NATIONAL BANK
Providence, Rhode Island
- Loan Officer & Special Lending Officer
- Credit Analyst
- Operations Manager, Wire Transfer Department
- Operations Manager, Purchasing Department

KAREN M. GAVITT

Inorganic Laboratory Manager

Ms. Gavitt has five years of experience in the analysis of environmental and hazardous waste samples for both organic and inorganic analytes. She was a VOA's GC/MS analyst during her most recent employment before joining Mitkem. Ms. Gavitt also has experience in the preparation of hazardous waste samples for organic analyses by USEPA CLP protocol.

EDUCATION

DUQUESNE UNIVERSITY
Pittsburgh, Pennsylvania
Chemistry, BS

RELATED EXPERIENCE

1994-Present

MITKEM CORPORATION
Warwick, Rhode Island
- Inorganic Laboratory Manager

1994

ENVIRONMENTAL SCIENCES SERVICES
Providence, Rhode Island
- GC/MS Analyst

1990-1994

CEIMIC CORPORATION
Narragansett, Rhode Island
- Trace Metals Laboratory Supervisor
- Organic Prep Lab Technician

JOHN SOUVE

GC Laboratory Manager

Mr. Souve has several years of experience in the analyses and data reporting of Pesticides/PCB and Herbicides by GC methods using a variety of detector configurations. He also has experience in the preparation of hazardous waste samples for organic analyses using USEPA CLP protocols.

EDUCATION:

UNIVERSITY OF RHODE ISLAND
Kingston, Rhode Island
Natural Resources, BS

RELATED EXPERIENCE:

1994-Present

MITKEM CORPORATION
Warwick, Rhode Island
- GC Laboratory Manager

1991-1994

ENVIRONMENTAL SCIENCES SERVICES
Providence, Rhode Island
- GC Supervisor

1991

CEIMIC CORPORATION
Narragansett, Rhode Island
- CLP Prep Lab Technician

LABORATORY CERTIFICATIONS



New York State Department of Economic Development

Division of Minority & Women's Business Development
One Commerce Plaza
Albany, New York 12248 518 474-6348

FAX: 518 473-0665

February 16, 1995

Kin S. Chiu, CEO
Mitek Corporation
175 Metro Center Blvd.
Warwick, N.Y. 02886

Dear Mr. Chiu,

The New York State Department of Economic Development, Division of Minority and Women's Business Development (DMWBD) has determined that your firm meets eligibility requirements for certification, pursuant to Executive Law, Article 15-A and SNYCRR Section 140 through 145 of the Regulations.

Therefore, we are pleased to inform you that the Mitek Corporation has been granted status as a Minority-owned Business Enterprise. Your business will be listed in the State's Directory of Certified Businesses with the following list of principal products or services:

931 Chemists-Analytical & Consulting
246 Environmental Consultants
58 Biological Research

952 Materials Analysis
616 Environmental Consultants
725 Water & Commercial Air Pollution Control

This Certification remains in effect for a period of generally two years from the date of this letter or until such time as you are selected by this Office for re-certification. Any changes in your company that affect ownership, managerial and/or operational control, must be reported to this Office within thirty (30) days of such changes; including changes to company name, business address, telephone numbers, principal products/services and bonding capacity.

The Certification status is not intended to imply that New York State guarantees your company's capability to perform on contracts, nor does it imply that your company is guaranteed any State business.

Thank you for your cooperation and on behalf of the State of New York, we wish you success in your business endeavors.

Sincerely,

Phyllis M. Cannizarro
Phyllis M. Cannizarro
Certification Supervisor
Business Services

PMC:ba





STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Administration
OFFICE OF PERSONNEL ADMINISTRATION
EQUAL OPPORTUNITY OFFICE
One Capitol Hill
Providence, R.I. 02908-5865
TDD#: 277-6144

November 14, 1994

Mr. Kin Chiu
CEO
Mitkem Corporation
175 Metro Center Boulevard
Warwick, RI 02886

Dear Mr. Chiu:

Based on the application and supplemental information provided by you, your application for certification for the State of Rhode Island Minority Business Enterprise Program has been approved. Your company has been approved to conduct business primarily as an environmental testing firm under SIC CODE 8911. Your "Minority Business Certification Number" which you can utilize as proof of your status is MBCN-528.

Your certification is valid until October 31, 1995, unless revoked sooner based on a determination of ineligibility. It is your responsibility to notify the State of Rhode Island Minority Business Compliance Office of any change in your business that would render your business ineligible for MBE certification.

In order to be recertified, you must submit your recertification package sixty (60) days prior to your current certification date. Your recertification package must include: (a) Current Financial Statements, (b) current work history, (c) current tax returns reflecting your primary MBE Certification SIC business code, and (d) a notice of any change of ownership or business control.

We wish you success in the State of Rhode Island's Minority Business Enterprise Program; and, as we can be of further assistance to you, please contact this office.

Sincerely,

William F. Bundy
Assistant Administrator for
Minority Business Enterprise Program

cc: Phil Kydd - DOT --
Bertha Biagioni - OOP
Larry Franklin - DOA
A. Vincent Igliozzi - DOA
Herb Spencer - DOA



STATE OF NEW YORK DEPARTMENT OF HEALTH

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

Mark R. Chassin, M.D., M.P.P., M.P.H.
Commissioner

Paula Wilson
Executive Deputy Commissioner

DECEMBER 6, 1994

OFFICE OF PUBLIC HEALTH

Lloyd F. Novick, M.D., M.P.H.

Director

Diana Jones Ritter

Executive Deputy Director

WADSWORTH CENTER FOR

LABORATORIES AND RESEARCH

Lawrence S. Sturman, M.D., Ph.D.

Director

LABID 11522
DR KIN S CHIU
MITKEM CORPORATION
175 METRO CENTER BLVD
WARWICK RI 02886

DEAR DR CHIU:

Your application for certification in the New York State Department of Health Wadsworth Center Environmental Laboratory Approval Program has been approved with the following exceptions. Your LABID is 11522.

You were not approved for the following Non-Potable Water (NW) analytes because unapproved methods were cited:

- Gold
- Platinum
- Palladium
- Titanium
- Methoxychlor
- Dicamba
- Silvex

Please note that ELAP approval in both the Air and Emissions (AE) and Solid and Hazardous Waste (SW) categories is by full subcategory only and requires concurrent approval of those analytes in the Non-Potable (NW) category, unless otherwise stated on the application(s). Therefore, you were also not approved for the following:

SW TCLP - you were not approved for the required, concurrently approved NW analytes - Methoxychlor
Silvex

SW Chlorinated Hydrocarbon Pesticides - you were not accredited for the required, concurrently-approved NW analyte - Methoxychlor

SW Chlorophenoxy Acid Pesticides - you were not certified for the required, concurrently-approved NW analytes - Dicamba Silvex

SW Sulfide - you did not apply for this required, concurrently-approved NW analyte.

Please consult the ELAP Certification Manual for approved methods before replying.

Your ELAP 1994-95 Certificates of Approval will be issued upon receipt & approval of a reply to this letter.

If you have any questions, please do not hesitate to call the ELAP Office at (518) 485-5570.

Sincerely,



Linda L. Madlin
Administrative Assistant
Environmental Laboratory
Approval Program

LLM:saw

State of Rhode Island and Providence Plantations
DEPARTMENT OF HEALTH

Audit No 0149



License No... 120.....

This is to certify that

MITKEM CORPORATION
175 Metro Center Blvd.
Warwick, RI 02886

is licensed to operate a

Analytical Laboratory

Mitkem Corporation

in conformity with Chapter 39 of Title 23 of the General Laws of Rhode Island, as amended.

It has demonstrated its proficiency in the performance of the following One categories of laboratory tests:

Chemistry

Barbara A. DeBunno M.D.

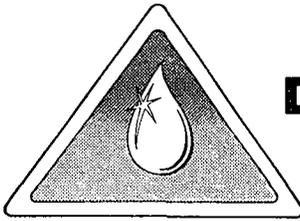
Director of Health

Expires, June 30, 1996

ISSUED 16 December 1994

Appendix J

*Qualifications and Experience Statement
for Delta Well and Pump*



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

February 16, 1995

Laura Truettner
ERM-Northeast
175 Froehlich Farm Blvd.
Woodbury NY 11797

Dear Ms. Truettner:

In conjunction with our proposal for the Metro-North Rail Yard bid, I would like to take this opportunity to introduce our firm to you. As a drilling company we strive to be versatile and professional in working for and with owners, consulting engineers and other contractors. Following is a summary of some of our services.

Delta Well & Pump Co., Inc. serves municipal and industrial customers, providing a full range of drilling capabilities. We are able to construct auger wells of varying sizes from a 4 inch diameter borehole to a 17½ inch borehole. Our equipment allows for a complete range of soil sampling, periodic water sampling in advance of the augers as drilling progresses, gravel packing, grouting, and well completion. Auger wells have been drilled for dewatering projects; formation sampling; landfill monitoring; aquifer testing; fuel storage monitoring; sewage treatment plant monitoring and water supply, diffusion and recovery wells. Our work has been overseen and approved by the Department of Environmental Conservation (DEC) and the Department of Health. Essentially, we pride ourselves in being able to do the unusual such as angle drilling or deep auger wells constructed with our Failing F-10 rigs.

For deeper wells our conventional rotary rigs have the capability of drilling to 2000 feet.

We also offer a full range of reverse rotary wells including test holes to 1200 feet for aquifer testing and large diameter underreamed wells for municipal water districts.

We currently install irrigation wells and pumps for a majority of the golf courses located on Long Island. The service and repair of wells, pumps, diesel engines and associated equipment for municipal water districts and industrial customers is another of our many diverse services. We also abandon and seal wells in accordance with DEC specifications, a service which is often required in response to the DEC's tightened policy on idle wells.

Ms. Laura Truettner
ERM

Page 2 of 2
February 16, 1995

Our crews have all completed the 40 hour OSHA certification program with annual 8 hour refresher courses. We also maintain a medical surveillance program.

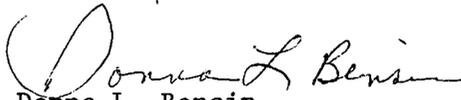
In addition, our affiliated machine shop expands the scope of our capabilities well beyond the average drilling contractor.

Delta Well & Pump Co., Inc. is a New York State, New York City and Port Authority of NY & NJ certified Woman-owned Business (WBE) and a New York State DOT certified Disadvantaged Business Enterprise (DBE).

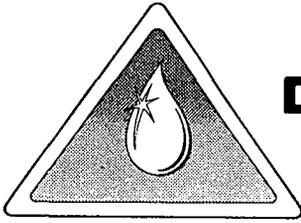
We have attached a list which summarizes some of the services we have provided our customers. If we can assist you or other members of your firm in any way, please do not hesitate to call. We look forward to hearing from you.

Very truly yours,

DELTA WELL & PUMP CO., INC.


Donna L. Bensen
President

DLB/jp
Enclosure
(13)



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

SERVICES PROVIDED

Our well drilling services include:

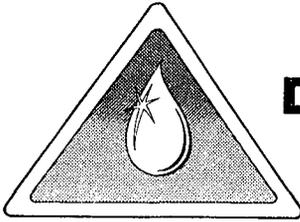
- * 40 hour OSHA trained employees
- * OSHA medical surveillance program
- * Deep rotary wells and test holes (1500 + feet)
- * Large diameter reverse rotary supply wells
- * Supply and diffusion heating and cooling wells
- * Recovery wells and recharge (injection) wells
- * Test wells for aquifer tests
- * Dewatering wells
- * All phases of environmental drilling
- * Monitoring wells and soil samples for property environmental studies, sewage treatment plants and ground water monitoring
- * Screened auger water sampling
- * Hydropunch sampling
- * Borings
- * Angle drilling
- * Well rehabilitation
- * Installation of liner screens and screen replacement
- * Chemical treatment
- * Well abandonment in accordance with D.E.C. specifications
- * Gamma ray logging
- * Sieve analysis
- * Installation of cathodic protection grounding rods
- * Concrete core drilling (portable equipment)

Our pump shop and service department include the following capabilities:

- * Pump supply and installation
- * Pump repair and rebuilding (for all manufacturers of pumps)
- * Pump disassembly with inspection report and repair recommendations
- * Pump testing with associated report and recommendation
- * Emergency responses
- * Diesel engine/generator repair
- * Periodic maintenance of diesel engines/generators
- * Inspection and recommendation for repairs of diesel engines/generators

In addition, through our affiliated machine shop Rotodrill Welding & Machining Co., Inc., we are able to provide the following:

- * All phases of welding and machining
- * Metalizing and shaft repair
- * Specialty fabrication
- * Overnight emergency service



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

EQUIPMENT LIST

DRILLING RIGS/PUMP TRUCKS

- (1) Portadrill mud rotary and air rotary combination
- (1) Failing JED A reverse rotary
- (1) Failing JED A mud rotary/reverse rotary rig
- (2) Failing F-10WT auger/mud rotary/reverse rotary combination rigs
- (1) Failing F-7 auger rig
- (1) 22W cable tool rig
- (1) Franks mud rotary rig
- (2) Smeal hoist rigs
- (1) Acker hand rig

TRUCKS

- (1) Flat bed LN9000 with hydraulic boom
- (1) Flat bed truck
- (1) Dump Truck
- (1) Tag-along dump trailer
- (3) Flat bed trailers
- (2) Low boy trailers
- (2) Job office trailers
- (2) 7000 gallon tank trailers
- (2) Tractors
- (4) Service trucks
Pick-up trucks

TEST EQUIPMENT

Miscellaneous submersible and deep well turbine pumps with related column pipe, etc.

Test engines, generators, etc.

- (1) 55KW diesel generator
- (1) 60KW diesel generator
- (2) 25KW diesel generators
- (1) 5KW gas generator

MISCELLANEOUS

- (2) Sullair 185 CPM compressors
- Construction pumps (various sizes) 2" to 3" gas driven
- (4) Ford backhoes
- (8) Welding machines (gasoline driven)
- (1) Fork lift
- (5) Steam cleaners (portable)
- (1) Portable concrete coring machine

TEST ENGINES

- (1) 871 Detroit diesel
- (1) 6 cylinder Continental gas engine
- (1) 371 Detroit diesel
- (1) 471 Detroit diesel

DW&P-353 (11/93) (L21)

ROBERT T. DEVINE

RESUME

Delta Well & Pump Co., Inc.

1987 - Present Hired as a driller when company started up. Promoted to Field Supervisor in 1988 and to Vice President of Field Operations in 1989. Responsible for all field activities; hiring and firing, production, actual drilling methods and techniques, shop activities which include equipment repairs and design, fabrication and purchases of specialized tools and equipment. Assist in the preparation of bids evaluating labor hour requirements, drilling methods, and capabilities.

Delta Well Co., Inc.

1976 - 1986 Hired as a driller for Long Island and New Jersey projects. I was substantially responsible for the early growth of Delta Well Co., Inc., providing the drilling expertise the principles of the company lacked. Held the position of Shop Stewart for International Union of Operating Engineers Local 138 for eight years with responsibility mediating labor disputes and handling union labor complaints. Company on the verge of bankruptcy; sold its assets.

C. W. Lauman Co., 100 Lauman Lane, Bethpage, NY

1963 - 1976 Promoted to Driller and progressed to job Foreman on major drilling jobs throughout the east coast of the United States. Projects included studies for the United States Geological Survey, municipal water supply systems, and nuclear power plants. Arranged for manpower, equipment, and materials for these out-of-town projects and supervised drilling construction crews of six men. Company went bankrupt.

1961 - 1963 Hired as a Driller's Helper, obtained experience on rotary and cable tool drilling rigs.

CHRISTOPHER MICHAEL OKON

RESUME

Work History:

- 1987 - Present Delta Well & Pump Co., Inc.
Progresses from Field Technician to Project Manager for well construction projects including Nassau County Department of Public Works and Suffolk County Water Authority contracts as well as environmental projects for private industry. Contracts range from one-day jobs to \$500,000+ municipal requirements commitments. Duties include estimating, purchasing, direct project coordination with customer and field supervisor, billing, and meeting all record keeping and reporting requirements. Technical responsibilities include soil sample analysis, gamma logging, well screen selection, well design, pump selection, vibration analysis and machinery balancing.
- 1983 - 1987 Bensin Contracting, Inc. (Part Time)
Field helper for mechanical contractor.

Education:

- 1990 - Present N. Y. Institute of Technology
Currently pursuing Bachelors Degree in Mechanical Engineering.
- 1987 - 1990 State University of New York - Farmingdale
Associates Degree in Engineering Science
- 1983 - 1987 State University of New York - Binghamton
Bachelors Degree in Mathematical Sciences
- 1990 40 Hour OSHA Hazardous Materials Safety Course
- 1994 International Ground Source Heat Pump Association
Accredited Installer
- 1994 Pi Tau Sigma National Honorary Mechanical
Engineering Fraternity



STATE OF NEW YORK
GOVERNOR'S OFFICE
OF
MINORITY & WOMEN'S BUSINESS DEVELOPMENT
ALBANY 12224

STEPHANIE M. BROWN
DIRECTOR

TWO WORLD TRADE CENTER
58TH FLOOR
NEW YORK CITY, N.Y. 10047
(212) 567-2263

October 16, 1991

Fed. ID#: 11-2841186

Ms. Donna L. Bensin
Delta Well & Pump Company Incorporated
97 Union Avenue
Ronkonkoma, NY 11779

Dear Ms. Bensin:

On behalf of New York State, the Governor's Office of Minority and Women's Business Development (GOMWBD) has completed its review of your application for State certification as a Women-owned Business Enterprise and has determined that your firm meets eligibility requirements pursuant to Executive Law, Article 15-A. We are pleased to inform you that the firm of **Delta Well & Pump Company Incorporated** has been granted status as a Woman-owned Business Enterprise.

Your business will be listed in the State's Directory of Certified Businesses with the following list of principal products or services:

Construction: Drilling and Industrial water supply

Certification status is not intended to imply that the State of New York guarantees your company's capability to perform on contracts, nor does it imply that your company is guaranteed any State business.

This certification remains in effect for a period of two years from the date of this letter or until such time you are selected by this Office for recertification. Please remember that any changes in your company that affect ownership, managerial, and/or operational control must be reported to this Office within 30 days of such changes; including changes of company name, business address, telephone numbers principal products/services, and bonding capacity. At such time as it is necessary for your company to be recertified, you will be notified by this Office.

If your certification status is questioned by any public or private entity, please direct the inquiry to this office for clarification.

Thank you for your cooperation. On behalf of the State of New York, I wish you luck in your business endeavors, particularly in those involving State agencies.

Sincerely,



Al Bass
Assistant Director
Business Services Bureau

cc: Joe Baez
Joan Fonseca
Fran Genovesi
Michael Searles
Keith Hercules
Anthony Fowora

gg:glos



DEC 28 1992

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
ALBANY, N.Y. 12232

FRANKLIN E. WHITE
COMMISSIONER

DEC 22 1992

Ms. Donna Bensin
Delta Well & Pump Co., Inc.
97 Union Avenue
Ronkonkoma, New York 11779

Dear Ms. Bensin:

The New York State Department of Transportation is pleased to inform you that the firm of DELTA WELL & PUMP CO., INC., meets the criteria established in accordance with 49 CFR 23.53 as a Disadvantaged Business Enterprise for participation in Federally funded projects.

Welcome to the Disadvantaged Business Enterprise Program and Best Wishes in your future endeavors.

Your firm's name will be listed in the New York State Department of Transportation Registry of Disadvantaged Business Enterprise firms with the following list of principal products or services:

(648) SUBSURFACE EXPLORATIONS - WELL DRILLING

If your firm expands its services, increases its product line, or diversifies to other areas not referenced above, you must request, in writing, to have the above referenced principal products or services expanded to include the new products or services offered by your firm. The request for expansion of services must be accompanied with proofs of purchase for equipment, executed contracts for performance, newly hired employees and/or supervisory personnel and any other information pertinent to a review and approval. Until the information has been reviewed and acknowledged by the Office of Equal Opportunity Development and Compliance, your firm's principal products or services for DBE participation on federally assisted projects will only include those requested and approved at this time.

Certification status is effective for not more than one year. At that time, you will be required to submit a Schedule A for continuation.

Page 2

DBE Certification has been granted to DELTA WELL & PUMP CO., INC. as meeting the requirements related to ownership, managerial control, operational control, contribution of capital and business size as outlined in 49 CFR 23.53. Accordingly, any changes that affect ownership, managerial and/or operational control must be reported to NYSDOT, Office of Equal Opportunity Development and Compliance, 1220 Washington Avenue, Albany, N.Y. 12232, within 30 days of that change. Also, any change in address should be reported immediately.

From time to time, NYSDOT may examine facts concerning your continuing eligibility. In that regard, as a condition of your certification, you have consented to examination of your books and records and interviews with your principals and employees for the purpose of such examination and to the revocation of your certification if such examinations or interviews are denied.

Please note that certification as a DBE does not guarantee your company a right to perform on New York State contracts. Performing a contract or subcontract concerning a New York State government agency depends on a variety of features, including your responsibility as a bidder, etc. In that regard, you are directed to individual agencies of New York State for their rules, regulations, policies and procedures concerning contracting or subcontracting. To the extent you contract, or subcontract, concerning a NYSDOT project as a DBE, please refer to the specifications outlined on the individual contract.

Plans and proposals for upcoming projects can be purchased either in person or by mail at the NYS Department of Transportation Sale of Plans Unit, Room 109A, Building 5, State Campus, Albany, NY 12232; The Department of Transportation, Hunters Point Plaza, 47-40 21st Street, Long Island City, NY 11101 or at the Regional Office responsible for the project. Plans and proposals generally cost \$49.00 (plus a \$6.00 postage, if mailed). Checks should be made payable to the "State of New York Department of Transportation". Please include your Federal Identification Number on each check.

The Department has two subscription services providing information to bidders. One is for Notice of Highway Lettings, which advises subscribers of upcoming projects. The other is for Tabulation of Results of Highway Lettings, which identifies the low bidder for each project. The cost of these services for a twelve month period is \$32.00 for "Notices" and \$15.00 for "Results". If you want to subscribe to either or both of these services, send a check made payable to the "State of New York Department of Transportation", to the NYS Department of Transportation, Contract Management Bureau, Room 108, Building 5, State Campus, Albany, NY 12232.

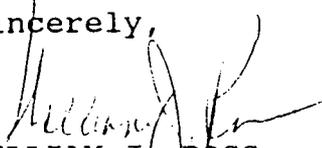
For those interested in sub-contracting or supplying it is advisable to subscribe to our "Results" service so you can contact the successful low bidder of the project you are interested in.

If you have any additional questions, please contact the Contract Management Bureau at (518) 457-3583.

Should you have any questions regarding your certification as a Disadvantaged Business Enterprise or your participation on a NYSDOT contract, please contact the Office of Equal Opportunity Development and Compliance at (518) 457-1128. We will be happy to assist you in any way possible.

NYSDOT looks forward to doing business with you and encourages your participation - Good Luck!

Sincerely,

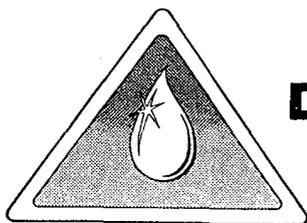

WILLIAM J. ROSS
Compliance Specialist II
Office of Equal Opportunity
Development and Compliance

WJR:MSM:tbs

cc: L. Gilmore Canton, Gov. Office, Albany, NY
R. Morales, NYS Thruway Authority
M. Pugh, NFTA
M. Searles, Gov. Office, NYC
File

LIST OF REFERENCES
AIRPORT CONSTRUCTION
Prepared February 2, 1995

<u>PROJECT</u>	<u>CONTRACTED BY</u>	<u>CONTACT</u>	<u>CONTRACT AMOUNT</u>	<u>DATE COMPLETED</u>
Replacement of Cooling Water Supply Wells at Building 111 Contract JFK-710	The Port Authority of NY & NJ	Bruce Frumer Port Authority REO 718-656-7214	\$343,678	04/93
JFK Building 197 Site Assessment	Lawler, Matusky & Skelly Engineers One Blue Hill Plaza PO Box 1509 Pearl River, NY 10965	Al Zay 914-735-8300	12,457	10/92
JFK Building 215 5 Monitoring Wells	Lawler, Matusky & Skelly Engineers One Blue Hill Plaza PO Box 1509 Pearl River, NY 10965	Kevin McCarty 914-735-8300	7,375	04/93
JFK Building 55 80 Vapor Extraction and Air Injection Wells	Terra Vac 806 Silvia Street West Trenton, NJ 08628-3239	Jim Busanus 609-530-0003	150,000	In progress
LaGuardia HERTZ Three (3) Monitoring Wells	Groundwater Technology Inc. 101-1 Colin Drive Holbrook, NY 11741	Tony Fiorentine 516-472-4000	3,000	05/93
JFK TWA Building 60 Five (5) Monitoring Wells	Burns & McDonnell Waste Consultants, Inc. 3701 South Lindbergh Blvd. St. Louis, Missouri 63127	James D. Roach 314-821-9016	9,650	05/94
JFK Building 56 American Airlines Terminal 21 Monitoring Wells	Burns & McDonnell Waste Consultants, Inc. 10881 Lowell Overland Park, Kansas 66210	Ron Falwell 816-333-8787	35,273	07/94
Port Authority NY & NJ Howland Hook Sanitary Con. Staten Island, NY (6) Test Borings	Lawler, Matusky & Skelly One Blue Hill Plaza PO Box 1509 Pearl River, NY 10965	Matt Greco 914-735-8300	6,230	10/93



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

Hired by: Blasland & Bouck Engineers, P.C.
1 Suffolk Square
Suite 210
Islandia, NY 11722-1543

Contact: Mr. Stanley Sucharski, Jr. (516) 234-0634

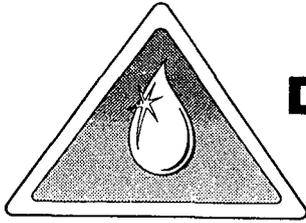
Contract
Title: Remedial Action Program

Location/Owner: Port Washington L-4 Landfill
Town of North Hempstead, New York

Scope of Work: Installation of auger monitoring wells,
mud rotary/reverse rotary combination monitoring
wells and recovery well

Date of Completion: Monitoring Wells Complete
Recovery Well in Progress

Contract Amount: \$240,000.00



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

Hired by: Geraghty & Miller, Inc.
125 East Bethpage Road
Plainview, NY 11803

Contact : Mr. Carlo San Giovanni 516-391-5259

Contract
Title: Monitoring Well Drilling and Installation

Location/Owner: Grumman Aerospace Corporation
Bethpage, NY 11714

Project I

Scope of Work: Installation of 29 monitoring wells
Utilizing auger and combination
Auger/mud rotary/reverse rotary drilling methods

Date of Completion: November 1991

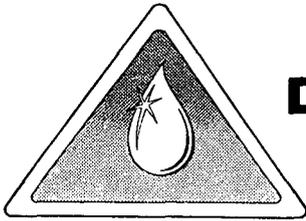
Contract Amount: \$363,338.00

Project II

Scope of Work: Installation of 13 deep monitoring wells
utilizing auger, mud rotary and combination
auger/mud rotary/reverse rotary drilling
methods.

Date of Completion: November 1993

Contract Amount: \$500,000.00



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

Contracted by: Camp Dresser & McKee
100 Crossways Park West, Suite 415
Woodbury, NY 11797

Contact: Mr. Drew Bennett 516-496-8400

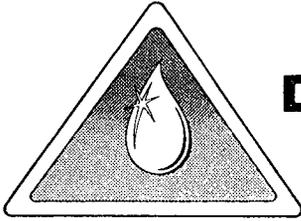
Contract Title: Brookfield Avenue Landfill Project
State Island, NY
General Fund Registration #9323183

Location/Owner: City of New York

Scope of Work: Environmental drilling for landfill including
borings, piezometers, monitoring wells

Date of Completion: June 1994

Contract Amount: \$300,000



DELTA WELL & PUMP Co., Inc.

WATER AND ENVIRONMENTAL DRILLING

Hired by: County of Nassau Department of Public Works
Hazardous Waste Unit
One West Street
Mineola, NY 11501

Contact: Mr. Tim Kelly 516 997-8282
Mr. James Mulligan, 516 932-4770
Director of Water Management

Contract Number: S80002L

Contract Title: Requirements Contract
Observation wells-Auger Method
Various hazardous waste locations
Nassau County, New York

Geographic Location: Nassau County, New York

Scope of Work: Auger monitoring wells

Date of Completion: February 1992

Final Value of Contract: \$130,000.00

Appendix K

*Qualifications and Experience Statement
for GRB Environmental Services, Inc.*

**GRB ENVIRONMENTAL
SERVICES, INC.**

Rose Russo Barbour
President

EDUCATION

B.E.C.E. , Civil/Water Resource Engineering, City University of New York, 1978
M.E.C.E. , Civil/Environmental Engineering, City University of New York, 1986

EXPERIENCE SUMMARY

Ms. Barbour has 14 years experience encompassing several aspects of hazardous waste, hydrogeology, permitting and civil engineering for utilities, industry and municipalities; more specifically in the areas of hydrogeology, pollution prevention, solid waste management, landfill engineering, drainage control, hazardous waste investigations (RI/FS), remedial design, hazardous waste spill response, development of construction specifications, permitting, wastewater treatment plant design, facilities planning administering consultant and construction contracts, preparing and updating budget forecasts and project schedules, monitoring and evaluating engineering and design efforts, and interfacing with regulatory agencies.

Ms. Barbour is a member of the Williamsburg Bridge Rehabilitation Program and is currently managing a hazardous waste remedial investigation as part of the construction program. Here she has investigated and delineated soil and ground water contamination, product from leaking underground gasoline and diesel fuel tanks, and is responsible for developing a remedial cleanup and construction program. As part of this effort she is responsible for identifying all required permits and has interfaced closely with Federal, State and City of New York regulating agencies including the NYSDEC. As part of her efforts, Ms. Barbour prepared a BMP Plan to control the release of contaminants during this large (\$450 Million) construction project. Upon developing a remediation program, Ms. Barbour will prepare remedial construction bid documents for bidding purposes.

Ms. Barbour has directed hydrogeologic investigations at inactive hazardous waste landfills, municipal waste landfills, coal ash landfills, and an abandoned coal gasification and coal tar disposal site. For a chemical reprocessing plant, she developed, evaluated and designed remedial alternatives to clean up a contaminated aquifer and provided construction management services for the installation of a ground water recovery system. She has assisted in the development of operation and closure plans to upgrade three landfills in accordance with NYSDEC regulations; leachate/drainage control alternatives (containment/collection/treatment/disposal); landfill gas control plans and design reports; and integration and coordination of closure plans with remedial plans. She has directed hydrogeologic investigations at coal ash landfills involving flow net analysis, solute transport and dispersion modeling, aquifer pump test analysis.

PROFESSIONAL EXPERIENCE

8/2/86 to Present GRB Environmental Services, Inc.

Develops, manages and implements hazardous waste investigations and remedial design at uncontrolled hazardous waste sites. Her experience encompasses over 2,000 hours of hands on work at hazardous waste sites throughout the Northeast. These sites were contaminated by volatile organics, base neutral compounds, toxic metals, and PCB's. Ms. Barbour has developed and directed several NYSDEC Phase II Inactive Hazardous Waste Investigations for PRP's, prepared pollution prevention/BMP plans for large remedial programs, prepared Part 360 Permit application programs and schedules, performed leaking underground storage tank investigations and evaluations, developed QA/QC protocols for field and laboratory programs, developed RI/FS work plans, identified and evaluated remedial alternatives, performed remedial costing evaluations, and develops and implements groundwater monitoring programs. Ms. Barbour provides expert technical assistance in the review and evaluation of RI/FS studies and design documents for CERCLA litigation negotiations. Prepared ARAR's document for Edgemere Landfill RI/FS.

At a construction site in New York City where a Post Office was being built over an old municipal waste landfill, Ms. Barbour designed a methane / combustible gas monitoring program for drilling, excavation and venting activities.

For an overseas A/E firm, Ms. Barbour provided technology transfer services on bioremediation technologies for the in-situ and in tank remediation of PCB's, waste oil, coal tar, and volatile organics. Systems and technologies evaluated included those from Detox Industries, Sybron Corporation, Polybac Corporation, Microlife Technics, Biosystems Engineering, Solmar Corporation, Zimpro Passavant, CCA Bioremediation System, and Groundwater Technology.

Currently, Ms. Barbour is providing technical services as a team member on the Williamsburg Bridge rehabilitation project. Here, she performed all environmental audits/surveys of some 20 buildings, performed soil gas surveys, designing and supervising all hazardous waste remedial programs, managing asbestos surveys of the anchorage houses, preparing specifications, and reviewing contractors bids and making recommendations for contractor selection. Based on the results of the environmental audits/surveys, Ms. Barbour will prepare plans and specifications for drilling and well installation, tank removal and disposal, soil sampling and analysis, asbestos removal and disposal, excavation and disposal of contaminated soils, supervision of contractors, and preparation of numerous reports.

1/1984 to 8/1986

NYC Department of Sanitation, Office of Resource Recovery
and Waste Disposal Planning

As a project coordinator was involved in the closure design of three municipal waste landfills, classified as inactive hazardous waste landfills, in accordance with the New York State Department of Environmental Conservation regulations and guidelines. Responsibilities included evaluation of subsurface exploration, hydrogeologic field testing, ground and surface water monitoring programs, leachate control alternatives, landfill gas control plans, and landfill design reports. Ms. Barbour was project manager for a Remedial Investigation / Feasibility Study (RI/FS) for subsurface PCB oil contamination at the Pennsylvania Avenue Landfill. The investigation required the identification of source(s) and aerial extent of contamination, recovery well installation monitoring network design and implementation, pilot testing and treatability study for clean-up alternatives such as containment collection/treatment/disposal of PCB oil and contaminated soil, waste minimization of PCB waste oil during clean-up test activities, implementation of manifest procedures for on-site storage and disposal and assistance for litigation proceeding associated with the illegal disposal of the hazardous wastes.

1982 to 12/1983

EBASCO Services, Envirosphere Company

On project team for a study entitled "Evaluation of Systems to Accelerate Stabilization of Waste Piles or Deposits" undertaken for JRB Associates of McClean, VA sponsored by the EPA. The objective of this project was to develop an engineering specifications manual for implementing in-situ hazardous waste treatment methods to be used in conjunction with or in lieu of excavation and offsite disposal for managing hazardous wastes sites.

Development of an Environmental Master Plan for the Corporacion Dominicana de Electricidad, the government-owned electric generating utility in the Dominican Republic. Responsible for the siting, conceptual and preliminary designs for a solid waste (ash) disposal system for the plant. Consolidated Edison Co. of New York - Siting study for coal combustion residue disposal facilities. Conceptual and preliminary design and layout of landfilling operations and access roads, liner design, drainage, construction limitations, ash handling and permitting requirements

New Jersey Client (Confidential) - Conducted a site soil and ground-water field sampling program and analysis to evaluate the pollution potential from an abandoned coal gasification and coal tar disposal operation.

1980 to 1982

Gibbs & Hill, Inc.

Prepared contract specifications for the North River Wastewater Treatment Plant. In conjunction with this task was extensive contact with manufacturers to screen and evaluate the suitability and performance of a wide range of mechanical and instrument control equipment installations. Reviewed construction drawings for inconsistencies or conflicts and conducted engineering systems design for several processes.

McKesson Envirosystems Co., Newark, N.J. Aquifer Decontamination Project (organic chemicals). Responsible for hydrogeologic evaluation, geotechnical analysis, laboratory test results evaluation; soil settlement analysis and design of several engineering solutions for aquifer decontamination. Remedial designs included groundwater recovery well system, french drain collection system, slurry wall with groundwater recovery well system, and capping.

Northeast Utility Service Company - Hydrogeologic Studies at the West Springfield and Mt. Tom Generation Stations, MA. Both Studies involved assessing the impacts of utility waste storage resulting from a coal conversion. Duties included the determination of the hydrodynamics of the site aquifers, development of a long term groundwater quality monitoring program and evaluating potential impacts on local water resources from future onsite stockpiling of coal and ash. The studies encompassed a pre-conversion and a post conversion analysis.

American Natural Resource Co., Kentucky - Groundwater Resource Supply. The study involved site selection for two production wells utilizing satellite photographs and geologic information. Analysis of aquifer pumping tests to assess potential for long term water resource supply for industrial and potable usage for a 20 million dollar coal preparation plant. Lead engineer responsible for computer simulations of groundwater flow patterns and the movement of contaminant plumes within the site water system. The simulations were used for interpretive and predictive studies to estimate groundwater behavior in response to various scenarios.

1979 to 1980

Metcalf & Eddy Engineers, Inc.

Duties involved preparation of the 201 Facilities Planning study of the NYCDEP Owls Head Water Pollution Control Plant, including alternatives and optimization studies; cost-benefit analysis and construction scheduling. Designed and evaluated sludge handling and stabilization alternatives, interfaced with manufacturers to evaluate equipment and proposals.

Prepared specifications and bidders evaluations for several sewer construction projects, provided construction management service for several construction projects, i.e. review of shop drawings and the resolution of field construction conflicts; involved in the collection and interpretation of secondary treatment requirement for New York City Department of Environmental Protection.

1978 to 1979 Factory Mutual (Engineer Inspector)

Ms. Barbour inspected numerous industrial facilities to review housekeeping practices, ascertain risks associated with facility activities regarding fire, explosion, or release of chemicals, prepared recommendations and action plans for facilities to comply with good engineering and safety practices.

PROFESSIONAL AFFILIATION

Member of American Society of Civil Engineers

NAME AND TITLE

LUIS LEBRON / Environmental Engineer

EDUCATION

B.S. Mechanical Engineering 1990 - University of Puerto Rico, Mayaguez Campus
E.I.T. License 12633

EXPERIENCE SUMMARY

July 1994 Present GRB Environmental Services, Inc.

Develop and review investigative work plans, evaluate environmental impacts from uncontrolled release of hazardous waste (evaluate impacts on ecological, terrestrial, and water resources), perform multi-media sampling, prepare mini-remedial investigative reports, perform and prepare preliminary site assessment, and inspect various industrial facilities

January 1993 Senior Manufacturing Engineer & Environmental/Safety Supervisor
to December 1993 Stryker Puerto Rico, Medical Devices Manufacturer, Arroyo, PR

- Installed and validates new manufacturing machinery. Developed validation protocols for new products. Experienced in injection molding, heat sealing and packaging machines (installation, processing and set up).
- Increased production output of molding process by decreasing die set up in time up to 35% less, modifying the feed process of polycarbonate and redesigning the production lines layout.
- Developed and implemented environmental control programs including hazardous materials, spill control and storm water. Responsible for all regulatory permits concerning air, water and hazardous/non hazardous waste regulations (hazardous waste storage, disposal and paperwork).
- Conducted and supervised Air Emission Control Programs including environmental control methods, selection and installation of environmental control equipments (fumes extraction, dust collectors, hepa air filters and ducts clean up) and developed written procedures.
- Responsible for Loss Prevention Planning and Controls. Experienced in hazardous exposures, fire safety, evacuation layouts and emergency and safety written procedures. Conducted fire prevention surveys, safety inspections and employee safety trainings.

December 1990 Facilities /Maintenance Engineer (Facilities Department Supervisor)
to December 1992 Stryker Puerto Rico, Medical Devices Manufacturer, Arroyo, PR

- Experienced in supervise multi shift maintenance technicians and machine shop personnel. Conducted contract management, work inspection and shop drawing review and approval during new constructions, additions and renovation projects.
- Performed design and layout of plans for mechanical system installations (plumbing, ventilating, compressed air, refrigeration and A/C). Experienced in installation and troubleshooting of hydraulic and pneumatic systems.
- Managed HVAC systems of two manufacturing plants including design, installation, maintenance and troubleshooting. Experienced in HVAC for pharmaceutical and controlled areas according to 209-D and 209-E Federal Standards.

- Experienced in electrical distribution, troubleshooting and maintenance of power systems.
- Implemented Preventive Maintenance Program and experienced in predictive maintenance. Responsible for purchasing and inventory of spare parts and materials.
- Responsible for handling and processing hazardous waste materials (treatment, storage, disposal and paperwork).

TRAINING

OSHA 40 hr training course (92')
OSHA 8 hr refresher course (93')
Confined Space Awareness & UST
EPA - Pollution Prevention
& Storm Water workshop
DOT Transportation of
Hazardous Materials seminar
Preventive Maintenance seminars

Safety & Health Training
Occupational Health workshops
Supervision Techniques seminar
GMP's seminars
JIT courses
TQM Training course
Autocad Courses (Release 12)
Injection Molding workshops

347 Madison Avenue
New York, NY 10017-3739
212 878-7000



Metropolitan Transportation Authority

June 30, 1994

CERTIFIED MAIL

Ms. Rose Russo Barbour
President
GRB Environmental Services, Inc.
15 Pleasant Lane
Oyster Bay, New York 11771

Re: **DBE RECERTIFICATION NOTICE**

Dear Ms. Barbour:

Please be advised that your firm has been **RECERTIFIED** as a Disadvantaged Business Enterprise (DBE) by the Metropolitan Transportation Authority (MTA). Accordingly, your firm is recertified as a DBE with all MTA agencies (MTA Long Island Rail Road, MTA Metro-North Railroad, MTA Long Island Bus, MTA New York City Transit, MTA Bridges and Tunnels and MTA Card Company) and can provide the product(s) and/or service(s) listed below:

**ENVIRONMENTAL CONSULTING SERVICES AND STUDIES;
HAZARDOUS WASTE INVESTIGATIONS**

Your firm is eligible to participate as a DBE on all MTA federally funded projects in the business area(s) listed above without further recertification review. In addition, your firm will be identified as a certified firm in the next update of the MTA Directory of Certified Firms.

Your firm's certification status with the MTA is effective for one (1) year from the date of this letter, provided there are no changes in the ownership, control and/or operations of the firm, or eligibility requirements during the approval period. We strongly encourage you to apply for recertification at least sixty (60) days prior to your expiration date. Additionally, you are required to immediately notify the MTA's Affirmative Action Department of any changes in your business ownership, control and/or operations, including business service capabilities.

The MTA and its agencies reserve the right to re-evaluate certification eligibility prior to the firm's participation on any MTA or agency project. In addition, if the MTA determines that a re-evaluation of your business is warranted, we will conduct a re-evaluation.

If you have any questions concerning the MTA Unified Certification Program, please contact this office at (212) 878-7217.

Sincerely,

A handwritten signature in black ink, appearing to read "E. E. Wiggins".

E. E. Wiggins
Director
Affirmative Action

cc: R. House, NYCTA
K. Neal/B. Marin, MTA

The agencies of the
Metropolitan Transportation Authority

MTA New York City Transit
MTA Long Island Rail Road

MTA Long Island Bus
MTA Metro-North Railroad

MTA Bridges and Tunnels
MTA Card Company

Peter E. Stangl, Chairman and Chief Executive Officer

**USEPA Technical Assistance Team
USEPA Region 2**

GRB Environmental Services, Inc. is a member of the TAT team providing various technical and support services to the USEPA. The TAT program

and its members augment DPA's response, removal and pollution prevention programs. Specifically, GRB staff assigned to the program perform the following services as required: 1) conduct on-site facility surveys and inspections to ascertain compliance with EPA Oil Prevention Regulations and evaluate/comment/prepare SPCC and BMP Plans, 2) implement EPA, State and contractor personnel training programs in providing the skills and expertise in handling multimedia emergencies caused by oil, hazardous substances, and toxic wastes, 3) review and analyze response contingency plans with regards to implementation of Federal-local, State and Local Chemical Emergency Preparedness Programs, 4) prepare pollution reports and damage assessments for the restoration or replacement of damaged natural resources, 5) coordinate the development of community relations plans, 6) conduct preliminary assessments and other Section 104(b) activities, 7) perform mini-remedial investigations for the purpose of deleting from or reclassifying on the National Priorities List (NPL) (i.e., activities may include preparation of a risk assessment, sampling, examination of the administrative record, etc.), 8) provide direct emergency response support, and 9) monitor and assist as required, response services during removal actions including sampling collection; identification of the existence and extent of a release, the source and nature of any hazardous substances released, and the extent of any danger to the public; performance of process inspections; evaluating disposal options; monitoring cleanup personnel; assessing feasibility and effectiveness of containment, on-site treatment and removal options; procuring applicable Federal, State and Local permits or manifests; UST assessment, etc.

**Williamsburg Bridge Rehabilitation
New York, NY**

GRB is responsible for performing all environmental audits and surveys at 20 different sites, designing and supervising all remedial action

programs, review contractor's bids and make recommendations for contractor selection, as part of the Williamsburg Bridge Rehabilitation Program. Prior to any environmental audit, GRB performs a record and literature search of each land parcel scheduled to be demolished, purchased, or disturbed in any way by construction activities. The objective of the record search was to identify current and previous site owners, compliance records, and land use activities. Site surveys performed by GRB included asbestos surveys, soil gas surveys, photographic survey and a hazardous substance survey.

The hazardous substance survey entailed the identification, documentation, sampling and analysis, and quantification of hazardous substances stored within the various structures scheduled for demolition. Method of storage and conditions of storage containers and storage areas were documented. Based on the results of the above surveys, GRB developed plans and specifications for remedial activities.

As part of the construction specifications for this long term construction contract, GRB prepared a BMP Plan in order to minimize the spread of contamination during construction activities, developed reporting and inspection procedures, and storm water control measures which the contractors are required to implement. GRB was selected to provide construction oversight services to ensure compliance with all remedial activities as well as BMP requirements.

New York City Department
of Sanitation - Five Landfills
New York, NY

GRB Environmental Services, Inc. prepared a document outlining the requirements for emergency response and monitoring activities at five New York City landfills. The document established pollution prevention techniques in responding to sudden or slow release of pollutants to the environment. Four of the five Landfills (Fountain Avenue, Pennsylvania Avenue, Brookfield, and Edgemere) are classified as inactive hazardous waste landfills by the New York State Department of Environmental Conservation. The document focused on emergency response activities and monitoring requirements for groundwater, surface water, soil gas, landfill gas, and air quality in response to the discovery or spill of solid (sludge, powder or solid), liquid, or gaseous hazardous wastes.

New York City Department
of Sanitation
New York, NY

Provided technical advise with respect to proposed hazardous waste remediation alternatives and pollution control techniques at Fountain Avenue Landfill and Fresh Kills Landfill; reviewed and summarized consultant reports; provided expert technical advise to the New York City Corporation Counsel on all aspects of landfill operation and closure per 6NYCRR Part 360 requirements; provided periodic updates on status of the closure plans and New York State Department of Environmental Conservation approvals and disapprovals; represented the Department of Sanitation at working group discussions on implementing the newly enacted Titles 3 and 5 of the Environmental Quality Bond Act of New York State; attended departmental meetings; and prepared summary reports on the foregoing items.