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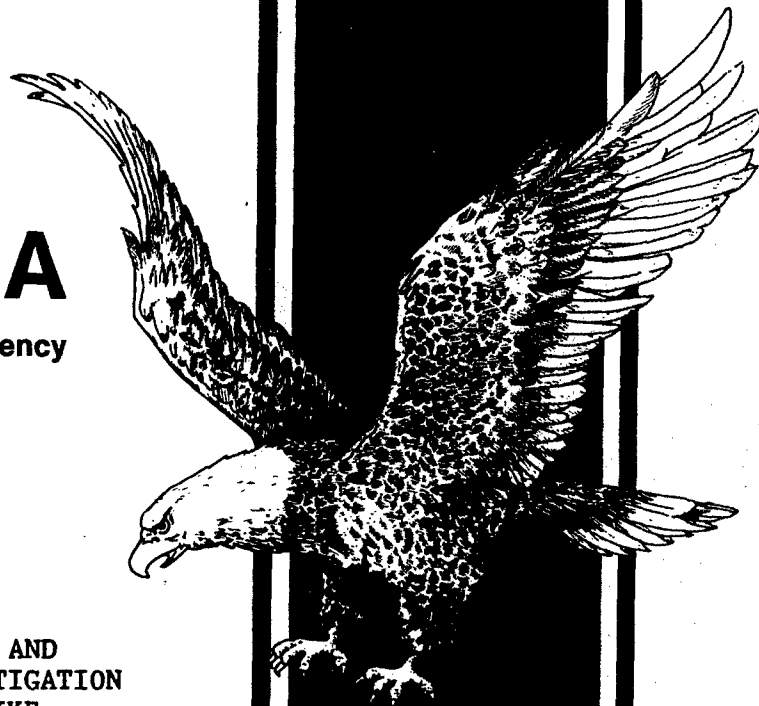
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USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

FINAL MANAGEMENT AND
DATA MANAGEMENT PLAN FOR
REMEDIAL INVESTIGATION AT
FORT GEORGE G. MEADE LANDFILL AND
PRELIMINARY ASSESSMENT/SITE INVESTIGATION
AT THE FORMER GAITHERSBURG NIKE
CONTROL AND LAUNCH AREAS



Prepared for:

U.S. Army Toxic and Hazardous Materials Agency
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May 1989

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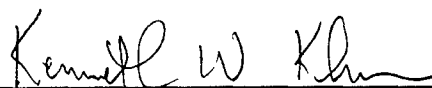
EA Engineering, Science, and Technology, Inc.
Sparks, Maryland 21152



Steven A. Brown
Project Manager

5-1-89

Date



Kenneth W. Kilmer
Manager, Engineering Operations

5/1/89

Date

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1. MANAGEMENT PLAN

1.1 GENERAL

Work assignments under this contract will include a Preliminary Assessment/Site Investigation at the former Gaithersburg NIKE Control and Launch Areas and a Remedial Investigation at the Fort Meade Landfill and other technical actions to establish the basis for development and evaluation of remedial alternatives. The program requires flexibility in organizing a team of technical personnel and technical resources to meet installation-specific needs, concurrent with employing preapproved field procedures, sampling techniques, and analytical methods to accomplish the assigned effort. At any given time during the period of performance, contamination assessments, sampling and analysis, geophysical or aquifer testing, and preliminary risk assessments may be in various stages of progress. The effective program organization will accommodate these requirements for both flexibility and consistency while maintaining a manageable degree of control over all activities.

Figure 1-1 illustrates the proposed organization for accomplishment of this effort. The core of the technical organization is the Project Manager and the assigned Project Team. Additional individuals can be made available if warranted.

The Project Manager assigned to the project has current USATHAMA task management experience and will act as a direct line of technical communication to the COR with a secondary, backup line of communication through the Program Manager.

1.2 PROGRAM MANAGER

The Program Manager will be responsible for maintaining corporate contractual obligations under the DOD program. He will provide overview of

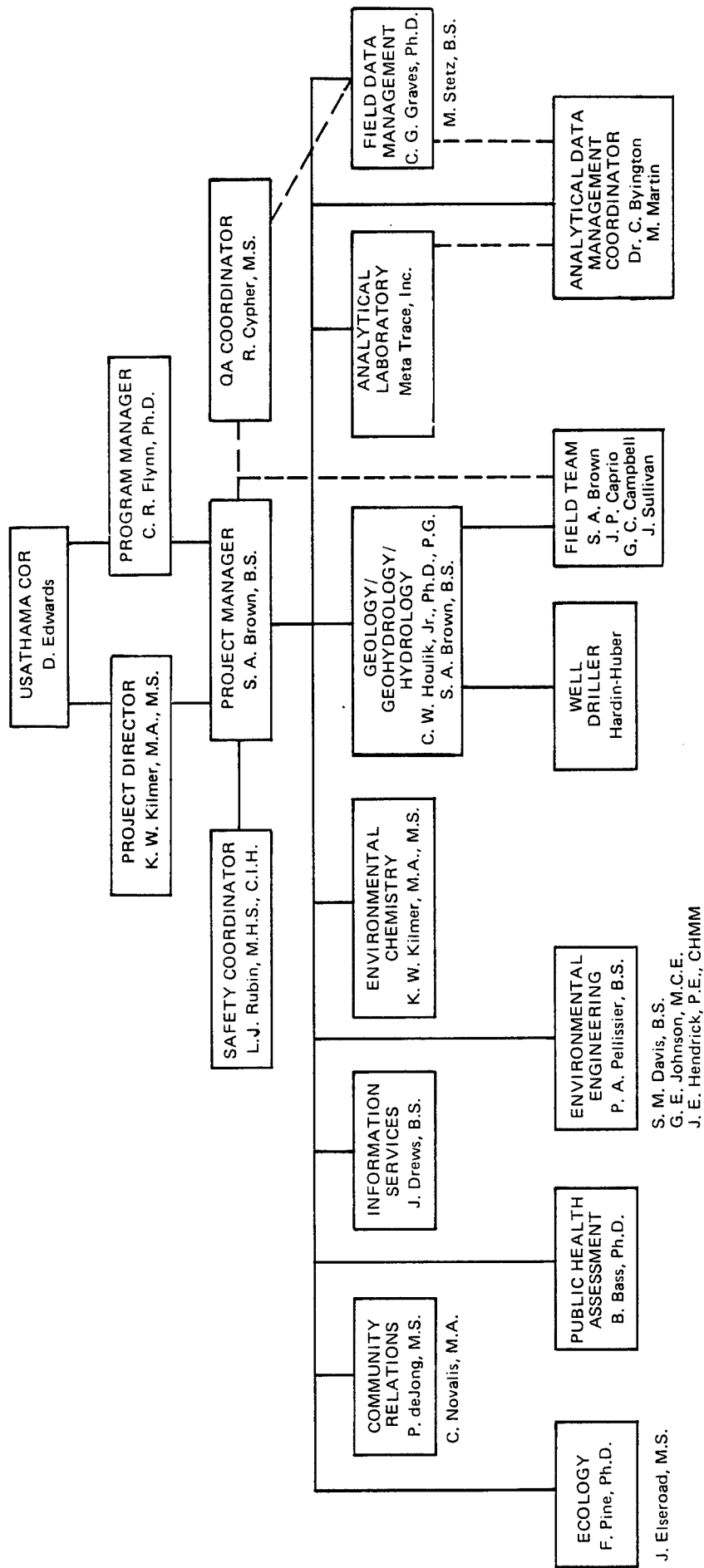


Figure 1-1. Key personnel assignments.

the schedules, costs, and technical performance and redirect efforts as necessary to maintain the broad contractual objectives. The Program Manager's responsibilities include: (1) review of work flow diagrams, plans, schedules, and manpower allocation; (2) guiding the attack on problems of specific difficulty; (3) review and approval of all contract changes; (4) direction of the overall program effort and on-going liaison with the USATHAMA COR and Contracting Officer.

1.3 PROJECT DIRECTOR

The Project Director is responsible for all Task Order contractual obligations including review of schedules, costs and technical performance. His responsibilities include: (1) selection and assignment of project team personnel, (2) approval of work plans, schedules, and allocations, (3) exercising final reviews and approval of the work products, (4) review and approval of contract changes, (5) maintenance of project team integrity throughout the project; and (6) oversight of the overall technical and managerial direction of the project.

1.4 PROJECT MANAGER

The Project Manager will be responsible for effective day-to-day management of the staff assigned to the work effort. These responsibilities specifically include: (1) management of all technical activities; (2) preparation of work flow diagrams, schedules, manpower allocations, and survey plans; (3) management of all project funds for labor and materials procurement; (4) review and administration of all work order changes; (5) successful accomplishment of all contractual obligations including costs, schedules, and technical performance under the assigned task; (6) management of the Project Team toward unified, productive

project accomplishment; (7) format and quality control of all documents and data reports; (8) direct communication and liaison with the USATHAMA COR; and (9) technical leadership.

1.5 QUALITY ASSURANCE COORDINATOR

This individual provides unbiased monitoring and periodic auditing of the quality control procedures of the Project Team. His duty is to ensure that established USATHAMA quality control procedures are being followed, that adequate documentation is provided, and that all QC problems are handled in an expeditious manner. The QAC is independent of the Project Team, and provides an outside review and audit function. As shown in Figure 1-1, he has oversight responsibility for activities of the field team, the analytical laboratory, and the data management team. The QA Coordinator supervises the preparation of the QA manual in accordance with client, regulatory, and EA Corporate policy for the project, and approves the final draft. The QA Coordinator has the authority to audit the project to ensure compliance with the guidelines set forth by the client, regulatory agencies, corporate management, and the project staff. The QA Coordinator has the authority to request changes as deemed necessary to comply with the QA manual, and to audit those changes as needed. The QA Coordinator reports to the President of EA and has full access to all project records. The responsibilities of the QA Coordinator are: (1) to identify the requirements of client, State, and corporate QA policies that are relevant to the project; (2) to prepare or supervise the preparation of the project QA plan; (3) to review project activities and work products to ensure compliance; (4) to work with State and client certification offices; and (5) to respond to client or State regulatory QA questions or policy changes. Because of the significance of the proposed work for USATHAMA, it is EA's Corporate Quality Assurance Officer who will be assigned directly to the QA Coordinator role for this project.

1.6 SAFETY COORDINATOR

Since this project potentially requires the sampling and analysis of hazardous materials, a project Safety Coordinator will be appointed to prepare the Safety Plan and oversee the activities of the Project Team throughout sample collection and analysis. This individual will ensure full compliance with U.S. Army and OSHA medical and safety regulations and with the procedures promulgated by the various Installation Commanders. Special attention will be required on the part of the Safety Coordinator if UXOs or chemical agent residues are encountered at the study site.

1.7 FIELD/LABORATORY/DATA COORDINATOR

A special coordination effort is required among the field team(s), the laboratory staff, and the data management team, as illustrated in Figure 1-1. Successful accomplishment of the entire task depends on effective coordination of these three activities during the critical field effort. Sample collection, preservation, shipping, and lot sizing require active field/laboratory communication. After field activities, the geotechnical data and the chemical data must be brought together by the data management team into the IRDMS format. The Project Manager has a very important responsibility for efficient coordination of this complex series of events. EA experience on current USATHAMA task assignments has shown the benefit of the special assignment of a Field/Laboratory/Data Coordinator who reports directly to the Project Manager with the sole responsibility to assist in the coordination of these events. Accordingly, the practice of appointing a Field/Laboratory/Data Coordinator shall continue under this contract.

1.8 DISCIPLINE LEADERS

Discipline Leaders in the following areas will be available to the Project Manager to accomplish work assignments and support the Project Team: (1) Analytical Laboratory; (2) Data Management; (3) Geology/Geo-

hydrology/Hydrology; (4) Information Services; (5) Ecology; (6) Environmental Engineering; (7) Public Health Assessment; and (8) Community Relations.

These individuals are specially qualified in their respective disciplines. They will report to the Project Manager and are responsible for satisfactory completion of the assigned work elements.

1.9 TEAM FORMAT

The Project Manager has full responsibility for technical accomplishment of the work effort. Each support person assigned to the project is accountable to the assigned manager. All support personnel work as a team under the direction of the Project Manager. The manager has access to discipline specialists in:

- | | |
|-----------------------------|------------------------|
| . geology/geohydrology | . community relations |
| . environmental engineering | . ecology |
| . environmental chemistry | . analytical chemistry |
| . information services | . data management |
| . public health assessment | |

The team size is a function of the magnitude of the effort at the site and the specific disciplines required. Support personnel from some disciplines (e.g., information services, public health assessment, community relations, analytical chemistry, data management) may overlap on several work efforts. EA's qualifications and existing staff are such that we can accommodate task efforts with close management of each effort at both the subtask (work element) and task levels, while at the same time providing overall program management and accountability to USATHAMA.

EA recognizes the value in reassigning teams which have performed successfully on previous task assignments. This ensures that personnel:

1. Are familiar with the specific objectives and protocols of the program.
2. Take full advantage of the learning process which accompanies all technical activities.
3. Learn and draw from each individual's unique talents in a team effort.
4. Provide a uniform approach to data gathering, analyses, and interpretation efforts within the bound of defined protocols and plans.
5. Learn from efforts/results at previous sites.
6. Provide consistent feedback/interaction with subcontractors.
7. Provide continuity among work efforts.

All of the items listed above promote not only a more cost-efficient approach to problem solving, but also a technically sound basis for problem identification and resolution. In this light, EA is committed to the concept of maintaining team integrity whenever technical requirements of tasks and logistical considerations permit.

1.10 SUBCONTRACTORS AND CONSULTANTS

EA will have full responsibility to the U.S. Army for all work performed as the prime contractor, providing all the necessary professional, scientific, and engineering services needed to accomplish the work, including field sampling, laboratory analysis, interpretation of findings, evaluation, and recommendations. Consultants with specialized

expertise may be required to perform specific work assignments. This can be accommodated within the program organization.

Subcontractors will be employed only for well drilling. EA normally selects a subcontractor drilling firm which has appropriate drill rigs located near the study site and which has experience and documented credentials in the proper installation of monitoring wells for environmental investigations of this type. Generally, a firm local to the study site also has the practical knowledge and experience with local geological conditions. This is of value to the Project Team in accomplishing the monitoring well installation efficiently. In addition, mobilization costs are generally lower for a qualified local firm, since equipment relocation costs are minor. EA has experience in working with a variety of drilling firms and in selecting a firm appropriate to the technical requirements of the specific effort. For the Fort Meade and former Gaithersburg NIKE Investigations, EA has selected Hardin-Huber, Inc. as the drilling subcontractor. A listing of their related project experience and drilling equipment is shown in Attachments A and B, respectively.

When monitor wells are installed under this program, it is necessary to survey the location and elevation of the well prior to entry of data into the IRDMS. EA personnel will do the field surveying under the direction of a licensed Maryland surveyor on EA's staff.

EA has in-house geophysical capabilities and equipment. Equipment used for geophysical surveys will be Geonics EM 34-3L, Bison resistivity meter, pipe and cable locator/metal detector. These instruments should be sufficient to accomplish the work at Fort Meade.

Subcontractors are supervised closely when conducting field work and communicate frequently (at least weekly) with their EA technical liaison when conducting other kinds of work. EA's subcontractors are required to follow EA and client quality assurance and health and safety policies and to follow the project's standard operating procedures.

EA's subcontractors are provided with full safety and health, QA, and field/technical project training appropriate to their responsibilities. They are required to provide monthly cost and progress statements with their invoices. These are reviewed and approved by the Project Manager prior to payment.

1.11 PROJECT COMMUNICATION PROTOCOLS

The Project Manager will be a direct line of communication between EA and the COR. A secondary, backup line of communication is also available through the Program Manager. Discipline Leaders report to the Project Manager and Field Team members report to the Manager via the Discipline Leader. Each of these individuals has definite responsibilities and specific areas of accountability in the management of and communication with team members and subcontractors. These responsibilities are as follows.

The Program Manager will negotiate, oversee, and sign on EA's behalf all Federal contract agreements. He will be accountable to the COR for the thoroughness of such agreements. EA believes that a primary basis for managing and establishing effective lines of communication is through up front communication of requirements governing contractor and subcontractor work efforts. This includes a clear definition of task objectives/schedules, USATHAMA requirements (e.g., Geotechnical Requirements), and protocols (e.g., QA, Safety, Technical, and Sampling Design Plans). With appropriate technical input from the Project Manager and Discipline Leaders, the Program Manager acts as a focal point for ensuring that such requirements are formally incorporated in all written agreements. To the extent practical, the Program Manager will ensure that the same requirements are incorporated within agreements governing similar efforts among tasks. The intent of the last statement is to minimize conflicting requirements which may create confusion among Task Managers and hence hamper effective and consistent communication.

The Project Director will be responsible for the final review and approval of all reports and oversight of the overall direction of the project. He will be available to assist in resolving any conflicts, questions or uncertainties which may arise during the performance of this project.

The Project Manager will be accountable to the COR for technical and cost performance. The Project Manager will also be responsible for ensuring that team members fully understand and require strict adherence with requirements implicit in subcontract agreements. The Project Manager will be specifically identified as the individual responsible for resolving any conflicts, questions, or uncertainties which may arise during the conduct of work efforts. In resolving such conflicts, the Project Manager will solicit input from the Program Manager and Discipline Leaders as appropriate. The Project Manager will be responsible for submitting monthly cost and performance reports, receiving and approving subcontractor invoices, for advising subcontractors of non-conformance with schedules and costs, resolving nonconformance issues, intervening directly if problems arise concerning compliance with protocols, and for informing the COR of performance deficiencies and steps taken to bring about corrective action. In the unlikely event that it appears to be in the best interest of the government to terminate subcontractor efforts due to performance problems, the Project Manager will be expected to rapidly present a documented basis for such action and seek COR approval.

Discipline Leaders (e.g., safety, geology/geohydrology, environmental chemistry) serve as a senior technical resource for ensuring that project plans are responsive to USATHAMA requirements, and for providing guidance on the proper response to these plans and to Field Team members on ways to ensure/check compliance and communication. The Discipline Leaders shall keep the Project Manager fully informed of all communication with subcontractors and Field Team members in the interest of avoiding conflicting guidance. Just as the Program Manager serves as a focal point to create uniformity in developing uniform efforts among

tasks, Discipline Leaders should strive to provide uniform guidance on ways to implement protocols. Again, this role is intended to avoid confusion which might hamper effective communication.

Field Team members represent a front line of communication with subcontractors. The importance of their role in communication with and management of subcontractors can not be underemphasized. A Field Team member will be specifically identified as the individual responsible for the direct supervision of all field efforts. The designated Field Team member, with input from the Project Manager and appropriate Discipline Leader, will be responsible for ensuring that work efforts are conducted in a manner which complies with protocols and work plans. In this role, the Field Team member should communicate throughout the field investigation to ensure strict adherence to these protocols. The Field Team member should be fully cognizant of schedule requirements. In all communications with subcontractors, the Field Team member should strive to present him/herself as a resource who can facilitate problem resolution.

1.12 PROJECT SCHEDULE

This section provides a combined schedule and budget for the PA/SI at the former Gaithersburg NIKE sites and the RI at the Fort Meade Sanitary Landfill and Clean Fill Dump. Figure 1-2 shows the project schedule for these projects. Table 1-1 provides a total project cost summary on a monthly basis and Tables 1-2 through 1-5 exhibit a monthly cost breakdown by subtask. The project has been divided into four subtasks: Plan Development, Phase I, Phase II, and Data Analysis and Reports. Table 1-6 shows a list of reports to be prepared for this project.

The Plan Development Subtask 1 involves preparing and submitting draft and final technical/sampling, safety and health, quality assurance, and management plans. Subtask 2 includes the Phase I sampling and analysis plus geophysical survey at Fort Meade. Subtask 3 includes well

installation, ground-water and soil sampling and analysis, surveying and aquifer tests at Gaithersburg and Fort Meade. Data analysis and report preparation make up Subtask 4.

1.13 PROJECT PERSONNEL

EA will make available to USATHAMA key professional staff in each of the technical disciplines required by this multidisciplinary effort. Figure 1-1 illustrates EA's project team structure and identifies the individuals involved with the Fort Meade Remedial Investigation. Key personnel and their project roles are listed herein.

Charles R. Flynn, Ph.D., P.H.	Program Manager
Kenneth W. Kilmer, M.S.	Project Director
Steven A. Brown, B.S.	Project Manager
Linda J. Rubin, M.H.S., C.I.H.	Safety Coordinator
Robert L. Cypher, M.S.	Quality Assurance Coordinator
Carol G. Graves, Ph.D.	Data Management Team Leader
Charles W. Houlik, Jr., Ph.D., P.G.	Geology/Hydrogeology Team Leader
Peter A. Pellissier, B.S.	Environmental Engineering Team Leader
Steven A. Brown, B.S.	Geotechnical Field Team Leader
Mark Stetz, B.S.	Field/Laboratory/Data Coordinator
Dr. Carol Byington	Analytical Laboratory Team Leader

Resumes of all EA personnel assigned to this project are included as Attachment C. Their resumes are presented for your inspection at this point to allow EA the flexibility to add personnel to this project should the need arise.

The Gantt chart displays a project schedule from April 1989 to February 1990. The project, titled "NO SCHEDULE NECESSARY-LAB CERTIFICATION COMPLETE PRIOR TO PROJECT COMMENCEMENT", is represented by a single horizontal bar at the top of the chart, indicating a continuous duration from April 1989 to February 1990. The chart includes a vertical axis labeled "Month" and a horizontal axis labeled "Year".

- NOTE: Δ = Draft Report, \blacksquare = Thama Review, \blacklozenge = Regulatory Review, \blacktriangle = Final Report, \bullet = Regulatory Meetings, \bullet = Thama Briefing, $\textcircled{1}$ = Monthly Cost and Performance Reports.

TABLE 1-1 FORT MEADE RI AND GAITHERSBURG PA/SI CUMULATIVE COST FORECAST

Subtask	Month	Direct Hours	Labor	Labor Overhead	Other Direct Costs	Vehicle Usage Subsistance	Drilling	Analytical	Subtotal	G&A	Total (a)
Plan Development	Jan 1988 - Mar 1989	822	13,858	15,743	1,898	1,588			33,087	3,209	36,296
Phase I	Apr 1989	723	12,084	13,727	2,894	3,420			32,125	3,116	35,241
	May 1989	375	6,505	7,390	996	3,420	36,795	62,495	117,601	11,407	129,008
Phase II	Jun 1989	497	7,536	8,561	5,197	1,558			22,852	2,217	25,069
	Jul 1989	376	5,435	6,174	5,197	1,558			18,364	1,781	20,145
	Aug 1989	284	4,866	5,528	4,201	1,558	70,136		86,289	8,370	94,659
Data Analysis/ Reports	Sep 1989	218	3,585	4,073	4,201	1,558		52,953	66,370	6,438	72,808
	Oct 1989	414	6,112	6,943	1,436	189			14,680	1,424	16,104
	Nov 1989	687	10,536	11,969	1,436	189			24,130	2,341	26,471
	Dec 1989	416	6,489	7,372	1,436	189			15,486	1,502	16,988
	Jan 1990	325	4,566	5,187	1,436	189			11,378	1,104	12,482
TOTALS:		5,137	81,572	92,667	30,328	15,416	106,931	115,448	442,362	42,909	485,271

(a) Total does not include fee.

TABLE 1-2 FORT MEADE RI AND GAITHERSBURG PA/SI STUDY

SUBTASK 1: PLAN DEVELOPMENT--CUMULATIVE COST FORECAST

Month/Year	Direct Hours	Labor	Labor Overhead	Other Direct Costs	Vehicle Usage & Subsistence	Drilling	Analytical	Subtotal	G&A	Total (a)
Jan 88-Mar 89	822	13,858	15,743	1,898	1,588			33,087	3,209	36,296

(a) Total does not include fee.

TABLE 1-3 FORT MEADE RI AND GAITHERSBURG PA/SI STUDY

SUBTASK 2: PHASE I--CUMULATIVE COST FORECAST

Month/Year	Direct Hours	Labor	Labor Overhead	Other Direct Costs	Vehicle Usage & Subsistence	Drilling	Analytical	Subtotal	G&A	Total (a)
Apr 1989	723	12,084	13,727	2,894	3,420			32,125	3,116	35,241
May 1989	375	6,505	7,309	996	3,420	36,795	62,495	117,601	11,407	129,008
TOTALS:	1,098	18,589	21,117	3,890	6,840	36,795	62,495	149,726	14,523	164,249

(a) Total does not include fee.

TABLE 1-4 FORT MEADE RI AND GAITHERSBURG PA/SI STUDY

SUBTASK 3: PHASE II--CUMULATIVE COST FORECAST

Month/Year	Direct Hours	Labor	Labor Overhead	Other Direct Costs	Vehicle Usage & Subsistence	Drilling	Analytical	Subtotal	G&A	Total (a)
Jun 1989	497	7,536	8,561	5,197	1,588			22,852	2,217	25,069
Jul 1989	376	5,435	6,174	5,197	1,588			18,364	1,781	20,145
Aug 1989	284	4,866	5,528	4,201	1,588	70,136		86,289	8,370	94,659
TOTALS:	1,157	17,837	20,263	14,595	4,764	70,136	--	127,505	12,368	139,873

(a) Total does not include fee.

TABLE 1-5 FORT MEADE RI AND GAITHERSBURG PA/SI STUDY

SUBTASK 4: PHASE II--CUMULATIVE COST FORECAST

Month/Year	Direct Hours	Labor	Labor Overhead	Other Direct Costs	Vehicle Usage & Subsistence	Drilling	Analytical	Subtotal	G&A	Total
Sept 1989	218	3,585	4,073	4,201	1,558		52,953	66,370	6,438	72,808 ✓
Oct 1989	414	6,112	6,943	1,436	189			14,680	1,424	16,104 ✓
Nov 1989	687	10,536	11,969	1,436	189			24,130	2,341	2,671 ←
Dec 1989	416	6,489	7,372	1,436	189			15,486	1,502	16,988
Jan 1990	325	4,566	5,187	1,436	189			11,378	1,104	12,482
TOTALS:	2,060	31,288	35,544	9,945	2,314	--	52,953	132,044	12,809	144,853

(a) Total does not include fee.

TABLE 1-6 LIST OF REPORTS

NAME	DATA ITEM NUMBER	FREQUENCY	FORMAT	SIGNATURES	DISTRIBUTION
Cost and Performance Reports	A001	Monthly	Written	S. Brown	USATHAMA
Progress/Status Meetings Reports	A002	As Required	Written	S. Brown K. Kilmer	USATHAMA
Project and Data Management Plan	A003	Draft and Final	Written	S. Brown K. Kilmer	USATHAMA
Technical/Sampling and Analysis Plan	A004	Draft and Final	Written	S. Brown K. Kilmer	USATHAMA
Quality Assurance Program Plan	A006	Draft and Final	Written	S. Brown K. Kilmer	USATHAMA
Quality Assurance Program Status Reports	A008	Weekly	Written	Dr. C. Byington	USATHAMA
Safety and Health Plan	A009	Draft and Final	Written	S. Brown L. Rubin	USATHAMA
Technical Report	A011	Draft and Final	Written	S. Brown K. Kilmer	USATHAMA
Accident or Incident Report	A012	As Required	Written	S. Brown	USATHAMA

2. DATA MANAGEMENT PLAN

Data management for the Fort Meade and Gaithersburg NIKE project will be carried out using the USATHAMA Installation Restoration Data Management System (IRDMS). The documentation EA has for this system is the Installation Restoration Data Management User's Guide, Chemical Data Entry, PC Version 1 May 1987, Chemical Data Coding Form Definitions. As implied by the title, this manual contains a copy of the chemical data coding form and allowable codes for each variable on the chemical data form.

The IRDMS is built using dBASE III software on an IBM PC-AT type micro-computer. EA has successfully used the IRDMS on previous projects for USATHAMA. Because of this previous experience, EA has in-place and operational all of the hardware and software necessary for using the IRDMS. Required hardware includes an IBM PC-AT with 30 MB hard disk storage, 1.2 MB and 360 KB floppy disk drives, 512K of RAM, a math coprocessor, a Hercules graphics card; a 1200 baud Hayes modem; and a HP7475A graphics plotter. Required software includes dBASE III, DOS Version 3.1, and 3 Plus Remote communications software.

Several types of data go into the IRDMS but all follow general procedures for entry, editing, and transmission. These procedures will be discussed in the next section of this plan. EA's previous experience with the IRDMS suggests that the data management primarily involves three types of data: map data, geotechnical data, and chemistry data. Each data type will be discussed following the general discussion of data management procedures.

2.1 GENERAL DATA MANAGEMENT PROCEDURES

Data are first coded on IRDMS coding forms. From the coding forms, data are entered onto the EA microcomputer using menu driven-software developed for the IRDMS. The straightforward data entry screens allow the

user to enter the data and create dBASE III files without the user being aware that dBASE III is the data management software. The data entry screens only permit allowable codes to be entered for each variable.

After data entry on the microcomputer, data are considered to be Level 1 data. Records (i.e., observations) are checked locally before transmission to the IRDMS. Records are first checked on an individual record-by-record basis. They are then checked globally (i.e., all records are considered together).

Records not passing the individual or global checks are first reviewed by data management personnel to resolve problems. Corrections are made to the data using IRDMS editing procedures which are similar to the data entry procedures. If problems can not be resolved by data entry personnel, the next step is to involve EA geology or chemistry personnel. If a problem can not be resolved locally, EA personnel will consult with USATHAMA personnel. Sometimes correct data do not pass local checks. In this case, data are transmitted to USATHAMA accompanied by a README file explaining the situation.

Data are transmitted directly to USATHAMA via a modem and communications software. At this point, data are Level 2 data. The same individual and global checks on the data are carried out by USATHAMA or IRDMS contractors. If problems are encountered at this point, notification is given to EA to correct and retransmit the data. Once data pass checks at USATHAMA, they become Level 3 data and are merged into the master IRDMS data base by USATHAMA or IRDMS contractors.

2.2 MAP DATA

No geotechnical or chemistry data for a site can be entered into the IRDMS until the sampling site is defined in the map file. Existing sites such as existing wells may already have records in the map file. For any site not yet included in the map file, EA will create these

records. Data management personnel will work with EA and USATHAMA geologists to ensure that these records are completed accurately and within the required 30 days of completion of well drilling.

2.3 GEOTECHNICAL DATA

The primary types of geotechnical data are field drilling and well construction data. These types of data need to be entered into their respective files within 30 days of completion of the field drilling or well construction. Data management personnel will work closely with geologists overseeing these activities in the field to ensure that this schedule is met.

2.4 CHEMISTRY DATA

Proper management of the analytical chemistry data begins in the field. Samples will be collected in the field and analyzed in metaTRACE's chemistry laboratory according to procedures outlined in the Sampling and Analysis Plan. After chemical analysis, results are coded onto forms and responsibility for the data transfers to data management personnel. Management personnel will work very closely with chemistry laboratory personnel to ensure smooth transfer of the data from the lab to the IRDMS, and to ensure that analytical data are entered into the IRDMS within 40 days of sample collection.

The coding of the IRDMS coding form by chemistry personnel helps to ensure the integrity of the data. After completion of the IRDMS coding forms, the forms are then given to data management personnel for entry on the microcomputer. Chemistry data is entered, checked, edited, and transmitted to the IRDMS according to procedures discussed in Section 1.

Chemistry and data management personnel responsible for data coding and entry each have copies of the IRDMS User's Guide (PC Version 1 May 1987). This User's Guide gives codes for each field or variable on the IRDMS Chemical Data Coding Form. This document will be the reference guide and

will be consulted first when any entry is rejected by the data entry portion of the IRDMS. If questions remain, data management personnel will discuss the problem with chemistry personnel. If problems can not be resolved locally, they will be discussed with USATHAMA chemists. If necessary, data will be transmitted with an accompanying README file to explain why item(s) have not passed checks on the local level.

2.5 DATA MANAGEMENT REQUIREMENTS

Just as data can not be entered into the IRDMS without a site record in the map file, chemistry data can not be entered without a methods table provided by USATHAMA. EA relies on the absolute accuracy of this table as provided by USATHAMA. Methods table variables on which EA depends include, but are not limited to, method number, method name, certified reporting limit, maximum possible concentration, and the high and low QC spike levels.

The role of control charts in quality control procedures is discussed elsewhere. Data management personnel work with chemistry lab personnel to produce these charts on a weekly basis. As of the writing of this data management plan, EA does not have the USATHAMA provided software necessary to create these charts. It is assumed that this software will be available by the time field sampling for this project commences.

ATTACHMENT A
SUBCONTRACTOR EXPERIENCE

HARDIN-HUBER, INC.

Project Summary

Completion Date	Job Name/ Location	Description	Consultant	Owner
Active	Koppers Seaboard Site Newark, N.J.	Cone, dilatometer testing, test borings, rock core	Keystone Environmental	Koppers
May 1987	Spring Garden Baltimore, Md.	Test borings (hand augered and hand split spoon sampled), 52 well point installations	EA Engineering, Science, and Technology, Inc.	Baltimore Gas & Electric
February 1987	Patuxent Naval Air Station, Lexington Park, Md.	Monitoring wells, well development	CH ₂ M Hill	U.S. Navy
February 1987	Dundalk Marine Terminal Baltimore, Md.	Test borings, double cased and single wells, 4 in. diameter	EA Engineering, Science, and Technology, Inc.	Maryland Port Administration
December 1986	Seven NIKE missile sites (Md., Va., Pa.)	Test borings, 2 in. monitoring wells, well development	EA Engineering, Science and Technology, Inc.	U.S. Army Corps of Engineers
November 1986	MOTSU Land Bridge Sunny Pt., N.C.	Rock coring	STS Associates	U.S. Army Corps of Engineers
August 1986	Chrysler Plant Newark, Del.	Test borings, stainless steel monitoring wells, 2 in. and 4 in. diameter	Roy F. Weston	Chrysler Corporation
March 1986	Black & Decker	Test borings, monitoring wells up to 6 in. diameter, well development	Geraghty & Miller, Inc.	Black & Decker
February 1986	Blue Plains WWTP	Test borings, 2 in. monitoring wells	EA Engineering, Science and Technology, Inc.	Washington, D.C.
January 1986	C&D Canal Del.	Installation of 4 in. wells, test borings	Enviro-Gro Technology	U.S. Army Corps of Engineers Phila., Pa.
January 1986	Allied Chemical Baltimore Works Baltimore, Md.	Installation of offshore instrumentation, monitoring wells up to 8 in. diameter	NUS Corporation	Allied Chemical Company
December 1985	Dupont Chambers Works Deepwater, N.J.	Test borings, monitoring wells	Woodward/Clyde Consultants	Dupont Chemical Company

HARDIN-HUBER, INC.

Project Summary

Completion Date	Job Name/ Location	Description	Consultant	Owner
December 1985	McGraw-Edison West Caldwell, N.J.	Test borings, monitoring wells	Fred C. Hart Associates	Cooper Industries
December 1985	Exxon Site Eastern Ave. Baltimore, Md.	Installation of 4 in. wells, test borings	Environmental Resource Management	Exxon Company, U.S.A.
July 1985	General Foam Plant East Rutherford, N.J.	Test borings, monitoring wells	Fred C. Hart Associates	General Foam Corp.
February 1985	Pepco Power Plant Chalk Point, Md.	Installation and development of 4 in. wells	Geomatrix, Inc.	Pepco
January 1985	Hawkins Point Hazardous Waste Landfill Baltimore, Md.	Test borings, installation of monitoring wells up to 6 in. in diameter	Woodward/Clyde Consultants Harrington, Lacey & Associates	Maryland Environmental Service
November 1984	Lee's Lane Landfill Louisville, Ky.	Installation of 4 in. monitoring wells	NUS Corporation	U.S. Environmental Protection Agency
November 1984	Mobay Chemical Natrium, W.V.	Installation of 2 in. monitoring wells	Geraghty & Miller, Inc.	Mobay Chemical
February 1984	David Taylor Research Center	Offshore test borings	Faisant Associates	U.S. Navy
November 1983	Ormet Plant Hannibal, Ohio	Test borings, monitoring wells	Geraghty & Miller, Inc.	Ormet Corp.
September 1983	Norris Farm Landfill Baltimore, Md.	Test borings, monitoring wells up to 4 in. diameter, and gas probes	Wehran Engineering	Browning-Ferris Industries
May 1983	PPG Industries Natrium, W.V.	Test borings and monitoring wells up to 4 in. diameter	Geraghty & Miller, Inc.	PPG Industries
February 1983	Hart-Miller Island Diked Disposal Area	Offshore test borings, land monitoring wells up to 4 in.	Century Engineering	Maryland Port Administration
January 1983	Dundalk Marine Terminal Dredging Study Dundalk, Md.	Offshore test borings	Gascoyne Laboratories	Maryland Port Administration
November 1982	Solley Road Hazardous Waste Landfill	Test borings, monitoring wells up to 8 in. diameter, gas probes, well abandonment	Fred C. Hart Associates Geraghty & Miller, Inc.	Browning-Ferris Industries

HARDIN - HUBER, INC.

Project Summary

Completion Date	Job Name/ Location	Description	Consultant	Owner
September 1981	Quarantine Road Hazardous Waste Facility Baltimore, Md.	Test borings, monitoring wells up to 4 in. diameter, and well abandonment	Bruce Martin Associates	Browning-Ferris Industries
September 1981	Quarantine Road Hazardous Waste Facility	Test borings, monitoring wells up to 4 in. diameter, and well abandonment	Bruce Martin Associates	Browning-Ferris Industries
February 1981	Harrisburg Expressway Harrisburg, Pa.	NX rock cores and grouting	Pennsylvania Department of Transportation	Pennsylvania Department of Transportation

ATTACHMENT B
DRILLING EQUIPMENT

HARDIN-HUBER EQUIPMENT

<u>Equipment Description</u>	<u>Year</u>	<u>Make</u>	<u>Model</u>
<u>Drill Rigs and Support Equipment</u>			
B-61 Drill Rig	1975	Int. Harv.	16004WD
B-61 Drill Rig	1974	Ford	F-6004WD
B-61 Drill Rig	1985	Ford	F-700
B-61 Drill Rig	1979	Ford	F-6004WD
B-61 Drill Rig	1973	GMC	65004WD
AD-II Drill Rig	1972	Ford	F-600
CME-45 Drill Rig	1973	Trailer	SKID
Acker-Hillbilly Rig	1963		SKID
Cathead Rig	1983	Portable	TRI-POD
CME-450 Drill Rig	1973	Trailer	ATV
Air Compressor	1969	Ingersol-Rand	Gas
Air Compressor	1980	Ingersol-Rand	Diesel
B-80 Drill Rig	1986	Ford	LT-8000
Mud Pump	1974	Gardner-Denver	Trailer

Support Vehicles

12 ft Flat Bed	1986	Ford	F-350
16 ft Flat Bed	1979	GMC	
14 ft Flat Bed	1974	Chevrolet	C-65
Pick-Up	1980	Ford	F-2504WD
Pick-Up	1982	Ford	F-250
Utility Bed	1984	Ford	F-250
12 ft Flat Bed	1986	Ford	F-350
Stake Bed	1984	Ford	F-250
Pickup	1985	Ford	Ranger
4WDMPV	1985	Ford	Bronco

Miscellaneous Equipment

- (4) Submersible pumps
- (2) Centrifugal pumps
- (2) Generators
- (4) Steam cleaners
- (10) Sets of Level C personal protective equipment

ATTACHMENT C

EA PERSONNEL PROFESSIONAL PROFILES



Professional Profile

Charles W. Houlik, Jr., Ph.D., C.P.G.
Director, Geotechnical Services

Dr. Houlik has more than 16 years of experience in the performance and management of multidisciplinary investigations addressing environmental issues and/or in support of engineering design. He is a Certified Professional Geologist with extensive experience in waste management, impact assessment, and facilities siting. His responsibilities include active participation in, and supervision of, site and regional geological investigations, surface and ground-water hydrological evaluations for siting or design of facilities, and impact assessments for existing and proposed facilities. Dr. Houlik has senior technical and administrative responsibility for Geotechnical Services at EA.

EDUCATION: Ph.D.; Rutgers University; Geology; 1972
M.S.; Rutgers University; Geology; 1970
B.S.; Baylor University; Geology; 1967

REGISTRATION/CERTIFICATION:

Registered Professional Geologist; Delaware, North Carolina,
South Carolina, Florida
Certified Professional Geologist; Virginia,
American Institute of Professional Geologists

EXPERIENCE

Waste Management--Supervised and performed geologic and ground-water investigations for solid waste and hazardous waste disposal site selection and evaluation studies; waste characterization studies, including studies of physical and chemical properties of coal flue gas cleaning wastes, and stabilized solid waste; leachate characterization, migration, and attenuation studies; and design of ground-water monitoring programs. On a client confidential basis, developed a program plan for evaluation of potential soil or ground-water contamination by polychlorinated biphenyls (PCB) at a number of industrial sites in the United States, managed a site assessment project at an active co-disposal (sanitary-hazardous) landfill, and provided hydrogeologic support for closure of chemical waste processing facility. Provided hydrogeologic support during conceptual design of a closure/redevelopment plan for an aluminum processing waste disposal site for Waste Management, Inc. Supervised design of the ground-water monitoring programs for the Aber Road Secure Landfill (RCRA Part B Application) for CECOS International and an industrial landfill (RCRA Closure Plan) for W. R. Grace.

Impact Assessment--Served as project manager, principal investigator, or technical consultant on site characterization studies, environmental and human health impact assessments, and design of remedial activities at contaminated industrial sites, active and abandoned waste disposal sites, and leaking underground storage tank sites. Responsible for the remedial investigation phase of a CERCLA-funded Remedial Investigation/Feasibility Study (RI/FS) at the Wide Beach Development Site for New York State Department of Environmental Conservation. Managed a CERCLA-Funded RI/FS at the Pepe Field Site for New Jersey Department of Environmental Protection. Managed Department of Defense Funded Site Inspections (SI) for sites at Willow Grove Naval Air Station and the Naval Ships Parts Control Center, Mechanicsburg, PA, and an RI/FS at a PCB contaminated site for the U.S. Navy. Managed an RI/FS at the site of a subsurface tank leak (gasoline) north of Baltimore, Md., for which the No-Action alternative was determined to be the most environmentally sound and cost effective; provided hydrogeologic support for RI/FSs in Maryland which culminated with design of ground-water recovery, treatment and infiltration systems, and design of an air stripping tower to treat water produced by a contaminated municipal water supply well. For Dresdner Associates, managed a project to assess levels of polycyclic aromatic hydrocarbon (PAH) contamination at an urban redevelopment site, evaluate alternatives for mitigative action, and prepare the Remedial Action Plan for Jersey City Redevelopment Agency at Newport Development Project, Jersey City, New Jersey.

Facilities Siting--Supervised and performed evaluations of geology, seismology, site and regional fault systems, and surface and ground-water hydrology for numerous existing and proposed nuclear-fueled and coal-fired electric generating stations in the United States, Spain, and Iran. Contributed to preparation of federal and state licensing documents. On a client confidential basis, responsible for the hydrologic, hydrogeologic, and geotechnical aspects of a siting study for a hazardous waste secure landfill site in a mid-Atlantic state and a candidate site evaluation study for a hazardous waste secure landfill site in a north-eastern state. For Virginia Electric and Power Company, supervised hydrogeologic investigations as part of environmental site characterization studies at four candidate sites for a coal-fired electric generating station planned to include onsite disposal of fly ash and FGD scrubber sludge. Managed a project to evaluate candidate sites for fly ash/FGD scrubber sludge disposal for Delmarva Power & Light Company's Vienna Unit 9. A thorough site characterization study was performed on the selected site. Laboratory waste characterization studies and a pilot scale field application were performed. The site and waste characterization studies provided the basis for computerized aquifer simulation modeling (hydraulic and contaminant migration). The results of ground-water modeling runs initially provided input to DP&L's landfill design decisions and finally provided the basis for the environmental impact assessment in the permit application.

PROFESSIONAL AFFILIATIONS

American Institute of Professional Geologists
Association of Engineering Geologists
Association of ground-water Scientists and Engineers



Professional Profile

Kenneth W. Kilmer
Manager of Engineering Operations
Environmental Engineer/Geologist

Mr. Kilmer manages multidisciplinary projects in the areas of solid waste and wastewater facilities planning and design, landfill closure, industrial pretreatment, site assessment/audit and ground-water geohydrologic studies. Responsibilities include impact analysis, conceptual design, contract preparation and negotiation, federal and state agency interface, and client liaison.

EDUCATION: M.S.; Yale University; Environmental Science; 1972
M.A.; Dartmouth College; Geochemistry--Chemistry; 1969
B.A.; Rutgers University; Geology; 1967

EXPERIENCE

Solid Waste Disposal--Currently managing a remedial investigation at an active sanitary landfill including a full hydrogeologic analysis and development of remedial engineering alternatives. In charge of the design of a lined leachate collection sanitary landfill in full compliance with latest Maryland State design guidelines. Managing the remedial investigation of five inactive landfill sites at a major military installation in New Jersey. Designed and conducted methane gas production survey of municipal/commercial landfill. Designed gas venting system. Prepared closure plan including drawings, specifications, and bidding documents. Prepared four-county resource recovery study including landfill siting, waste transport analysis, and facility siting. Analyzed four different alternative configurations of transport, facility type, and resource market for cost, implementability, and environmental impact.

Engineering Services--Manages complex engineering projects involving multiple subcontractors. Developed CPM and other project scheduling techniques. Reviewed contract drawings and specifications. Prepared invitation to bidders, bidding documents, and contract documents including general and technical specifications. Developed and supervised implementation/operations plan for construction activities including staging, stockpiling, access, utility protection, erosion control, and environmental constraints. Reviewed/modified plumbing code for mid-sized metropolitan area. Planned conceptual design of sedimentation control structures for in-stream construction. Prepared environmental specifications for soil and erosion control in lakeside construction projects.

Facility Siting/Site Audits--Performed siting studies for major public and private facilities such as incinerators, landfills, pipelines, wastewater treatment plants, industrial parks, marinas, and housing

developments. Extensive regulatory interface/compliance activity. Conducted site environmental/liability audits for RCRA/CERCLA compliance of both private and public sector facilities RCRA compliance audit for two major pesticide/herbicide manufacturing facilities. CERCLA audit for major military installation of 32,000 acres. Managed two major coal-conversion site environmental studies for the Department of Energy, as well as petroleum-storage facilities siting studies. Over 100 EAS/EIS studies completed, including major metropolitan facilities for New York City and Boston, Massachusetts.

Remedial Investigations--Currently managing a large remedial investigation of a chrome tailings disposal site with potential impacts to both surface and subsurface water resources. Investigated potential groundwater contamination and offsite gas migration at an abandoned municipal landfill. Prepared and supervised a site investigation and remedial design including closure plan and gas venting system. Developed remedial investigation including geophysical survey and drilling program at an active municipal landfill. Remedial design includes cost-effective evaluation of containment and treatment alternatives.

Hazardous and Toxic Wastes--Developed wastewater model ordinance specifying spill prevention plans and response requirements for industrial waste dischargers. Specified program structure/equipment for spill response team. Working familiarity with RCRA, CERCLA and preparation of spill prevention control and countermeasure (SPCC) plans.

Project Coordination/Community Relations--Managed over 150 projects with responsibility for coordinating public participation activities. Principal responsible for liaison with private and public clients, state and federal regulatory agencies, public advisory committees, technical advisory groups, and the media. Experienced in the management of large projects, including manpower, financial scheduling, and monthly reporting requirements. Developed public involvement plans, fact sheets, and responsiveness summaries. Developed and presented training seminar in industrial wastewater sampling equipment and techniques. Prepared audiovisual/graphic support for and conducted over 100 public presentations in support of engineering/environmental studies.

Environmental Planning--Provided expert testimony on land-use density required to ensure long-term protection of water supply. Participated in field evaluation of the effectiveness of existing non-point source pollution regulations in Prince George and Montgomery Counties, Maryland in the protection of a naturally-reproducing trout fishery on the Paint Branch watershed. Managed environmental development capability studies. Has been responsible for direction, management, and quality control of environmental assessment/impact activities. Coordinated exploration for and development of prospective economic deposits in New England, involving both field exploration and evaluation up through written evaluation and recommendation. Diversity of projects ranged from biological assessments through major energy impact evaluations, housing development, impact analysis, population projection, and demographic modeling.



Professional Profile

Charles R. Flynn, Jr., Ph.D., P.H.
Vice President, DOD Program Director

Dr. Flynn has more than 15 years of consulting experience in the environmental sciences and water resource engineering. As Director of EA's DOD Program, he is responsible for staff management, technical guidance, and planning/supervision of work efforts on EA's contracts with the Department of Defense. His duties include contract administration/management, negotiations with regulatory agencies, participation in public hearings, and expert witness testimony. A primary focus of Dr. Flynn's efforts is in promoting the effective integration of work efforts in the physical/engineering sciences with efforts in the biological, chemical, and risk assessment areas to ensure a sound multidisciplinary basis for conducting environmental studies and audits.

EDUCATION: Ph.D.; The Johns Hopkins University; Environmental Engineering; 1984
B.S. and Engineering Diploma; Memorial University of Newfoundland; Civil Engineering; 1969

CERTIFICATION: Certified Professional Hydrologist
AIH Certificate No. 292; 1984

EXPERIENCE

DOD Experience--Served as project/program manager on several DOD contracts: the Huntsville Division and Baltimore District, U.S. Army Corps of Engineers under the DERP (DERA) Program; the Omaha District, Corps of Engineers for hazardous waste storage facility siting for use by DRMS (Defense Reutilization and Marketing Service); the U.S. Navy (Northern Division, Naval Facilities Engineering Command) under the NACIP Program; the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at three sites under the Installation Reassessment Program; the U.S. Air Force (Occupational Environmental Health Laboratory) in directing RI/FS studies nationwide; and the U.S. Air Force (Engineering Support Center) in evaluating in situ remediation.

Water Quality Modeling--Directed field and modeling studies to define water quality impacts and wasteload allocation for proposed and existing point-source discharges. Directed investigations of nonpoint-source pollutant runoff and developed reservoir protection programs. Developed predictive models to determine the effectiveness of various means to release wastes from naval vessels. Developed predictions of water quality impacts associated with dredging operations.

Water Supply Studies--Directed studies that included simulation of water demand, evaluation of alternative supply scenarios, and development of drought contingency plans. Evaluated water supply options for a proposed coal slurry pipeline and presented testimony to a joint study committee of the Maryland House and Senate.

Facilities Siting and Impact Assessments--Determined the research priorities for evaluating the use of the Chesapeake Bay in assimilating discharges from power plants. Participated in hydrothermal and water quality studies pursuant to NPDES requirements. Directed studies to define the impacts of mining diatomaceous earth from lake sediments. Directed water quality and hydrographic studies associated with the construction of a major interstate tunnel and waterfront redevelopment activities.

Environmental Audits--Supervised and was active team member in environmental audits for transfers of industrial properties on behalf of law firms throughout the U.S. Served as project manager for work with the Huntsville Division and Baltimore District of the Corps of Engineers in which environmental audits were conducted at numerous previously owned DOD sites. Supervisor of environmental audits and RI/FS studies at hazardous waste sites throughout the U.S. under state and federal programs.

Solid/Hazardous Waste Disposal--Compiled and interpreted the results of hydrogeologic studies to define the impacts of an existing hazardous waste management and disposal facility. Designed a program to monitor the impacts of a sanitary landfill facility on surface and ground-water. Investigated feasibility of using upland sites for dredge spoil disposal. Designed and implemented program to characterize PCB contamination in a storage lagoon. Investigated the impact of leachate discharge on the water quality of a downstream water supply. Designed and implemented a stormwater sampling program to monitor PCB transport from an NPL site.

Reviews, Critiques, and Monographs--Prepared critiques on the impacts of proposed revisions of federal and state water quality criteria. Supervised preparation of guide to ground-water regulations in U.S. Reviewed EPA wasteload allocation policies and their impacts on industrial discharges. Participated in modeling efforts and provided administrative hearing support for a major municipal wastewater treatment plant discharger. Performed case study of decision making processes used by U.S. Army Corps of Engineers.

SELECTED PROFESSIONAL AFFILIATIONS AND PRESENTATIONS

National Vice Chairman, State and International Chapters of the American Institute of Hydrology

Conference Chairperson, "Water Problems of National Concern," Washington, D.C. (16-17 October 1986)

Lecturer, "Region III, Hazardous Waste Management Training Course" Baltimore, Md. (5-16 May 1986)



Professional Profile

Steven A. Brown
Geologist III

Mr. Brown has more than 4 years of experience as a geologist responsible for the implementation and management of hydrogeologic and geotechnical investigations involving data collection and reduction and preparing proposals and technical reports. Present hydrogeologic experience comprises ground and surface-water contamination assessments relating to hazardous waste, sanitary landfill and industrial sites; plus deicing salt contamination, stormwater management, U.S. Army NIKE missile sites and underground storage tank (UST) projects. Past Geotechnical experience includes involvement in foundation design, earth fill placement, and rock and soil slope design relating to highway projects.

EDUCATION: 24 Graduate Credits; Millersville University; Geology; 1982
B.S.; Bloomsburg University; Geology; 1977

EXPERIENCE

Water Supply and Water Quality Studies--Served as field geologist and site health and safety coordinator for ground-water contamination assessment at former NIKE missile base sites for U.S. Army Corps of Engineers in Maryland, Virginia, and Pennsylvania. In a similar capacity, conducted a Preliminary Assessment/Site Investigation at 14 separate sites at the Ft. Dix Military Reservation for U.S. Army Toxic and Hazardous Materials Agency. Field activities included conducting site reconnaissance, supervising drilling and installation of ground-water monitoring wells, performing site survey to establish vertical and horizontal locations, classification of soils and rocks, conducting ground water sampling program, geophysical surveys, collection of surficial soil and water samples, and conducting in situ permeability tests. Served as Principal Investigator on Remedial Investigation/Feasibility Study involving evaluation of ground water, surface water and soil contamination at the 100 + acre sanitary landfill at Ft. Meade, Maryland and at the U.S. Army NIKE control and launch sites in Gaithersburg, Maryland. Experienced in estimating costs and developing sampling and analysis plan for a multi-task project involving soil vapor and geophysics as preliminary assessment tools to be used to formulate drilling strategy. Based on preliminary and existing data, ground water, surface water, and soil sampling rationale and appropriate analytical parameters were finalized. Managed an UST project in Delaware involving eight former service stations. This project scope included soil vapor contaminant assessment, soil borings, monitoring well installation, ground water and soil sample collection and analysis. Investigated additional UST sites in Southern California and was responsible for client and regulatory contact, development of proposals, supervising field activities including soil

sample collection, monitoring well installation and ground water sample collection. Experienced in ground and surface water hydrology projects associated with highway drainage and storm water management. Conducted ground water tracer study in connection with the use of sinkholes for highway drainage outlets. Performed domestic water well contamination investigations related to highway deicing salts and conducted hydrologic investigation associated with the alleged contamination and interference of a drainage improvement project with ground water flow feeding a spring used as a source of municipal water. Participated with project team on storm water management design related to planned community design and surface reservoir protection. Presented information on ground-water monitoring network and stabilization of industrial waste ponds to satisfy RCRA Part B closure plan permitting process.

Geotechnical Investigation--Developed soils sampling and analysis program and boring and monitoring well installation network to characterize geologic, hydrogeologic, and geotechnical factors associated with municipal landfill expansion site selection in accordance with regulatory requirements. Supervised field activities, including soil sampling, wetlands evaluations, soil borings and monitoring well installation. Assisted in development of site selection and parameters for rock and soil borings for rock slope design on highway projects. Investigated subsurface conditions using resistivity techniques in Karst topography to locate subsurface cavities. Served as onsite inspector for various phases of construction of commercial properties and performed field and laboratory testing relative to foundation design, asphalt pavement, concrete structures, and earth fill placement projects. Assisted in remedial investigations involved with landslide activity on highway slopes.

Environmental Assessment--Assisted in performing onsite testing at coal-fired electrical generating station associated with reduction of particulate emissions and improved ESP operation. Collected and analyzed fly ash and fuel ash deposits formed in oil and coal-fired electrical generating station. Evaluated chemical and mineralogy data of coal and oil ash deposits and prepared technical reports concerned with the performance of flue gas conditioners and a magnesium oxide-oil slurry injection program. Assisted in soil vapor survey to determine explosion potential of methane gas emanating from landfill areas.

PROFESSIONAL AFFILIATIONS

Association of Ground Water Scientists and Engineers



Professional Profile

Robert L. Cypher
Director, Quality Assurance

Mr. Cypher conducts or participates with client auditors in conducting quality assurance audits of chemistry and bioassay laboratory analytical and quality control procedures. Reviews and approves study plans for major environmental studies and toxicity bioassay and chemistry QC procedures manuals for implementation in U.S. EPA-sponsored studies associated with industrial effluents and hazardous wastes. Assists directors and project managers in implementing corrective actions based on audit results and acceptable modifications to standard operating procedures that assure technical quality of project deliverables.

EDUCATION: M.S.; Frostburg State College, Management; 1975
B.S.; Georgetown College; Biology; 1965

EXPERIENCE

Quality Assurance/Regulatory Compliance--Implemented laboratory standard operating procedures, protocol, and quality control checkpoints and established a Quality Assurance Unit for Hazleton Biotechnologies Company, Vienna, Virginia. Brought immunochemistry division into compliance with Good Laboratory Practice (GLP) regulations. Conducted training sessions for all lab personnel. Set up and implemented Good Manufacturing Practices (GMPs) for HTLV-III Production Lab for Litton Bionetics, Inc., Kensington, Maryland. Set up a subcontractor QA/QC program. Conducted or participated in regulatory inspections, assured management of company's compliance with regulations for U.S. Department of Animal Welfare, interfaced with Safety Department concerning OSHA regulations, and hired, trained, and supervised auditors.

Laboratory Management--Managed Bioassay Operations for Chemical Carcinogenesis Department, Litton Bionetics, Frederick, Maryland. Acted as Animal Resource Program coordinator for Chemical Carcinogenesis Directorate. Managed day-to-day operations of a large animal facility determining potential carcinogenic effect of 25 chemicals on rodents.

Toxicology--Responsible for Animal Care, Tumor, Preparations, and Chemistry Units in Toxicology Department of Hazleton Laboratories. Conducted independent methodology studies.

SELECTED PUBLICATIONS AND PRESENTATIONS

Ulland, B.M., Cypher, R.L., Weisburger, J.H., Weisburger, E.K., and Rice, J.M.: Thyroid Cancer in Rats from Ethylene Thiourea Intake. J. Natl. Cancer Inst., 49:583-584, 1972.

Ulland, B.M., Cypher, R.L., Page, N., Squire, R., and Weisburger, E.: A Carcinogenicity Assay of Mirex in Charles River CD Rats. J. Natl. Cancer Inst., 58:133-140, 1977.

Cardy, R.H., Cypher, R.L., Renne, R.A., and Warner, J.W.: Carcinogenesis of Piperonyl Butoxide in Fischer 344 Rats. J. Natl. Cancer Inst., 62:569-578, 1977.

Cypher, R.L.: Chairman of AALAS-NCAB Session "Good Practice=Good Research," Hunt Valley.

Cypher, R.L.: GLP Procedures. Guest Lecturer at NIH Graduate School, NIH, Bethesda, Maryland.

Cypher, R.L.: Seminar on EPA (TSCA/FIFRA) GLP Regulations, Litton Bionetics, Inc., Kensington, Maryland, 1984.

PROFESSIONAL SOCIETY MEMBERSHIPS

American Association for Laboratory Animal Science
Regulatory Affairs Professionals Society
Regulatory Affairs Committee, NALSI
Society of Quality Assurance



Professional Profile

Linda J. Rubin, C.I.H.
Industrial Hygienist

Ms. Rubin is the senior industrial hygienist within EA's Environmental Management Group. She coordinates corporate services in industrial hygiene, safety, occupational health, and health and safety training. Ms. Rubin has more than 12 years of governmental and industrial experience in industrial hygiene, safety, fire protection, and hazardous waste.

EDUCATION: M.H.S.; Johns Hopkins School of Hygiene and Public Health;
Industrial Hygiene; 1981
B.S.; Cleveland State University; Environmental Health; 1976

CERTIFICATION: Certified Industrial Hygienist; ABIH #2567

EXPERIENCE

Program Management--Managed safety, industrial hygiene, hazardous waste, and fire protection program in a U.S. Coast Guard shipyard and an environmental consulting firm. Established programs for the control of asbestos, inorganic lead, and noise exposures; confined space entry; and respirators. Developed a written Safety and Loss Control program for a county government.

Safety and Health Program Audits--Performed safety and health program audit of numerous operations, including brick manufacturing plant, power plant environmental monitoring group, copper refinery, tire manufacturing plant, and truck maintenance and repair operation. Identified potential liability relative to issues of personnel safety and health and property loss.

Indoor Air Quality--Responsible for evaluation of indoor air quality in offices, schools, industrial facilities, laboratories, and residences. Made presentations on "Monitoring Methods and Equipment" at Maryland State Department of Education's Indoor Air Quality Workshop. Member of the School Environment Committee of the Maryland State School Health Council.

Asbestos Exposure Assessment and Removal--Evaluated potential exposures to asbestos-containing materials in buildings and ships. Developed appropriate controls (e.g., containment, ventilation, personal protection, and work practices) for removal of these materials. Monitored work progress to ensure conformance with control procedures. Performed pre-demolition building surveys to identify the presence of asbestos in construction materials for Corps of Engineers and commercial developers.

Surveyed shopping centers, office buildings, schools, and homes for asbestos, noting recommendation for control and/or remediation.

OSHA Compliance--Conducted compliance inspections of workplaces, e.g., foundries, coke ovens, longshoring operations, steel and wire mills, petroleum refineries, shipyards, biological specimen supply house, and other manufacturing and service operations.

Occupational Exposure Assessment--Evaluated occupational exposures to heavy metals, solvents, isocyanates, asbestos, fibrous glass, welding fumes, noise, radiofrequency radiation, pathogenic organisms, ammonia, and formaldehyde. Conducted study to characterize fibrous glass exposures of shipyard workers by concentration and fiber size. Evaluated feasibility of using light scattering photometer to assess adequacy of ventilation during welding/burning operations during ship repairing.

Hazardous Waste--Coordinated hazardous waste management program. Developed written procedures for identification, segregation, labeling, storing, and manifesting chemical waste. Developed site-specific health and safety plans for field investigations, including delineation of air monitoring, personal protective equipment, definition of work zones, decontamination procedures, emergency procedures, and safe work practices. USATHAMA sites included Tooele Army Depot, Fort Dix, and Lake City Army Ammunition Plant. Other Army investigations involved 7 former NIKE sites. Developed and presented 40-hour hazardous waste operations training course.

Training and Respiratory Protection--Established quantitative respirator fit test program for 500 employees. Responsible for selecting respirators, training, and program review. Planned and/or presented routine and specialized training for management and employees (e.g., asbestos, inorganic lead, respirators, noise, back injury prevention, hazardous waste operations and "Right-to-Know.")

Expert Testimony--Provided expert testimony in U.S. Coast Guard hearing. Represented OSHA in compliance hearings.

PROFESSIONAL AFFILIATIONS

American Industrial Hygiene Association
American Academy of Industrial Hygiene

SELECTED PUBLICATIONS AND PRESENTATIONS

Selective Application of Direct Reading Instruments at Hazardous Waste Sites. 1986. American Industrial Hygiene Conference. Co-authored by J. Serocki.

Assessment of Fume Levels Generated During Shipyard Welding and Burning Operations. 1983. American Industrial Hygiene Conference. Co-authored by P. Waters and F. Rosenthal.



Professional Profile

Peter A. Pellissier, E.I.T.
Civil Engineer

Mr. Pellissier participates in and manages environmental engineering projects. Mr. Pellissier's background includes experience in the management and administration of Department of Defense contracts, cost engineering, and budgetary estimating. He has also participated in the design of stormwater management projects. Designed measure to rectify a dangerous low-head weir.

EDUCATION: B.S.; The Pennsylvania State University; Civil Engineering; 1982

CERTIFICATIONS/REGISTRATIONS: Certified Engineers-in-Training; Maryland; 1983

EXPERIENCE:

DOD Experience--Served as project manager on the U.S. Army Corps of Engineers DERP Program. Responsible for administering maintenance and repair projects at the Scranton Army Ammunition Plant. Directed the development of guidance package for contractors to perform maintenance work in chemically-contaminated areas of Aberdeen Proving Ground. Prepared DOD construction contracts for solicitation of bids, advertisement and award. Participated in both competitive and non-competitive negotiations on Corps of Engineers construction projects.

Cost Engineering--Responsibilities included development of budgetary estimates for funding purposes, formulation of detailed line-item estimates for military and civil works construction projects, review of detailed estimates done by others, and evaluation of value engineering proposals. Implemented the Computer-Aided Cost Estimating System (CACES) into office operations. Evaluated the validity of mistake-in-bid claims by contractors. Formulated construction contract modification estimates.

Stormwater Management--Evaluated alternatives for remediation of environmentally undesirable coal pile runoff. Designed a collection system, detention pond, and outfall system for the runoff. Ensured that all regulations governing runoff water quality were complied with.

Low-Head Weir Remediation--Designed a method for eliminating the "roller effect" on an ogee weir. This entailed filling fiberglass bags with concrete to make the passage of water over the weir more turbulent. Developed a method of pumping concrete long distances over a body of water to fill the fiberglass bags which were held in place underwater.

Professional Affiliations

Society of American Military Engineers - member grade triangle (national fraternity of engineers, architects and scientists) member grade.



Professional Profile

Carol Gevecker Graves, Ph.D.
Biostatistician/Epidemiologist;
Manager, Environmental Health Group

Dr. Graves supervises all statistical services for EA projects, including design of experiments, development of statistical models, and selection of analysis techniques. Her experience includes applications in ecology, environmental science, and environmental health. Dr. Graves combines statistical and epidemiologic expertise in deriving quantitative assessments of risk to human health. She derives emissions estimates and carries out air modeling to estimate ambient air concentrations using EPA's UNAMAP series of air dispersion models.

EDUCATION: Ph.D.; The Johns Hopkins University; Biostatistics; 1975
M.L.A.; The Johns Hopkins University; Liberal Arts; 1969
A.B.; Drury College; Mathematics and English; 1962

EXPERIENCE

Project Management--Manages statisticians, health scientists, and data coordinators in support of EA projects. Performed data management for USATHAMA Installation Restoration Program. Managed analysis of acute toxicity data used by EPA in setting water quality criteria for Utilities Water Act Group (UWAG). Managed conversion of historical data for General Public Utilities and risk assessment at a former coal gas plant for Baltimore Gas and Electric. Managed a multi-agency project for the President's Council on Environmental Quality (CEQ), this project had a \$1.5 million annual budget; a staff of over 30 environmental scientists, health scientists, computer programmers, and support personnel; and included 15 subprojects for 10 federal agencies.

Risk Assessment--Analyzed the human health effects of chlordane and heptachlor and examined the regulatory environment concerning these compounds as part of an extensive environmental audit resulting from a large corporate transfer. Managed a complete human health and environmental risk assessment of a former coal gasification site. Developed screening levels based on concentrations associated with health effects to determine acceptable levels of pesticides in drinking water and developed a monitoring protocol using these levels. Performed exposure assessments for multiple sites at Bethlehem Steel Corp. and for a public site in Newark, NJ.

Air Dispersion Modeling--Uses EPA's UNAMAP series of air dispersion models including the long- and short-term Industrial Source Complex models. Modeled effects of incinerators for hazardous waste, infectious waste, and municipal solid waste. Modeled soil venting system at former gasoline station. Modeled emissions from incinerating mustard agent at the Aberdeen Proving Ground. Performed air modeling necessary for PSD

application for municipal solid waste incinerator. Used air modeling to address public concerns generated by community right-to-know reporting. Modeled air concentrations resulting from construction activities at multiple sites. Has applied Maryland's new air toxics regulations.

Data Analysis--Analyzed data from various biological disciplines to determine similarities and differences between stations, over time, or other factors for 316A and B and other studies. Analyzed impingement and entrainment studies. Developed automated procedure to produce control charts for USATHAMA analytical chemistry data and EA toxicological data. Worked with EPA's acute toxicity data to develop alternate approaches to the statistical aspects of water quality criteria development for UWAG. Performed short- and long-term trend analyses of air and water quality for CEQ annual reports, and analyzed data on the contribution of waterways to the heavy metal load of estuaries. Analyzed nationwide county-level data searching for correlations between environmental and occupational factors and chronic health problems for EPA and FDA.

Systems Design--Developed an English-language statistical and graphical analysis system called UPGRADE for CEQ. Redesigned the user interface, designed statistical procedures, and wrote the User's Manual and the Data Dictionary for same. Designed an easy-to-use system to access water-quality databases, select parameters, and create data sets for use with statistical packages for USGS. Designed and supervised development of a system to access data on mortality by age, sex, race, county, and cause of death for over 20 million deaths for FDA. Developed a system of summary tables of ecological data for Orange and Rockland Utilities.

PROFESSIONAL AFFILIATIONS

American Statistical Association, Past Secretary of Maryland Chapter
Society for Epidemiologic Research
American Public Health Association
Society for Risk Analysis

SELECTED PUBLICATIONS AND PRESENTATIONS

Published articles concerning computer systems for integrating environmental and health data; analysis of air and water quality; and environmental and genetic factors in lung and other diseases. These reports include:

Implications to the National Water Quality Criteria of Generating Additional Acute Toxicity Data. Presented at Society of Environmental Toxicology and Chemistry, St. Louis, Missouri. 1985.
Co-authored by J.A. Fava.

UPGRADE User's Manual. 1980. Council on Environmental Quality, Washington. Co-authored by L.J. Milask and M. Feldman.

Comparisons between desktop dispersion calculations and computerized air dispersion model results when results are to be used in a risk assessment. Presented at Society for Risk Analysis. 1986. Boston, Massachusetts.



Professional Profile

Mark T. Stetz
Physical Science Data Coordinator

Mr. Stetz assists in the data analysis of several ongoing projects as well as many recently acquired projects. He has also assisted in the field work of some projects.

EDUCATION: B.S.; Towson State University; Applied Mathematics; 1985

EXPERIENCE

Computer Science--Experienced in programming languages PASCAL, BASIC, and FORTRAN. Worked with VAX-11 computer system in course of college studies and PDP 11/70 and IBM PC computers at EA.

Field Work--Assisted in survey of cooling towers at an electrical power plant. Participated in dye study of a river in Connecticut. Assisted in well study of ground water at a Maryland landfill site.

Data Analysis--Analyzed data from several projects using mathematical skills and EA computer systems.



Professional Profile

Michael M. Robison
Chief Chemist

Mr. Robison is responsible for providing technical expertise in developing new projects, developing and implementing new procedures, choosing analytical instrumentation, and solving conceptual problems.

EDUCATION: S.M.; Massachusetts Institute of Technology; Inorganic and Nuclear Chemistry; 1964
B.S.; Carnegie Institute of Technology; Chemistry; 1960

EXPERIENCE

Analytical Quality Control--Responsible for implementing, monitoring, and refining the laboratory quality control program. Reviewed and approved data generated in the laboratory. Represented the laboratory in internal and external audits of laboratory operations. Prepared quality assurance project plans for projects and proposals. Developed calibration and quality control procedures for laboratory instrumentation. Prepared SOPs for analytical methods and quality control procedures. Contributed analytical methods and quality control sections to proposals and reports.

Environmental Chemistry--Collected and analyzed estuarine water samples for nitrogen, phosphorus, and carbon species as part of Maryland Power Plant Siting Program. Responsible for performing and supervising automated nutrient analyses, organic carbon analysis, residual chlorine measurements, ion selective electrode determination, fluorometric uranium analysis, oil and grease determination, and conductivity measurements. Planned and directed the collection and analysis of industrial effluents for NPDES and local monitoring requirements. Supervised field collection effort for the chemistry section of a baseline inventory of Potomac wetlands. Conducted literature review and developed laboratory capability in pesticide residue analysis. Extracted and analyzed surface and ground water, elutriates, soils, sediments, sludges, and biological materials for chlorinated hydrocarbon pesticides, PCBs, and chlorophenoxy acid herbicides.

Laboratory Design/Maintenance--Assisted in the design, equipping, and start-up of EA's environmental chemistry laboratory. Developed new analytical capabilities and improved existing methods. Assisted in the evaluation, acquisition, and start-up of the GC/MS system for priority pollutant analysis.

Fire and Flame Studies--Planned and directed sampling and performed analyses for a study of carbon monoxide buildup in burning buildings. Studied polymer burning and flame structure kinetics. Performed analyses for toxic substances in the tissue of fire fatalities. Compiled bibliography of flame structure studies.

Nuclear Studies--Involved in project for the production of short-lived radionuclides for use in medical diagnosis and research. Conducted research on the synthesis of organic compounds incorporating carbon-11. Developed method for the elimination of sodium interference in the neutron activation of biological materials. Measured trace metals in plant and animal tissue using neutron activation analysis and gamma ray spectroscopy. Prepared literature review on the activation analysis of the halogens. Analyzed reactor cooling water for fission products. Set up monitoring program for tritium in urine.

PROFESSIONAL ACTIVITIES

American Chemical Society
Society of the Sigma Xi

SELECTED PUBLICATIONS AND PRESENTATIONS

Bibliography of Flame Structure (1934-1972). 1973. APL/JHU FPP TR13. Johns Hopkins Univ., Baltimore, Md. Co-authored by R.M. Fristrom and B.W. Kuvshinoff.

The accumulation of gases on an upper floor during fire buildup. 1972. Fire Technol. 8:278. Co-authored by P.E. Wagner, R.M. Fristrom, and A.G. Schulz.

Availability of rotational energy for intrinsic excitations in compound nuclei. 1969. Middle Eastern Technical University, J. Pure Appl. Sci. 2:193. Co-authored by R.P. Black.



Professional Profile

Pieter de Jong
Land Use Planner, Environmental Assessments

Mr. de Jong has management responsibilities for coastal zone projects, land planning, and environmental issues related to real estate, land transfer, or other related land development activities. His nine years of research and project experience cover a wide range of environmental, natural resource, and comprehensive planning issues. His last five years of experience have been with County-level planning in Maryland, concentrating on environmental issues including implementation of local Coastal Zone Management Programs, site plan review, and developing water quality and watershed management plans.

EDUCATION: M.R.P.; University of Pennsylvania; Regional Planning; 1986
B.A.; University of Pennsylvania; Biology and Environmental
Science; 1976

EXPERIENCE

Regional Planning--Created section in Harford County's Department of Planning and Zoning to address environmental planning concerns in both current and long-range planning programs. Held supervisory and management responsibilities in five major planning areas: administration of the agricultural lands preservation program and the incorporation of a rural strategy into the Master Plan Update; provision of environmental planning input to the development review process and to Board of Appeals cases; implementation of the County Coastal Zone Management Program; development of the local Chesapeake Bay Critical Area Plan; and development of a water quality implementation strategy for Harford County. Supervised five land use and natural resource planners. Developed land use plan, including a land suitability analysis, for a rapidly growing portion of Harford County. Drafted environmental legislation for the protection of stream valley corridors and other sensitive natural features. Participated in the development of two County Master Plan Updates. Assisted in the development of a non-tidal wetlands protection program for Harford County.

Environmental Site Assessment--Prepared several assessments for waterfront residential and commercial projects as required by the Chesapeake Bay Critical Area legislation. Evaluated environmental assessments for surface mining operations. Prepared position paper on land application of sewage sludge in coastal plain environments. Experienced in conducting opportunity/constraint analysis for major land development proposals. Specialized in integrating soils, hydrologic, topographic,

and biotic information to determine optimal land uses, and also as a means to mitigate the adverse impacts of development. This method of analysis is effective at site, local, and regional levels of focus.

Water Quality Investigations--Designed methodologies for two water quality monitoring programs. Incorporated water quality components in watershed management studies. Directed a four-member team in the development of a non-point source water quality management strategy for EPA Region III. Evaluated best management practices for reduction of pollutant loadings from urban and rural non-point sources.

Project Management--Lead responsibility for over a dozen state or federal grant projects, covering a wide spectrum of research, planning, or implementation projects. Project management responsibilities have included proposal preparation, costing, management/oversight, and/or documentation. Coordinated multidisciplinary research projects and compiled a natural features inventory for a 960-acre land preserve on the Front Range of Colorado.

PROFESSIONAL AFFILIATIONS

American Planning Association
American Forestry Association

SELECTED PUBLICATIONS AND PRESENTATIONS

An Ecological Planning Approach to the Development of Local Critical Area Plans. 1985. In Coastal Zone 85, Proceedings of the Fourth Symposium on Coastal and Ocean Management. ASCE: New York, New York.

A Local Government Approach to Wetland Protection. 1985. In Wetlands of the Chesapeake: Protecting the Future of the Bay. Environmental Law Institute: Washington, D.C. Co-authored by R.S. Lynch.

Bush River Management Plan. 1985. Harford County Department of Planning and Zoning, Northfield Press: Edgewood, Maryland

Region III Non-Point Source Strategy. 1981. U.S. EPA Region III, Philadelphia, Pennsylvania, January.

Pest Management in Transition; with Regional Perspectives on the Interior West. 1979. Westview Press: Boulder, Colorado.



Professional Profile

Carol M. Novalis
Social Scientist

Ms. Novalis is a research analyst responsible for socioeconomic analyses, market research, statistical analyses, and information systems. Her 16 years of experience include development of evaluation methodologies; database design and management; design and implementation of national surveys for education, health and market research projects; professional and community training programs; policy analysis; and project management. Ms. Novalis' expertise is in the qualitative analyses of information needs, the design of data collection and analysis protocols to meet the needs of clients for information specific to their objectives, and development of print and video materials for information programs.

EDUCATION: Ph.D. University of Maryland; Education Policy;
In progress
M.A.; University of Maryland; Administration, Supervision,
and Curriculum (Adult and Community Education); 1974
B.A.; Queens College (CUNY); Social Sciences; 1969

EXPERIENCE

Project Management--Directed several large survey projects during the last 11 years. Coordinated conferences and seminars and served as consultant for many projects requiring management of budgets ranging from \$40,000 to \$250,000; included supervision of staff, plus management and analyses of large databases. Coordinated a series of independent seminars on environmental regulations for "clean" industries and water quality management for manufacturers.

Survey Research--Participated in the analyses of EA's Health Perception survey and developed the ranking of perceptions of health risk for EA's Risk Assessment Methodology. Analyzed content of dredge-spoil data to determine toxicity. Directed efforts to develop survey requirements and specifications for the National Center for Education Statistics, and assisted the Center in standardizing existing data to allow multiyear analyses of all data collected over the previous decade. Analyzed three separate studies of the accuracy of applicant reporting and the adequacy of program funding criteria for the Basic Educational Opportunity Grant Program. Analyzed a National Cancer Institute study on the employability of cancer patients which was implemented in three cities. Analyzed a survey of community uses of television which entailed design of survey forms, identification of respondents, and management and analysis of data.

Professional and Community Education--Experienced in conducting and designing professional and community education programs, including local communications planning, worker training, public relations, and conference management during the last 10 years. Analyzed effective communication media, methods, and content on both professional and community-based populations. Developed public information material on environmental topics for professional lay populations.

Policy Analysis and Research--Analyzed funding policies to develop a model for funding at state, local, and federal levels that would maximize the impact of federal contributions for a federal library innovation program. Analyzed the communications needs of a local community to enhance the effectiveness of local economic and social programs. Completed a Ford Foundation project that analyzed the federal role in the funding of children's television programs.

Database Design and Management--Designed and compiled a national database using census, vital statistics, food stamp, and nutrition program information which were used to analyze measures of economic need and the effectiveness of targeting a nutrition education program for the U.S. Department of Agriculture. For FOOTSTEPS, a two-year educational television series, designed and managed all research efforts, including a needs assessment, field test, and specialized laboratory evaluations of program and curriculum elements. This also entailed an innovative documentation effort that included recording of project activities, management, and progress and preparation of reports for all research activities. Provided technical information systems, consulting to local hospitals and health facilities. For the federal government, designed a project to integrate several national databases and designed analyses for simulating alternative funding formulae for federal funding of education.

Evaluation Research--Experience includes evaluation studies of: the FOOTSTEPS project; educational programs for juveniles under state-ordered residential care; a middle school program; national funding of innovative library programs; and several training programs and educational television projects.

SELECTED PUBLICATIONS AND PRESENTATIONS

Qualitative methods for assessing audience reaction. Presented at the National Federation of Local Programmers, Annual Conference, St. Paul, Minn. 10 July 1982.

A Study of Library Cooperatives, Networks and Demonstration Projects. Saur, N.Y. 1980. Co-authored by J. Casey and R. Patrick.

The FOOTSTEPS experience: Formative evaluation in the development of learning materials for adults. Presented at the Lifelong Learning Research Conference, University of Maryland, Cooperative Extension Service, College Park, Maryland. 11 January 1979.



Professional Profile

Joan Drews
Supervisor, Communications Group

Ms. Drews supervises the activities of the Communications Group which provides the following technical publishing services: editing, proof-reading, word processing, production coordination, and reproduction. Ms. Drews assumes editorial responsibility for large technical reports.

EDUCATION: B.S.; The Johns Hopkins University; Business Administration; 1979

EXPERIENCE:

Editing and Report/Proposal Production: Maintains editorial style and consistency in technical reports and proposals. Responsible for production of reports including: a study of alternative disposal methods for a chemical munitions stockpile at a military installation; results of biological and hydrothermal field studies of the cooling water systems of three power generating stations; and a case study of the effect of water quality-based toxicity control procedures on water pollution.

Author Consultation: Works extensively with authors to ensure that results and conclusions are readable and pertinent and that tables and graphics are effective. Collaborated on the writing of several articles for the American Society for Testing and Materials on the acute and chronic toxicity of effluent samples from a variety of sources.

Graphics: Schedules the production of graphics included in technical reports.

Reproduction: Supervises the reproduction center specialist who is responsible for reproduction of technical reports, proposals, and manuals, maintenance of copiers, supply inventory, and purchase of printed forms, letterhead, and other items.

Word Processing System: Coordinates production of text and tables through the Word Processing Center. Works with word processing operators to apply special Word-11 (VAX 11/785 computer-based) word processing system features to EA publishing specifications. Issues updates to word processing guidelines manual.

Development of Materials: Published a quick reference guide to proofreading symbols. Created a table of special-use characters available on the Word-11 system for use by word processing system users. Established master files of documents used repeatedly in preparing EA reports/proposals.

Marketing and Public/Employee Relations Programs--Has 10 years of experience in public/employee relations and marketing consulting, managing such programs as: corporate and departmental newsletters; tuition reimbursement; suggestion plan; sales incentives; consumer seminar series; special event planning; and fund raising. Had responsibility for advertising campaigns, new location openings, and media relations.



Professional Profile

J. Paul Caprio, Jr.
Project Geologist

Mr. Caprio is a geologist responsible for the design management, implementation, and interpretation of geotechnical and hydrogeologic field and laboratory investigations, managing and analyzing data collected in such studies, and preparing impact assessments and reports. His nine years of consulting experience include surficial geologic mapping; seismic, electromagnetic conductance and resistivity surveying; and hydrogeologic investigations, aquifer analysis as well as extensive field and laboratory experience in soils and materials testing.

EDUCATION: B.S.; Virginia Polytechnic Institute; Geology; 1979

REGISTRATION: Registered Professional Geologist; South Carolina

EXPERIENCE

Impact Assessment--Supervised and performed site assessments, including test borings, piezometers, observation wells, geophysical surveying, and ground-water monitoring at active and closed solid and hazardous waste landfills in Maryland, Pennsylvania, and Ohio and at numerous sites of underground tank leaks (gasoline) in the Mid-Atlantic region. Assessed potential ground-water contamination from a sludge lagoon for the Roanoke (Virginia) County Department of Public Works and performed geophysical and chemical analyses to assess the corrosive effect of soils on underground utilities for the U.S. Army. Principal Investigator and Site Manager for Remedial Investigation/Feasibility Studies (RI/FS) at Superfund landfill sites in New Jersey and Pennsylvania. Designed and managed hydrogeologic investigation of impact of chromimum tailings fill on ground water and surface water quality.

Water Supply and Water Quality Studies--Designed, supervised, and performed ground-water monitoring programs at waste management facilities and sites of petroleum product contamination in the mid-Atlantic region. Performed shallow geophysical profiling for ground-water and bedrock depth determinations and fracture trace identification. Supervised drilling, well installations, and aquifer testing at numerous sites. Supervised drilling and logging of geothermal test wells for the U.S. Department of Energy and participated in hydrogeologic studies for septic system and well placements at proposed developments for Ryan Homes. Designed and performed multiwell aquifer pump tests for water allocation permit and ground water remediation treatment systems in both the Piedmont and Atlantic Coastal plains. Designed and performed infiltration studies of in-situ soils for infiltration basin artificial ground-water recharge. Planned and implemented programs for pump testing and recovery

well design at a contaminated ground water plume effecting a municipal water supply well in Frederick County, Maryland, and a contaminated ground water plume affecting domestic supply wells in Baltimore County, Maryland.

Facilities Siting--For Virginia Electric and Power Company, performed hydrogeologic investigations as part of environmental site characterization studies at four candidate sites for a coal-fired electric generating station planned to include onsite disposal of fly ash and FGD scrubber sludge.

Geotechnical Investigations--Managed and responsible for quality control of EA's soils testing laboratory. Served as onsite inspector for various phases of construction of commercial properties and performed accompanying field and laboratory testing, supervised test borings, field and laboratory testing pertinent to foundation design, slope stability, pavement recommendations, and construction dewatering problems, and provided recommendations to clients with regard to these areas and conformance to specifications. Investigated the cause of foundation settlement at a Howard Johnson's in Alexandria, Virginia for Leroy T. Gravvits, investigated the effects of adjacent load bearing foundations on existing underground basements for Greenhorne & O'Mara, and consulted on foundation design and construction dewatering at an electric test facility site for Baltimore Gas & Electric Company. Participated in investigations and testing related to placement of clay cover at a secure landfill in Maryland, and slope stability evaluations at a secure landfill in Ohio.

PROFESSIONAL AFFILIATIONS

American Association of Petroleum Geologists
Association of Groundwater Scientists and Engineers
National Water Well Association



Professional Profile

Sam M. Davis, E.I.T.
Environmental/Civil Engineer

Mr. Davis prepares engineering plans and specifications for multidisciplinary projects in waste facility design, landfill closure, water transport systems, and waste treatment. He participates in proposal and contract preparation, site investigative and remedial recommendations, construction inspection, state and local agency interaction, and client liaison.

EDUCATION: B.S.; The Pennsylvania State University; Environmental Engineering; 1985

EXPERIENCE

Hazardous and Toxic Wastes--Participated in preparation of detailed engineering specifications and plans for closure of an existing hazardous waste fill impoundment. Experienced in design evaluation of cap thicknesses and individual multi-layer objective, stormwater and run-off requirements, erosion control, gas vent system piping, site grading, and presentation of contract documents for construction. Prepared engineering closure documents required for U.S. EPA Part B submittal. Supervised carbon filter installations into water distribution systems of numerous suspect hydrocarbon containment areas. Provided design of a gravity flow carbon unit into an existing aeration stripping system, providing low cost and site adaptability. Made PCB disposal recommendations for contaminated transformer devices. Advised client of current legislation and method of a timely and legal disposal solution.

Water Distribution Systems--Compiled engineering drawings for leachate conveyance force main project from source to sanitary sewer outfall. Adhered to Highway Department requirements and environmental regulations, as well as answering to municipal and client interests. Investigated existing municipal, sewer pumping stations, and sewage network and proposed loading analysis. Conducted field survey of topographic and physical site features. Prepared permit applications for highway and municipal codes. Directed design of manhole, air relief valving, clean-out, and other appurtenant items and their location along the force main route. Supervised construction of two miles of 10-in. piping, as well as placement of hydrants, valves, tees, and individual service metering and connections.

Landfill Design/Closure--Prepared design and specification of several lined landfill facilities including leachate collection, leachate pumping stations, storage vessels, membrane system evaluation, and preparation of permit documents. Developed closure drawings for an active municipal

landfill. Computed stormwater volumes and design of control ditching and basins for regulatory approval. Served as regulatory and client liaison. Performed conceptual design and cost evaluation/feasibility study of site alternatives. Participated in proposal documents for numerous phases of landfill involvement. Served as landfill operator for client during personnel changes.

Facility Studies--Investigated remedial action for heavily contaminated methane soils. Recommended and performed pilot study for design of active venting plan through onsite differential pressure testing and design of final system. Assisted in installation and materials selection for a bioreclamation research project conducted on jet-fuel-contaminated ground water through nutrient injection along with design of volatile organic stripping system. Evaluated ground-water reversal network at former sanitary landfill, and associated costs. Recommended and performed design modifications to improve hydrocarbon removal at an existing stripping unit.

Inspections--Responsible for inspection of PVC and HDPE membrane liners, leachate collection piping and systems, liner covering, fencing construction, compaction, storm water piping and control measures, municipal water systems and appurtenances, and operational facility construction.



Professional Profile

John F. Hendrick, P.E., CHMM
Environmental Engineer

Mr. Hendrick manages environmental engineering projects and has ten years of experience on projects dealing with treatment, storage, transportation, and disposal of water, wastewater, and solid waste. His experience includes work with landfills, water and wastewater treatment, groundwater monitoring, environmental audits and site assessments and underground storage tank management.

EDUCATION: M.S.; The Johns Hopkins University; Environmental Engineering; 1982
B.S.; Temple University; Environmental Engineering Technology; 1978

REGISTRATION/
CERTIFICATION: Registered Professional Engineer
Maryland No. 13480
Delaware No. 7327
Master Level Certified Hazardous Materials Manager; 1985
Diplomate, American Academy of Environmental Engineers

EXPERIENCE

Landfill Engineering--Managed the design and evaluation of several major municipal solid waste landfills. Evaluated the siting and design of several industrial landfills for the State of Maryland. Evaluated the suitability of location and design requirements for numerous municipal and industrial landfills.

Water Treatment--Designed and provided engineering services during construction and start-up of an unmanned water treatment plant for removal of volatile organic compounds from a municipal water supply. The plant includes packed column aeration, softening, chlorination, and pumping into an existing distribution system. The design included evaluation and costing of alternatives for achieving the treatment goal. The finished water pumping was based on a Hardy-Cross analysis of the existing system.

Wastewater Treatment--Participated in the 20 year facility plan for a major wastewater treatment plant. Performed a feasibility study (economic and technical) to determine the best phosphorus removal system for a 70 million gallon per day plant. Inspected and evaluated the operating efficiency of several industrial and municipal wastewater treatment plants and recommended improvements based on evaluations.

Ground-Water Monitoring--Evaluated the adequacy of numerous ground-water monitoring systems. These systems monitored disposal operations and sub-surface petroleum spills. Interpreted data from these wells to determine impact on downgradient aquifers and water supplies.

Environmental Audits and Site Assessments--Reviewed industrial processes and waste generation while inspecting numerous industrial facilities in order to assess environmental contamination and liability. Participated in complete environmental audits, including site inspection, record searches, and personnel interviews for several multi-million dollar land transfers.

Underground Storage Tank Management--Evaluated the extent of contamination and remedial activities at several sites. Assessments have included evaluation of hydrogeological and chemical data. Provided oversight during tank excavation and removal. Designed groundwater recovery and treatment systems. Developed guidelines for cleanups and disposal of contaminated ground-water. Evaluated the adequacy of ground-water monitoring systems, product recovery systems (active and passive), ground-water treatment systems, soil venting systems, and soil excavations. Performed several soil vapor contaminant assessments.

PROFESSIONAL AFFILIATIONS

American Academy of Environmental Engineers
American Society of Civil Engineers (Member Grade)
American Water Works Association
Construction Specifications Institute - (Professional Member)
National Association of Environmental Professionals

SELECTED PUBLICATIONS AND PRESENTATIONS

Fundamentals of ground-water--Quality and Quantity. 1985. Presented at the Thirty-sixth Short Course for Water and Waste Operators Training Seminar.

Landfill Permitting. 1986. Presented at the Maryland Association of Counties Seminar on Solid Waste Management.

"Soil Vapor Contaminant Assessment," Toxic and Hazardous Waste: Proceedings of Nineteenth Mid-Atlantic Industrial Waste Conference (Evans, J.C., Ed.) Technom IC Publishers, (1987).



Professional Profile

Gregory E. Johnson, E.I.T.
Civil/Environmental Engineer

Mr. Johnson is a project manager and engineer in projects in the areas of civil and environmental engineering. His expertise is in the fate and transport of heavy metals. Mr. Johnson's background includes experience in onsite wastewater treatment alternatives, stormwater management, floodplain studies, management and design of commercial and industrial site development projects, hazardous waste management, and demolition design.

EDUCATION: M.C.E.; University of Delaware; Environmental Engineering; 1986
B.C.E.; Villanova University; Civil Engineering; 1984

CERTIFICATIONS/
REGISTRATIONS: Certified Engineer-in-Training; Pennsylvania; 1984

EXPERIENCE

Fate and Transport Of Heavy Metal Contaminants--Developed a laboratory procedure to study the effects of various environmental conditions on the dissolution of lead sulfide. Examined the effects that metals and organic complexing ligands had on the concentration of free lead.

Remedial Investigation and Design--Managed projects under the U.S. Army Corps of Engineers Defense Environmental Restoration Program (DERP), including site contamination assessment and evaluation and selection of remedial design alternatives. Performed environmental contamination inspections and prepared reports for real estate transactions. Evaluated and selected remedial design alternatives at various other toxic and hazardous waste sites. Designed and prepared specifications for an activated carbon system to treat ground water contaminated with PCBs, PAH, and fuel oil. Managed a project involving re-design of a sump pit in a chrome plating facility.

Demolition of Contaminated Facilities--Prepared guideline specifications for the demolition of facilities contaminated with chemical agents. Managed a project involving demolition of asbestos-sided buildings, including: preparation of specifications, site contamination inspection, asbestos survey, environmental assessment (EA), government estimate for project cost, design drawings and plans, and construction oversight.

Stormwater Management and Floodplain Hydraulics--Designed and permitted stormwater management and erosion control facilities for commercial, residential, and industrial developments in Baltimore, Howard, Anne

Arundel, and Frederick counties, Maryland. Responsible for hydraulic designs, collection and conveyance systems, construction cost estimates, and project management. Performed floodplain studies of several medium-sized watersheds in central Maryland. Examined the effects of proposed development on future storm events. Prepared hydrologic and hydraulic design reports for various types of culverts and other flood control structures.

Biological Wastewater Treatment Plant Design--Participated in onsite engineering modifications related to the design and construction of an extended aeration/rapid infiltration wastewater treatment plant at Yellowstone National Park in Wyoming. Performed construction inspection and soil testing. Prepared recommendations and design modifications for an onsite extended aeration treatment plant in Western Maryland to achieve regulatory compliance.

Commercial And Industrial Site Development--Prepared site development plans for commercial and industrial sites in central Maryland. Responsibilities included preliminary site layout; grading; water, sewer, and storm drain design; road improvements; and stormwater management and erosion control design.

Septic System Design--Designed septic systems for residential and industrial developments. Experienced in the design of percolation beds and trenches and Wisconsin Mound Systems. Performed field testing of soil permeability and analyzed soil suitability for system design. Prepared and presented design reports to regulatory agencies.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers
Water Pollution Control Federation
Engineering Society of Baltimore
Tau Beta Pi (Engineering Honor Society)
Chi Epsilon (Civil Engineering Honor Society)
Chesapeake Water Pollution Control Federation-Industrial
Wastes Committee

SELECTED PUBLICATION AND PRESENTATIONS

Chemical Examination of the Fate and Transport of Environmental Lead Sulfide. 1986. University of Delaware. MS Thesis.



Professional Profile

Mary Manella Uhlfelder
Chemist IV

Ms. Uhlfelder supervises the preparation of data reports, assists the quality control officer in reviewing analytical data and functions as the Analytical Task Manager in the U.S. Army Toxic and Hazardous Materials Agency QA program.

EDUCATION: M.A.; The Johns Hopkins University; Chemical Oceanography;
1971
B.A.; College of Notre Dame of Maryland; Chemistry; 1967

EXPERIENCE

Analytical Experience--Performed determination of general inorganics and organics in water and sediment. Specialized in analysis of metals by atomic absorption spectrophotometry. Prepared standard operating procedures (SOPs) for all general analyses. Assisted in development of laboratory quality assurance/quality control (QA/QC) program.

Environmental Chemistry--Directed analysis of industrial effluents for local monitoring requirements. Developed field kit for dissolved oxygen determination based on Winkler titration, prepared the SOP, and conducted the field study. Responsible for maintenance and calibration of field water quality analyzers.

Laboratory Management--Supervised performance of general inorganic and organic analysis. Responsible for training analytical technicians. Directed scheduling of personnel and equipment, logging samples and results, and maintenance of reagents and equipment. Participated in development of analytical price list and prepared cost efficiency evaluations for general analyses. Conducted literature searches and developed laboratory SOPs to conform to U.S. EPA methodology. Reviewed analytical data and prepared client reports.

Program Management--Implemented U.S. Army Toxic and Hazardous Materials Agency QA program for various Installation Restoration projects. Responsible for submitting the required documented methods and laboratory certification data. Participated in the preparation of technical plans for studies at several installations. Ensured that sample handling and analysis were consistent with U.S. Army Toxic and Hazardous Materials Agency requirements.

SELECTED PUBLICATIONS AND PRESENTATIONS

Magnesium to chlorinity ratio in seawater. 1973. J. Geophysical
Research 78:3621-3626. Co-authored by J.H. Carpenter.



Professional Profile

Barbara F. Bass, Ph.D.
Senior Scientist

Dr. Bass works in the EA Risk Assessment Group. She has been project manager for several health and environmental projects ranging from the development of draft proposed risk assessment guidelines for EPA to the analyses of numerous risk assessment science and policy issues in a variety of areas, including neurotoxicology, immunotoxicology, and hazardous waste reduction. Dr. Bass has also been involved in program goals involving health, transportation, land-use, and energy policy issues.

EDUCATION: Ph.D.; The Johns Hopkins University; Toxicology; 1984
B.S.; Trinity College; Biology; 1976
B.A.; Trinity College; Psychology; 1972

EXPERIENCE

Risk Assessment/Risk Management Issues--Under contract to the U.S. Army's AMCCOM, evaluating from a local perspective (Aberdeen Proving Ground) the risk analysis presented in the Draft Programmatic Environmental Impact Statement on the Chemical Stockpile Disposal Program. Evaluated risk assessment methodologies resulting in development of draft proposed risk assessment guidelines for EPA. Involved in the analysis of risk assessment science and policy issues and guidelines in a variety of areas, including hazardous waste reduction, neurotoxicity, and immunotoxicity. Served as project manager and conducted evaluation of scientific literature on key risk assessment issues, e.g., analyses of data on dozens of chemicals to determine relative power of different types of testing strategies for assessing neurotoxicity.

Regulatory Issues--Experienced in policy work and methodologies. Familiar with regulatory acts and rulings, testing, and permitting processes of various government agencies (e.g., EPA, FDA, and OSHA). Experienced in regulatory program functions. Improved scientific and policy foundations of chemical risk assessments; attained broad working knowledge of various federal and state regulatory programs and their respective activities. Wrote reports prepared for government clients on scientific and policy perspectives.

Data Analysis--Experienced in data management of chemicals for EPA. Set up database on chemicals that were submitted in premanufacture notices (PMNs) to EPA. Conducted empirical analyses in fields of toxic substances and hazardous waste to support public policy development. Involved in review and evaluation of numerous chemicals.

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
American Chemical Society
American Public Health Association
National Capital Area Society of Toxicology
Society for Risk Analysis
Society of Toxicology

SELECTED PUBLICATIONS AND PRESENTATIONS

Community Review Support Study: Aberdeen Area. 1987. U.S. Army Armament Command Contract No. DAAA 15-87-0033. EA report.

Immunotoxicology Strategy: Review of Major Scientific Conferences, Federal Activities and Federal Policies Relating to Immunotoxicology. 1987. EPA Contract No. 68-02-4228. Co-authored by W.R. Muir and N.R. Rose.

Immunotoxicology Strategy: Identification of Policy and Programmatic Options. 1986. EPA Contract No. 68-02-4228. Co-authored by W.R. Muir and N.R. Rose.

Hazardous Waste Reduction Information Needs. 1986. Office of Technology Assessment, Contract No. 633-1900.0. Co-authored by A. Colb, J.M. Muir, and W.R. Muir.

User Friendliness of OTS Information Resources and Systems. 1986. EPA Contract No. 68-02-4228. Co-authored by W.R. Muir and J.M. Muir.

Summary of Federal Actions and Risk Assessment Methods Relating to Neurotoxicity. 1986. EPA Contract No. 68-02-4228. Co-authored by W.R. Muir.

Neurotoxicity Science Issue Reports: Acute vs. Repeated Exposure Tests. 1985. EPA Contract No. 68-01-0554. Co-authored by W.R. Muir and J.S. Young.

The Effects of 2,5-Hexanedione on Cholinesterase in the Rat. 1987. Co-authored by A.M. Goldberg. In Neurobiology of Acetylcholine Eds. N.J. Dun and R.L. Perlman.



Professional Profile

Frank W. Pine, Ph.D.
Program Manager, Environmental Assessments

Dr. Pine has graduate-level training in ecology and animal behavior with emphasis on environmental biology and public health. He has conducted studies and research on biological uptake of trace metals in estuarine wetland ecosystems and managed multidisciplinary studies to define baseline conditions in tidal fresh wetland communities, estuarine communities, and terrestrial and nontidal wetland areas. These included water quality, nutrient flux determinations, soil types and conditions, plant community structure, invertebrate and vertebrate populations, and potential influences of adjacent land-use practices. His experience also includes environmental impact assessments, aerial photographic surveying and mapping, taxonomic and community structure analyses, and quantitative assessment of environmental effects. Dr. Pine has defined the potential effects of disturbances upon rare, threatened, or endangered species and upon sensitive communities and is experienced in the detailed analysis of the vegetative and faunal communities and their relationship to impacts resulting from development and highway construction.

EDUCATION: Ph.D.; The Johns Hopkins University; Ecology and Animal Behavior; 1980
B.S.; Kenyon College; Biology; 1964

EXPERIENCE

Environmental Assessment--Directed numerous studies of environmental consequences of development in the coastal zone of the Chesapeake Bay. Directed studies to support preliminary planning and development of Environmental Impact Statements for federally funded road projects in Baltimore County, Maryland, and for the National Freeway in Washington County, Maryland. Assisted in management of all environmental work relating to the construction of the I-95 tunnel across Baltimore Harbor and was also responsible for the development and implementation of the wetlands mitigation program. Directed studies and developed a comprehensive Environmental Enhancement Plan for Baltimore Harbor related to mitigation, shoreline improvement, and wetlands creation.

Dredging and Dredge Spoil Disposal--Directed or assisted in the completion of Environmental Impact Statements (NEPA compliance) related to dredging and disposal of contaminated bottom sediments in Baltimore Harbor and Washington, D.C. Experience includes definition of terrestrial and aquatic ecological impacts in both estuarine and upland fresh water communities. Studies included the potential effects of discharges upon surface and ground water as well as the definition of mixing zones and concentrations of a wide range of contaminants at both dredge points

and in the discharge from disposal sites. Conducted research concerning the potential for odor problems related to dredge spoil disposal. Conducted research into methods for mitigating loss of habitat, including the creation of new marsh habitat and the use of reef structures for improvement of finfish habitat. Assisted in the development of alternative uses of dredge spoil material. Assisted in public information meetings and 404 permit hearings regarding the potential effects and benefits of dredging and disposal operations.

Solid and Hazardous Waste Handling and Disposal--Conducted studies related to defining the environmental impacts of expanding secure chemical management facilities in relation to Resource Conservation and Recovery Act (RCRA) requirements. Defined existing conditions and methods for ameliorating odor problems at hazardous and solid waste disposal sites. Assisted in the assessment of environmental problems related to the transfer and storage of kepone and related compounds. Participated in public information meetings regarding the public health aspects of PCBs and the problems of transporting and storing materials containing PCBs.

Water Quality and Environmental Toxicology--Graduate-level training in mammalian physiology and toxicology. Conducted research in waterborne pollutant dynamics and water quality. Studies included sources, bioaccumulation potential, sinks, and comparison of contaminant concentrations with federal and state guidelines, criteria, and standards for all classes of surface waters, ground water, and drinking water.

Project Management--Directed multidisciplinary studies involving combined field and laboratory research as well as literature reviews and laboratory studies. Responsible for directing proposal preparation, costing, management, and completion of projects. Training has included seminars concerning personnel and project management and short courses in proposal preparation.

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
National Association of Environmental Professionals

SELECTED PUBLICATIONS AND PRESENTATIONS

Environmental Assessment: Physical/Chemical Impacts of Dredging and Spoil Disposal--Trench Tube Crossing of the Anacostia River. 1981. NTIS-PB81-202756. Co-authored by J.C. Yost, S.W. Saul, and S.G. Wood.

The Relationship Between Land-Use Characteristics and Trace Metal Concentrations in Submerged Vascular Plants. 1979. Proc. International Conference on Management and Control of Heavy Metals in the Environment, CEP Consultants, Ltd., London. 664 pp.



Professional Profile

H. Jeffrey Elseroad
Environmental Scientist

Mr. Elseroad has graduate-level training in environmental engineering and 15 years of professional experience in environmental assessments and pollution control planning. He provides expertise primarily for water quality and water pollution control projects. He also leads multidisciplinary environmental impact studies for wastewater, water resources, solid waste, and transportation projects. He has investigated the water quality impacts of wastewater treatment plant discharges, industrial waste discharges, solid waste landfills, nonpoint-source runoff, hydroelectric power plants, flood control dams, highway and highway tunnel construction, and marinas. Many of these projects involved the collection and analysis of water and wastewater samples as well as the evaluation of water quality data. On a broader scale, Mr. Elseroad has prepared siting studies, facility plans, and environmental impact statements for wastewater management facilities, flood control projects, sanitary landfills, and highways. These projects typically encompass environmental and socio-economic impact assessments and engineering feasibility studies.

EDUCATION: M.S.E.; The Johns Hopkins University;
Environmental Engineering; 1973
B.A.; Carleton College; Chemistry; 1970

EXPERIENCE

Environmental Assessment--Managed environment assessment of a flood control dam and lake on Red Run in Baltimore County, Maryland. Prepared environmental impact statement for the Warren Road extension and I-83 interchange in Baltimore County. Directed technical work and wrote two environmental impact statements prepared for U.S. EPA on major wastewater conveyance and treatment systems in the Louisville metropolitan region. Compiled information and led workshops for matrix ranking of environmental impacts on two wastewater treatment facility plans and two sanitary landfill siting studies.

Water Quality--Conducted water quality field studies and impact analyses for proposed Red Run Dam. Assisted in evaluation of water chemistry and toxicology of ammonia and phenol discharge to Baltimore Harbor from Bethlehem Steel. Performed critical evaluation of permit calculation procedures and prepared User's Guide for obtaining discharge permits based on EPA's Technical Support Document for Water Quality-Based Toxics

Control. Managed project investigating technologies for aerating the discharge from the Conowingo Hydroelectric Dam on the Susquehanna River. Managed project at Safe Harbor Hydroelectric Facility to study the effects of a newly installed discharge aeration system and to assess fish mortality from turbine passage. Managed stormwater runoff monitoring program conducted on the Patuxent River for the Maryland Water Resources Administration. Directed field chemistry program and evaluated water quality data from the Potomac River and adjacent wetland creeks as part of a study of a relocated wastewater treatment plant outfall. Evaluated water quality data from Baltimore Harbor for a study of the dredging impacts of the I-95 tunnel. Conducted field surveys and analyzed water quality data for an industrial discharge to Baltimore Harbor, paper mill discharges to the Juniata and Pigeon Rivers, and power plant discharges to the Harbor and the Monongahela, Hackensack, Delaware, and Susquehanna Rivers. Assisted in technical program of Baltimore region 208 water quality management planning.

Wastewater Management--Directed a monitoring program for toxic and oxygen-demanding pollutants in the discharges of two electricity generating stations in New Jersey. Developed alternatives and performed cost-effective analyses for wastewater conveyance and treatment facilities in the Rock Creek, Seneca Creek, and Muddy Branch basins of Montgomery County. Prepared cost-effectiveness evaluation of septage management alternatives for Wicomico County. Evaluated wastewater treatment process alternatives and developed sewer flow monitoring and industrial discharge monitoring programs for Howard County.

Solid Waste Management--Directed technical evaluations of Harford County landfill siting study encompassing eight sites; prepared Phase II Geologic and Environmental Report and developed stormwater management plan on selected site. Evaluated site characteristics and environmental impacts in county-wide search for a landfill in Lancaster County. Performed noise, surface-water, and ground-water sampling and data analysis at municipal sanitary landfills.

PROFESSIONAL AFFILIATIONS

American Water Resources Association
Water Pollution Control Federation
North American Lake Management Society