

CORE

**Environmental
Services, Inc.**

**4 Brookstone Plaza
Morgantown, WV 26508**

August 10, 2009

Purchasing Division
2019 Washington Street, East
P.O. Box 50130
Charleston, WV 25305-0130

Attention: Chuck Bowman

Subject: Expression of Interest
Landfill Closure Design and QA/QC
City of Wheeling Landfill
Ohio County, West Virginia

Dear Mr. Bowman,

On behalf of CORE Environmental Services, Inc. (CORE), we are pleased to provide this reply to the Expression of Interest regarding the above referenced project. We appreciate the opportunity to offer our services to the West Virginia Department of Environmental Protection (WVDEP), and look forward to working with you on the project.

If you have any questions regarding this submittal or CORE's organization, please contact me directly at (304) 266-7207.

Sincerely,

CORE Environmental Services, Inc.

Thomas M. Rebar, LRS
Senior Project Manager

Enclosures

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PURCHASING DIVISION
STATE OF WV

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
LANDFILL CLOSURE CONSULTANT QUALIFICATION QUESTIONNAIRE**

PROJECT NAME City of Wheeling (DEP 14705)		DATE (DAY, MONTH, YEAR) August 10, 2009		FEIN 25-1881536	
1. FIRM NAME CORE Environmental Services, Inc.		2. HOME OFFICE BUSINESS ADDRESS 4068 Mt. Royal Boulevard Gamma Building, Suite 225 Allison Park, PA 15101		3. FORMER FIRM NAME N/A	
4. HOME OFFICE TELEPHONE 412-487-6000		5. ESTABLISHED (YEAR) 2001		6. TYPE OWNERSHIP INDIVIDUAL, CORPORATION, PARTNERSHIP, JOINT-VENTURE	
				6A. WV REGISTERED DBE (DISAVANTAGED BUSINESS ENTERPRISE) YES <input type="checkbox"/> NO <input type="checkbox"/>	
7. PRIMARY OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. (name particular type) PERSONNEL EACH OFFICE See attached sheets.					
8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM Stephen A. Zbur			8a. NAME, TITLE, & TELEPHONE NUMBER-OTHER PRINCIPALS N/A		
9. NUMBER OF PERSONNEL BY DISPLINE (Bold Lettering Indicates Minimum Design Team Members) Detailed information On Team To Be Included					
<u>4</u> ADMINISTRATIVE		<u> </u> ECOLOGISTS		<u> </u> LANDSCAPE	
<u> </u> ARCHITECTS		<u> </u> ECONOMISTS		<u> </u> ARCHITECTS	
<u> </u> BIOLOGIST		<u> </u> ELECTRICAL		<u> </u> MECHANICAL	
<u>5</u> CADD OPERATORS		<u> </u> ENGINEERS		<u> </u> ENGINEERS	
<u> </u> CHEMICAL ENGINEERS		<u> </u> ENVIRONMENTALISTS		<u> </u> MINING	
<u>8</u> CIVIL ENGINEERS		<u>4</u> ESTIMATORS		<u> </u> ENGINEERS	
<u>3</u> CONSTRUCTION		<u>2</u> GEOLOGIST		<u> </u> PHOTOGRAMMETRISTS	
<u> </u> INSPECTORS		<u> </u> HISTORIANS		<u> </u> PLANNERS:	
<u>3</u> DESIGNERS		<u>1</u> HYDROLOGISTS		<u> </u> URBAN/REGIONAL	
<u> </u> DRAFTSMEN				<u> </u> SANITARY ENGINEERS	
				<u>1</u> SOILS ENGINEERS	
				<u> </u> SPECIFICATION WRITERS	
				<u>35</u> TOTAL PERSONNEL	
TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: <u> 3 </u>					
*RPEs other than Civil must provide supporting documentation that qualifies them to supervise and perform this type of work.					
10. If submittal is by joint venture, list participating firms & outline specific areas of responsibility (including administrative, technical, & financial) for each firm. Each participating firm must complete a "Consultant Confidential Qualification Questionnaire". N/A					
10a. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? <input type="checkbox"/> YES <input type="checkbox"/> NO N/A					

11. OUTSIDE KEY CONSULTANTS/ SUB-CONSULTANTS ANTICIPATED TO BE USED.		
NAME AND ADDRESS: Pedersen & Pedersen, Inc. 441 Mars-Valencia Road Valencia, PA 16059	SPECIALTY: Civil and Environmental Engineering/Surveying	WORKED WITH BEFORE <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
NAME AND ADDRESS: Geotechnics 544 Braddock Avenue Pittsburgh, PA 15112	SPECIALTY: Engineering Testing Services	WORKED WITH BEFORE <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE <input type="checkbox"/> YES <input type="checkbox"/> NO

12. ***Note: *Personnel* refers to those who will be working directly on the project:

A. Are your firm's personnel experienced in Solid Waste Landfill Closure Design?

YES Description and Number of Projects:

See attached sheets.

NO

B. Are your firm's personnel experienced in Solid Waste landfill site characterization assessment and evaluation?

YES Description and Number of Projects:

See attached sheets.

NO

C. Are your firm's personnel experienced in landfill closure construction inspection?

YES Description and Number of Projects:

See attached sheets.

NO

D. Is your firm experienced in Aerial Photography and the Development of Contour Mapping?

YES Description and Number of Projects:

See attached sheets.

NO

E. Are your firm's personnel experienced in evaluating ground water contamination, such as may be associated with landfills?

YES Description and Number of Projects:

See attached sheets.

NO

F. Are your firm's personnel experienced in Landfill Closure cost estimating?

YES Description and Number of Projects:

See attached sheets.

NO

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (describe project) (Furnish Complete data but keep to essentials)			
NAME& TITLE (Last, first, Middle Int.) Holmes, Jeffrey S.	YEARS OR EXPERIENCE		
	YEARS OF (type) EXPEIRENCE: 28 Environmental	YEARS OF (type) EXPEIRENCE: Landfill and closure related work, 16 years	YEARS OF (name type) EXPEIRENCE:
Brief Explanation of Responsibilities: See attachment. See resume provided in Attachment 1.			
EDUCATION (DEGREE, YEAR, SPECIALIZATION) BS in Environmental Engineering, 1981 Water, Waste Water, Solid Waste			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS: See attachment		REGISTRATION (Type, Year, State) P.E. See attachment	
13a. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (name type of design or work) (Furnish complete data but keep to essentials)			
NAME & TITLE (Last, First, Middle Int.) Pedersen, Harold, C. Secretary/Treasurer and Principal Engineer	YEARS OF EXPEIRENCE		
	YEARS OF EXPEIRCENE (name type): 30 Engineering	YEARS OF EXPEIRENCE (name type):	YEARS OF EXPEIRENCE (name type):
Brief Explanation of Responsibilities: Project Engineer and Project Manager for 9 solid waste landfill projects, including closure design, closure construction inspection and cost estimating. See attached resume provided in Attachment 1.			
EDUCATION (Degree, Year, Specialization) BS - Engineering MA - Environmental Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS ASCE, AAEE, Society of Military Engineers, Air & Waste Management Association		REGISTRATION (Type, Year, State) P.E., PA, MD, WV, OH, NJ PLS - WV	

13b. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE QA/QC (Furnish complete data but keep to essentials)			
NAME & TITLE (last, first, middle Int.) Holmes, Jeffrey S.	YEARS OF EXPEIRENCE		
	YEARS OF EXPERIENCE (name type): 28 Environmental	YEARS OF EXPEIRENCE (name type): 16 QA/QC	YEARS OR EXPEIRENCE (name type):
Brief Explanation of Responsibilities: QA Manager QA Inspections at various sites Development of various QA/QC plans See attachment responses to Item 12C and resume provided in Attachment I.			
EDUCATION (Degree, Year, Specialization) BS in Environmental Engineering, 1981 Water, Waste Water, Solid Waste			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS See attachment		REGISTRATION (Type, Year, State) P.E. See attachment	
13c. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR HEAVY EARTH WORK CONSTRUCTION PROJECTS (Furnish complete data but keep to essentials)			
NAME & TITLE (last, first, middle Int.) Greene, James, E. Project Manager	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type) 24 Engineering	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)
Brief Explanation of Responsibilities Project Manager for 13 heavy earth work construction projects. See attached resume provided in Attachment I.			
EDUCATION (Degree, Year, Specialization) BS – 1985 – Civil Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS PA Society of Professional Engineers, Pittsburgh Chapter		REGISTRATION (Type, Year, State) P.E. – PA, WV	

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE THIS PROJECT (name project)

- Majority of design detail drawings will be prepared by Pedersen & Pedersen, Inc. at their Weirton, West Virginia office
- Terra Model
- Auto CAD 2007
- Microstation V.8
- Various printers
- Plotters
- Copy machines
- Survey equipment, including GPS, Leika Total Station

Subcontract reproduction services may be utilized for detailed engineering drawings and specification package reproduction

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD ASSOCIATED WITH OR RELATING TO LANDFILL CLOSURE OR CONSTRUCTION.				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Hazardous Waste Landfill, on going reporting services. Johnstown, PA	ArcelorMittal Steel USA, Richfield, Ohio	Conducted closure design and QA services during closure, on going ground water monitoring.	\$750,000	100% design and construction. On-going monitoring.
Surface impoundment and drying beds closure, ongoing reporting services. Williamsport, PA	ArcelorMittal Steel USA, Richfield, Ohio	Closure design modifications, QA services, on going ground water monitoring services.	\$1,100,000	100% design assistance and construct. On-going monitoring.
Old City of York Landfill Superfund Site, York County, PA-Superfund Site Remedial Action	Waste Management of Pennsylvania, Inc. (WMPA), 448 Lincoln Highway Fairless Hills, PA 19030	Developed remedial design work plan and design documents, performed construction oversight, performed cost and certification for remedy, involving ground water extraction and treatment, landfill cover placement, passive landfill gas venting and leachate removal. Routine operation, maintenance and monitoring.	\$1,400,000	100% design and construct. On-going operation, maintenance and monitoring services.
Seneca Landfill, Evans City, PA CQA Services	Seneca Landfill, Inc., 421 Hartmann Road, Evans City, PA 16033	Construction quality assurance services related to installation of landfill gas monitoring wells	\$20,000	50% for calendar year 2009.
TOTAL NUMBER OF PROJECTS:			TOTAL ESTIMATED CONSTRUCTION COSTS:	
# 4			\$ 3,270,000	

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS RELATING TO LANDFILL CLOSURE AND CONSTRUCTION.

PROJECT NAME, TYPE, AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST:	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD (List 5 to 7)				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Hazardous Waste Landfill, on going reporting services. Johnstown, PA	ArcelorMittal Steel USA, Richfield, Ohio	\$20,000/year	2008	Ongoing post-closure care services
Hazardous waste surface impoundment and drying beds closure, ongoing reporting services. Williamsport, PA	ArcelorMittal Steel USA, Richfield, Ohio	\$7,000/year	2008	Ongoing post-closure care services
Jeffrey S. Holmes was the certifying engineer for numerous projects between 1986-2000 at his previous employer.				

18. COMPLETED WORK WITHIN LAST 5 YEARS IN WHICH YOUR FIRM HAS BEEN A SUBCONSULTANT TO OTHER FIRMS (INDICATE PHASE OF WORK WHICH YOUR FIRM WAS RESPONSIBLE) LIST 5 TO 7.

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
Corning Landfill, Residual Waste Landfill, Parkersburg, WV	Corning Inc. Corning, NY 14831	\$26,000 / year	2006-Present	No	Weston Solutions, Kim Veal

19. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the WV Department of Environmental Protection.

Pedersen & Pedersen, Inc. is a West Virginia registered DBE (WBE firm) and has been in business since 1986. One of their current projects is the 1,100 acre Fort Henry Business Park (now called the Highlands), located in Wheeling, West Virginia. They are serving as the prime contractor for all site engineering, permitting, environmental studies and construction oversight. As a result of this work, they recently received the Northern Panhandle Conservation District Contractor and Developer of the Year Award in 2004. They also received the second place award as the statewide 2004 West Virginia Conservation District Contractor and Developer of the Year.

CORE Environmental Services, Inc. was recently contracted by the West Virginia Department of Environmental Protection, Office of Environmental Remediation to perform groundwater sampling, assessment, reporting and well abandonment services on 3 orphan UST sites in West Virginia.

20. The foregoing is a statement of facts

Signature: _____

Title: _____

Printed
Name: _____

Date: _____

**Responses to West Virginia Department of Environmental Protection
Consultant Confidential Qualification Questionnaire
City of Wheeling Landfill (DEP# 14705)**

Item 7.

4 Brookstone Plaza, Morgantown, WV 26508, 304-292-2673, Thomas Rebar, West Virginia LRS-Office Manager, 4 employees, 2 Staff Scientists, 1 administrative assistant, 1 field technician. Jeffrey S. Holmes, P.E. from our Allison Park, PA Office is responsible engineer in charge of this office and will serve as the Project Manager.

We have 11 full-time employees in the Allison Park, PA Office, consisting of 1 Professional Geologist, 1 Professional Engineer, 3 environmental scientists, 3 field technicians, 1 field technician/scientist, 2 full-time administrative staff and 1 part-time administrative staff.

Item 9.

CORE offers a wide range of environmental services to our landfill clients including third party construction quality assurance oversight, assisting in permit application development, managing routine environmental compliance and assessing and remediating soil and groundwater contamination. We have experience working at both closed and operating municipal waste and residual (non-hazardous) waste landfill sites. Our experience also includes working on projects for hazardous waste landfills and former municipal waste landfills, some of which are currently federal Superfund Sites. Our staff has worked on landfill sites in Pennsylvania and Maryland as well as on units closed as landfills in Connecticut, Michigan, New York, Ohio and Virginia. The following summarizes services we have provided to our landfill clients in the past:

- Preparation of operation and maintenance and monitoring plans;
- Preparation of various works plans for construction sites, including, spill plans, Site Work Plans, Waste Management Plans and Sampling and Analysis Plans;
- Performing routine environmental monitoring of groundwater, surface water, sediment and landfill gas;
- Development of routine environmental monitoring reports;
- Application of database software incorporating GIS capability to provide cost-effective management of site environmental data;
- Conducting site Operation and Maintenance (O&M) including maintaining landfill cover, drainage and environmental monitoring systems;

- Conducting groundwater investigations including natural attenuation evaluations;
- Conducting feasibility studies of remedial alternatives;
- Design of groundwater remediation and landfill capping systems;
- Development of detailed design documents and bid packages for landfill closures;
- Supporting efforts for beneficial site redevelopment;
- Negotiating with landowners and working with client legal counsel to develop restrictive deed covenants associated with Institutional Controls;
- Representing clients at public meetings;
- Preparation of landfill operating and expansion permit applications;
- Negotiating with regulatory agencies on site permit applications, consent order conditions, monitoring programs and other requirements;
- Design of landfill gas venting systems;
- Design and installation of contaminated sites vapor recovery and monitoring systems;
- Landfill closure including development of closure plans and oversight of closure operations including construction quality assurance and quality control;
- Development of spill prevention and response plans;
- Development of erosion and sedimentation control plans; and,
- Due diligence evaluations (i.e., Phase 1 and Phase 2 Assessments).

Mr. Jeffrey S. Holmes, P. E. of our Allison Park, PA office has been involved with engineering design and construction related projects for over 28 years. He has been involved with and managed the designs, closure plan/bid specification preparation process and performed construction QA/QC services for over 16 sites involving some with closure costs over several millions of dollars each. He has served as the QA/QC officer and certifying engineer at numerous sites over his career and is very experienced at the type of work that is required at the Capon Springs Landfill.

Mr. Holmes will serve as your project manager and will work with the professionals at Pedersen & Pedersen, Incorporated and Geotechnics, who are extremely qualified

to aid in our efforts to satisfy your project goals and objectives. Resumes for key project personal are provided in Attachment 1.

Item 12A.

Mr. Holmes has been involved with closure design projects since the mid-1980's and has designed closure plans and bid packages for closure projects in many states. He holds professional engineering licenses in West Virginia, Ohio and Pennsylvania. He has been involved with more than 10 landfill closure design projects over the last 28 years. Project descriptions for several select closure designs follow:

Project manager for 65% and 100% design phases for a landfill capping system, marsh area cover system, soil cover system for a stream backchannel, stabilization of streambanks, identification and quantification of excavation areas for incorporation under the landfill cap, slurry wall, sedimentation basin and stormwater management features. Managed the design team and was responsible for development of project work plans and related documents including erosion and sediment control plan; environmental permits report; basis of design report; stormwater pollution prevention plan; design specifications; design drawing; and, the construction cost estimate.

Project engineer for development of Remedial Design Work Plan and associated documents, and assisted in coordination of conceptual, pre-final, and final design activities. Participated in cover thickness evaluation, borrow area evaluation, landfill gas survey, evaluation of collected data, and development of remediation design reports to include plans for capping a 16-acre portion of a landfill and collection and treatment of contaminated ground water from five on-site ground water extraction wells. Coordinated development of design reports for submittal to EPA regarding landfill capping and landfill gas assessment, monitoring and collection. As part of pre-final and final design, assisted in development of routine monitoring and performance verification plans. Acted as quality assurance director during remedial construction activities, responsible for construction oversight, participant in bi-weekly construction meetings and negotiations with regulatory agency.

Design engineer for development and preparation of RCRA closure plan for a hazardous waste tank farm involving an alternative capping system and subsurface drainage system. Conducted regulatory negotiations for alternative capping system and modified statistical groundwater data evaluation procedures.

Primary designer and certifying engineer for a residual waste study at this beryllium alloys manufacturing facility, which identified and classified the waste streams according to the new residual waste regulations. A thorough overview of the new regulations and their effect on facility operations was presented along with viable action options which included compliance requirements, schedules, and cost.

Pedersen & Pedersen has been involved with 17 different landfill design projects involving development of grading plans, hydrology calculations, cap system design,

preparation of technical specifications and bid documents, as well as permit modifications for hazardous, municipal and various industrial landfills and sites. Cap systems have included geosynthetic and natural clay cover systems.

Item 12B.

The following are three representative projects:

Old City of York Landfill Superfund Site, York County, Pennsylvania. Developed Sampling and Analysis Plan (including quality assurance procedures) for characterization activities at this former municipal waste landfill and implementation of assessment. Characterization activities consisted of conducting soil borings to confirm adequate thickness of landfill cover soils, placement and monitoring of landfill gas monitoring probes for methane, sampling surface water and sediment and fish and macrobenthic life to evaluate for impact of landfill on surface water quality and aquatic life. Routinely monitored perimeter landfill gas probes to assess whether off-site migration of methane was occurring above regulatory levels. Also installed and sampled groundwater monitoring wells to confirm groundwater flow patterns and the nature and extent of groundwater contamination. Characterization also included performing aquifer test to identify aquifer properties for use in computer groundwater modeling. Performed computer groundwater modeling to identify extraction well locations and pumping rates. Managed a natural attenuation evaluation for the Site along with a feasibility study comparing Monitored Natural Attenuation (MNA) with the groundwater pump and treat remedy. Natural attenuation evaluation activities included low-flow purging of monitoring wells per EPA protocols while monitoring key aquifer geochemistry properties (e.g., dissolved oxygen and oxidation-reduction potential) as well as contaminant daughter and end-products. Upon implementation of MNA alternative, conducted routine groundwater monitoring with periodic statistical evaluation of monitoring results. Also performed modeling of natural attenuation of contaminants to forecast timeframe for achievement of remedial goals and extent of plume migration. Activities included development of reports presenting and evaluating site characterization results and recommendations as well as routinely interfacing with state and EPA regulatory personnel.

River Road Landfill Superfund Site, Hermitage, Pennsylvania. Performed modeling of diffuse groundwater and leachate flow to evaluate the impact of leachate and groundwater on receiving water body (utilizing PADEP's PENTOXSD model) on this former municipal waste landfill. In addition, provided oversight of routine environmental monitoring and conducted reporting activities which included evaluating quarterly groundwater monitoring results including comparing results to remedial standards. Also, applied knowledge of landfill stabilization process to help forecast trends in leachate and groundwater quality and to support a reduced frequency in the groundwater monitoring effort. Utilized Piper and Stiff Diagram plots to evaluate for leachate impacts on groundwater quality.

Waste Management, Sandy Hill Landfill, Bowie, Maryland. Developed a complex groundwater investigation plan for this municipal waste landfill to investigate VOC contaminated groundwater for leachate versus gas migration impacts. Performed investigation procedures including application of direct push technology for in-situ

groundwater sampling, time series sampling of groundwater wells, monitoring well headspace gas sampling, environmental isotope sampling and leachate sampling. Data evaluation included application of various techniques including evaluation of groundwater and landfill gas chemical data and performing gas and groundwater equilibrium calculations using Henry's Law. Also utilized Piper and Stiff Diagrams to evaluate for impact of landfill leachate on groundwater chemistry. Activities included a risk evaluation which involved identifying nearby receptors and evaluating potential migration pathways. Developed investigation report and associated recommendations and participated in presentation of findings to public liaison group. Developed groundwater monitoring plan in compliance with Subtitle D requirements.

Item 12C.

Mr. Holmes has been involved with closure construction projects since the mid-1980's. He has been involved with more than 10 landfill type closure construction projects and has served as lead QA/QC Officer and certifying engineer for numerous projects over his career. Project descriptions for several select projects follow:

Construction manager for a RCRA Correction Action Program for a manufacturer of beryllium alloys, one of the first RCRA Corrective Action Projects to be undertaken by EPA. The purpose of the project was to determine the impact of on-site waste disposal practices by prior owners of the site which included the operation of an on-site industrial waste landfill and several waste water and sludge lagoons. Provided construction oversight supervision and design engineer roles, periodic site visits and participation in meetings and regulatory agency negotiations.

Quality Control Supervisor for closure of a 13-acre landfill. Managed field QC staff, responsible for development and preparation of all work plans, including: Construction Execution Plan; Contractor Quality Control Plan; Security Plan; Environmental Protection Plan; Spill and Discharge Control Plan; Decontamination Plan; Submittal Register; and, Traffic Control Plan. Responsible for development and preparation of all project QC submittals (material approvals, laboratory data, field testing results) responsible for QC oversight of contaminated waste regrading, placement of cover soils, installation of erosion control measures, fencing and site revegetation operations. Conducted task specific meeting agendas and conducted Preparatory Phase and Initial Phase Meetings with required site personnel and contractors. Participated in Weekly Progress Meetings, prepared daily construction quality control reports and was involved with client and state agency negotiations of project changes.

Certifying engineer for closure of a 5-acre hazardous waste pile. Participated in negotiation with PADEP for cost-saving modifications to the approved closure plan (prepared by others) and coordination of other contractors during closure. Project involved closure of a 4 acre pile using geosynthetics and a soil/aggregate cover system.

Project and field manager for field oversight and certification of RCRA closure of three inactive hazardous waste surface impoundments and three non-hazardous waste drying beds. Managed verification sampling, review of contract change orders, oversight of

contaminated waste stabilization QA/QC, management of soil testing contractor, synthetic liner installation supervision and surveying oversight. Weekly reports were provided to the client as well as a comprehensive certification document

Project manager for verification sampling, oversight of field engineers and construction contractor, coordinated QA/QC testing procedures for soils and synthetic liner and was responsible for surveying activities during closure of six RCRA plating wastewater sludge lagoons. Provided oversight of additional site investigation activities to define extent of contamination outside impoundments, negotiation with regulatory agency officials regarding closure issues and performance of risk assessment for clean closure. A comprehensive certification document was also prepared.

Project manager and field manager for oversight of closure activities for two RCRA electroplating wastewater surface impoundments. Management of closure activities included contractor oversight, soils verification sampling and approval of laboratory analysis results as "clean," soils QA/QC testing and surveying services. Performed periodic compliance inspections, involved in negotiations with CTDEP regarding soil compaction and additional waste material removal and establishment of modified cleanup criteria. Supplied client with comprehensive closure certification document.

Project manager and field manager for oversight of RCRA closure activities for five electroplating wastewater surface impoundments and two sludge disposal areas. Oversight of closure activities involving removal of wastes for off-site disposal, soil verification sampling and analysis with approval of "clean" levels, backfilling and soils QA/QC testing. Involved in negotiations with CTDEP to revise cleanup levels to less stringent criteria during closure. Supplied client with comprehensive closure certification document.

Pedersen & Pedersen has been involved with 7 different landfill closure projects involving review of shop drawings, construction oversight and inspections, preparation of certification reports and soils testing services.

Item 12D.

Pedersen & Pedersen is contracted routinely by other firms to perform aerial surveys, establishing ground controls and producing required mapping. They also perform property and location surveys and provide complete mapping services. They have performed more than 100 such surveys.

Item 12E.

CORE is experienced in evaluation of aquifer degradation as a result of landfill groundwater (leachate) drainage. Representative projects involving such evaluations (including monitoring well installation, groundwater and leachate sampling, aquifer testing, computer modeling, monitored natural attenuation evaluations, modeling diffuse flow of groundwater to receiving water bodies, etc.) are discussed above in response to question 12B.

Item 12F.

Mr. Holmes has been involved the development of closure cost estimates since his environmental career began in 1986. He frequently evaluates and costs out alternatives for various environmental projects including landfill type projects routinely. He has been involved with numerous projects involving development of detailed construction cost estimates in his career. The majority of the projects discussed in the design portion of this questionnaire (Item 12A.) all had cost estimates developed and prepared by or under the direction of Mr. Holmes. Several of these cost estimates were generated under the Superfund program as part of the design phase of the project and under the USEPA Region 3 RCRA Corrective Action program.

Pedersen & Pedersen has been involved with 17 different landfill closure projects involving development of cost estimates for initial construction activities and future maintenance and bonding purposes.

Item 13-Jeffrey S. Holmes, P.E.

Responsibilities

On a day to day basis, Mr. Holmes is responsible for managing environmental contamination assessment projects, RCRA permitting projects, discharge permitting projects (NPDES, stormwater and POTW), compliance auditing projects, development and preparation of various types of pollution prevention plans, RCRA and solid waste closure plan preparation and management and certification of RCRA and solid waste closures. He also participates in and manages site characterization studies. His duties include planning and implementation of projects, coordination with clients, state regulators and subcontractors, interpretation of data, preparation of reports, design packages and project specifications, development of project cost estimates and various other job accounting and invoicing functions.

Specific duties related to landfill closure design related work was specified for select projects in the response to Item 12A.

Memberships

Pittsburgh High Technology Council Catalyst Connection regular participant and West Virginia Manufacturers Association meetings periodically

Registrations

Professional Engineer, Pennsylvania, 035724-E, 1986

Professional Engineer, Ohio, E-51145, 1987

Professional Engineer, West Virginia, 15759, 2003

West Virginia Licensed General Engineering Contractor, 2004



CORE

Environmental
Services, Inc.

4068 Mt. Royal Blvd.
Suite 225, Gamma Building
Allison Park, PA 15101-2951
(412) 487-6000 • Fax (412) 487-9785

Jeffrey S. Holmes, P.E.
Senior Project Manager

Experience Summary

Mr. Holmes is responsible for managing environmental contamination assessment projects, RCRA permitting projects, discharge permitting projects (NPDES, stormwater and POTW), compliance auditing projects, development and preparation of various types of pollution prevention plans, RCRA and solid waste closure plan preparation and management and certification of RCRA and solid waste closures. Mr. Holmes also participates in and manages site characterization studies. His duties include planning and implementation of projects, coordination with clients, state regulators and subcontractors, interpretation of data, preparation of reports, job accounting and invoicing.

Education

BS, Environmental Engineering,
Pennsylvania State University, State
College, 1981

40-Hour HAZWOPER Training Course &
Associated 8-Hour Refresher training to
Date Complying with OSHA Standard 29
CFR 1910.120.

Professional Affiliations & Registrations

Professional Engineer, Pennsylvania,
035724-E, 1986
Professional Engineer, Connecticut, 15046,
1987
Professional Engineer, Ohio, E-51145, 1987
Professional Engineer, New York, 070285-
1, 1993

Professional Engineer, West Virginia,
15759, 2003
West Virginia Licensed General
Engineering Contractor, 2004

Publications

"Time-Release Electron Donor Application
in a Low Permeability PCE Contaminated
Aquifer" - Proceedings of the Third
International Conference on Remediation of
Chlorinated and Recalcitrant Compounds,
Monterey, CA, May 2002.

Representative Experience

Developed and prepared Post-Closure
Permit modification to reduce the sampling
frequency of the ground water monitoring
program, eliminate some program
monitoring wells, reduce some
recordkeeping requirements and eliminate
some analytical parameters from the post-
closure program.

Project manager for initial development of
and periodic updates to Part B RCRA
Storage and Processing Permit Application
for the facilities rotary hearth furnace,
electric arc furnace and cadmium recovery
processes as well as related activities.
Conducted meetings with PADEP and client
and provided permit revisions in the form of
revised applications to address facility
modifications and subsequent regulatory
agency comments.

Project manager and design coordinator for
development of RCRA storage facility Part
B Permit applications. Three different sites
were evaluated and went through a partial or



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Senior Project Manager

the complete permit application process. Application preparation involved regulatory liaison with Florida DEP and other environmental agencies, design of storage facilities and associated layout per applicable regulations, preparation of required Florida DEP Permit forms, development of spill plans and erosion control plans

Construction manager for a RCRA Correction Action Program for a manufacturer of beryllium alloys, one of the first RCRA Corrective Action Projects to be undertaken by EPA. The purpose of the project was to determine the impact of on-site waste disposal practices by prior owners of the site which included the operation of an on-site industrial waste landfill and several waste water and sludge lagoons. Provided construction oversight supervision and design engineer roles, periodic site visits and participation in meetings and regulatory agency negotiations.

Quality Control Supervisor for closure of a 13-acre landfill. Managed field QC staff, responsible for development and preparation of all work plans, including: Construction Execution Plan; Contractor Quality Control Plan; Security Plan; Environmental Protection Plan; Spill and Discharge Control Plan; Decontamination Plan; Submittal Register; and, Traffic Control Plan. Responsible for development and preparation of all project QC submittals (material approvals, laboratory data, field testing results) responsible for QC oversight of contaminated waste regrading, placement

of cover soils, installation of erosion control measures, fencing and site revegetation operations. Conducted task specific meeting agendas and conducted Preparatory Phase and Initial Phase Meetings with required site personnel and contractors. Participated in Weekly Progress Meetings, prepared daily construction quality control reports and was involved with client and PADEP negotiations of project changes.

Participated in confidential due diligence evaluation associated with the acquisition of a natural gas fired power plant in western Kentucky by evaluating potential for liability associated with off-site sources, wastewater, storm water, ground water and waste management conditions.

Design engineer for development and preparation of RCRA closure plan for a hazardous waste tank farm involving an alternative capping system and subsurface drainage system. Conducted regulatory negotiations for alternative capping system and modified statistical groundwater data evaluation procedures.

Primary designer and certifying engineer for a residual waste study at this beryllium alloys manufacturing facility, which identified and classified the waste streams according to the new residual waste regulations. A thorough overview of the new regulations and their effect on facility operations was presented along with viable action options which included compliance requirements, schedules, and cost.



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Project manager for 65% and 100% design phases for a landfill capping system, marsh area cover system, soil cover system for a stream backchannel, stabilization of streambanks, identification and quantification of excavation areas for incorporation under the landfill cap, slurry wall, sedimentation basin and stormwater management features. Managed the design team and was responsible for development of project work plans and related documents including erosion and sediment control plan; environmental permits report; basis of design report; stormwater pollution prevention plan; design specifications; design drawing; and, the construction cost estimate.

Project manager for system design of two extraction wells, air stripper, transfer pump and flow equalization tank. Involved in negotiations with PADEP for system design, permitting and monitoring program development. Provided oversight of extraction and treatment system construction activities and involved in ongoing system operation, maintenance and monitoring program activities. Provided oversight of design of ground water extraction and treatment system for DNAPL recovery and containment.

Project manager for development and preparation of comprehensive spill pollution and prevention plans for the facilities pump station, mining operations, power plant and manufacturing operations. Spill plans were developed in accordance with the company's standard format to address all

facility operations and waste materials as well as raw materials.

Developed and prepared numerous discharge permits and baseline monitoring reports for various firms for NPDES discharges involving categorical industry standards, stormwater discharges and discharges to various municipal sewage treatment facilities.

Project manager for environmental compliance auditing at the company's manufacturing facilities to include RCRA and solid waste issues, underground storage tanks, SARA Title III issues, Clean Water Act NPDES permitting and pretreatment requirements, OSHA flammable storage areas and TSCA PCB issues. Comprehensive final summary reports were prepared in conjunction with post-audit meetings.

Project manager for developing and managing numerous spill prevention plan projects, including SPCC Plans, Stormwater Pollution Prevention Plans, and Preparedness Prevention and Contingency Plans for numerous industrial facilities.

Project manager for assessing the viability of purchasing an in-place pump and treat system to remediate petroleum product releases. Recommended purchase of the system and assisted in the negotiation of the purchase price with BUSTR. Managed installation of additional groundwater wells and operation of the system, maximizing the efficiency of product recovery efforts at the



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site. Managed preparation of a Remedial Action Plan and performance of a dual-phase extraction test. Directed evaluation of additional remedial alternatives in efforts to bring the site to closure and satisfy cleanup standards.

Project engineer for development of Remedial Design Work Plan and associated documents, and assisted in coordination of conceptual, prefinal, and final design activities. Participated in cover thickness evaluation, borrow area evaluation, landfill gas survey, evaluation of collected data, and development of remediation design reports to include plans for capping a 16-acre portion of a landfill and collection and treatment of contaminated ground water from five on-site ground water extraction wells. Coordinated development of design reports for submittal to EPA regarding landfill capping and landfill gas assessment, monitoring and collection. As part of pre-final and final design, assisted in development of routine monitoring and performance verification plans. Acted as quality assurance director during remedial construction activities, responsible for construction oversight, participant in bi-weekly construction meetings and negotiations with regulatory agency.

Project manager for consulting assistance immediately following release of industrial wastewater containing hexavalent chromium, design and oversight of site investigation activities related to the release. Investigation involved soil boring and ground water monitoring well installation

and monitoring activities to assess extent of contamination. Following assessment activities, assisted in development of design of ground water extraction system. Responsible for oversight of system construction, operation, maintenance and development and implementation of monitoring program. Project resulted in the recovery of the vast majority of contaminated wastewater.

Project manager for development of detailed design report, specifications and construction drawings for ground water interceptor trench system and associated extraction wells for DNAPL recovery. Assisted in preparation of design calculations for total system flow rates, sizing extraction well pumps and trench configurations. Also involved in design of pilot boring program to determine depth of interceptor/collection trench and presence of DNAPL as well as system performance monitoring program to evaluate extraction system flow rates and drawdown for system optimization.

Certifying engineer for closure of a 5-acre hazardous waste pile. Participated in negotiation with PADEP for cost-saving modifications to the approved closure plan (prepared by others) and coordination of other contractors during closure.

Developed and implemented a closure plan for facility decommissioning of finishing operations prior to relocation of a concrete sump, paint booths and surrounding areas, pretreatment (chromate conversion coating



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and cleaning) area, paint room, wastewater treatment facilities and several storage areas. Implemented decontamination of structures and associated analytical verification testing, oversight and management of contractors and preparation of closure certification documentation.

Project and field manager for field oversight and certification of RCRA closure of three inactive hazardous waste surface impoundments and three non-hazardous waste drying beds. Managed verification sampling, review of contract change orders, oversight of contaminated waste stabilization QA/QC, management of soil testing contractor, synthetic liner installation supervision and surveying oversight. Weekly reports were provided to the client as well as a comprehensive certification document

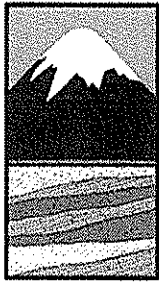
Project manager for verification sampling, oversight of field engineers and construction contractor, coordinated QA/QC testing procedures for soils and synthetic liner and was responsible for surveying activities during closure of six RCRA plating wastewater sludge lagoons. Provided oversight of additional site investigation activities to define extent of contamination outside impoundments, negotiation with regulatory agency officials regarding closure issues and performance of risk assessment for clean closure. A comprehensive certification document was also prepared.

Project manager and field manager for development of three RCRA closure plans for 1) an electroplating wastewater treatment plant sludge drum storage area, 2) carbon steel pickle liquor storage tank, and 3) stainless steel pickle liquor storage tank. Negotiated closure plan approvals with Ohio EPA. Provided oversight and certification of closure for drum storage area and carbon steel pickle liquor storage tank to include decontamination activities, verification sampling and analysis review and approval, and periodic inspections during closure

Project manager and field manager for oversight of closure activities for two RCRA electroplating wastewater surface impoundments. Management of closure activities included contractor oversight, soils verification sampling and approval of laboratory analysis results as "clean," soils QA/QC testing and surveying services. Performed periodic compliance inspections, involved in negotiations with CTDEP regarding soil compaction and additional waste material removal and establishment of modified cleanup criteria. Supplied client with comprehensive closure certification document.

Project manager for development of post-closure permit application to include ground water monitoring program, statistical evaluation of ground water monitoring data and site inspection program.

Project manager and field manager for oversight of RCRA closure activities for five electroplating wastewater surface



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impoundments and two sludge disposal areas. Oversight of closure activities involving removal of wastes for off-site disposal, soil verification sampling and analysis with approval of "clean" levels, backfilling and soils QA/QC testing. Involved in negotiations with CTDEP to revise cleanup levels to less stringent criteria during closure. Supplied client with comprehensive closure certification document

Project manager for developing and managing state grant program authorized waste minimization audit. Audit addressed metal finishing operations, painting, degreasing operations and various other operations involving oils, solid wastes and wastewater. Program was developed with company input and through meetings with their waste minimization committee. Previous operations were reviewed in detail including chemical usage, waste generation rates, process water usage and electricity usage. Final report included recommendations regarding product substitutions, new treatment/reuse equipment, water conservation and provided payback period evaluations.

Project manager for three comprehensive property transfer assessments of this 25 acre park to include asbestos, storage tanks, hazardous substances, PCBs, solid wastes, ground water monitoring well installation and sampling, development of soil sampling program. Final reports provided recommendations on waste characterization, tenant activities and operations and a

summary of liabilities based on field sampling activities and walkover surveys. Cost estimates for remedial activities were also provided

Project manager for review of soil gas survey and soil sampling program and for oversight of groundwater monitoring well installation and sampling program development related to VOC contamination. Provided oversight of record search activities, aerial photograph acquisition, review of prior plant operations, development of isoconcentration maps and ground water contour maps for incorporation into final contamination investigation report. A final report was prepared addressing findings, possible sources, and recommendations for additional investigation activities.

Project manager for Phase I and Phase II property assessment activities, including development of soil, groundwater and surface water sampling program, collection of samples and data interpretation. Reviewed manufacturing operations, interviewed plant personnel, and prepared a comprehensive summary report developed for the client's use in filing appropriate state property transaction forms.

Project and field manager providing field oversight and certification of two non-hazardous waste surface impoundments. Provided oversight and approval of contractor QA/QC procedures, negotiations with regulatory agency officials, and oversight of surveying activities.



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Technical assistant responsible for comprehensive records search program development and performance of record search, including Sanborn map acquisition and review, interviews with PADEP officials, plant personnel and Army Corps of Engineer personnel, title search of properties, PADEP compliance file history review of surrounding property owners, aerial photograph acquisition and review. Involved in development of soil and groundwater sampling and analytical program based on records search findings.



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**Thomas M. Rebar, L.R.S.
Senior Project Manager**

West Virginia Licensed Remediation Specialist

Experience Summary

Mr. Rebar has over twelve years of experience as an environmental consultant working with petroleum industry clients in Pennsylvania, West Virginia and the surrounding states, including eight years as a WV Licensed Remediation Specialist (LRS). Mr. Rebar currently manages CORE's West Virginia office and staff, and is the primary contact for clients and regulatory agencies on projects he manages in West Virginia and throughout the mid-Atlantic region.

Mr. Rebar's professional experience includes acting as the LRS on Projects in West Virginia's Voluntary Remediation and Redevelopment Program (VRRP), including retail petroleum sites and a former bulk petroleum plant with multiple contaminant sources.

Mr. Rebar is proficient in the management of all aspects of environmental assessment and remediation projects. His experience as a Project Manager covers responsibilities from proposal preparation and budgetary management, through field personnel and subcontractor supervision, regulatory interaction and site closure negotiations.

In addition to project level management and supervision, Mr. Rebar has extensive hands-on experience in the field as a Project Scientist and Senior Field Technician. Field experience includes the installation and operation of various types of soil and ground water remediation systems, soil boring and monitoring well installation, Phase I and II site assessments, remedial feasibility studies, emergency spill response, and on-site construction management.

Remedial system experience includes the installation and operation of dual phase recovery systems, pneumatic pump-and-treat systems, and high and low vacuum vapor recovery systems. He is experienced with the operation of systems utilizing carbon absorption and catalytic oxidation, air strippers, product skimmers, and multi-phase vacuum extraction

equipment. Mr. Rebar has hands-on experience with various methods of subsurface exploration, including

the utilization of direct-push, hollow-stem auger, and air rotary boring methods to complete subsurface delineation.

Education

B.S. in Geology - California University of Pennsylvania

Annual continuing education credits obtained through participation in the Risk Assessment/ Brownfield Site Assessment Workshops presented by the West Virginia Department of Environmental Protection (WVDEP), 2000 through 2008

Pennsylvania Department of Environmental Protection (PADEP) Land Recycling Workshops - December 2007 and 2008

40-Hour HAZWOPER Training Course and Associated 8-Hour Refresher Training current to date, complying with OSHA Standard 29 CFR 1910.120

8-Hour Supervisors Course complying with 29 CFR 1910.120(e)(4)

Red Cross First Aid and CPR Certified

Professional Affiliations & Registrations

West Virginia Licensed Remediation Specialist
Registration No. 109

Member (not registered Geologist) of the Pennsylvania Council of Professional Geologists (PCPG)

Associate Member of the West Virginia Oil Marketers & Grocers Association (OMEGA)



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Thomas M. Rebar, L.R.S.
Senior Project Manager

West Virginia Licensed Remediation Specialist

Member of the West Virginia Chapter of the Air and Waste Management Association (AWMA), West Virginia Chapter, Allegheny Mountain Section

Morgantown Area Chamber of Commerce,
Morgantown, West Virginia

Representative Experience

As a LRS, Mr. Rebar is certified by the director of the West Virginia Department of Environmental Protection as an individual qualified to perform professional remediation services and to supervise the assessment and remediation of contaminated sites within West Virginia's VRRP. Mr. Rebar's LRS experience in West Virginia includes performance of site cleanup activities according to EPA and VRRP QA/QC standards.

As a Project Manager, Mr. Rebar has performed management duties on over 150 projects for over 50 different petroleum industry clients in PA and WV, including acting as the project LRS on projects within West Virginia's VRRP.

Recent projects include Risk-Based closure of a petroleum bulk storage terminal in northern WV through West Virginia's Voluntary Remediation Program, and projects of various size and scope throughout PA, OH and WV. Mr. Rebar prepares proposals, contracts and work plans for these projects and is the primary contact for client representatives and state regulators. Mr. Rebar is responsible for the scheduling and supervision of a full-time staff working on these projects and performs final review of all reports, permits and correspondence related to the projects. Mr. Rebar also is responsible for all budget-related and financial management issues on these projects.

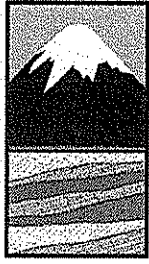
Mr. Rebar has performed day-to-day coordination of fieldwork and management site-specific issues for

multiple projects. He has been responsible for the application of state and federal regulations to petroleum projects in multiple states. As a Staff level Scientist, Mr. Rebar has supervised soil boring and remediation system installations, directed underground storage tank closures and performed Phase I and Phase II Environmental Site Assessments and site delineation. Previous technical level field experience included operation and monitoring of remediation systems, pilot testing, ground water sampling, installation and maintenance of Oxygen Releasing Compound[®] and other passive remediation units, supervising construction subcontractors, surveying, well abandonment, coordinating laboratory services and field activities, and setting up and operating mobile point-source remediation systems.

Professional staff level report preparation experience includes data analysis and preparation of technical reports in various States, for numerous and diverse clientele, and for all phases of environmental projects. Mr. Rebar has been the primary author and/or primary reviewer on Phase I Site Assessments, Phase II Site Characterization Reports (SCRs), Corrective Action Plans (CAPs), and Remedial Action Completion Reports (RACRs) submitted to regulatory agencies in multiple States.

Retail & Bulk Petroleum Facilities - Managed projects on over 120 retail petroleum sites for over 35 individual clients. These sites are in various stages of cleanup including initial assessment, site delineation and characterization, remediation system design and installation, system optimization and regulatory closure negotiations. Mr. Rebar has managed site closures in WV via the Leaking Underground Storage Tank (LUST) program and in Pennsylvania through Underground Storage Tank Program and Act II.

Phase I Site Assessments - Mr. Rebar has recently completed Phase I site assessments per ASTM E-1527 on petroleum and industrial sites in West Virginia, Pennsylvania, and Florida. His role on these



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projects included on-site assessment and interviews,
senior report review, and project management.



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Heather W. Gawne, C.H.M.M.
Project Manager

Experience Summary

Heather W. Gawne is a project manager for CORE Environmental Services, Inc. with more than nine years experience in environmental coordination, supervision, field activities; and management, maintenance and presentation of data using geographic information systems (GIS) applications. She has also supervised field programs which included drilling and installation of monitoring wells, surveying, excavations, collection of soil and ground water samples and in-situ oxidation to remediate petroleum releases and on-site field analysis of soil.

She is currently responsible for managing environmental contamination assessment and characterization projects, completing discharge permitting projects (NPDES for industrial discharges and stormwater and air) and compliance auditing. Daily duties may include planning and implementation of projects, coordination with clients and subcontractors, interpretation of data, preparation of reports, job accounting and invoice review. She is currently working toward a Master's degree from Duquesne University in Environmental Science and Management.

Education & Accreditation

M.S. Environmental Science and Management – Duquesne University, Pittsburgh, Pennsylvania

B.S. Earth Science - Clarion University of Pennsylvania, Clarion, Pennsylvania

Certified Hazardous Materials Manager (CHMM)

40-Hour HAZWOPER Training Course & Associated 8-Hour Refresher Training to Date Complying with OSHA Standard 29 CFR 1910.120.

8-Hour Supervisors Course complying with 29 CFR 1910.120(e)(4).

Hazardous Materials Manager, Institute of Hazardous Materials Management, November 2004.

Professional Memberships

Pennsylvania Association of Environmental Professionals.

Academy of Certified Hazardous Materials Managers, 2004.

Three Rivers Chapter, Academy of Certified Hazardous Materials Managers, 2004.

Representative Experience

Ms. Gawne has provided oversight of excavation and transportation subcontractors for large excavation activities at various commercial and industrial clients in varying states: large petroleum/oil client (Michigan); capacitor manufacturer (Virginia); and commercial developer (Maryland).



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Project Manager

Supervised excavation activities for a large petroleum/ oil client in Michigan involved the removal of hydrocarbon impacted soils from the release of underground storage tanks to the applicable health standards. Field testing by a certified laboratory was utilized during the excavation. Approximately 200 tons of soil was removed during the excavation.

Directed the segregation of PCB/non-PCB capacitors, removal of sixteen 55-gallon drums and excavation of 2,399 tons of PCB-containing soil at a Virginia capacitor manufacturer. Activities for the site involved setting up a grid to locate buried drums that had been identified during ground penetrating radar (GPR), buried drum removal, capacitor segregation and removal, PCB grid sampling, and PCB immuno-assay field testing.

Ms. Gawne has directed excavation activities of hydrocarbon impacted soils at a former demolition landfill in Maryland. Approximately 4,500 tons of soil were disposed by landfill and bioremediation. The site work consisted of removing overburden that existed above the identified hydrocarbon impacted as well as removing the impacted zone in two separate areas. The excavation also involved the removal of buried drums, lead-acid batteries, and the occasional steel piping from removed underground storage tanks. Once excavation work was completed the site was re-graded and re-seeded to Maryland Department of Environment (MDE) standards. The site received a "no further action" upon completion of the final remedial report.

During the removal of drums and capacitors, PCB soil testing using immuno-assay field test kits was utilized to ensure that PCB contaminated soil was completely removed prior to placing clean backfill in the excavation. PCB soil samples were also sent to a certified laboratory to verify the results of the PCB field test kits. The Environmental Protection Agency's publication "*Verification of PCB Spill Cleanup by Sampling and Analysis*" was followed to ensure proper sampling points and statistical accuracy.

Performed oversight of subcontractors during soil excavation, transportation and disposal for commercial and industrial sites. Provided health and safety monitoring at construction sites and prepared health and safety plans for other types of environmental work.

She has conducted soil analysis for PCBs and TPH using immuno-assay field test kits which required the use of preparing calibrators for comparison to samples. Preparing soil extractions for assay run, and preparing conjugates and substrates for the assay run. Absorbance reading was also required with a photometer for final readings.

Established project databases for large-scale site investigations, water assessments, and remediation projects. Activities included the entry and integration of maps, cross-sections, laboratory data, and field data into a geographic information system (GIS) with use of AutoCAD 2004 as its graphical interface.



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Project Manager

Supervised field activities that included soil and water investigations. This work involved drilling, Geoprobng and excavation.

Conducted ground water and soil sample collection and field analysis. Communicated with various laboratories to ensure the quality control and data accuracy.

Maintained computer database of multiple site, multiple event sampling system using GISKey.

Prepared and obtained National Pollution Discharge Elimination System (NPDES) permits for Pennsylvania and New Jersey. Prepared and obtained Permit to Construct and Install a ground water remediation system air permit for New Jersey using the NJDEP RADIUS submittal system. Prepared Request for Determination (RFD) applications for Pennsylvania remediation systems.

Prepared and submitted minor source air permits for bulk petroleum plants and various industrial facilities within the state of Pennsylvania. In addition, Ms. Gawne prepares the annual air emissions reports for the clients when requested.

Ms. Gawne also partakes in compliance audits for various underground and above ground storage tank facilities and other various industries. The compliance audits focus on environmental regulations but also touch on the health and safety factors associated with the specific industry. In addition, Ms. Gawne completes the SARA, biennial residual waste,

and biennial hazardous waste reports for various manufacturing clients.

Completed Phase I assessments for proposed cellular phone tower placements and real estate transactions. Ms. Gawne has also prepared Preliminary Assessments for the State of New Jersey. She has done record and file searches at the PADEP for properties which have had suspected or confirmed chemical releases to the soil and/or ground water.

Ms. Gawne has also been involved with the completion of both statewide health standard and site specific standard site characterization reports (SCR) and remedial action completion reports (RACR) as per PADEP requirements.

Ms. Gawne recently embarked on an independent study trip as a delegate of the United States to China. Her specific topic of study was wetlands in China and the uses of wetlands in China to; filter heavy metals and other contaminants from entering rivers, streams, and creeks; aid in flood control; and support endangered species.

The entire independent study included day trips to endangered species breeding centers, wastewater treatment plants, and recycling centers within different provinces of China. The studies were always followed with discussions between the delegates and directors of the areas visited. Ms. Gawne completed an independent study on wetlands in China.



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Project Manager

Ms. Gawne was also in charge of developing a post-presentation in the form of a DVD that documented the study interests such as the breeding center and wastewater treatment plants. The DVD was presented to the Dean of the Bayer School of Natural and Environmental Sciences as well as students who are interested in study abroad opportunities.

HARALD C. PEDERSEN, P.E., D.E.E., P.L.S.

Secretary/Treasurer

Principal Engineer

**PEDERSEN
& PEDERSEN**

Years Experience: 30

Education

Swarthmore College, Bachelor of Science Degree in Engineering

West Virginia University, Master of Science Degree in Engineering

Active Registrations

Registered Professional Engineer-Pennsylvania, Maryland, West Virginia, Ohio, New Jersey

Registered Professional Land Surveyor-West Virginia

Summary of Experience:

Mr. Pedersen has a wide range of experience on civil engineering, environmental engineering, surveying and mapping projects. He is a member of the American Academy of Environmental Engineers whose specialty is solid waste management.

Mr. Pedersen has been project engineer and project manager for projects including: abandoned mine land reclamation; civil/site design for residential, commercial and industrial developments, sewer and water line design; stormwater management and erosion control facility design; Phase 1, 2 and 3 environmental site assessments for residential, commercial and industrial properties; environmental permit preparation for water, wastewater, municipal solid waste management and hazardous waste site closure; design of municipal solid waste disposal facilities; design of utility and coal refuse disposal facilities; investigation of underground tank leaks and spills; design of PCS communication tower and antenna installation sites; design of communication fiber optic cable installation, cross-country and trans- Atlantic; boundary, topographic and location surveys; and detailed mapping projects for highway design and construction.

Representative Projects:

- Project Manager – URA Bedford Dwelling Project. Mapping and utility field conformance surveys, map compilation, resolution of date conflicts
- Project Manager-SEA Convention Center Street Right of Way. Supplemental mapping; verification of Convention Center column layout; preparation of PennDOT right-of-way plans; determination of donation credit areas; preparation of street abandonment plans for City review.
- Project Manager-SEA Clemente Park. Topographic location and property surveys; bathometric survey of River bottom; design surveys; map preparation.
- Project Manager-URA Pittsburgh Convention Center. Design and property surveys for new Convention Center design and construction.
- Project Manager-Pennsylvania Turnpike Commission milepost 0:0 to 10:0. Review of structural design by project design/build team; Preparation of comments of design; comment letter with checklist response format; quality assurance surveys; construction monitoring.
- Project Manager – Steeple Chase. Design of a planned residential community with 120 quadrants. Presented zoning change petition, completed site design, utility design, storm water management, and geotechnical evaluation.
- Project Manager – Conemaugh Generating Station Disposal Site, PA Electric Company. Preparation of PADER solid waste and coal refuse disposal permit applications; design of disposal site expansions including runoff collection channels, erosion and sedimentation control structures, underdrains and leachate collection piping, synthetic liner (more than 60 acres), and site grading; evaluation of wastewater treatment facility and site grading; evaluation of wastewater treatment facility performance; study of sludge handling and disposal; evaluation of coal refuse filter cake disposal; surface water study (flow and quality); and consultation regarding site operation.
- Project Manager – Solid Waste Permitting, Vogel Disposal Service, Inc. Responsible for the environmental permitting of two existing municipal waste landfills located in Western Pennsylvania. Developed site operational and closure plans. Prepared storm water and leachate NPDES Permit Applications. Developed leachate in-flow parameters and trending analyses.

- Project Manager – Harrisburg International Airport, PA DOT. Environmental assessment of proposed runway expansion. Study included the characterization and quantification of hazardous material such as asbestos, PCB oils, oxidizers, and solvents; installation of groundwater monitoring wells; ground and surface water sampling and analysis; cost estimates for remedial cleanup.
- Project Manager – RCRA Permitting, ARMCO. Completion of Parts A and B of RCRA permits for a hazardous waste treatment and disposal facility. Preparation of a hazardous waste delisting petition to EPA for neutralized pickle liquor waste. Synthetic liner design for hazardous waste impoundment.
- Project Manager – RCRA Permitting, Koppers. Developed closure and post-closure plans for hazardous waste disposal site. Plans included groundwater monitoring program formulation; waste containment plans; cost estimates; regulatory agency contact.

Years of Experience: 31

Education/Certifications:

- B.S., 1972, Mining Engineering, Penn State University
- Troxler Certification
- 10-Hour OSHA Training
- WVDOT Compaction Certification
- WVDOT Concrete Technician Certification
- NICET Level I

Active Registrations:

Pennsylvania 1979 - Professional Engineer

New Jersey 1995 - Professional Engineer

Summary of Experience:

Mr. Torbert has an extensive and diverse background in site and structural design, environmental studies, mapping, CAD/GIS (AutoCAD MicroStation and ArcView) design, construction inspection and monitoring, construction/site surveying, utility searches, building inspections, and property and underground surveying.

Representative Projects:

Construction Monitoring

- Compaction Testing Using Nuclear Density Equipment.
 - District 3, West Virginia DOH. For hot mix asphalt, soil (including one-point field proctor) and manufactured aggregate. Included sampling of materials, testing in lab for sizing and fineness specifications, and maintenance of state report forms.
 - Fort Henry and Industrial Centre Ohio County, West Virginia. Including soil compaction for embankment (one-point field proctor), visual inspection, and aggregate and asphalt compaction control for new roadways. Includes maintenance of company report forms based on standard WV reporting format.
 - Various sites in Pittsburgh, East Pittsburgh and Butler.
- Concrete Testing.
 - Slump and Cylinder. Various construction projects in Pennsylvania.
 - Slump, Pressure Air Meter, Rollameter and Cylinder. Various bridge and highway construction projects, District 3, West Virginia DOH.
- Construction Inspection
 - 400-person bath house and sewage treatment facility, including design, specifications and drawings.
 - 150-person bath house, mantrip system and concrete highwall protection for an industrial facility.
 - 2 PVC-lined pond installation projects (WV).
 - Acid mine water treatment plant.
- Project Engineer and Safety Officer. 2 mine shafts (PA) and 2 mine shafts and sites (WV).
- Design and Construction Inspection. Underground bulkhead used to dam approximately 100 vertical feet of mine drainage water for use as a relay sump.
- Surveying, Construction Inspection and Project Engineering. Municipal landfill in West Virginia.

Site Design

- Mine Planning. Design of mine workings and complete facilities for future coal production planning, balancing production startups and equipment purchase and transfers for 10 to 12 different coal mines in PA and KY.

- Mine Design. Design of mine workings and support to maximize efficiency and profit and minimize subsidence and roof control concerns, maintenance of subsidence submissions, design and control of longwall subsidence issues, 4 different coal mines in PA and KY.
- Underground Utilities Investigation and Mapping, David L. Lawrence Convention Center Project, Pittsburgh
 - Roberto Clemente Park Renovation, Pittsburgh
 - LTV Steel Site, South Side, Pittsburgh
- Building and Home Inspections. Over 200 residences for resale and construction.
- Sewer and Culvert Design. Nine Mile Run Site, Pittsburgh
- Highwall Stability Design. Several strip mine cuts and mine site layouts.
- Mine Site Construction Design and Inspection. Cut and fill calculations, pond designs and utility planning.
- Site Design For A \$1M Industrial Addition. Addressing local and state approvals, HOP permits, sewage design, stormwater and E&S management, geotechnical design, specification and bid documents.

Environmental Studies

- Drilling Inspection and Logging. Several geotechnical and environmental exploratory projects, including Allegheny Airport and Nine Mile Run.
- Management of Over 100 Industrial Respirable Dust Compliance Issues. Ranging from analysis and dust sampling to design of pollution control equipment.
- Management of Several Methane Compliance Issues. In underground coal mines, ranging from methane emission profiles as related to operational methods, and equipment and procedural adaptations to handle methane production.
- Design of Several Methane and Respirable Dust Compliance Issues. In above-ground coal handling facilities, such as conveyor and silo systems, including methane emission and dust generation profiles as related to operational methods, and equipment and procedural adaptations to handle methane and dust production.
- Technical and Drafting Assistance. On patented design of water-powered air cleaning scrubber, self-cleaning dust-control water spray and non-incendive water-powered steel-cutting jet system.
- NPDES Observation. Steel mill in Butler PA for outfall levels and quality, sampling of outfall and internal operational processes, maintenance of sampling program and record-keeping.
- Crown Atlantic Company, LLC. Site. Reconnaissance for proposed cellular tower site. Phase I Environmental Site Assessment including NEPA checklist, land title search and Sanborn map research.
- Phase I Environmental Site Assessment. Nine Mile Run, including NEPA checklist, land title search, historical photograph and Sanborn map research.

Structural Design

- Ancillary Industrial Structural Equipment. Design and material handling projects, including chutes, crushers and conveyor systems.
- Truck Stabilization System. Degrading for dumping coal trucks at a preparation plant.
- Steel Mill Equipment and Installation. Design of new electric arc furnaces, ladle furnaces, ladle cars and ladles.
- Steel Mill Building Renovations. Design for new equipment, including specifications and bid documents for 6 installations.

- Underground Haulage and Mantrip Track Systems. Design of mine roof support and advance systems, fresh water and AMD piping systems (including dams, pumping stations and pig launchers), electrical supply systems, ventilation equipment and systems and conveyor haulage systems.

Property Surveying

- Management of Two Surveying Crews and Draftsman. Baseline surveys for installation of industrial facilities.
- Municipal Landfill, West Virginia. surveying, construction inspection and project engineering
- Lanpher Reservoir, Pittsburgh. Site topographic surveying, sewer televising and investigation.

Years of Experience: 17

Active Registrations

Registered Professional Engineer – Pennsylvania

Education

University of Pittsburgh, Bachelor of Science in Civil Engineering

Summary of Experience:

Mr. Stahl is an accomplished civil engineer with significant experience in the field of remediation. He has been project engineer and project manager for projects including civil/site design of commercial and industrial developments; telecommunication design; stormwater management and erosion control design; DEP/COE permitting; conceptual site and utility plans; construction cost estimation; hydrologic analysis of drainage areas; construction site monitoring and certification reports

Representative Projects:

Project Engineering

- Station Square Hotel Expansion, Pittsburgh, PA. Design of site development drawings to reconstruct parking lots and utilities to accommodate the hotel expansion. Project included erosion and sedimentation control, stormwater management and technical specifications.
- Mulberry Alley (aka Jacob Street) Storm Sewer Project, Kittanning, Armstrong County, Pennsylvania. Kittanning Borough. This project included the design of 3,100 feet of 48" diameter HDPE and RCP from behind the Armstrong County Courthouse to the Allegheny River.
- Collier Township Development Preliminary Engineering Design, Collier Development Company, Inc. Developed a preliminary site plan with proposed grading, roadways, pad layouts and utilities for the 400-acre site. A detailed construction cost estimate was also prepared.
- Parking Lot Design, Clarion, Pennsylvania. Clarion University of Pennsylvania. Managed the design of a 200-space parking lot for student parking facility, including underground stormwater management facility.
- Stormwater Management Drawings, Adams and Pine Townships, Pennsylvania. Trees Development Company. Prepared and processed engineering drawings and hydrologic and hydraulic analysis for 10 basins at Treesdale.
- Erosion and Sedimentation Control Design, Greene County, Pennsylvania. U.S. Steel Mining Company. Designed erosion and sedimentation control plans for several U.S. Steel mine site.
- Erosion and Sedimentation Control Design, Ocean County, New Jersey. Atcatel. Designed erosion and sedimentation control plans for pipeline and grounding bed.
- Hiking/Biking Trail, Lake Lynn, West Virginia. The 7-mile trail included site plans, stormwater design, erosion and sediment control, construction cost estimates and preparation of technical specifications.

Years of Experience: 19

Active Registrations

Registered Professional Engineer – Pennsylvania and West Virginia

Education

Pennsylvania State University, Bachelor of Science Degree in Civil Engineering, 1985; Computational Methods in Stormwater Management, August 1992

Summary of Experience:

Mr. Greene has a wide range of experience on civil engineering projects. He has been project engineer and project manager for projects including civil/site design of commercial and industrial developments; sewer and water line design; stormwater management and erosion control design; DEP/COE permitting; conceptual site and utility plans; 3-D CADD renderings and movies; construction cost estimation; hydrologic analysis of drainage areas; design of water quality infiltration trenches, dry wells and infiltration basins; and wetland mitigation.

Representative Projects:

Project Management

- Fort Henry Business Park, Ohio County, West Virginia. Ohio County Commission. Managed and designed final construction plans, DEP/COE permitting, conceptual site and utility plans, SWM design, E&S control, 3-D renderings, construction cost estimates, preliminary geotechnical investigation and preliminary roadway design for a 671-acre Commercial and Industrial Park.
- Cabela's Retail Store, Ohio County, West Virginia. Cabela's Retail Incorporated. Managed and designed conceptual plans, 3-D renderings, site grading plans, parking plans, utility design and technical specifications, final construction plans, landscape design, irrigation design, geotechnical investigation, erosion and sedimentation control plans, ALTA survey, construction surveying and permitting for 175,000 sf building on a 60 acre site.
- Cabela's Distribution Center, Ohio County, West Virginia. Cabela's Retail Incorporated. Managed and designed conceptual plans, site grading plans, parking plans, utility design and technical specifications, final construction plans, landscape design, irrigation design, geotechnical investigation, erosion and sedimentation control plans, construction surveying and permitting for 572,000 sf building on a 44 acre site .
- West Hills Industrial Park Expansion, East Franklin Township, Armstrong County, Pennsylvania. Armstrong County Industrial Development Authority. The 200-acre project included roadway design, water, sanitary sewer and erosion & sedimentation control design. A stormwater management basin (134-acre drainage area) was also designed for controlling the future runoff of the site.
- Wheeling Shoppes, Ohio County, West Virginia. Debartolo Property Group, LLC. Managed and designed 85-acre retail center including WAL-MART and Lowe's through conceptual planning stage. Completed numerous grading plans, parking layouts, out-lot designs, utility plans, 3-D CADD renderings and movies. Worked directly with retailers to develop workable site plans.
- TECH 21 – R&D, Commercial and Residential Development, Marshall Township, Pennsylvania. CB Richard Ellis, Pittsburgh. Managed all phases of 225-acre site development including grading plans, earthwork analysis, wetland investigation, construction cost estimates and roadway design.
- Zelienople Airport, Beaver County, Pennsylvania. Zelienople Airport Authority. Managed completion of mast site plant and construction cost estimates including layout of utilities, roadways, developable pads and stormwater management facilities for 200-acre airport property.
- Mulberry Alley (aka Jacob Street) Storm Sewer Project, Kittanning, Armstrong County, Pennsylvania. Kittanning Borough. This project included the design of 3,100 feet of 48" diameter HDPE and RCP from behind the Armstrong County Courthouse to the Allegheny River.

- Collier Township Development Preliminary Engineering Design, Collier Development Company, Inc. Developed a preliminary site plan with proposed grading, roadways, pad layouts and utilities for the 400-acre site. A detailed construction cost estimate was also prepared.
- Circuit City Design, The Pointe, North Fayette, Allegheny County, Pennsylvania. Circuit City Stores, Inc. Project included parking lot layout, grading, utility, landscaping, lighting and erosion and sedimentation control design.
- Parking Lot Design, Clarion, Pennsylvania. Clarion University of Pennsylvania. Managed the design of a 200-space parking lot for student parking facility, including underground stormwater management facility.
- Subdivision Infrastructure Planning and Design, Rockville, Maryland. The Construction Group, Inc. Managed planning through design of roads, drainage, water and sewer for 13-lot, \$10 million Montera subdivision.
- Subdivision Design, Gaithersburg, Maryland. Kettler Brothers, Inc. Managed planning through design of 100-lot, \$20 million East Village (Sections 7 and 8) subdivision.

Stormwater Management

- Stormwater Management Detention Basin Design for the U.S. Property and Fiscal Office, Pittsburgh, Pennsylvania. Pittsburgh Air National Guard Base. Designed stormwater management detention basin for 100-acre drainage area near the Pittsburgh International Airport.
- Airport Stormwater Management, Pittsburgh, Pennsylvania. Allegheny County Department of Aviation. Prepared stormwater management programs for Pittsburgh International Airport. Tasks included hydrologic analysis of 12,400-acre drainage area, including location and design of 13 stormwater management detention basins to reduce runoff from future airport expansion.
- Stormwater Management Drawings, Adams and Pine Townships, Pennsylvania. Trees Development Company. Prepared and processed engineering drawings and hydrologic and hydraulic analysis for 10 basins at Treedale.
- Stormwater Detention Basin Design, Pittsburgh International Airport, Pennsylvania. Allegheny County, Department of Aviation. Designed stormwater management detention basin for 1,000-acre drainage area of McClaren's Run.
- Stormwater Management Plan, Rockville, Maryland. The City of Rockville, Maryland. Prepared and processed engineering drawings for water quality infiltration trenches, dry wells and infiltration basin for construction of two-mile extension of Ritchie Parkway.

Storm Drainage

- Box Culver Design, Rockville, Maryland. City of Rockville. Designed seven six-foot culverts crossing Cabin John Creek at Ritchie Parkway.
- Residential Storm Drainage Design, Rockville, Maryland. The Construction Group, inc. Designed 2,000 linear feet of storm drainage including curb and yard inlets for Montera subdivision.
- Subdivision Storm Drainage Design, Gaithersburg, Maryland. Kettler Brothers, Inc. Designed 5,000 linear feet of storm drainage for East Village subdivision.

Hydrologic and Hydraulic Studies

- Drainage Basin Analysis, Broward and Palm Beach Counties, Florida. South Florida Water Management District. Analyzed 100-square-mile Hillsboro Canal drainage basin to determine runoff curve numbers, times of concentration, structure data tables, reach data tables, and a sub-basin drainage area map. Developed TR-20 and HEC-2 computer models.
- Floodplain Mapping Analysis, Pittsburgh International Airport, Allegheny County, Pennsylvania. Allegheny County, Department of Aviation. Analyzed McClaren's Run floodplain at the Pittsburgh International Airport. Tasks included preparing existing and proposed 100-year floodplain mapping and design of 630-foot, eight-foot by ten-foot box culvert stream enclosure.

Sanitary Sewer and Potable Water

- Water and Sewer Design, Gaithersburg, Maryland. The Construction Group, Inc. Designed water and sewer extension in Flower Hill Subdivision.
- Water and Sewer Design, Rockville, Maryland. The Construction Group, Inc. Designed water extension, sewer extension and pressure sewer extension for Montera subdivision.

Erosion and Sedimentation Control

- Erosion and Sedimentation Control Design, Frederick, Maryland. The Aushermund Development Corporation. Designed erosion and sedimentation control plans for construction of three stormwater management ponds including two diversion channels with a 70-step construction sequence.
- Erosion and Sedimentation Control Design, Greene County, Pennsylvania. U.S. Steel Mining Company. Designed erosion and sedimentation control plans for 18-acre U.S. Steel mine site.
- Erosion and Sedimentation Control Design, Montgomery County, Maryland. City of Rockville, Maryland. Designed erosion and sedimentation control plans for four constructions areas totaling 1,000 linear feet of stream bank stabilization.

Wetland Mitigation

- Wetland Mitigation Design, Rockville, Maryland. City of Rockville, Maryland. Designed wetland mitigation plans to create 12 acres of wetlands for construction of Ritchie Parkway.
- Wetland Mitigation Design, Hardy and Randolph Counties, West Virginia. West Virginia Department of Transportation. Managed design of 45-acre wetland mitigation project for Appalachian Corridor H Project.

Publications

“Stormwater Management Program for the Pittsburgh International Airport,” presented at the 1993 ASCE International Symposium on Engineering Hydrology, San Francisco, California.

Memberships

Pennsylvania Society of Professional Engineers, Pittsburgh Chapter