PROPOSAL NUMBER
ENGWR-P17-G003 REVISION 0

PRESENTED ON
JUNE 15, 2017

QUALIFICATIONS FOR A

LEACHATE TANK STUDY AT THE MONONGALIA AND MORGANTOWN LANDFILLS EXPRESSION OF INTEREST

PRESENTED TO THE STATE OF WEST VIRGINIA
IN RESPONSE TO CEOI 0313 DEP1700000003

ENERCON

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1501 ARDMORE BOULEVARD | SUITE 200 | PITTSBURGH, PENNSYLVANIA 15221-4451

PHONE 724.733.8711 | FAX 724.733.4630 | ENERCON.COM

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June 15, 2017
ENGWR-P17-G003 Revision 0

State of West Virginia
Bid Clerk, Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, West Virginia 25305-0130

Re: Centralized Expression of Interest 0313 DEP1700000003 "Leachate Tank Study at the Monongalia and Morgantown Landfills"

Dear Bid Clerk:

Enercon Services, Inc. (ENERCON) and our subsidiary Tri-County Engineering, LLC (TCE) are pleased to submit this response to the State of West Virginia's Centralized Expression of Interest (CEOI) 0313 DEP1700000003 for a leachate tank study at the Monongalia and Morgantown Landfills.

ENERCON, founded in 1983, is an employee-owned firm specializing in engineering, environmental, and management services with 27 offices around the country, including Pittsburgh, Pennsylvania. ENERCON's clients include most major electric utilities, chemical and nuclear fuel cycle facilities, oil and natural gas companies, the federal government and many Fortune 500 companies. ENERCON is the premier provider of engineering and environmental services to the nuclear industry and was ranked as the #1 nuclear firm by Engineering News-Record in 2015. This work requires a keen attention to detail and rigorous quality assurance processes. Our clients have confidence their products and services are delivered on time while exceeding expectations.

For over 33 years, our focus at ENERCON has been to provide high quality, cost-effective solutions for our clients. We accomplish this by integrating our efforts with our clients' needs in a partnership of mutual goals and objectives. We understand that planning and execution go hand-in-hand for effective project management and cost control. In this competitive economic environment, we are judged and measured against our competitors by only the success of our most recent project. As such, it is vital for us to meet and exceed every one of your expectations. This project will be as important to us as it is to you.

We are confident our highly specialized capabilities bring a value-added service no other firm can match. Per the solicitation instructions, our qualifications are summarized economically; more extensive corporate and personal resumes are available for review as needed by the State.

Thank you for your consideration. If you have any questions or require further information, please contact me at 412.871.2708 or via email at skline@enercon.com. ENERCON looks forward to supporting the State of West Virginia on this project.

Sincerely,

Shaun W. Kline, Ph.D., P.E. (Pennsylvania #PE085658)
Engineering and Water Resources Lead | Environmental Services Group | Enercon Services, Inc.
1501 Ardmore Boulevard | Suite 200 | Pittsburgh, Pennsylvania 15221-4451
Office: 412.871.2708 | Mobile: 352.514.3340 | Fax: 724.733.4630 | skline@enercon.com

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1.0 FIRM EXPERIENCE AND QUALIFICATIONS

Enercon Services, Inc. (ENERCON), founded in 1983, specializes in engineering, environmental, surveying and management services. ENERCON's clients include major electric utilities, chemical and nuclear fuel cycle facilities, oil and natural gas companies, the federal government and many Fortune 500 companies. In many areas, ENERCON is an industry leader providing solutions for emergent regulatory initiatives. ENERCON achieved the following positions in the current Engineering News – Record (ENR) rankings: ***#1 Nuclear Firm, #9 Power Firm, #33 Pure Designers, #53 Design Firm, #103 Environmental Firm, #117 Global Design Firms***. Our ability to have achieved these rankings is due to our corporate culture, which is best summarized by our tag line: ***Excellence – Every Project, Every Day***.

Over the past 34 years, ENERCON has seen significant growth. Starting from three people and four clients, ENERCON now has more than 1,200 full-time employees, and maintains 27 offices nationwide. In 1992, ENERCON created an Employee Stock Ownership Program and is currently an Employee-Owned Company. Over the past 15 years, ENERCON has worked hard to achieve continuous profitable growth and is a financially healthy firm. Due to the continued projected growth, over the past 3 years, ENERCON has acquired 3 new firms which operate as subsidiaries to ENERCON, they are MARACOR Technical Services, Talisman International, and Tri-County Engineering, LLC.

Currently, ENERCON consists of five service groups: 1) Environmental Services Group; 2) New Plant Services Group; 3) Power Generation Services Group; 4) Power Delivery Services Group; and 5) ENERCON Federal Services Group. Each group has complementary services and is structured to support different client needs for environmental, engineering, design, and compliance services. These groups provide our clients with a single source for comprehensive services. Support for the State of West Virginia projects will come from the Environmental Services Group using professionals out of the Pittsburgh, PA, and the wholly-owned subsidiary, Tri-County Engineering, LLC in New Stanton, PA.

ENERCON has a strong, diversified staff consisting of registered professional engineers (civil, mechanical, electrical, chemical, environmental, nuclear, computer, control systems, fire protection, architectural, structural), professional geologists, hydrologists, seismic hazards analysts, systems analysts, probabilistic risk analysts, maintenance specialists, licensing specialists, senior operators, emergency planning professionals, chemistry and health physics specialists, and environmental professionals. Many of our professionals hold advanced degrees, certifications, and have been published in professional journals and peer reviewed publications. Several of these advanced degree professionals will be part of the team assembled for the work (refer to Section 2 for the team).

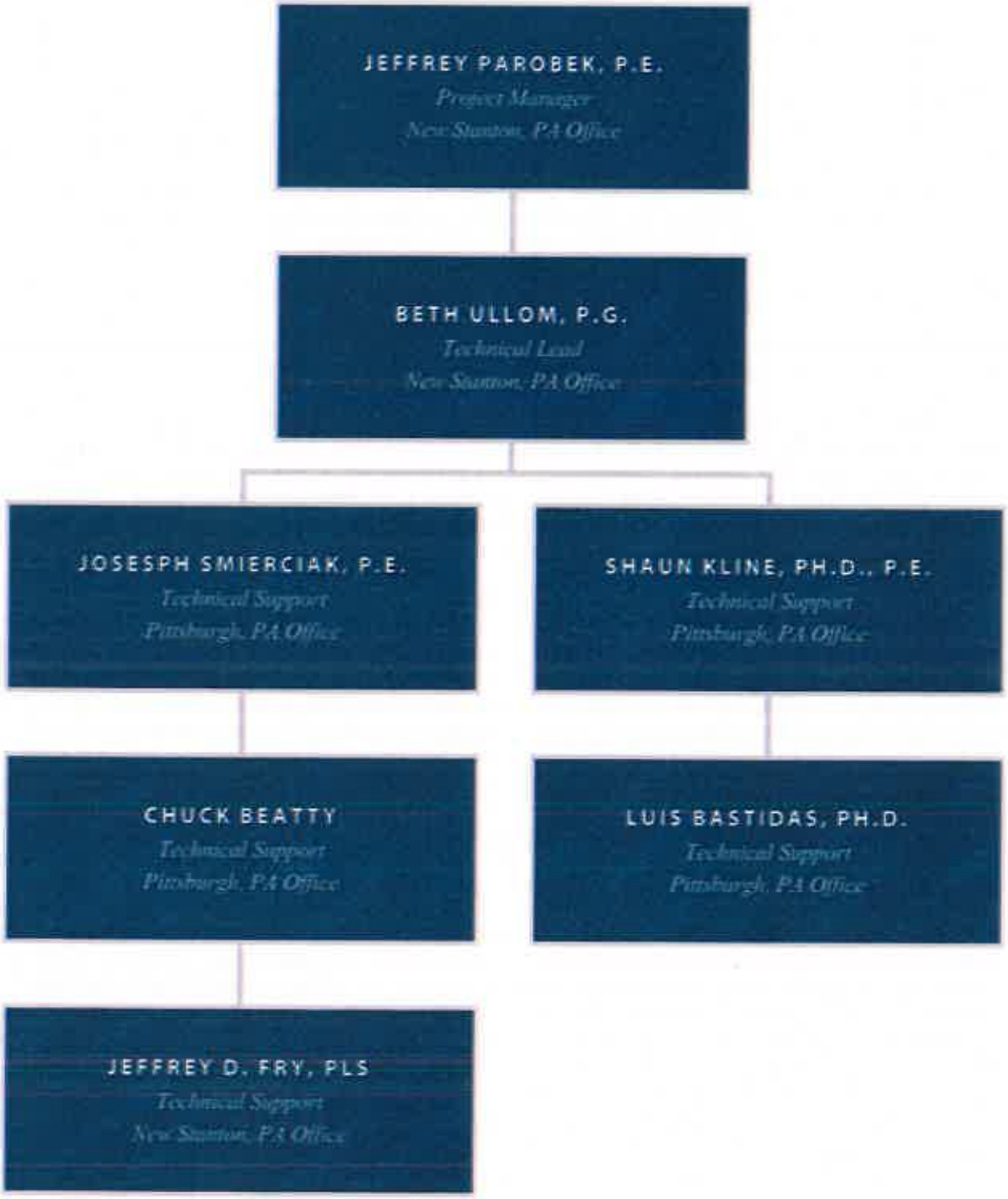
Tri County Engineering (TCE) located in the Borough of New Stanton, Pennsylvania has been providing engineering services to municipal, development and energy clients in Southwestern Pennsylvania since 1979. TCE staff brings with them the experience of managing a wide range of projects and clients, including authorities, government agencies, utilities, development groups, retailers, etc. Working in this capacity, our staff has experience in managing the entire process from site selection, design, demolition and construction through final certificate of occupancy. In November 2014, TCE joined ENERCON, which has significantly enhanced available environmental, structural, compliance and geotechnical services.

TCE Survey staff utilize state-of-the-art electronic surveying equipment to capture physical features geospatially with associated metadata. This information is processed using various CAD and GIS software packages to deliver the client accurate, highly enriched digital files to the required specifications.

TCE Survey experience includes both public and private clients within the Architectural, Oil and Gas, Nuclear, Transportation, Telecommunication, and Energy Market Sectors.

1.1 PROJECT TEAM

1.1.1 KEY ORGANIZATIONAL CHART



1.1.2 KEY TEAM MEMBER DESCRIPTIONS

JEFFREY A. PAROBEK, P.E. | *Project Role: Project Manager*

Mr. Parobek is currently the Civil Engineering Lead for TCE. He is responsible for overview of technical aspects of project design, design coordination with clients and other members of the design team, public presentations of projects in front of governing bodies, regulatory agencies and at stakeholder meetings, coordination of project bid processes and oversight of services during construction including change order and pay application reviews, coordination with other managers for manpower and scheduling, preparation of price proposals and statements of qualifications, preparation of invoices and supplemental work requests.

Mr. Parobek has previously been responsible for all aspects of project design for land development and public infrastructure projects including plan preparation, preparation of stormwater management plans, erosion and sediment control plans, technical specifications and complete bid documents, oversights of bid process, services during construction including project progress meetings, pay application and change order review and resolution of problems encountered during construction. Mr. Parobek will serve as Project Manager.

BETH P. ULLOM, P.G. | *Project Role: Technical Lead*

Ms. Ullom is the Environmental Lead for TCE. She possesses unique expertise in geological, geophysical, and environmental disciplines as a result of having a B.A. in Biology from Indiana University, a B.S. in Geosciences (*cum laude*) from the University of Texas at Dallas, and a M.S. in Geology from Kent State University, where she was selected as an outstanding geology graduate student at the Master's level during the year of her graduation. Ms. Ullom is a registered professional geologist in Kentucky ([redacted] Pennsylvania ([redacted] and Virginia [redacted]

Ms. Ullom possesses diverse and extensive knowledge of environmental compliance issues and has significant project management experience with professional staff performing a variety of environmental assessment and remediation activities. She has developed technical expertise over the course of a 30-year career in environmental site characterization. She has supervised and reported results for a large number of Phase I through complex Phase II site assessments, geophysical site characterization activities, geological site characterizations and hydrogeological site assessments, geotechnical drilling, wetland determination and delineation, and environmental remediation projects, and has served as an expert witness for many of the same issues. Her experience includes management of site characterization, installation of monitoring wells, leachate characterization and monitoring, and permit preparation for numerous construction and demolition debris and residual waste landfills in Ohio.

JOSEPH M. SMIERCIAK, P.E. | *Project Role: Technical Support*

Mr. Smierciak holds a B.S. in civil engineering. He has over twenty-five years of experience in construction, geotechnical, environmental, and nuclear fields. Mr. Smierciak has extensive experience in the design and construction of landfills. Mr. Smierciak has prepared erosion and sediment (E&S) Plans and SWPPPs, performed hydrology and hydraulics analysis for landfills, prepared detailed drawings and technical specifications, performed Construction Quality Assurance (CQA) on landfills including geomembranes, and prepared documentation reports for submittal to governing regulatory agency. He has significant experience interacting with regulatory agencies. As an example, he interacted on a daily basis with NYSDEC (Region 9) field oversight for a Brownfield remediation project in Buffalo. Mr. Smierciak also has extensive experience in the nuclear field. He served as a work planner for the decommissioning of a Nuclear Power Plant (NPP), participated in several ISFSI and FLEX projects, and served as the CQA

Manager for the remediation of radiological waste buried in shallow trenches that had the potential to contain special nuclear material. He participated in the RCRA closure of the T-1 Building at the SDA.

CHARLES R. BEATTY | *Project Role: Technical Support*

Mr. Beatty holds a B.S. in civil engineering technology. He has over thirty years of experience in construction, geotechnical, environmental, and nuclear fields. Mr. Beatty has performed settlement, slope stability, and leachate analysis for landfill projects. He served as the Nuclear Material Accountability Office (NMAO) and CQM Construction Manager for the Shallow Land Disposal Area (SLDA) Remediation Project that required the remediation of radiological waste buried in shallow trenches that had the potential to contain special nuclear material. He has significant experience interacting with regulatory agencies including the NRC and USACE. Mr. Beatty recently managed the final radiological decommissioning and demolition of the Buffalo Materials Research Center (BMRC) at the University of Buffalo.

SHAUN W. KLINE, PH.D., P.E. | *Project Role: Technical Support*

Mr. Kline holds a Ph.D. in earth sciences, a M.S. in coastal and oceanographic engineering, and a B.S. in civil engineering (specializing in water resources). He has over ten years of experience in applied water resources, hydrology, and hydraulics. Mr. Kline has extensive experience in numerical modeling surface hydraulic processes. Mr. Kline is proficient in developing and using hydrologic and hydraulic modeling software programs, including MATLAB, Delft3D, SWAN, SLOSH, HEC-RAS, HEC-HMS, ArcGIS, FLO-2D Pro, and USEPA-SWMM. He also has experience with deployment, maintenance, collection, and processing for remote sensing and field observation techniques and has coordinated field work in security sensitive facilities such as NASA's Kennedy Space Center. Mr. Kline has authored reports for federal regulators, state agencies, private-sector clients and peer-reviewed articles and has given multiple subject matter expert presentations at academic institutions, professional conferences, and to federal regulatory agencies.

LUIS A. BASTIDAS, PH.D. | *Project Role: Technical Support*

Dr. Bastidas has over 25 years of successful experience as consultant engineer and academic researcher in hydrology and hydraulic engineering and extensive experience in modeling hydrology, hydrometeorology, river morphology, and groundwater. He has experience in hydrological, drainage, stormwater, and flood control studies and designs. He has extensive experience writing grant proposals, technical publications and reports, and creating and delivering presentations for a variety of audiences including scientists, engineers, partners, and stakeholders; and expertise in land surface, conceptual and distributed rainfall-runoff, snow, groundwater, and numerical river modeling. His expertise includes hydrological/hydrometeorological forecasting, semi-arid hydrology, flood forecasting and flood control, water resources, remote sensing in hydrology, and climate change impact evaluation with expert experience in model uncertainty analysis, data assimilation, and model benchmarking. Dr. Bastidas has published many technical papers and is proficient in many software programs including 2D – 3D Hydro/Hydraulics Modeling and C, C++, FORTRAN, BASIC, MATLAB, and R computer languages.

JEFFREY D. FRY, PLS | *Project Role: Technical Support*

Mr. Fry has over40 years of experience and has the responsibility of managing the survey operations for West Virginia by planning survey project activities, reviewing survey project documents and drawings for quality control, scheduling survey crews, mentoring survey staff, and establishing and enforcing department standards.

Prior to joining Tri County Engineering, Mr. Fry has experience with projects such as flood studies and bridge and stream sections in central and southern West Virginia and eastern Kentucky for the USACE, commercial and residential land development, ALTA/ACSM Land Title Surveys, right of way surveys, construction surveys, municipal water and sewer extension surveys, GPS control surveys, lot surveys, and also design and drafting experience.

2.0 APPLICABLE EXPERIENCE ON SIMILAR PROJECTS

2.1 LANDFILLS

NYSERDA RCRA CLOSURE OF T-1 BUILDING

ENERCON (as a subcontractor to Permafix) performed the Resource Conservation and Recovery Act (RCRA) closure of the T-1 Building. Closure occurred in two phases. As part of Phase I, New York State Energy Research and Development Authority (NYSERDA) was responsible for removing the leachate from Tank T-1 and associated equipment and items. During Phase II, ENERCON removed Tank T-1, ancillary equipment (fill pump and piping and tank vent), and approximately 500 cubic feet of packaged waste from the T-1 Building. The T-1 Building was HEPA vacuumed and assessed for compliance with clean closure criteria. At the conclusion of closure, a certification of RCRA closure was prepared in accordance with 40CFR 265.115, 6 NYCRR 373-3.7 and 6 NYCRR 373-3.10(h).

NYSERDA DRY-CASK INTERIM STORAGE FACILITY

ENERCON (as a subcontractor to NAC International) was awarded a contract by the operating contractor at the DOE WVDP site to develop a high level waste storage facility. ENERCON was subcontracted to provide support in the following site design activities:

- Site Preparation;
- Soil Improvement;
- Grading and Drainage Design;
- Concrete Pad and Apron Design;
- Haul Path and Underground Assessment;
- Electrical, Security Lighting and CCTV;
- Fencing and Physical Protection;
- Fire Protection;
- Licensing Support; and
- Construction Specification.

SHALLOW LAND DISPSAL AREA CONSTRUCTION QUALITY CONTROL

The Shallow Land Disposal Area (SLDA) project is being managed by the U.S. Army Corps of Engineers (USACE) under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Radiologically and chemically impacted waste was buried in 10 shallow trenches. ENERCON provided construction quality control (CQC) services for this project. The first year of the project involved preparing the site for the remediation and included the following major construction items: sedimentation traps and basins to manage storm water, 3,600 foot long asphalt paved access road, 60,000 square foot clear span fabric building for processing waste, wastewater treatment plant, and a Final Status Survey (FSS) asphalt pad. This multi-million dollar project will require excavation of approximately 41,600 cubic yards of radiologically and chemically impacted waste. During the second year of the project, remediation of the buried radiological waste was conducted and the waste was transported off-site for disposal at a permitted facility. ENERCON

staff served as the construction quality manager (CQM) for the remediation work. ENERCON staff served the role of Assistant Project Engineer responsible for the wastewater treatment plant and remediation area. As CQM, ENERCON staff prepared Daily Quality Control Reports (DQCRs) to document the daily activities and managed the CQC staff. As Assistant Project Engineer, ENERCON staff responsibilities included collecting weekly discharge samples and tracking the volume of treated water for the wastewater treatment plant.

2.2 SURVEYING

WESTMORELAND GENERATING STATION

Tri-County Engineering (TCE) has been providing high - precision Quality Assurance Site Surveying in support of the Tenaska Westmoreland Generating Station since February 2016, on behalf Tenaska's EPC, Black & Veatch Construction, Inc. The Tenaska Westmoreland Generating Station is a 925-megawatt, combined cycle electrical generating facility which will meet the energy needs of approximately 925,000 homes, delivered through the PJM Interconnection regional transmission organization.

The QA site surveying includes locating anchor bolts for critical equipment to within 0.005 feet horizontal tolerance and 0.003 feet vertical tolerance, and the establishment of first order monumentation around the power plant site. Attaining this level of precision requires the use of state-of-the art, high- precision survey equipment and highly experienced field survey personnel. TCE's survey equipment includes Spectra

Precision Focus 35 robotic total stations which feature motorized drives to quickly and precisely turn to and repeat measurements, which is paramount to meet the QA project requirements.

In addition to the QA site surveying, TCE is providing civil engineering support to B & V for the Westmoreland Generating Station project, including earthwork volume calculations and associated CAD work to assist the EPC with Bill of Quantities. The civil engineering support is directed by a Pennsylvania-registered Professional Engineer, and the CAD deliverables are prepared using both AutoCAD and Microstation.

3.0 CAPACITY AND CAPABILITY OF THE FIRM

3.1 INITIATING EMERGENT WORK AUTHORIZATIONS

Project Managers have the authority to negotiate and implement any new Task Order that does not require contractual changes. Each ENERCON division has key operating managers who can review and negotiate contract changes. If emergency responses are required, Project Manages have the authority to initiate new Tasks while written Task Orders are being processed provided they remain within specified corporate limitations. Senior management can extend those authorizations if needed. Per our corporate policy, any emergency work authorization exceeding $50,000 requires the approval of our President. These polices have been developed to control costs and maintain effective communication on project cost control.

3.2 CONTINGENCY TO ADJUST TO UNFORESEEN ISSUES

As ENERCON's list of preferred engineering and technical support contracts have grown, we make a concentrated effort to reach out and secure talent within our organization from across the country that have direct engineering and environmental experience needed on specific projects. All offices communicate in weekly conference calls to address priority project needs, limitations on key resources, and high visibility project issues. These conferences include all senior ENERCON management, up to and including our Chief Operating Officer and President.

ENERCON actively recruits young talent from several colleges across the country. We are always nurturing the development of new incoming engineers and scientists for future needs. ***We employ eight (8) full-time recruiters*** focused squarely on identifying available talent and securing qualified engineers and technical staff. ENERCON maintains a resume database of over 20,000 engineers, and technical staff. Should you have a sudden increased need for our services under this contract, ***we have immediate s access to over 1,200 personnel located in our other 27 offices as well as the resources of our subcontractors.***

3.3 PROCESS TO ADJUST TO TASKS THAT DO NOT FALL WITHIN THE CONTRACT'S CORE STATEMENT OF WORK

Normal Changes – ENERCON organizes our contracts with a single point of contact between the ENERCON project manager and your project manager. Any necessary changes in scope required by field operations with normal time constraints can be quickly communicated to your Project Manager by our Project Manager.

Alternative Method, Direct Communication to Task Order Manager – When a Task Order is assigned, ENERCON assigns a Project (Task Order) Manager to complete the work. Scope Changes to individual Task Orders can be sent directly to the Project Manager when rapid response is needed.

Alternative Method, General Task Order or Retainer – If needed, we have established had a limited retainer project for rapid response to emergency issues. This method allows us to respond to minor scope

issues that can be covered by the retainer while waiting for contracts to generate a Task Order. Our typical method for this process is to limit the retainer to $7,500 or less as negotiated.

Alternative Method, Notification of Field Change –Project Managers are trained to inform you of any changes in conditions that warrant a change in scope. This is accomplished via telephone and backed up via email or letter communication from the Project Manager. ENERCON will not proceed with the change in scope until we receive written notification from you to do so.

3.4 APPROACH TO PROJECT WORK SCOPE AND TRACKING

ENERCON has a corporate-wide project controls, cost, and time tracking system. This software collects and stores essential information necessary for us to monitor and track critical labor and project parameters. Our personnel and project information is maintained in this system, and employees enter their time directly into the system daily. In addition to electronic time keeping and invoicing, our system provides real-time financial and cost status to our Project Managers. Our system interfaces with Primavera so that resource expenditures can be exported to generate Cost Performance Index (CPI) and Schedule Performance Index (SPI) factors for larger projects.

Our system tracks multiple tasks for each project. Each task is assigned resources with man-hours specified by individual. No individual can exceed the authorized level of hours for a specified task without prior Project Manager approval. This assures that any deviations from the planned level of effort are immediately identified and evaluated so that appropriate corrective actions are developed and implemented. Our system allows each person on the project team the ability to view the project data. The system accumulates time against each project and tasks as time is entered and charged to a task, giving direct feedback on progress and charges to date. Our system fully integrates into our financial management systems, so all information on project costing, including direct project labor, other direct costs such as travel and living, subcontracts, and equipment leasing and rentals, are automatically entered as the charges are incurred.

4.0 QUALITY ASSURANCE / QUALITY CONTROL MEASURES

ENERCON has developed and maintains a Quality Assurance program which meets the criteria defined by the Nuclear Regulatory Commission in 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" meeting the ANSI N45.2-1977 and NQA-1-2008 / NQA-1a-2009: QA program standards. The NQA-1a-2009 is one of the most stringent QA program standards and our QA Program has been audited by several domestic and international organizations. As such, ENERCON maintains a staff of five full time QA department employees who are strictly dedicated the applying and ensuring the program requirements to ENERCON products and services. For quality control, ENERCON uses formalized engineering (corporate standard) procedures (CSPs), design verification, peer review and our Engineering Review Board to constantly grade, maintain, and improve the quality and completeness of our calculations, designs, and reports. While the QA department ensures global quality, the ENERCON Project Manager (PM) is tasked with ensuring that all QA procedures are followed.

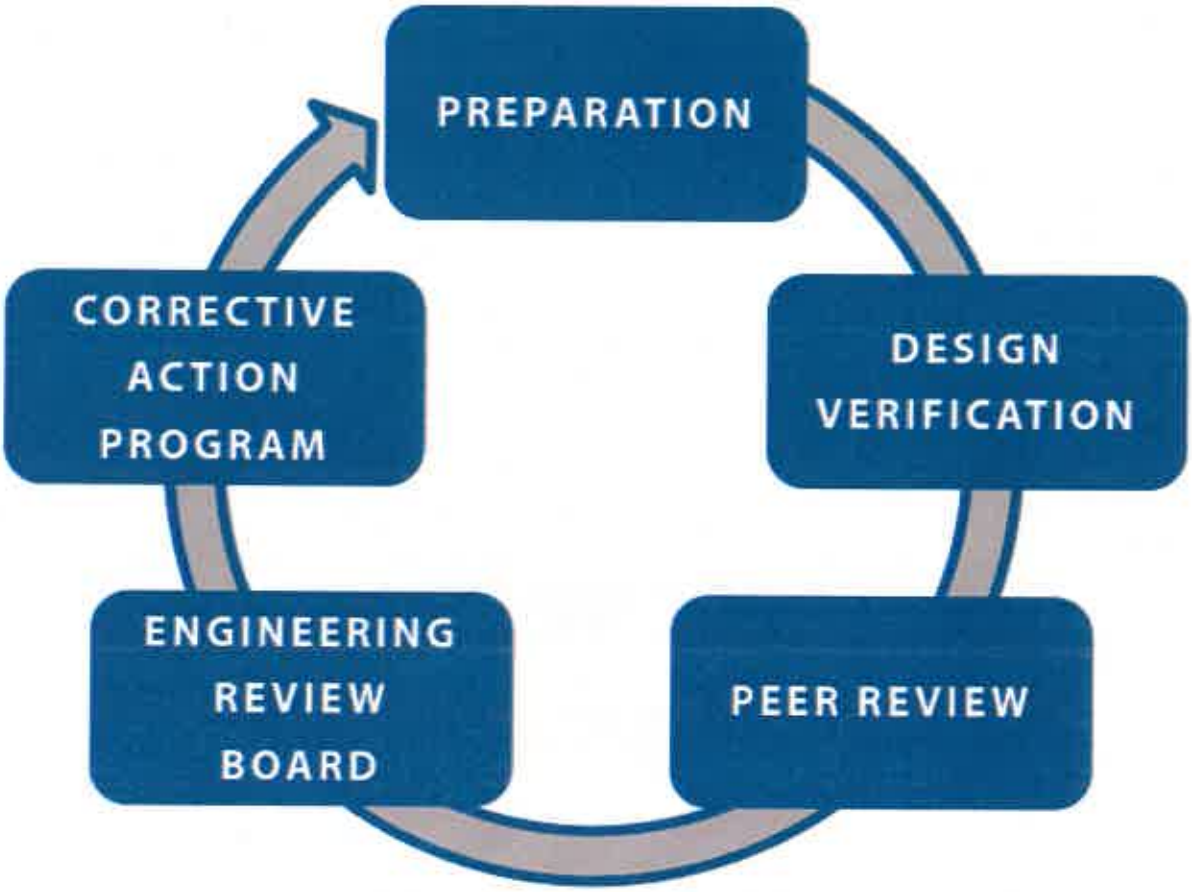
Engineering procedures are followed to ensure consistency, completeness, thoroughness, and accuracy of our work. Calculations are prepared following an approved, specified format and a documented procedure to meet these objectives. Calculations are independently design verified by a second engineer. In modeling space, the design verifier usually either recreates the model, checks all inputs individually or tests the model by an alternative calculation or method to validate and assess the confidence of the results. After calculations are completed and design verified, peer reviews are performed when needed. Peer reviews, performed by a senior engineer familiar with the project, are focused on the appropriateness of work scope, level of detail, methodologies employed, consistency with the regulatory guidance, and the level of detail compared to the project goals and engineering objectives.

For the final review and approval step, ENERCON uses an Engineering Review Board (ERB) that follows a formalized, internal process to review major design deliverables and calculations. Calculations and reports are submitted to an independent ERB after completion, design verification, and peer review. Senior engineers within our organization who have not participated in the performance of any project work deliverables, are assigned to review and grade the work product. This procedure was developed to provide the standard measures of engineering product quality.

Each engineering report or calculation is graded in each of the categories listed above as appropriate. Scores are assigned to each item, and an overall grade is assigned. Comment/Resolution forms document the reviewers' comments, which are returned to the lead engineer to accept or reject the comments. Work products with unacceptable grading are rejected for use, and require the work to be corrected. Clients only receive deliverables that have successfully passed each internal ENERCON review phase. Grades for performance with the ERB are tracked, and published internally on dashboards showing the ERB's assessment of work product quality. Lessons learned from past similar projects are applied to the current projects underway and future projects.

Once the deliverable is submitted to the client and client has a chance to provide comments, the ENERCON originator, design verifier and peer reviewer are all part of the resolution process, following the same procedures as mentioned above to resolve all comments. Meetings are held as necessary until all comments are resolved to the satisfaction of the client. If the client and stakeholder identifies a concern or issue beyond the typical comment cycle such as a deficiency, error or performance issue, ENERCON initiates its Corrective Action program and performs a root cause analysis or apparent cause analysis to resolve and correct the deficiency or issue. All actions are then documented in the corrective action report and shared as a lesson learned. All re-work required because of a deficiency or error is performed as warranty work until the problem is corrected in the deliverable.

The ENERCON QA Program is designed as a continual learning and improvement process. Each stage is independent of the others to ensure fresh and unbiased input. At the end of a particular deliverable or project, lessons learned – both the good and bad – are compiled in our Corrective Action program. Our staff is then trained on these lessons learned to ensure the next project is even better than the last. Ultimately, the goal of our QA Program is ***Excellence – Every Project. Every Day.***


PREPARATION
DESIGN VERIFICATION
PEER REVIEW
ENGINEERING REVIEW BOARD
CORRECTIVE ACTION PROGRAM

APPENDIX A:
KEY RESUMES

TRI-COUNTY ENGINEERING, LLC
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Excellence—Every project. Every day.
PROFESSIONAL ENGINEERS & LAND SURVEYORS

Jeffrey A. Parobek, P.E.

Experience Summary

- Plans preparation and project management for development of commercial, retail, industrial institutional and retail land development projects including roadway and utility infrastructure for both private and public clients with various sources of funding.
- Management of construction projects including oversight of the bidding process, pay application review and change order negotiation, resolution of field issues due to unforeseen conditions.
- Public presentation of projects at municipal hearings, stakeholder meetings and with reviewing agencies.

Core Qualifications

Site Development	Regulatory Compliance	Technical Writing
Municipal Infrastructure	Environmental Permitting	Cost Estimating
Erosion Control Plans	Storm Water Management	Construction Management
Brownfields Redevelopment		

Experience Description

Mr. Parobek is currently employed as a Engineering Lead - Civil: He is responsible for overview of technical aspects of project design, design coordination with clients and other members of the design team, public presentations of projects in front of governing bodies, regulatory agencies and at stakeholder meetings, coordination of project bid process and oversight of services during construction including change order and pay application reviews, coordination with other managers for manpower and scheduling, preparation of price proposals and statements of qualifications, preparation of invoices and supplemental work requests.

Previously Mr. Parobek worked at GAI Consultants as a Lead Engineer and Project Manager where he was responsible for all aspects of project design for land development and public infrastructure projects including plan preparation, preparation of stormwater management plans, erosion and sediment control plans, technical specifications and complete bid documents, oversight of bid process, services during construction including project progress meetings, pay application and change order review and resolution of problems encountered during construction

Previously, Mr. Parobek was employed at William H. Gordon Associates as Deputy Design Director where he was responsible for oversight of design teams in the preparation of site plans for roadway infrastructure, commercial and industrial developments. He was responsible for coordinating review of plans with various county review agencies and the Virginia Department of Transportation. Mr. Parobek would coordinate manpower and scheduling with other managers to meet submission schedules.

Mr. Parobek was a Staff Engineer at William H. Gordon Associates, in this role he was responsible for preparation of site and grading plans, utility design including stormwater, sanitary sewers and water line, stormwater management plans, and erosion and sediment control plans for commercial and industrial development projects.

As a Survey Computer at William H. Gordon Associates, Mr. Parobek was responsible for preparation of base plans including downloading and processing field data, field setup for construction stakeout, deed research for property surveys, preparation of subdivision plans, easement plats and ALTA surveys, and preparation of construction cut sheets.

A list of key projects includes:

Lardin Substation Expansion in German Township, Pennsylvania for Allegheny Power. Mr. Parobek was project Manager for the project that included including grading, landscape buffer, drainage improvements, erosion and sediment control plans and stormwater management report. The project included coordination meetings with the municipalities and attendance at zoning and planning hearings to obtain local approvals.

Lead project engineer on part of the Indonesia Transmission Line in Irian Jaya for P.T. Freeport Indonesia Company. Design project for a reliable 60-mile-long, 230 kV transmission line from an ocean port site through mangrove swamps to a mill in the mountains at elevation 9,000 ft. to supply power to the client's copper and gold mining operations. Responsible for design and coordination of one mile underground segment of twin 230 kV to avoid flight path issues with final approach to major airport.

Loyalhanna Substation Expansion in Latrobe, Pennsylvania for Allegheny Power. A Site development project to expand the Loyalhanna Substation. Mr. Parobek was project manager for the site design portion of the project that consisted of topographic and property survey, grading plans and erosion and sediment control plans. The project also included coordination meetings with the municipality and local permit applications.

Wallace Lane Substation in Murrysville, Pennsylvania for Allegheny Power. Mr. Parobek was project manager for the project to study the proposed expansion of the Wallace Substation. The work consisted of preparation of concept plans studying alternate configuration and grading schemes for a replacement substation while maintaining service from the existing substation. The analysis included evaluation of earthwork needs, minimization of retaining walls, drainage and maintenance access.

EQT Smallman Street Natural Gas Fueling Station. Mr. Parobek performed utility service design and prepared water/sewer tap plans for the first natural gas fueling station in the City of Pittsburgh's Strip District.

Summerset at Frick Park Residential Development at Nine Mile Run in Pittsburgh, Pennsylvania for the Urban Redevelopment Authority of Pittsburgh. Residential development project for a 238-acre brownfield site requiring Phase I and II grading, infrastructure planning, design, and permitting for a 713-unit multi-phased residential development on an abandoned riverside slag dump bordering the main access highway to Pittsburgh's eastern suburbs. This was an ongoing development project that had Mr. Parobek's involvement for 17 years. As a Project Manager Mr. Parobek was responsible for preliminary and final design for grading and infrastructure, trail system, construction administration and oversight of CO&A compliance reporting for this multiple-award-winning project.

Provide expert witness review and report preparation for Romouldi Davidson Associates for various cases involving storm drainage and sanitary sewerage issues, construction claims, and personal injury from falls and accidents on roadways and parking lots. Responsible for reviewing depositions, expert witness reports and physical conditions to determine causative factors surrounding the incidents in question. His preparation of expert witness reports presented as evidence in support of the clients represented.

Vincentian Village in the Town of McCandless is a retirement village consisting single family/duplex units and apartment units with a clubhouse and fitness trail system on 20 acres. Mr. Parobek was a Project Manager for preparation of conceptual planning, rezoning, grading and site plans, utility plans, stormwater management and NPDES permitting.

Vincentian Home renovations and expansion I the Town of McCandless which included expansion of the existing skilled care facility to provide an assisted living component and renovations to modernize the skilled care facility. As a Project Manager for preparation of site plans, stormwater management, utility upgrades and NPDES permitting.

West Virginia University Law Center in Morgantown, West Virginia. Mr. Parobek was a Project Manager for the expansion and renovation of the School of Law including building expansion, parking lot redesigns, utility relocation, stormwater management and erosion control plans.

West Virginia University Evansdale Campus utility infrastructure upgrades in Morgantown, West Virginia. West Virginia University was undergoing a major redevelopment of the Evansdale Campus. Mr. Parobek worked as a Project Manager for utility infrastructure upgrades and relocations required by construction of new facilities. Project also included expansion of existing parking lots and design of new stormwater management facilities.

Clarion University Tippin Gym expansion and rehabilitation. Mr. Parobek was project manager for expansion and renovation of the Tippin Gym to provide an updated competition pool and an addition to the Student Recreation Center to provide an additional recreational pool. Project included design of relocation for major utility corridor, ADA access upgrades and sustainable stormwater management to offset new impervious area created by the project.

West Virginia University Evansdale Crossing. Mr. Parobek was project manager for the development of a 100,000 square foot private/public facility to create new student space, vertical connection across campus, and retail use. The project involved site design and grading, coordination with other team members for University parking and roadway projects and outlining provisions for sustainable stormwater management.

Lorien Residential Development in Penn Township, Pennsylvania consisted of the development of 51 single family residential units on 19.5 acres. Mr. Parobek was project manager responsible for preparation of infrastructure design drawings and subdivision plans. The work included NPDES permitting, stormwater management utilizing Best Management Practices for water quality, sewage planning permits and presentations at public hearings to attain municipality approval on the project.

Stauffer Diesel Site Plan in Hempfield Township, Pennsylvania. Mr. Parobek was project manager responsible for the design of a 7,500 sf industrial facility that incorporated provisions for expansion to 15,000 sf. Mr. Parobek was project manager responsible for preparation of site development design drawings. The work included NPDES permitting, stormwater management

utilizing Best Management Practices for water quality and presentations at public hearings to attain municipality approval on the project.

Northpointe at Slate Lick Development in Armstrong County, Pennsylvania for the Armstrong County Industrial Development Authority. Design and permitting project (Phases I through IV) for a 910-acre mixed-use development. As a lead engineer Mr. Parobek was responsible for more than 10,000 lf. of roads, utility infrastructure, walking trails, wetlands mitigation, bidding administration, and construction contract administration.

Washington's Landing Housing Development on Herr's Island on the Allegheny River in Pittsburgh, Pennsylvania. Mr. Parobek worked for the Urban Redevelopment Authority of Pittsburgh. This was a public space improvements project for a 7-acre, 100-unit residential development on a brownfield site, completed in 1995. His work included planning, permitting and design as well as construction management services. As an engineer he was responsible for designing roadways, waterlines, sanitary sewer, and storm drainage.

Federal Drug Enforcement Administration (DEA) Office Site in Kennedy Township, Allegheny County, Pennsylvania for Rycon Construction Company and Oxford Development Company. This was a design build project for a new field office requiring security considerations, a Leadership in Energy & Environmental Design (LEED) structure, designed in 2004 and completed in 2005. As a Project Manager and lead engineer Mr. Parobek was responsible for site planning and design, erosion & sedimentation (E&S) control design and permitting, and landscaping.

Porcelain Park, Derry Borough is an approximate 19.3 acre site which consisted of industrial use for the manufacture of porcelain insulators. The property was acquired by the Redevelopment Authority of Westmoreland County to facilitate mitigation of the safety and environmental hazards. RACW's objective was to identify various environmental contaminants that may exist, identify various remediation options, develop a plan to remediate environmental contamination, demolish the remaining structures, and restore the property to a vegetated state. As Project manager Mr. Parobek was responsible for oversight of environmental investigations and preparation of reports and clean-up plans to facilitate Act 2 clearance for the property as well as development of demolition plans and oversight of bidding process.

Arden Courts Assisted Living Facility in Monroeville, Pennsylvania for Manor Care Health Services, Inc. Mr. Parobek did comprehensive site planning and development project for an assisted living facility. As an engineer he was responsible for utility design, site grading, pavement design, permitting, stormwater management, wetlands delineation, and preparing construction documents.

Bedford Dwellings Phase 2, City of Pittsburgh, an 11-acre residential property owned by the Housing Authority of the City of Pittsburgh (HACP) in partnership with McCormack Baron Salazar and the Urban Redevelopment Authority of Pittsburgh. The three-phase project required demolition of 270 units of public housing, and renovation and construction of approximately 191 residential units of mixed-income rental and for-sale homes. Mr. Parobek was the project manager preliminary engineering studies and infrastructure and site design services throughout Phases II and III of development. Site rehabilitation involved coordination between Pittsburgh housing and development authorities, architects, planners, and engineers.

Amerihost Inn in Weirton, West Virginia for Arlington Hospitality Development, Inc. Mr. Parobek worked on a site development project to construct an inn at Three Springs Industrial and Business Park. As Project Manager he was responsible for permitting review, preliminary design development, preliminary grading studies, site plan design, utilities design, stormwater management report, Erosion & Sedimentation (E&S) Control Plan, National Pollutant Discharge Elimination System (NPDES) permit application, ALTA survey, and coordination meetings.

Sears Store and Auto Center Site at Fort Steuben Mall in Steubenville, Ohio for The Goodman Company. Mr. Parobek worked on this site planning project for a new Sears retail store and automotive center. As an engineer he was responsible for conceptual and final site design, utilities design, permitting, construction documents, and construction consultation.

Sims Metal Recycling Facility in Dinwiddie County, Richmond, Virginia for Sims Metal Company. Site improvement project in 2004 to modify an existing metal recycling facility on a 16-acre site requiring 2,000 l.f. of access roadway with truck scale, planning for 2,000 l.f. of new privately-owned railroad track (spur), and a 22,500 s.f. prefabricated building. Responsible for topographic and utility survey, environmental site assessment, site layout and design, truck scale foundation design, and building foundation design.

Pittsburgh City Sewers for the City of Pittsburgh, Pennsylvania. Sewer rehabilitation/ reconstruction project for 8 sewers (storm, sanitary, combination). As an engineer he was responsible for investigating the condition of several large diameter brick combination sewers and determining the feasibility of different rehabilitation methods including trenchless technologies for the following: Carnegie Mellon Sewer (3,000 l.f. of 54" and 72" combination sewer), Merchant Street Sewer (1,300 l.f. of 54" x 48" inlaid stone arch sewer and 72" brick sewer), Dinwiddie Street Sewer (2,600 l.f. of 36" storm sewer and 1,850 l.f. of 12" water line).

Southern Beltway, Section 54-A in Allegheny County, Pennsylvania for Duquesne Light Company. Mr. Parobek worked on a transmission line relocation project for a 1.3-mile relocation of a single-circuit wood pole 138 kV line and a double-circuit 23 kV line. Project included a 0.2-mile section of underground power cables within Pennsylvania Turnpike Commission highway easement under five proposed bridges for an interchange at the Pittsburgh International Airport, completed in 2003.

Mon/Fayette Expressway (Section 52J) South Park Township and Jefferson Borough, in Washington and Allegheny Counties, Pennsylvania for the Pennsylvania Turnpike Commission. Highway and roadway design project for 1.7 miles of 4-lane limited access expressway, and 1.2 miles of local road (Peters Creek Road extension) with a multi-use trail, completed in 2003.

Martin Luther King Jr. East Busway Extension in Edgewood and Swissvale Boroughs, Allegheny County, Pennsylvania for the Port Authority of Allegheny County. Final busway design project for 2.3 miles of 2-lane busway with four stations, four park-n-ride lots, and a linear park. As an engineer he assisted with stormwater management and drainage design.

Southern Beltway, Section 54-A in Allegheny County, Pennsylvania for Duquesne Light Company. Transmission line relocation project for a 1.3-mile relocation of a single-circuit wood pole 138 kV line and a double-circuit 23 kV line. Project included a 0.2-mile section of underground power cables within Pennsylvania Turnpike Commission highway easement under five proposed bridges for an interchange at the Pittsburgh International Airport, completed in 2003.

Straka's Bar Demolition in Homestead, Pennsylvania. Mr. Parobek provided oversight of environmental investigations for ACM and regulated wastes and developed demolition plans and specifications for removal of a two story masonry building that previously contained a bar and rooming house. Beneficial re-use of the site included construction of a parking lot to facilitate redevelopment of a former bakery into retail/residential uses. The project also included administering the bidding process, oversight of demolition, testing of backfill materials, and preparation of contract documents needed to reflect special requirements of the funding agency.

Braddock Gateways Demolition in Braddock, Pennsylvania. Mr. Parobek provided oversight of environmental investigations for ACM and regulated wastes and develop demolition plans and specifications for removal of abandoned retail, bar, apartment and service station buildings to facilitate future redevelopment efforts. The project included coordination with the Allegheny County Health Department since structural conditions of some structures made it unsafe to perform pre-demolition surveys. The project also included administration of the bidding process, oversight of demolition and testing of backfill materials, and contract documents needed to reflect special requirements of the funding agency.

Former LTV Steel Selective Demolition in Pittsburgh, Pennsylvania. The project consisted of reviewing previously prepared environmental reports on this Act 2 brownfield site and preparation of demolition plans and specifications for demolition of several buildings, electrical towers and former railroad bridge. The project included partial demolition of a historic roundhouse to remove additions to the original structure as well as salvage of various historic artifacts contained in some of the structures. The project also included administration of the bidding process, oversight of demolition, testing of backfill materials, and contract documents needed to reflect special requirements of the funding agency.

South Park Fairgrounds Master Planning, South Park, PA. Mr. Parobek provided technical oversight of an evaluation of existing facilities at the South Park Fairgrounds. The project consisted of evaluation of existing facilities and public participation process to develop a master plan and prioritization of rehabilitation projects. Throughout the former Fairgrounds area.

North Park Water Line Replacement, McCandless, PA. Mr. Parobek managed the design of replacement of approximately 5,200 feet of aging water lines along Ingomar and Old Ingomar roads in Allegheny County's North Park. An alignment study was performed to relocate portions of the alignment out of the PaDOT right of way and also to avoid mature trees and slide prone soils.

Wolf Trails Park, Vienna, Virginia. Mr. Parobek managed design of site improvements for a neighborhood park for the Fairfax County Park Authority including parking, passive recreation, basketball and tennis courts, playground area and trails connecting to the Fairfax County stream valley trail system. Work also included bidding assistance and construction services.

Meadowlark Gardens Arboretum Visitor Center, Vienna, VA. Mr. Parobek prepared design of site improvements for Northern Virginia Regional Park Authority including access road, Parking, grading and trails.

Education and Certifications

Bachelor of Science Degree in Mining Engineering, The Pennsylvania State University at University Park, Pennsylvania.

Certification from ASFE, Fundamentals of Professional Practice Management Course, Magna Cum Laude, 1996.

Maryland Erosion and Sediment Control Certification No. RPC005223, March 30, 2016

Professional Registrations

Pennsylvania, [redacted]

Virginia [redacted]

West Virginia, [redacted]

Publications and Presentations

Permanent Vegetation Establishment on Manufactured Soil at a Former Slag Disposal Pile in Pittsburgh, Pennsylvania, USA: Lessons Learned, *"Soil Horizons"*, November-December, 2012.

Technical/Computer Software Skills

- AutoCAD, Carlson, Civil 3D
- Microsoft Office Products
- Adobe Illustrator Products
- Hydraflow, HydroCAD, TR-55, Penn State Run-off Model
- HEC-RAS, HY-8

ENERCON

TRI-COUNTY ENGINEERING, LLC
An ENERCON Company
Excellence—Every project. Every day.
PROFESSIONAL ENGINEERS & LAND SURVEYORS

Beth P. Ullom, P.G.

Experience Summary

- Over 30 years in the environmental consulting field
- Litigation support for environmental issues, including preparation of exhibits, maps, and expert reports
- Geochemical, geological, geophysical and biological science experience
- Wetland delineation and determination
- Presentation of safety, environmental and geological topic seminars to municipal and commercial customers
- Extensive knowledge of environmental pollution and compliance which is used to assist customers to achieve regulatory compliance
- Significant Phase I and Phase II environmental assessment and site remediation experience
- Successful interface with local, state and federal regulatory agencies

Experience Description

Due Diligence Lead, Enercon Services, Inc., Pittsburgh, Pennsylvania
Environmental Lead, Tri-County Engineering, LLC

- Due diligence lead for Enercon Pittsburgh office. As part of that responsibility, also the lead for the Tri-County Engineering Environmental Services Group. Responsibilities include development of geosciences and environmental work, meeting with customers, preparation of proposals, performing and managing geosciences and environmental work, giving informational presentations, and interfacing with regulatory agencies. Senior level technical review of reports prepared by staff.

- Manage performance of wetland delineations and wetland determinations. Review and preparation of reports and relevant permits pursuant to US Army Corps of Engineers guidelines. Supervise preparation of permits and restoration and monitoring plans. Meet with customers to discuss relevant Clean Water Act requirements for projects.

- Manage performance of Phase I and Phase II Environmental Site Assessments in the Eastern U.S., including specifying work plans for environmental drilling and sampling for Phase II Environmental Site Assessments. Preparation of reports of findings.

- Provide specifications and manage performance of remediation at contaminated sites

- Manage performance of geotechnical drilling

- Site visits to oil and gas drilling sites to determine compliance with Clean Water Act regulations and in support of preparation of SPCC plans.

- Attendance at regular meetings of oil and gas associations and public meetings in a tri-state region. Certified under the Pennsylvania DEP 2011 Bureau of Oil and Gas Management to perform work related to oil and gas production in the state of Pennsylvania.

- Technical review of environmental assessment project reports prepared by others, including reports of Phase I and Phase II environmental site assessments, remediation projects, wetland delineation, geological and geophysical reports, and geotechnical drilling reports.

- Marketing to new and existing customers.

Senior Technical Specialist- Enercon Services, Inc
Murrysville, Pennsylvania

- Senior technical specialist in the Enercon Environmental Services Group. Responsibilities included development of geosciences and environmental work, preparation of proposals, performing and managing geosciences and environmental work, giving informational presentations, and interfacing with regulatory agencies.

- Performance of wetland delineations and wetland determinations. Preparation of reports and relevant permits pursuant to US Army Corps of Engineers guidelines.

- Performance of regulatory due diligence site visits to oil and gas drilling sites to determine compliance with Clean Water Act regulations and in support of preparation of SPCC plans.

- Attendance at regular meetings of oil and gas associations and public meetings in a tri state region. Certified under the Pennsylvania DEP 2011 Bureau of Oil and Gas Management to perform work related to oil and gas production in the state of Pennsylvania.

- Technical review of environmental assessment project reports prepared by others, including reports of Phase I and Phase II environmental site assessments and remediation projects.

- Marketed to new and existing customers.

Manager, Environmental Services - Restore America, Cape Girardeau, MO and Ashland, KY

- Performed geochemical, geological, geophysical, occupational safety and environmental consulting tasks. Used diverse and extensive knowledge of environmental and OSHA compliance issues including worker health and safety, and control of hazardous and regulated materials on the job site to assist multiple industrial, building trade, and commercial customers achieve compliance in multiple states.

- Presented safety, environmental and geological topic seminars to municipal and commercial customers on topics including "Before you build", "Environmental Compliance (Phase I and II environmental site assessments, Phase III-Remediation)", "Geologic Hazards", "New Madrid Seismic Zone Earthquakes", "Mold", "Lead and lead based paint", "Non-invasive Site Characterization Techniques"

- Interfaced with regulatory agencies including Ohio EPA, Ohio DOL, Missouri DNR, Missouri DOL, federal OSHA, MSHA, USEPA, US Army Corps of Engineers

- Marketed to potential customers and maintained customer relations with existing customers.

Senior Environmental Scientist III
Project Manager - Environmental Division - Engineering Department, Bowser-Morner, Dayton, OH

- Senior environmental scientist reporting to V.P. of Engineering; interfaced with other V.P.s, specifically Risk Manager, Safety Officer, and heads of all company departments and district offices

- Managed multi-task assignments consisting of geophysical and geological site characterizations and hydrogeologic site assessments, geotechnical drilling, wetland determination and delineation, and installation of groundwater monitoring wells, underground storage tank closures, Phase I and Phase II environmental site assessments, as well as remediation activities. Sites included construction and demolition debris landfills, solid waste landfills, industrial and manufacturing facilities, retail gasoline stations, food manufacturing facilities, public schools, municipal facilities, dry cleaners, large acreage public and private properties.

- Used extensive knowledge of environmental pollution and compliance to achieve customer regulatory compliance in multiple states, including Ohio, Kentucky, Tennessee, Pennsylvania, New Jersey and Indiana. Interfaced with environmental, natural resources and other regulatory agencies in multiple states, and with representatives of the USEPA and US Army Corps of Engineers.

- Provided key geological expert witness testimony, including expertise in wetland characterization, related to siting of landfills, which resulted in successful outcome for customers. Prepared exhibits, maps, and expert witness reports related to geology, hydrogeology and wetlands issues.

- Prepared proposals in response to requests for projects ranging in size from simple environmental site assessments to remediation of steel mill.

- Prepared technical reports and reviewed reports prepared by others for projects ranging from Phase I ESA's to complex Phase II site assessments as well as remediation projects and geologic and hydrogeologic site assessments, wetland delineations, and NEPA reports.

- Preparation and/or management of preparation of environmental permits and license applications for numerous construction and demolition debris landfills and two industrial residual waste landfills in Ohio.

Project Manager, Vadose Research, Inc., Canton, OH

- Provided oversight of all aspects of project work for this family business from sales effort to client contact to project initiation, management, reporting and completion. Versatility with multiple disciplines ranging from geology and geophysics to chemical analyses, human environmental risk, microbiology and occupational safety. Prepared proposals for residential, commercial, industrial, state and federal customers. Managed technical and administrative staff.

- Used extensive knowledge of various regulations to assist customers gain regulatory compliance in multiple states, including Ohio, Pennsylvania, New York, West Virginia, Kentucky, Indiana, Tennessee, Nevada, and Montana

- Provided expert witness services related to the decommissioning of a large industrial facility where soil and groundwater were impacted by regulated chemicals
- Performed or managed numerous Phase I environmental site assessments according to current version of ASTM E 1527
- Performed or managed Phase II environmental site assessments for sites with soil, surface water and/or groundwater suspected or known to be contaminated with regulated substances; managed asbestos and lead based paint testing through qualified subcontractors and prepared reports where appropriate; managed and reported results for testing for bacteria and mold in commercial and residential facilities
- Designed and performed soil gas surveys, and analysis of soil gas samples. Prepared reports of findings and recommendations.
- Managed field work and prepared reports of findings, under direction of Ohio VAP certified professional, associated with three Covenants Not to Sue in Ohio VAP
- Performed or managed geological site characterizations, geotechnical drilling, wetland determination and delineation, and installation of groundwater monitoring wells, underground storage tank closures, as well as remediation activities. Sites included construction and demolition debris landfills, solid waste landfills, industrial and manufacturing facilities, retail gasoline stations, food manufacturing facilities, public schools, municipal facilities, dry cleaners, large acreage and linear public and private properties.
- Managed and/or performed environmental assessment of oil and gas well fields, individual wellheads, compressor stations, and tank facilities associated with oil and gas wells in New York, Pennsylvania, Ohio, West Virginia, and Virginia for major oil and gas producer during merger for acquisition of existing production. Managed and reported results of environmental testing for contamination of groundwater following drilling of new oil and gas wells.
- Performed geological and geophysical prospect mapping for oil and gas exploration purposes
- Interacted very successfully with state and federal regulatory agencies for a variety of customers and issues, including soil, surface water, groundwater and air pollution issues involving citations, violations, fines, and findings and orders from state and federal EPAs
- Performed permitting for air, water, disposal, etc., including Title V air permits, PTIs, PTOs, SWPPPs, SPCC plans, 404 permits and 401 water quality permits
- Designed and managed acquisition of geophysical data, including seismic reflection and refraction, ground penetrating radar, borehole radar, and gravity and magnetic data as well as processing and reporting results of those surveys for commercial, industrial and oil and gas company clients
- Performed complicated in-depth research and investigation for technical reports, including contract research for commercial and industrial clients on specialized topics such as solvent detection, natural attenuation and gas detection for earthquake prediction
- Provided peer review of environmental due diligence documents prepared by others for commercial and industrial clients and underwriting groups such as insurance companies

Guest Professor, Kent State University, Stark Campus, North Canton, OH
Taught physical and environmental geology and associated laboratories

Adjunct Faculty, Professor, University of Akron, Wayne College, Orrville, OH
Taught physical and environmental geology and associated laboratories. Survey courses in hazardous waste, petroleum contaminated soils, earthquakes.

Consultant, Canton, OH
Independent consultant in geology and geophysics while in graduate school

Geophysical Research Team Member, University of Texas at Dallas, Richardson TX
Performed gravity data and seismic velocity analyses, and seismic survey at Nevada Test Site.

Geophysical Analyst, Placid Oil Company, Dallas, TX
Team member performing seismic data digitizing, interpretation, processing, mapping, velocity analyses, and collation of drilling data- Chuckchi Sea, Beaufort Sea, Gulf of Mexico

Education

M.S., Geology, Kent State University, Kent, OH
Thesis: Crustal Structure Beneath the Cincinnati Arch in South Central Kentucky Using Magnetic, Gravity, and Seismic Reflection Data, 1989
B.S., Geology (Geophysics Option), *cum laude,* University of Texas at Dallas, Richardson, TX
B.A., Biological Sciences, Indiana University, Bloomington, IN

Professional Registration

Professional Geologist, State of Kentucky- registration [redacted]
Professional Geologist, State of Pennsylvania- registration [redacted]
Professional Geologist, State of Virginia- registration [redacted]

Professional Memberships and Associations

University of Maryland University College- Professional Science Master's Program Advisory Board
Ohio Shale Coalition
Ohio Oil and Gas Association

Specialized Training

2015 Safeland Training through PEC
2011 Pennsylvania DEP Bureau of Oil and Gas Management Industry Training Workshop
Missouri University of Science & Technology New Madrid Seismic Zone Conf. 2009
ASTM Due Diligence at Dawn, 2007
Certification for Construction and Demolition Debris Landfills in Ohio, 2007
Hewlett Packard Gas Chromatography Troubleshooting training course
Ohio Oil and Gas Association Annual Technical Seminars 1989-1999, 2011-2012
Association of State Wetland Managers Annual Technical Seminars and Training1990-1994
Wetland Delineation Training- Kent State University 1996
40 hour HAZWOPR
30 Hour Construction Safety for Managers
MSHA Mine Safety Training
Confined Space Training (8 Hour) and Trenching and Shoring Training (8 Hour)

ENERCON

Joseph M. Smierciak, P.E.

Experience Summary

- Over 26 years of engineering, environmental, and construction oversight experience
- Environmental and regulatory permitting experience
- B.S., Civil Engineering
- Professional Engineer – Pennsylvania, Washington, and West Virginia

Experience Description

Mr. Smierciak serves as a Senior Engineer at Enercon Services, Inc. (ENERCON) where he is responsible for storm water management (including preparing erosion and sedimentation control and storm water management plans), civil design, landfill design and analysis, and environmental and regulatory permitting. Mr. Smierciak has extensive experience in landfill system design and construction management including leachate collection system, liner, and cap design and construction quality assurance (CQA). He has participated in the every phase of the design process from conceptual (permitting) to detailed (construction) design. He has provided construction management and CQA for municipal solid waste and coal residue landfills. Mr. Smierciak has prepared detailed design drawings and technical specifications for numerous landfill liners and caps. The liner and cap components have consisted of a low permeability clay layer or flexible membrane liner, geonets or geocomposites, gravel or sand layers, and vegetative layer. Mr. Smierciak has extensive experience in performing CQA and construction management of landfill construction including construction of leachate collection systems and leachate storage tanks, liner systems, and cap systems. Mr. Smierciak has prepared reports to document/certify landfill construction to the governing regulatory agency. In additional to traditional landfill cap systems, Mr. Smierciak has participated in two sludge caps of industrial waste ponds that used high strength geotextiles. One of the projects required the installation of a groundwater collection trench around the approximate 55 acre pond.

Mr. Smierciak served on the construction quality control (CQC) team for the Parks Township Shallow Land Disposal Area (SLDA) Remedial Action project located in Armstrong County, PA. The project is being managed by the U.S. Army Corps of Engineers under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The first year of the project involved preparing the site for the remediation and included the following major construction items: sedimentation traps and basins to manage storm water, 3,600 foot long asphalt paved access road, 60,000 square foot clear span fabric building for processing waste, wastewater treatment plant, and a Final Status Survey (FSS) pad constructed using asphalt. During the first year of the project, Mr. Smierciak documented work activities by maintaining a daily log of construction activities and taking digital photographs of major construction activities. This multi-million dollar project will require excavation of approximately 41,600 cubic yards of radiological and chemically impacted waste (including material that potentially contains highly enriched uranium). During the second year of the project, remediation of the buried radiological waste was conducted and the waste was transported off-site for disposal at a permitted facility. Mr. Smierciak served as the construction quality manager (CQM) for the remediation work before transitioning into the role of Assistant

Project Engineer responsible for the wastewater treatment plant and remediation area. As CQM, Mr. Smierciak prepared Daily Quality Control Reports (DQCRs) to document the daily activities and managed the CQC staff. As Assistant Project Engineer, responsibilities included collecting weekly discharge samples and tracking the volume of treated water for the wastewater treatment plant. Mr. Smierciak was responsible for tracking the waste excavated and transported to the Material Processing Building and managing isolation containers.

Mr. Smierciak participated in an approximate $15 million remediation of a manufactured gas plant located in Buffalo, New York. The project involved excavation and disposal of approximately 170,000 tons of contaminated soil and placement and compaction of approximately 100,000 tons of backfill. During remediation, groundwater and/or surface water that entered the excavations was collected and treated using an on-site treatment system. Various sheet piles walls were constructed as needed. One sheet pile wall was constructed in a former backfilled slip to allow for contaminated soils to be excavated. Another was constructed to protect a utility corridor. Functions included construction oversight of all aspects of the remediation, preparing manifests, and performing waste characterization and confirmation sampling. This project required interaction with client representatives, the remediation contractor, New York State Department of Environmental Conservation (NYSDEC), and New York State Department of Health (NYSDOH). After the remediation was completed, Mr. Smierciak prepared the documentation report for submittal to the regulatory agencies.

Mr. Smierciak provided CQA for a bio-polymer slurry wall that was constructed by Geo-Con for the collection of contaminated groundwater from a landfill at a Ryobi distribution facility located in Anderson, South Carolina. The bio-polymer slurry wall was approximately 200 feet long and 50 feet deep. The slurry wall was excavated using a long-reach excavator. Bio-polymer slurry was prepared and mixed in tanks on site and added to maintain trench stability. After excavation was completed, the slurry was degraded and a granular backfill was added to the trench.

Mr. Smierciak served as the CQA Inspector for a Superfund project involving remediation of mine waste in Baxter Springs, Kansas. The project involved excavation of tailings and other mine waste from a nearly 1,000 acre site. The tailings and mine waste were consolidated and placed under an engineered cap. The project also involved grading and capping of a large chat (metal waste) pile. Due to the earth disturbance, several sedimentation basins and drainage ditches were constructed to manage storm water runoff. Functions included visual inspection of contamination removal, erosion and sedimentation (E&S) inspections, preparation of daily logs, monthly agenda and minute meeting preparation for CQA meeting. Mr. Smierciak performed construction oversight of backfilling, compaction, and compaction testing (density/moisture content testing) of structural fill and clay cap. This project required interaction with the remediation contractor, Kansas Department of Health and Environment, US Army Corps of Engineers, and U.S. Environmental Protection Agency (USEPA).

Mr. Smierciak served as the Project Engineer for a project involving capping of a 55 acre sludge pond on an approximate 1,000 acre site in Plant City, Florida. The project required construction of an approximate 1.5-mile groundwater collection trench around the sludge pond to collect contaminated groundwater. Waste materials from another pond located on site was consolidated under the engineered cap. Prior to serving as the Project Engineer during construction, Mr. Smierciak prepared the technical specifications and Construction Quality Assurance Plan (CQAP) for the project and participated in field preparation activities. Field preparation activities included vane shear testing of the pond sludge and field testing of the geotextile. The engineered cap consisted of a stabilization geotextile (designed to have sufficient tensile strength to support the

engineered cap over the soft underlying sludge), leachate/pore water collection layer, general fill layer, 40-mil geomembrane, sand protection layer, and a topsoil layer. As Project Engineer, Mr. Smierciak provided Construction Quality Assurance (CQA) of the multi-layered cap and coordinated activities of the general contractor and the geomembrane and groundwater collection trench subcontractor. Mr. Smierciak developed (in the field) excavation plans for additional borrow areas and the final grading plan for the cap. Field planning was necessary because the final configuration of the cap was not known prior to construction due to several factors including the volume of contaminated material to be consolidated under the engineered cap and the movement (consolidation) of the soft sludge. Field planning helped to maximize the volume of contaminated material place under the engineered cap. Mr. Smierciak also coordinated with the contractor who was demolishing the plant (concrete rubble was being used to construct stabilized haul roads for the capping). Mr. Smierciak managed the CQA team that provided construction oversight of the 40-mil geomembrane used in the engineered cap. Mr. Smierciak also interacted with the Florida Department of Environment Protection, U.S. Army Corps of Engineers, and USEPA on this project. Mr. Smierciak's knowledge and experience combined with his excellent written and verbal skills and organizational abilities helped make this both technically difficult and challenging project a success. The stabilization geotextile subcontractor won a national award due to the complexity and size of the installation.

Mr. Smierciak was a Project Engineer where he served as the Project Removal Manager for a Superfund project involving removal of glass cullet in Fairmont, West Virginia. Functions included performing waste characterization and delineation sampling, preparing manifests, and environmental monitoring. This project also involved interaction with the remediation contractor, West Virginia Department of Environmental Protection (WVDEP), and USEPA.

Mr. Smierciak has used the Hydrologic Evaluation of Landfill Performance (HELP) computer program for landfill design of municipal solid waste and coal residue landfills. The HELP program is a quasi-two-dimensional hydrological model for conducting water balance analysis of landfills, cover systems, and other solid waste containment facilities. The model accepts weather, soil and design data, and uses solution techniques that account for the effects of surface storage, snowmelt, runoff, infiltration, evapotranspiration, vegetative growth, soil moisture storage, lateral subsurface drainage, leachate recirculation, unsaturated vertical drainage, and leakage through soil, geomembrane or composite liners. Landfill systems including various combinations of vegetation, cover soils, waste cells, lateral drain layers, low permeability barrier soils, and synthetic geomembrane liners may be modeled. The model facilitates rapid estimation of the amounts of runoff, evapotranspiration, drainage, leachate collection and liner leakage that may be expected to result from the operation of a wide variety of landfill designs. The primary purpose of the model is to assist in the comparison of design alternatives.

Mr. Smierciak prepared performance specifications for a project which required the remediation of low-level radiation contamination in Tulsa, Oklahoma. Mr. Smierciak was trained to operate sodium iodide (NaI) detector for performing radiation scans.

Mr. Smierciak participated in the closure of a disposal facility in East Palestine, Ohio. Activities included environmental sampling, oversight of removal activities, and preparation of the closure documentation. He also prepared cost estimates for post-closure activities at this facility.

Mr. Smierciak performed construction oversight for a landfill expansion for a flue gas desulfurization (FGD) scrubber sludge landfill located at a power plant in Shinnston, West Virginia. Mr. Smierciak participated in the preparation of the landfill expansion certification report.

As an Assistant Project Engineer, Mr. Smierciak's responsibilities included design and layout of landfills and associated facilities, quantity and cost estimation, and slope stability. Mr. Smierciak participated in a project that involved the conceptual design of approximately 20 landfills in Mexico.

Mr. Smierciak provided CQA for the installation of landfill liner construction at the Brooke County Landfill located near Weirton, West Virginia. The Brooke County Landfill is a Class A WVDEP permitted solid waste facility. This landfill facility has a double synthetic liner protection system. The typical landfill liner cross section (starting from the bottom) consists of a six-inch thick compacted clay layer, 60-mil HDPE secondary geomembrane/liner, 200-mil geocomposite leak detection zone, geosynthetic clay liner (GCL), 80-mil HDPE primary geomembrane/liner, and 18-inch thick protective cover layer. Mr. Smierciak performed CQA during the installation of the 60-mil HDPE secondary geomembrane/liner and the 80-mil HDPE primary geomembrane/liner. He acted as the professional engineer's representative, so that as each layer was installed the layer could be certified so that the next layer could be installed.

Mr. Smierciak prepared a construction package (construction drawings/plans and specifications) for a landfill cell expansion for a landfill located in Piketon, Ohio. Construction included excavation of over 500,000 cubic yards of material (soil and rock), placement of a four-foot thick clay liner, leachate storage tank construction, sedimentation basin construction, structural fill placement, and deployment of 60-mil high density polyethylene (HDPE) geomembrane and geocomposite.

Mr. Smierciak performed Construction Quality Assurance (CQA) for numerous landfill cell expansions and caps. Liner and cap system components included clay, geosynthetic clay liners (GCLs), 60-mil and 80-mil HDPE geomembranes, geotextiles, geonets, and geocomposites. Responsibilities included preparation of field activity logs, contractor supervision, and preparation of certification reports documenting CQA activities for state agency approval. Mr. Smierciak interacted with Ohio EPA personnel from both the Southeast District Office (SEDO) and the Northeast District Office (NEDO).

Mr. Smierciak provided construction quality assurance for a slurry cutoff wall in New Castle, Delaware that was constructed around a drum disposal area. The slurry wall was approximately 1,700 feet long and 50 feet deep (keyed 3-feet into the Potomac Clay). The slurry wall was constructed using soil-bentonite designed to achieve a permeability of less than 1×10^{-7} centimeters per second.

As an Engineer, Mr. Smierciak's responsibilities included logging of split-spoon samples, preparation of test boring logs, monitoring well and piezometer installation, direction of drilling operations, and coordination of laboratory testing programs.

Mr. Smierciak participated in numerous subsurface investigations and geotechnical analyses (settlement and allowable bearing capacity) for shallow foundations.

Mr. Smierciak participated in the slope stability analysis of an existing ash pond dike. Responsibilities included review and evaluation of laboratory results and performing the slope stability analysis using the computer program STABL under the direction of a senior engineer.

Mr. Smierciak served as the project leader for two inclinometer monitoring projects. Experience included inclinometer reading and data reduction. As project leader, he was responsible for producing monthly reports which summarized the condition of the slope.

Additional experience included construction inspection, quantity and cost estimates, preparation of grading plans, development of geologic cross sections, review of construction activity logs, assistance in the preparation of fly ash disposal site construction plans, and groundwater and surface water sampling.

As an Inspector, Mr. Smierciak participated in a preliminary geotechnical investigation for a continuous caster at a steel manufacturing facility in located in the Pittsburgh area. He served as an inspector during the subsurface investigation. Responsibilities included logging of soil samples and rock cores and preparation of boring logs. Upon completion of the drilling program, he performed allowable bearing capacity and settlement analysis based on soil parameters determined during the subsurface investigation.

Education

B.S. Civil Engineering, University of Pittsburgh, Pittsburgh, PA (April 1990)

Certification

Professional Engineer (Pennsylvania, Washington, and West Virginia)

West Virginia Professional Engineer Registration Numbe[redacted]

Troxler nuclear testing equipment training

OSHA 40 hour health and safety training (HAZWOPER) (8-hour annual HAZWOPER refresher - December 2016)

U.S. Army Corps of Engineers (USACE) Construction Quality Management for Contractors (February 10, 2011)

Computer Skills

Proficient using Microsoft Word and Excel

Affiliations

American Society of Civil Engineers

Tau Beta Pi – National Engineering Honor Society

Chi Epsilon – Civil Engineering Honor Society

Scholarships and Honors

Art Livingood Scholarship from the American Concrete Institute for academic excellence

ENERCON

Charles R. Beatty, Jr.

Experience Summary

- Degreed Civil Engineering Technologist with over 30 years of experience in geotechnical engineering, environmental and radiological investigation, decommissioning and remediation, quality assurance/quality control, and construction management.
- Performed slope stability analysis for industrial, commercial, and landfill sites.
- Executed settlement analysis for landfills, as well as spread footings and piles.
- Performed liquefaction evaluation for a municipal landfill expansion.
- Managed personnel and data on a long-term slope inclinometer and piezometer monitoring project at a fly ash disposal site.
- Completed disposal site leachate percolation estimates using the HELP program.
- Has significant civil field experience including on site management of quality control for the largest earthwork project ever completed in Pennsylvania (Midfield Terminal Project).
- Managed design and construction of an emergency spillway for a large water supply reservoir. This included analysis of an earthen dam.
- Managed quality assurance and/or quality control (QA/QC) in numerous settings including:
  - Complex U-235 waste remediation;
  - Greater Pittsburgh International Airport Construction (earthwork phase);
  - Geotechnical Laboratory; and
  - Thorium-232 dross pond remediation.
- Successfully managed projects for various clients including utility, mining, industrial, and commercial.
- Effectively manages a diverse group of professionals including engineers, designers, biologists, environmental scientists, technicians, and geologists.

Experience Description

Mr. Beatty joined ENERCON's Pittsburgh office in 2013 as a Senior Engineer. Mr. Beatty provides engineering support in various areas including environmental oversight and design, construction oversight and design, radiological and mixed waste management and shipping, geotechnical engineering, and estimating. He also has performed construction management and quality control and assurance on numerous construction/remediation projects.

He is responsible for preparing geotechnical specifications and soil boring layouts for projects originating in ENERCON Pittsburgh. He is also responsible for evaluating laboratory results and preparing geotechnical reports for foundation design parameters.

Mr. Beatty recently served as field manager for a subsurface investigation at the Farley and Indian Point Nuclear Plants. This included review and on-site implementation of Work Packages for utility location and geotechnical drilling subcontractors as well as day-to-day communication with plant management personnel.

Mr. Beatty managed characterization and prepared shipping papers for potentially low-level mixed waste (LLMW) contained in 55-gallon drums and other containers stored at Nuclear Power

Station. This included: initial sampling and assessment of the stored waste; characterization; and RCRA and DOT categorization;

Mr. Beatty managed the final radiological decommissioning and demolition of the Buffalo Materials Research Center (BMRC) at the University of Buffalo. His responsibilities included day-to-day supervision of ENERCON's health physics and safety personnel as well as oversight of the demolition/excavation contractor and cleanup and mitigation activities. He prepared all NRC Forms 540 and 541 for radiological waste shipping. He was also in charge of implementation of all Final Status Survey measurements and sampling. Mr. Beatty was ENERCON's primary interface with the Nuclear Regulatory Commission, as well as University of Buffalo management.

Prior to joining ENERCON, Mr. Beatty excelled as follows:

Senior Project Manager

- Worked as Contractor Quality Control (QC) Systems Manager and Nuclear Material Accountability Officer for a complex Uranium-235 remediation project under the FUSRAP Program. Duties for this position include development and administration of the Special Nuclear Material Control and Accountability (MC&A) Program. Participated in planning and development of work instructions and packages related to the MC&A requirements in accordance with 10 CFR Part 74 requirements. Communicated day-to-day with health physics and waste management personnel regarding SNM determinations. Prepared and submitted NRC/DOE Form 741 Nuclear Material Transaction Reports.

  Responsible for day-to-day quality control to assure that the project team implemented project policies, plans and procedures; daily QC documentation (DQCR) in accordance with the three-phase system; Field work variances; deficiency identification and tracking; meeting planning and documentation; waste volume management; NRC Form 741 completion and tracking; and special nuclear material (SNM) inventory.

Senior Construction Manager/Senior Civil Specialist

- Provided Remediation Design and Construction Management for a multifaceted $70,000,000 Thorium and MGP Tar Decommissioning/Remediation Project in Canton Township, PA (Chevron/Molycorp). Manufacturing operations at this facility produced byproduct slags, some of which contained low level naturally occurring radiological materials, and some of which did not. Slags of both kinds were used as fill materials on portions of the plant and are commingled in some of the manufacturing areas of the plant. In addition, a large area of the site contained buried manufactured gas plant (MGP) tar that needed to be excavated as residual waste and disposed at a nearby licensed facility. Therefore, in these areas, remedial activities addressed both the Decommissioning Plan and Pennsylvania Act 2 requirements. Following completion of remediation activities, areas were backfilled with below criteria soil/slag, and clean backfill and topsoil were imported and placed to restore the pre-excavation grade. As a consequence, the entire former manufacturing area was covered with a minimum thickness of two feet of clean fill/topsoil. This surface layer served two purposes: 1) to restore the site to original grade and 2) to meet Pennsylvania Act 2 criteria.

- Led a design team for a RCRA waste/radiological remediation project (Welsbach) for the Environmental Protection Agency/United States Army Corps of Engineers. This project was being completed under Comprehensive Environmental Response, Compensation and

Liability Act of 1980 (CERCLA/Superfund). EPA added the Welsbach & General Gas Mantle site in New Jersey to the Superfund National Priorities List on June 17, 1996 because radiological contamination was discovered at the site. The site is comprised of two former gas mantle manufacturing sites and numerous residential properties in the cities of Camden and Gloucester City, New Jersey. As part of the process of making gas mantles, the radioactive substance thorium was used to make the mantles glow brighter. Some of the waste materials or slag from the manufacturing process contained the radioactive elements thorium and radium. These elements give off gamma radiation as part of the process of radioactive decay. It is believed that these waste materials were used as fill throughout area of Gloucester City and Camden. However, because of the widespread and varied materials involved, the waste is also screened as potential RCRA "mixed waste".

- Conducted contractor pre-qualification, bid reviews, and negotiations.
- Served as Health and Safety Officer on a large remediation project.
- Familiar with the behavior based safety system utilized by oil companies.
- Completed compliance audits for U.S. Army Corps of Engineers.
- Led and completed "Why-tree" and root-cause analyses.
- Conducted health and safety audits on remediation sites.
- Served as Corporate Radiation Safety Officer (RSO) for Pennsylvania. This included management of storage, monitoring, and use of a licensed Nuclear Moisture-Density Gauge.

Senior Project Manager

- Developed construction specifications and construction estimates for remediation of an industrial site with thorium contamination.
- Conducted contractor pre-qualification, bid reviews, and negotiations.
- Prepared a permit revision for a bleeder shaft site.
- Completed permit revisions for additional underground and subsidence control boundaries.
- Developed a rock fall mitigation design for a dangerous slope adjacent to a rail line owned by a coal mine.
- Prepared stream and wetland restoration plans and PA Chapter 105 Stream Encroachment Permits.

Project Manager

- Completed design calculations, grading plan, and surface water design for a 150,000-cubic-yard low-level radioactive soil containment cell.
- Managed civil aspects of various disposal cell and remediation designs.
- Performed an evaluation of alternative cover designs for a monolith radiological disposal cell.

- Completed civil design aspects of several Decommissioning Plans.
- Developed rock fall mitigation designs.
- Completed leachate percolation estimates using the HELP program.
- Prepared construction specifications for various industrial construction and remediation projects.
- Completed realistic construction estimates for municipal, industrial, and remediation projects.
- Coordinated analysis and modification for filter plant.
- Prepared design, specifications, and bid documents for water line replacement.
- Prepared Drinking Water Consumer Confidence Reports.
- Prepared Act 537 Sewage Plans.
- Developed an Emergency Action Plan for a water supply reservoir. This included management of HEC-RAS analysis.
- Managed design and construction of an emergency spillway for a large water supply reservoir. This included analysis of an earthen dam.
- Communicated with Pennsylvania Department of Environmental Protection on behalf of municipality.

Project Engineer

- Completed numerous subsurface investigation reports presenting recommendations for foundation design and construction, lateral support, site development, grading, and drainage for commercial and industrial sites.
- Performed slope stability analysis for industrial, commercial, and landfill sites.
- Executed settlement analysis for landfills, as well as spread footings and piles.
- Performed liquefaction evaluation for a municipal landfill expansion.
- Managed personnel and data on a long-term slope inclinometer and piezometer monitoring project at a fly ash disposal site.

Geotechnical Department Manager

- Supervised drilling, laboratory testing, and field instrumentation for numerous subsurface investigation projects.

Project Engineer

- Has significant civil field experience including on site management of quality control for the largest earthwork project ever completed in Pennsylvania (Midfield Terminal Project). This included oversight and documentation of physical soil tests such as laboratory moisture-density (Proctor), classification, and in-place compaction (Troxler and sand-cone). Was also responsible for in-situ concrete tests (compression test cylinders, slump, and air entrainment).

Education and Training

B.S., Civil Engineering Technology, 1984, Point Park University, Pittsburgh, PA

Additional Training/Qualifications

- DOD Secret Security Clearance 2012
- Pennsylvania Department of Environmental Protection, Annual Oil & Gas Industry Training, 2012
- Select Topics in Radiation Protection, 2004, Louisiana State University
- MCASES, 2nd Generation (MII) Basic Training, 2009, Project Time & Cost, Inc.
- DOT & NRC Requirements for Shipping and Receiving Radioactive Materials, 2005, Radiation Safety Academy
- Primavera Project Management with P6: Basic Module, 2008, Simplex
- Red Cross First Aid/CPR/AED, 2017
- Occupational Safety and Health Administration (OSHA) 40-hour health and safety training course
- OSHA 8-hour Health and Safety Supervisor Training Course
- OSHA 8-hour Health and Safety Refresher Course
- OSHA 30-hour Construction
- OSHA 10-hour Construction
- Troxler Nuclear Densimeter Training

Professional Certifications, Memberships and Affiliations

- Certified Construction Contract Administrator, 2007, Construction Specifications Institute
- USACE Construction Quality Management for Contractors (CQM), 2011

ENERCON

Shaun W. Kline, Ph.D., P.E.

Experience Summary

- Degreed Civil and Coastal Engineer and Earth Scientist with over 10 years of experience in applied water resource/coastal engineering and coastal geomorphology. Currently serving as the engineering lead in the Pittsburgh office.
- Has served as the technical lead and/or project manager for projects involving coastal flooding, wave effects, water quality, sediment transport, coastal wave barrier and structure design, precipitation flooding, river and floodplain flooding, water quality nutrient loadings/management, sea level rise and climate change, tsunami flooding, seismic fragility, quality assurance audits, data management and numerical modeling.
- Extensive experience in numerical modeling techniques, remote sensing (installation, monitoring, and processing) and field observations.
- Has led multiple safety-related projects, including all quality assurance and quality control aspects.

Experience Description

Mr. Kline is a coastal engineer and earth scientist at ENERCON's office in Pittsburgh, Pennsylvania. Mr. Kline has served as the water resources and engineering lead in that office since December 2014. Mr. Kline has the following project experience while at ENERCON:

- NextEra Energy (NEE), Point Beach Nuclear Power Plant (PBNP), Point Beach, Wisconsin:

  Mr. Kline was project manager for the Flooding Hazard Reevaluation (FHR) and at NEE PBNP. Mr. Kline directed, oversaw, and reviewed calculations relating to tsunami sources, ice effects, lake levels, site-specific precipitation, precipitation effects (runoff, including storm sewer network), site-specific storm parameters, storm surge, seiche, hydrostatic and hydrodynamic loading, wave runup and waterborne projectiles. Mr. Kline was the primary author of the FHR Report (FHRR) submitted to the Nuclear Regulatory Commission (NRC). This project finished on schedule for the committed March 2015 NRC submittal deadline. Mr. Kline served as the technical design lead for FHRR audit question responses. The following models were used in this flooding evaluation: FLO-2D Pro, SWMM5, Delft3D and proprietary MATLAB scripts.

  Mr. Kline designed the wave protection barrier for the license basis criteria and provided the technical guidance on the license basis precipitation evaluation of the roof and yard drain networks. Mr. Kline provided technical oversight for the evaluations of the license basis riprap shore protection and maximum wave forces during the design basis event. Mr. Kline was a subject matter expert for NEE PBNP during a 95002 Inspection in February 2015.

  Mr. Kline worked on the flooding evaluation in support of NEE PBNP's response to the 2013 NRC yellow finding letter regarding flood protection measures. Mr. Kline performed the wave runup calculation and provided technical guidance for the Delft3D storm surge and wave barrier stability analyses. Mr. Kline authored the report for the

flooding and wave runup evaluation. This work supported a regulatory conference in July 2013 which resulted in a reduction from a yellow to a white finding.

- NEE, Turkey Point Nuclear Generating Stations Units 3 & 4 (PTN), Homestead, Florida:

  Mr. Kline was the technical lead for the responses to the Requests for Additional Information (RAIs) related to the FHRR submitted for NEE PTN. The responses involved the local intense precipitation (LIP) evaluation and inputs to the Integrated Assessment (IA). Mr. Kline provided technical guidance, authored the responses, and coordinated submission with PTN.

  Mr. Kline was the office technical lead for the PTN IA. Mr. Kline provided technical guidance, specifically for the LIP evaluation, internal leakage analysis, wave runup, hydrostatic and hydrodynamic loadings, waterborne projectiles, and sedimentation. Mr. Kline was a contributor to the IA report.

  Mr. Kline was the technical lead for the development and calibration of a mixing model for PTN cooling canal system (CCS) to determine the effects of a point source addition on the salinity and temperature profiles throughout the CCS. This project is ongoing.

  Mr. Kline was the technical lead for the development of a conceptual nutrient loading balance model for the CCS based on recently collected data, historical reports and scientific literature. The nutrient balance considered all potential inflows and outflows including natural and industrial (continuous, batch and episodic processes) sources.

  Mr. Kline was also the technical lead for a statistical predictor model to be used to forecast chlorophyll levels, algal biomasses, and basket strainer cleanings using measured water quality analytes. This model showed high skill with a 40- to 60-day outlook, providing the site advanced warning of impending adverse conditions.

- Entergy, Pilgrim Nuclear Power Station (PNPS), Plymouth, Massachusetts:

  Mr. Kline was the project manager and technical design lead for a study of expected surge levels and wave effects between 5- and 500-year return periods and associated effects on the barge berth roadway and adjacent security barrier. Recommendations for shore protection (e.g., armor units) to minimize damage for each event were made. An annual damage risk potential, used to guide the most economical engineering solution (i.e., alternatives analysis) was generated. This project completed on schedule and budget in August 2015.

  Mr. Kline designed an anchor and tether as part of the Diverse and Flexible Coping Strategies (FLEX) equipment deployment at Entergy PNPS.

- NEE, Seabrook Station, Seabrook, New Hampshire:

  Mr. Kline served as the technical lead and provided technical guidance for the precipitation, storm surge, seiche, tsunami, wave runup and wave overtopping evaluations. Mr. Kline was the technical internal reviewer for the FHRR. The FHRR was submitted in September 2015.

Mr. Kline is the project manager and technical lead for the Seabrook FHRR audit. The audit successfully completed in December 2016 with no changes to the flooding impacts at the site.

- NEE, Duane Arnold Energy Center (DAEC), Palo, Iowa:

  Mr. Kline was the technical design lead for the NEE DAEC FHR audit question responses. Questions covered the Local Intense Precipitation (LIP) and Probable Maximum Flood (PMF) events. Mr. Kline oversaw, generated, and reviewed the written responses and was the point of contact between ENERCON and NEE DAEC.

  Mr. Kline performed the combination flooding event calculation as part of the NEE DAEC FHR. This calculation compiled the results from multiple hydrologic models: HEC-RAS, HEC-HMS and FLO-2D Pro.

- NEE, St. Lucie Nuclear Power Plant (PSL), St. Lucie, Florida:

  Mr. Kline worked on the FHR for NEE PSL. Mr. Kline completed the hurricane climatology, probable maximum hurricane parameters, tsunami source, and wave runup calculations. Mr. Kline provided technical guidance and design verification for the calibration and execution of the storm surge model for the probable maximum storm surge, 10% exceedance high tide, sea level rise, and hydrostatic and hydrodynamic loading analyses. The FHRR was submitted to the NRC in March 2015.

  Mr. Kline was the co-technical design lead for the FHR interim action analyses for the LIP and related effects (i.e., internal leakage under external doors during the event). Mr. Kline oversaw and directed work, reviewed calculations and reviewed the final report, which was submitted for regulatory review.

- Exelon Generating Corporation, Peach Bottom Atomic Power Station (PBAPS), Peach Bottom, Pennsylvania:

  Mr. Kline was the project manager for the seismic fragility analysis at PBAPS, including the slope stability and liquefaction evaluation, as part of the larger Seismic Probabilistic Risk Assessment (SPRA). Mr. Kline provided technical oversight and coordinated the geotechnical evaluations. This project is ongoing.

  Mr. Kline was the co-technical design lead for the development of responses for the FHRR audit and oversaw response preparation, review and dialog with the regulatory authorities. All audit questions were closed satisfactorily in March 2016. Mr. Kline co-developed and co-calibrated the HEC-RAS river channel flow model for the FHR at PBAPS. Mr. Kline provided technical oversight for the wind-wave runup evaluation at PBAPS. Mr. Kline provided technical guidance for the Exelon fleet-wide evaluation strategy with respect to storm surge and seiche analyses.

- Exelon Generating Corporation, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert Cliffs, Maryland:

  Mr. Kline authored RAI responses to the CCNPP FHRR storm surge calculation. Mr. Kline technically reviewed pre- and post-stormwater and Environmental Site Design (ESD) calculations for the Electrical Distribution Reliability Improvement Project (EDRIP).

- Exelon Generating Corporation, Three Mile Island Nuclear Generating Station (TMI), Middletown, Pennsylvania:

  Mr. Kline provided technical guidance and supervision for a groundwater flow evaluation during probable maximum flood (PMF) conditions.

- Exelon Generating Corporation, Limerick Generating Station, Limerick, Pennsylvania:

  Mr. Kline was the technical lead for an update to the LIP evaluation.

- Newpark Resources, Inc., Houston, Texas:

  Mr. Kline was the project manager for a geotechnical structural analysis evaluation that studied the benefits of a proprietary mat system to that of a traditional site mat system technique. Stresses and deformations due to loadings form static rigs or dynamic wheel loadings were determined. Animations were prepared for the dynamic loading cases.

- FirstEnergy Nuclear Operating Company (FENOC), Davis-Besse Nuclear Power Station (DBNPS), Oak Harbor, Ohio:

  Mr. Kline provided design verification of the storm surge and seiche analysis at FENOC DBNPS.

- FENOC, Perry Nuclear Power Plant (PNPP), Perry, Ohio:

  Mr. Kline provided technical guidance to the design of a shore/channel protection structure along Lake Erie at FENOC PNPP. Mr. Kline co-prepared the current design basis LIP evaluation.

- Pacific Gas & Electric Company (PG&E), Diablo Canyon Power Plant (DCPP), San Luis Obispo, California:

  Mr. Kline performed an independent technical review of the FHR storm surge evaluation and select portions of the FHRR. Mr. Kline was a technical verifier for the FHRR LIP internal leakage calculation.

- Pacific Gas & Electric Company (PG&E), Humbolt Bay Power Plant (HBPP), Eureka, California:

  Mr. Kline was the project manager for a QA audit of HBPP. Work scope included development of audit plan, performance of audit and submission of final audit report.

Prior to ENERCON, Mr. Kline was a graduate research assistant in the University of Florida's Department of Geological Sciences from August 2009 to June 2013. Mr. Kline performed multiple numerical modeling, remote sensing, and field observation work. Mr. Kline co-coordinated beach/shoreline monitoring at Kennedy Space Center, Cape Canaveral, Florida using remote sensing (i.e., Argus camera, LiDAR surveys, aerial imagery) and field observations (i.e., nearshore wave instruments, kinematic differential GPS surveys). The purpose of this project was to correlate seasonal and event-driven nearshore morphodynamics with wave forcing and provide guidance to NASA regarding coastal evolution at the site. Mr. Kline modeled wave energy dissipation and shoreline response to individual events and seasonal wave climates. Mr. Kline co-coordinated the deployment and three Acoustic Doppler Current Profilers (ADCP) at the site. Mr. Kline additionally developed a quasi-two-dimensional numerical model for sea cliff retreat due to mechanical abrasion and wave effects for the California Energy Commission. He authored technical reports and status updates to NASA and CEC. Multiple presentations and publications arose from this work.

Mr. Kline was a graduate research assistant and fellow in the University of Florida's Department of Coastal & Oceanographic Engineering from January 2007 to January 2009. Mr. Kline coupled storm surge model (SLOSH) with a wave model (SWAN) and evaluated the results on Tampa Bay and Miami basins for the National Institute of Standards and Technology (NIST) and the National Weather Service (NWS). The government agencies received the final coupled model as a deliverable. Mr. Kline modeled hurricane storm surges for a variety of hurricanes in Gulf of Mexico and Caribbean using the numerical models SWAN and ADCIRC. Mr. Kline additionally modeled overland waves for various projects.

Mr. Kline was a student intern in the water resources group at Jones, Edmunds and Associates in Gainesville, Florida from May 2006 to January 2007. Mr. Kline assisted engineers in watershed management plans and flood plain analyses for state (i.e., Florida) and local agencies (GIS/ICPR modeling). Mr. Kline completed portions of permit reviews and water pollution studies and compiled stormwater design guidelines for all Florida water management districts.

Education and Training

Ph.D., Geological Sciences, University of Florida, Gainesville, Florida

Dissertation: *Influence of Wave Energy Dissipation on the Geomorphic Behavior of Rocky and Sandy Coasts*

M.S., Coastal & Oceanographic Engineering, University of Florida, Gainesville, Florida

Thesis: *Introduction of Wave Set-up Effects and Mass Flux to a Numerical Storm Surge Model*

B.S., Civil Engineering, University of Florida, Gainesville, Florida

Professional Certifications, Memberships and Affiliations

- Professional Engineer
  - Pennsylvania [redacted]
  - Florida [redacted]
  - North Carolina [redacted]
- NCEES Model Law Engineer [redacted]

- PEC/SafeLand Certification (PEC100690267)

Honors and Awards

- ENERCON Emerging Leadership Program

  Year-long program for employees identified as high performing, high potential staff by management to develop further management, supervisory and networking skills

- NASA Group Achievement Award

  Awarded to dune vulnerability team studying coastal behavior at Kennedy Space Center

- University of Florida Civil & Coastal Engineering Alumni Fellowship

  $84,000 four-year tuition waiver and stipend

Technical/Computer Software Skills

- Operating systems: Unix/Linux, Windows, Mac
- Programming languages: FORTRAN, Shell, HTML
- Software: Matlab, Delft3D (–FLOW and –WAVE), SWAN, SLOSH, HEC-RAS, HEC-HMS, ArcGIS, FLO-2D Pro, SWMM5, Microsoft Office Suite, Microsoft Visio

Publications and Presentations

- Select peer-reviewed publication:

  Bastidas, L. A., J. O. Knighton, and **S. W. Kline** (2015), Parameter sensitivity and uncertainty analysis for a storm surge and wave model, *Natural Hazards Earth System Science Discussions*, 3, 6491-6534, doi:10.5194/nhessd-3-6491-2015.

  Kline, S. W., P. N. Adams, and P. W. Limber (2014), The unsteady nature of sea cliff retreat due to mechanical abrasion, failure and comminution feedbacks, *Geomorphology*, Volume 219, 53-67.

- Select professional reports:

  ENERCON [prepared by **S.W. Kline**] (2015), *Flooding Hazards Reevaluation Report FPL-076-FHRPR-002 Revision 2 for Point Beach Nuclear Plant Units 1 and 2*, Enclosure to NextEra Energy Point Beach, LLC, Response to NRC 10 CFR 50.54(f) Request for Information Regarding Near-Term Task Force Recommendation 2.1, Flooding – Submittal of Flooding Hazards Reevaluation Report, ML15071A413.

  Adams, P. N., J. M. Jaeger, R. A. MacKenzie, **S. W. Kline**, M.Willis, and K. Sexton (2014), *Monitoring Shoreline And Beach Morphologic Change At Kennedy Space Center, Cape Canaveral, Florida: Final Report, May 2009 – October 2013.*

  Adams, P. N., J. M. Jaeger, R. A. MacKenzie, and **S. W. Kline** (2012), *Monitoring Shoreline And Beach Morphologic Change At Kennedy Space Center, Cape Canaveral, Florida: Annual Report Phase 3* (pp. 1–17).

Adams, P. N., D. L. Inman, N. E. Graham, J. L. Lovering, A. Young, and **S. W. Kline** (2012), *Ocean Wave Climate Change and Associated Implications for Coastal Erosion Along the Southern California Coast*, Prepared for: California Energy Commission (CEC) Public Interest Energy Research (PIER) Program Final Project Report.

Jaeger, J. M., P. N. Adams, R. A. MacKenzie, **S. W. Kline**, B. Maibauer, A. Lesnek, E. Harris-Parks, and J. L. Lovering (2011), *Monitoring Shoreline And Beach Morphologic Change At Kennedy Space Center, Cape Canaveral, Florida: Annual Report Phase 2* (pp. 1–107).

- Select conference presentations:

Bastidas, L. A., J. O. Knighton, **S. W. Kline**, and J. D. Pistininzi (2016), Delft3D sensitivity and uncertainty analysis for hurricane simulations in the North Atlantic, A14A-2522, EOS, Trans., American Geophysical Union, 2016 Ocean Sciences Meeting, New Orleans, LA.

S. W. Kline, P. N. Adams, and N. G. Plant (2013), Does the complex inner-shelf bathymetry control the geomorphic evolution of a two cuspate headland system, at Cape Canaveral, Florida?, EP011, EOS, Trans., American Geophysical Union, 2013 Fall Meeting, San Francisco, CA.

MacKenzie, R. A., J. M. Jaeger, P. N. Adams, **S. W. Kline**, J. L. Lovering, and N. G. Plant (2013), A science-based decision support system for the management of critical infrastructure along NASA Kennedy Space Center Shoreline, Cape Canaveral, Florida, Gelogical Society of America, Southeastern Section, 62nd Annual Meeting, San Juan, Puerto Rico.

S. W. Kline, P. N. Adams, N. G. Plant, R. A. MacKenzie, and J. M. Jaeger (2012), Effect of a Shore-Oblique Ridge on Beach and Bar Morphodynamics at Kennedy Space Center, Cape Canaveral, Florida, EP011, EOS, Trans., American Geophysical Union, 2012 Fall Meeting, San Francisco, CA.

J. L. Lovering, P. N. Adams, and **S. W. Kline** (2012), Morphological Impacts of Sea Level Rise Driven Wetland Loss on Two Florida Inlets, EP011, EOS, Trans., American Geophysical Union, 2012 Fall Meeting, San Francisco, CA.

R. A. MacKenzie, J. M. Jaeger, P. N. Adams, N. G. Plant, R. Schaub, **S. W. Kline**, and J. L. Lovering (2012), Investigating Coastal Geomorphic Behavior near Critical Infrastructure along the NASA Kennedy Space Center Shoreline, Cape Canaveral, Florida, Risk and Response: Sea Level Rise Summit: The Future of the Florida and the Coast, Boca Raton, FL.

S. W. Kline, P. N. Adams, N. G. Plant, R. A. MacKenzie, and J. M. Jaeger (2011), Video Based Observations of Event-driven Behavior of Double Barred Nearshore Bathymetry at Kennedy Space Center, Cape Canaveral, Florida, EP33A-0895, EOS, Trans., American Geophysical Union, 2011 Fall Meeting, San Francisco, CA.

P. N. Adams, J. M. Jaeger, R. A. MacKenzie, **S. W. Kline**, B. J. Maibauer, M .B Gravens, T. P. Pierro, and J. L. Lovering (2011), Investigating the Geomorphic Behavior of the Cape Canaveral Coast Through High-Resolution Beach Monitoring, Sediment Analysis, Oceanographic Observations, and Numerical Modeling, EP51D-07, EOS, Trans., American Geophysical Union, 2011 Fall Meeting, San Francisco, CA.

R. A. MacKenzie, J. M. Jaeger, P. N. Adams, N. G. Plant, R. Schaub, **S. W. Kline**, and J. L. Lovering (2011), Improvements of Visual Based Shoreline Accuracy From Satellite Imagery and Simultaneous Differential GPS Surveys, EP33A-0887, EOS, Trans., American Geophysical Union, 2011 Fall Meeting, San Francisco, CA.

S. W. Kline, P. N. Adams, N. G. Plant, R. A. MacKenzie, and J. M. Jaeger (2011), Seasonal and Event-driven Behavior of a Sandy Beach and Bar System at Kennedy Space Center, Cape Canaveral, Florida, 10th Argus Conference, Oregon State University, Corvallis, OR.

S. W. Kline and P. N. Adams (2010), Numerical Modeling of Sea Cliff Retreat as a Function of Wave Climate, Sediment Availability, Abrasion, and Failure, EOS, Trans., American Geophysical Union, 2010 Ocean Sciences Meeting, Portland, OR.

- Invited presentations:

28th Environmental Virginia Symposium, Protecting Critical Infrastructure from the Effects of Climate Change, Lexington, Virginia (04/05/2017).

HalfMoon Education, Inc., Current Issues in Landscape Architecture, Smarter Flood Resiliency & Planning: Assessing the Real Hazards & Minimizing Risk, Jessup, Maryland (02/07/2017).

FPL Turkey Point – Cooling Canal System Water Quality Improvement Solutions Workshop, Cooling Canal System (CCS) Water Quality, Nutrient Loadings and Critical System Thresholds, Homestead, FL (06/07/2016).

American Geophysical Union, Does the complex inner-shelf bathymetry control the geomorphic evolution of a two cuspate headland system, at Cape Canaveral, Florida?, San Francisco, CA (12/10/2013).

NASA, Kennedy Space Center's Coastal Geology and Shoreline Processes (Results to Date) Presentation, Kennedy Space Center, Cape Canaveral, FL (02/29/2012).

NASA, Dune Vulnerability Team Group Meeting, Kennedy Space Center, Cape Canaveral, FL (01/10/2012).

University of Florida, International Workshop on Progress in Rocky Coast Geomorphology, Gainesville, FL (02/21/2011).

University of Florida, Department of Civil & Coastal Engineering Seminar Series, Gainesville, FL (04/06/2009).

ENERCON

Luis A. Bastidas Ph.D.
Current July 2016

Experience Summary

- Over thirty years of successful experience as consultant engineer and academic researcher in surface and groundwater hydrology and hydraulic engineering.
- Extensive experience in modeling hydrology, hydrometeorology, river morphology, groundwater, stochastic hydrology, statistical learning theory and machine learning applied to water resources, model uncertainty and model calibration.
- Extensive experience in hydrological, water quality, drainage, stormwater, groundwater, and flood control studies, designs, and use of remote sensing for water resources.
- Extensive experience writing technical publications and reports; grant proposals, creating and delivering presentations for a variety of audiences including scientists, engineers, partners, and stake holders.

Skills & Expertise

Rainfall-Runoff Modeling
Groundwater Modeling
Land-Surface Modeling
Water Quality Modeling
Sediment Transport
Stochastic Hydrology
Forecasting &Uncertainty Analysis
Model Calibration
Water Resources
Hydraulic Engineering Design
Flood Forecasting and Control
Stormwater
Remote Sensing

Coastal Engineering
Hydrometeorology
Fuzzy Logic
Artificial Intelligence & Machine Learning
Multi-Criteria Optimization and Sensitivity
Statistical Learning Theory
Machine Learning
HEC-RAS, HEC-HMS, DAMBRK
MODFLOW, ArcGIS, Delft-3D
SAC-SMA, SWWM, TR55, FLO-2D
C, C^{++}, FORTRAN, MATLAB, R
OS: UNIX, LINUX, MacOS, Windows

Publications

- 58 peer-reviewed publications,
- 3 edited books,
- 4 technical reports, and
- 124 technical/scientific conference presentations

Covering topics in hydrology, hydraulics, water resources, water resources management, hydrometeorology, water quality, remote sensing, and artificial intelligence applied to hydrology. Over 1400 citations of the published papers.

Appointments

Senior Engineer, ENERCON
Assoc. Research Professor, Assistant Professor, Utah State University, Dept. Civil & Env. Engineering
Assistant Research Professor, University of Arizona, Dept. Hydrology and Water Resources.
Principal, Associate, Assistant Professor, National Polytechnic University, Quito-Ecuador
Engineer, Mott-MacDonalds, Cambridge, United Kingdom.
Hydraulic Engineer, Ecuadorian Institute of Water Resources

Professional Experience

Consultant Engineer

- Senior Engineer for hydrological modeling for flood studies at several Nuclear Power Plants in the USA including hurricane meteorology, coastal and riverine flooding, hydraulics, tsunami, wave, seiche, groundwater, intense precipitation, internal building flooding, water temperature and water quality modeling.
- World Bank Expert Consultant for the Early Warning Hydrological Forecast System of the National Water Authority of Peru (ANA).
- World Bank Expert Consultant for the development of a hydrological remote sensing information data base for the National Water Authority of Peru.
- In charge of numerical modeling of several rivers and watersheds for flood forecasting, flood control, river engineering, and water supply.
- Lead in hydrologic and sediment transport modeling studies and participated in the development of physical hydraulic models for the design of large hydroelectric projects.
- In charge of estimating the discharges and probable values at 300 locations of the national river network for the National Hydraulic Plan and the National Irrigation Plan of Ecuador.
- Lead Engineer in the hydrologic risk assessment of the Trans-Ecuadorian pipeline.
- Lead Engineer of two irrigation projects from identification, conception to final design.
- Member of the team developing the HYDRO_3D for the Consultant firm Mott-MacDonalds in the UK. Developer of Sediment Transport 3D routines.
- Lead Technical Engineer in design studies for highway and airport drainage (hydrology and hydraulics).
- Lead Hydrologist in the studies and designs for the improvement of the water quality of the Machángara River.
- Lead Hydrologist in the design of sanitary landfills, groundwater contamination.

Research

- Wrote proposals and obtained approximately 1.2 million dollars of funding for research projects from NASA, NOAA, NSF, and State of Utah.
- Principal Investigator in research projects on rainfall-runoff modeling, land surface atmosphere exchange, snow, mountain, and semi-arid hydrology modeling; and applications of remote sensing in hydrology.
- Principal Investigator in the development of multi-criteria algorithms for optimization and sensitivity analysis.
- Principal Investigator in the development and application of statistical learning theory and artificial intelligence methods to hydrological modeling, water resources, rainfall trends, flood forecasting, uncertainty analysis, model complexity.
- Principal Investigator for the coupling of land surface atmosphere transfer models to groundwater models (Noah and MODFLOW).
- Principal Investigator and Lead in a numerical experiment for benchmarking and comparison of 12 land surface models from hydrometeorological modeling centers across the world.
- Former Vice-President of the International Commission for Land-Atmosphere System Studies (ICLASS) and member of the Science Panel of the Global Land Atmosphere System Studies Experiments (GEWEX-GLASS).
- Chair of 2 sessions on Land Surface Modeling and 2 sessions on Model Uncertainty at the American Geophysical Union Meetings annual meetings.

- Member of over 15 graduate student thesis committees of which 10 at doctorate level (Main advisor for 4).
- Taught graduate classes on hydrological modeling, land surface atmosphere modeling, systems methods applied in hydrometeorology, optimization and sensitivity analysis, statistical learning theory in water resources at the Department of Hydrology and Water Resources, University of Arizona, Department of Civil and Environmental Engineering, Utah State University.
- Taught undergraduate classes in Engineering Hydrology, Fluid Mechanics, Statistics, and Computer Languages at Department of Civil and Environmental Engineering, Utah State University, and National Polytechnic University, Quito-Ecuador.

Complementary Experience

- Reviewer of research proposals for the NASA-GEWEC; NASA-LBA; NOAA-OGP; NSF Geosciences-Hydrology, Atmosphere, and Applied Mathematics Sections; USGS Water Resources Program; USAID.
- Research Proposal Panelist for NSF Carbon Program, NASA Water Cycle Program, NASA SERVIR Program.
- Reviewer of research papers for Water Resources Research, Advances in Water Resources, Journal of Geophysical Research, Journal of Hydrology, Journal of Hydrometeorology, Journal of Hydrological Sciences, Hydrological Processes, Journal of Applied Meteorology, Theoretical and Applied Climatology, Journal of the American Water Resources Association, Agricultural and Forest Meteorology, Journal of the Meteorological Society of Japan, Environmental Modeling and Software, Hydrology and Earth System Science, Climate Change, Journal of Hydroinformatics.
- Member of the Working Group on Uncertainty Analysis and Parameter Estimation, Interagency Steering Committee in Multimedia Environmental Models.

Education

- Ph.D., Hydrology, Department of Hydrology and Water Resources, University of Arizona, Tucson, AZ
- M.Sc., Hydraulic Engineering, Department of Civil Engineering, University of Newcastle upon Tyne, United Kingdom
- Graduate studies in Computer Science, Department of Computer Science, Escuela Politécnica Nacional, Quito, Ecuador.
- Civil Engineer, Major in Hydraulics, Department of Civil Engineering, Escuela Politécnica Nacional, Quito, Ecuador.
- Physics, Moscow State University, Moscow, Russia.

Honors and Awards

- Fulbright Scholarship, USIA
- British Council Scholarship
- Ecuadorian Institute of Electrification Scholarship

Affiliations

- American Geophysical Union, Member
- American Meteorological Society, Member
- American Society of Civil Engineers, Member
- European Geophysical Union, Member
- International Association of Hydrological Sciences, Member
- Colegio de Ingenieros Civiles del Ecuador
- Asociación Latino Americana de Hidráulica

TRI-COUNTY ENGINEERING, LLC
An ENERCON Company
Excellence—Every project. Every day
PROFESSIONAL ENGINEERS & LAND SURVEYORS

Jeffrey D. Fry, P.S.

Experience Summary

- Licensed Professional Land Surveyor with experience since 1976, including projects in the coal industry, transportation, residential and commercial land development, the U.S. Army Corps of Engineers, the Marcellus Shale gas industry, and municipal consulting services.
  - Urban and rural boundary survey projects and construction surveying.
  - GNSS surveying.
  - Project management, department management, and client interaction.

Experience Description

Mr. Fry is the Regional Practice Lead for West Virginia at ENERCON's office in New Stanton, PA.

Mr. Fry has the responsibility of managing the survey operations for West Virginia by planning survey project activities, reviewing survey project documents and drawings for quality control, scheduling survey crews, mentoring survey staff, and establishing and enforcing department standards.

Prior to joining Tri County Engineering, Mr. Fry has experience with projects such as flood studies and bridge and stream sections in central and southern West Virginia and eastern Kentucky for the USACE, commercial and residential land development, ALTA/ACSM Land Title Surveys, right of way surveys, construction surveys, municipal water and sewer extension surveys, GPS control surveys, lot surveys, and also design and drafting experience.

Education and Training

Graduate, Wayne High School, Wayne, WV

Additional Training

- Carlson Survey training in Maysville, KY
- Numerous professional development courses

Professional Certification

- Professional Surveyor (P.S.) – WV [redacted]

Technical/Computer Software Skills

- AutoCAD and Carlson Survey
- Microsoft Office products
- Trimble Geomatics Office, NGS OPUS, Corpscon, Leica Infinity, Spectra Precision Office
- Survey grade GPS, conventional survey total stations and data collectors, Leica digital levels

APPENDIX B:

CONSULTANT QUALIFICATION QUESTIONNAIRE FORM

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONSULTANT QUALIFICATION QUESTIONAIRE

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
Leachate Tank Study	June 15, 2017	

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
Enercon Services, Inc.	500 Townpark Lane Kennesaw, Georgia 30144-5870	

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP INDIVIDUAL, CORPORATION, PARTNERSHIP, JOINT-VENTURE	6A. WV REGISTERED DBE (DISAVANTAGED BUSINESS ENTERPRISE)
770-919-1930	1983	Corporation	YES (NO)

7. PRIMARY OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. (name particular type) PERSONNEL EACH OFFICE
1501 Ardmore Boulevard, Suite 200, Pittsburgh, Pennsylvania 15221 / 724-733-8711 / Sandra Dinzeo

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER-OTHER PRINCIPALS
John Richardson (President/CEO) Robert Bryan (COO) Matt Marshall (CFO) Michelle Zerkle (VP – HR) Chris Stammen (VP – Fossil Industrial/Power Delivery) Jim Gannon (Senior VP/CNO) Pete Mast (President – ENERCON Federal Services)	

9. NUMBER OF PERSONNEL BY DISPLINE **(Bold Lettering Indicates Minimum Design Team Members)**
Detailed information On Team to Be Included

3 ADNIMSIRATIVE	0 ECOLOGISTS	0 LANDSCAPE ARCHITECTS	0 STRUCTURAL ENGINEERS
0 ARCHITECTS	0 ECONOMISTS	0 MECHANICAL ENGINEERS	**10 SURVEYORS**
0 BIOLOGIST	0 ELECTRICAL ENGINEERS	0 MINING ENGINEERS	_OTHER
5 CADD OPERATORS	0 ENVIRONMENTALISTS	0 PHOTOGRAMMETRISTS	
1 CHEMICAL ENGINEERS	**0 ESTIMATORS**	0 PLANNERS: URBAN/REGIONAL	_TOTAL PERSONNEL
6 CIVIL ENGINEERS	**1 GEOLOGIST**	0 SANITARY ENGINEERS	
2 CONSTRUCTION INSPECTORS	0 HISTORIANS	**2 SOILS ENGINEERS**	
3 DESIGNERS	**3 HYDROLOGISTS**	0 SPECIFICATION WRITERS	
0 DRAFTSMEN			

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE:
3
***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".

10a. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ↑ YES ↑ NO

11. OUTSIDE KEY CONSULTANTS/ SUB-CONSULTANTS ANTICIPATED TO BE USED.		
NAME AND ADDRESS: Tri-County Engineering, LLC 319 Paintersville Road Hunker, PA 15639	SPECIALTY: Surveying, Civil Engineering	WORKED WITH BEFORE ☑ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO
NAMEAND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ YES ☐ NO

12. A. Is your firm experienced in solid waste landfill leachate storage design?
YES Description and Number of Projects:
ENERCON staff has extensive experience in landfill system design and construction management including leachate collection systems, liners and cap design and construction quality assurance (CQA). Our staff has participated in every phase of the design process from conceptual (permitting) to detailed (construction) design.
NO

B. Is your firm experienced in solid waste landfill leachate capacity assessment?
YES Description and Number of Projects:
ENERCON staff has extensive experience in landfill system design and construction management including leachate collection systems, liners and cap design and construction quality assurance (CQA). Our staff has participated in every phase of the design process from conceptual (permitting) to detailed (construction) design.
NO

C. Is your firm experienced in solid waste landfill closure construction inspection?
YES Description and Number of Projects:
NYSERDA West Valley Demonstration Project (WVDP) RCRA Closure
NYSERDA West Valley Demonstration Project (WVDP) Dry-Cask Interim Storage Facility
NO

D. Is your firm experienced in aerial photography and the development of contour mapping?
YES Description and Number of Projects:
Most of TCE's survey projects require development of contour mapping. We utilize various types of ground based and aerial methodologies to develop 3D terrain models and contour mapping. TCE self performs ground based mapping and utilizes the services of various sub-consultants when aerial photography is required.
NO

E. Is your firm familiar with the requirements of 33CSR1, the ground-water protection act, under-ground and above-ground storage tank rules?
YES Description and Number of Projects:

NO

F. Is your firm experienced in solid waste landfill closure cost estimating?
YES Description and Number of Projects:

NO

13. PERSONAL HISTORY STATMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (describe project)** (Furnish Complete data but keep to essentials)			
NAME& TITLE (Last, first, Middle Int.) Smierciak, Joseph M.	YEARS OR EXPERIENCE		
	YEARS OF (type) EXPERIENCE: 26 (engineering)	YEARS OF (type) EXPERIENCE: 26 (environmental)	YEARS OF (name type) EXPERIENCE: 26 (construction oversight)
Brief Explanation of Responsibilities: Mr. Smierciak has extensive experience in landfill system design and construction management including leachate collection system, liners and cap design and construction quality assurance (CQA). He has participated in every phase of the design process from conceptual (permitting) to detailed (construction) design. He has provided construction management and CQA for municipal solid waste and coal residue landfills. He has prepared detailed design drawings and technical specifications for numerous landfall liners and caps.			
EDUCATION (DEGREE, YEAR, SPECIALIZATION) B.S., Civil Engineering, 1990, Geotechnical Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS: American Society of Civil Engineers	REGISTRATION (Type, Year, State) P.E., West Virginia, [redacted] (Active) P.E., Pennsylvania, [redacted] (Active)		

13a.PERSONAL HISTORY STATMENT 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.)	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type):	YEARS OF EXPERIENCE (name type):	YEARS OF EXPERIENCE (name type):
Brief Explanation of Responsibilities:			
EDUCATION (Degree, Year, Specialization)			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)		

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.) Smierciak, Joseph M.	YEARS OR EXPERIENCE		
	YEARS OF (type) EXPERIENCE: 26 (engineering)	YEARS OF (type) EXPERIENCE: 26 (environmental)	YEARS OF (name type) EXPERIENCE: 26 (construction oversight)
Brief Explanation of Responsibilities: Mr. Smierciak has extensive experience in landfill system design and construction management including leachate collection system, liners and cap design and construction quality assurance (CQA). He has participated in every phase of the design process from conceptual (permitting) to detailed (construction) design. He has provided construction management and CQA for municipal solid waste and coal residue landfills. He has prepared detailed design drawings and technical specifications for numerous landfall liners and caps.			
EDUCATION (DEGREE, YEAR, SPECIALIZATION) B.S., Civil Engineering, 1990, Geotechnical Engineering			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS: American Society of Civil Engineers	REGISTRATION (Type, Year, State) P.E., West Virginia, [redacted] Active) P.E., Pennsylvania, [redacted] (Active)		

13c. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **REPONSIBLE FOR HEAVY EARTH WORK CONSTRUCTION PROJECTS** (Furnish complete data but keep to essentials)			
NAME & TITLE (last, first, middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)
Brief Explanation of Responsibilities			
EDUCATION (Degree, Year, Specialization)			
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)		

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE THIS PROJECT (name project)
Software available: MODFLOW, HELP, SWMM, FLO-2D Pro, HEC-RAS, HEC-HMS, Delft3D,
MATLAB and R.
TCE has a full suite of surveying equipment available locally for use on this project.

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 RESOPNSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
N/A	N/A	N/A	N/A	N/A
TOTAL NUMBER OF PROJECTS: #0		TOTAL ESTIMATED CONSTUCTION COSTS: $0		

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 CONSTURCTION COST:	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
N/A	N/A	N/A	N/A	N/A	N/A

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)
N/A	N/A	N/A	N/A	N/A

18. COMPLETED WORK WITHIN LAST 5 YEARS IN WHICHYOUR 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
NYSERDA WVDP RCRA Closure	NYSERDA	$180,000	2009-2010	Yes	PermaFix, Inc.
Shallow Land Disposal Area Construction Quality Control	USACE	$300,000	2010-2012	Yes (work temporarily stopped)	Cabrera Services, Inc.

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.

See proposal ENGWR-P16-G003 Revision 0 main text.

20. The foregoing is a statement of facts Signature: _____ Title: Engineering Lead Printed Name: Shaun W. Kline	Date: 06/15/2017