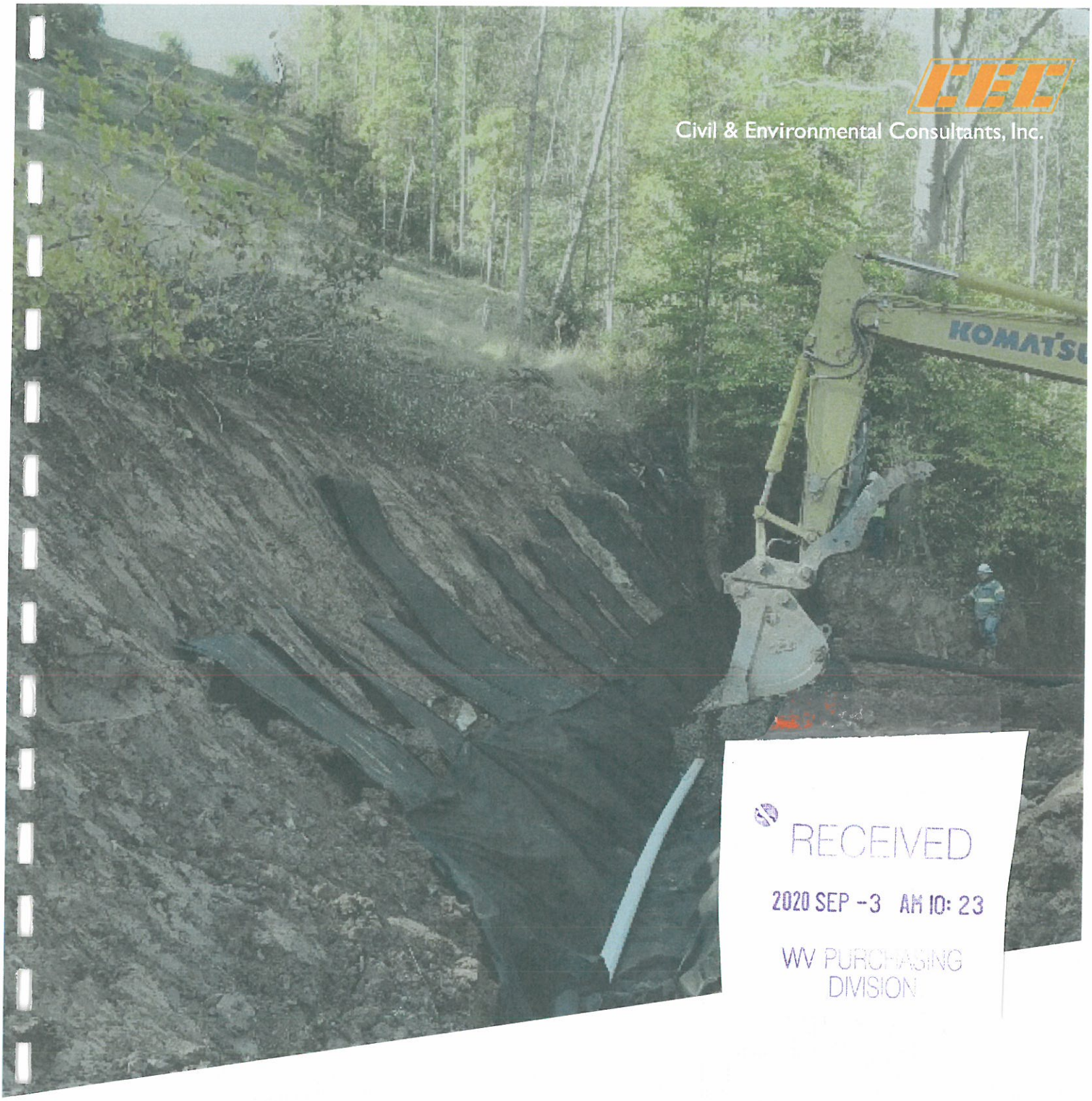

Civil & Environmental Consultants, Inc.

PROFESSIONAL ENGINEERING SERVICES FOR SARDIS (SAAS) LANDSLIDE

CEC | BRIDGEPORT
Project 305-022
September 3, 2020

September 3, 2020

Mr. Guy Nisbet
Department of Administration
Purchasing Division
2019 Washington Street East
Charleston, West Virginia 25305-0130

Dear Mr. Nisbet:

Subject: Proposal for Professional Engineering Services
Solicitation No. CEOI 0313 DEP2100000001
EOI – Sardis (Saas) Landslide Project, Harrison County, WV
CEC Project: 305-022

Civil & Environmental Consultants, Inc. (CEC) is pleased to submit this Expression of Interest (EOI) to West Virginia Department of Environmental Protection (WVDEP) for the Sardis (Saas) Landslide Project in Harrison County, West Virginia. Our preparation of this proposal is based on the Expression of Interest (EOI) dated July 29, 2020 and Addendum 1 received August 14, 2020.

CEC's civil engineering services include surveying/geo-spatial, civil, structural and geotechnical engineering, traffic engineering, ecological services, environmental services, landscape architecture and planning, and other specialty services. We will manage and execute this project through our local Bridgeport, WV office. Our office is built with experts in the region and currently has over 100 engineers, surveyors, landscape architects and scientists with extensive and varied experience, specializing in the aspects of your proposed project. We are confident that the enclosed materials highlight our team and our capabilities.

This document presents an overview of CEC's qualifications and experience. We have included a diversified group of successful past projects to display our depth of experience and ability to be responsive to your needs. CEC is a leading firm in West Virginia with the knowledge, experience, and resources to successfully lead this project from inception to completion. We also maintain a working relationship with local materials testing and drilling firms to provide a broader scope of services and allow our clients to enjoy the benefits of one primary project consultant.

Thank you for providing CEC the opportunity to present our qualifications to the West Virginia Department of Environmental Protection. We look forward to the next steps in the selection process. Please contact Jane Hicks at 304-848-7502, or at jhicks@cecinc.com, if you have any questions or require additional information.

Respectfully submitted,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

L. Jane Hicks
Senior Project Manager

Greg Linder, P.E.
Principal

PROFESSIONAL ENGINEERING & CONSULTING SERVICES FOR SARDIS (SAAS) LANDSLIDE

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APPENDICES

1.0 Firm Overview

Civil & Environmental Consultants, Inc. (CEC) is recognized for providing innovative design solutions and integrated expertise in air quality, civil engineering, ecological sciences, environmental engineering and sciences, planning, survey, transportation engineering, waste management, and water resources. CEC was founded in 1989 and currently has approximately 1,000 employees. From our 26 offices, we provide comprehensive multi-disciplinary services to numerous clients across the country. Specifically, CEC has extensive experience providing landslide mitigation services to various clients from our Bridgeport, West Virginia office.

Our Bridgeport Office has successfully completed in excess of 200 landslide mitigation projects in the last year. This experience is highlighted in the resumes of key personnel (Attachment D) and representative project summaries (Attachment E) presented in this SOQ. CEC does not anticipate the need for subconsultant services for this project except for drilling and laboratory testing on an as needed basis.

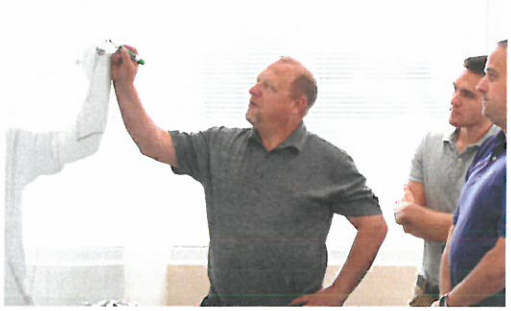
1.1 Commitment to Safety

CEC is committed to conducting its business in a manner that sustains and protects the safety and health of its employees. CEC strives for continuous improvement in the effectiveness of its safety and health programs. We affirm that:

- Working safely is a key corporate value and a condition of employment.
- All workplace hazards can be safeguarded against by using proactive measures and actions.
- Occupational safety and health is part of every employee's total job performance.
- Each CEC employee is responsible, and is held accountable for establishing safe workplace conditions to prevent injuries and occupational illnesses.
- Training employees to work safely is essential and is the responsibility of CEC Managers and Supervisors.
- Creating and maintaining a safe workplace, combined with the prevention of personal injuries and accidents, is good business.
- An effective Safety Program is part of CEC's vision and mission.

CEC's Workplace Safety Program and Manual provides general physical hazard assessments for tasks commonly performed by CEC employees. The program requires a hazard assessment and preparation of a project safety plan for all field operations. The plans are continuously updated through the use of Job Safety Assessments and on-site safety meetings for CEC personnel.

1.2 Attention to Quality



CEC performs our professional services under our corporate Quality Assurance Plan (QAP). This QAP was developed to verify the engineering, design, plans and other deliverables prepared by the project team and the various disciplines are supported by comprehensive studies and sound engineering judgment, in compliance with established policies, guidelines and standards, and contain appropriate design flexibility and cost saving measures. This QAP entails a comprehensive listing of CEC quality policies and standard operating procedures that are available on CEC's internal network. It is consistently reviewed and updated by a multi-office team of experienced professionals to ensure "Best Quality Control Practices" are uniformly applied. In support of this QAP, CEC is committed to the application of established design policies, guidelines, and processes developed and published by review and resource agencies. From a quality

standpoint, technical personnel review the technical quality, accuracy and completeness of all designs, analyses, drawings, estimates, and report text. Peer-level personnel are responsible for the performance of an independent check of all calculations and project deliverables prior to each project milestone submission.

As part of the QAP, reviews will be performed for the appropriate element throughout the design/construction process. These reviews will be completed prior to submitting reports, plans, construction documentation, or other deliverables. These reviews will verify the adequacy of the information presented and compliance with established guidance documents. The QAP also documents procedures for work procedure and equipment use, employee and project safety, project management and records and communications. The goal and objective of the QC/QA Policy is to provide a safe and consistent delivery of quality services to the City of Morgantown.

1.3 Controlling Costs and Maintaining Schedules

CEC has written quality policies that are provided to all employees; these policies define critical work quality and internal control procedures. Employees are instructed and required to record hours worked daily in the Deltek system and each employee-prepared time sheet is reviewed and approved by a system defined supervisor. Project management personnel have online access to project budgets, project cost and hours, billing and accounts receivable information. In addition to online access, each month the Accounting Department distributes to the project manager and principal-in-charge copies of a summary project status report showing budget and actual project information.

Project cost controls are provided by our fully integrated accounting system. The management information system is used to compile and control costs by project and by task, independent of personnel used, or their office location. Costs specific to the project are consolidated by accounting and verified by the CEC project manager for accuracy. Further accounting control is provided for monthly reviews of all projects. The costs incurred are compared to progress on the projects to confirm that the expenditures of budgeted funds correlate to the overall progress on the projects.

1.4 Staff Availability

CEC regularly reviews workload by office and by Practice through a series of regularly scheduled meetings/reviews. Each office holds a weekly meeting to review new and upcoming proposal activity and reports shared opportunities. Additional practice meetings/ reviews are held to review workload, schedule manpower and anticipate schedule changes. CEC regularly monitors our workload and backlog against staff availability and adds personnel, as necessary, to meet client and project requirements and has the ability to augment staff from our 23 office locations and over 1,000 personnel.

1.5 Multi-Disciplined

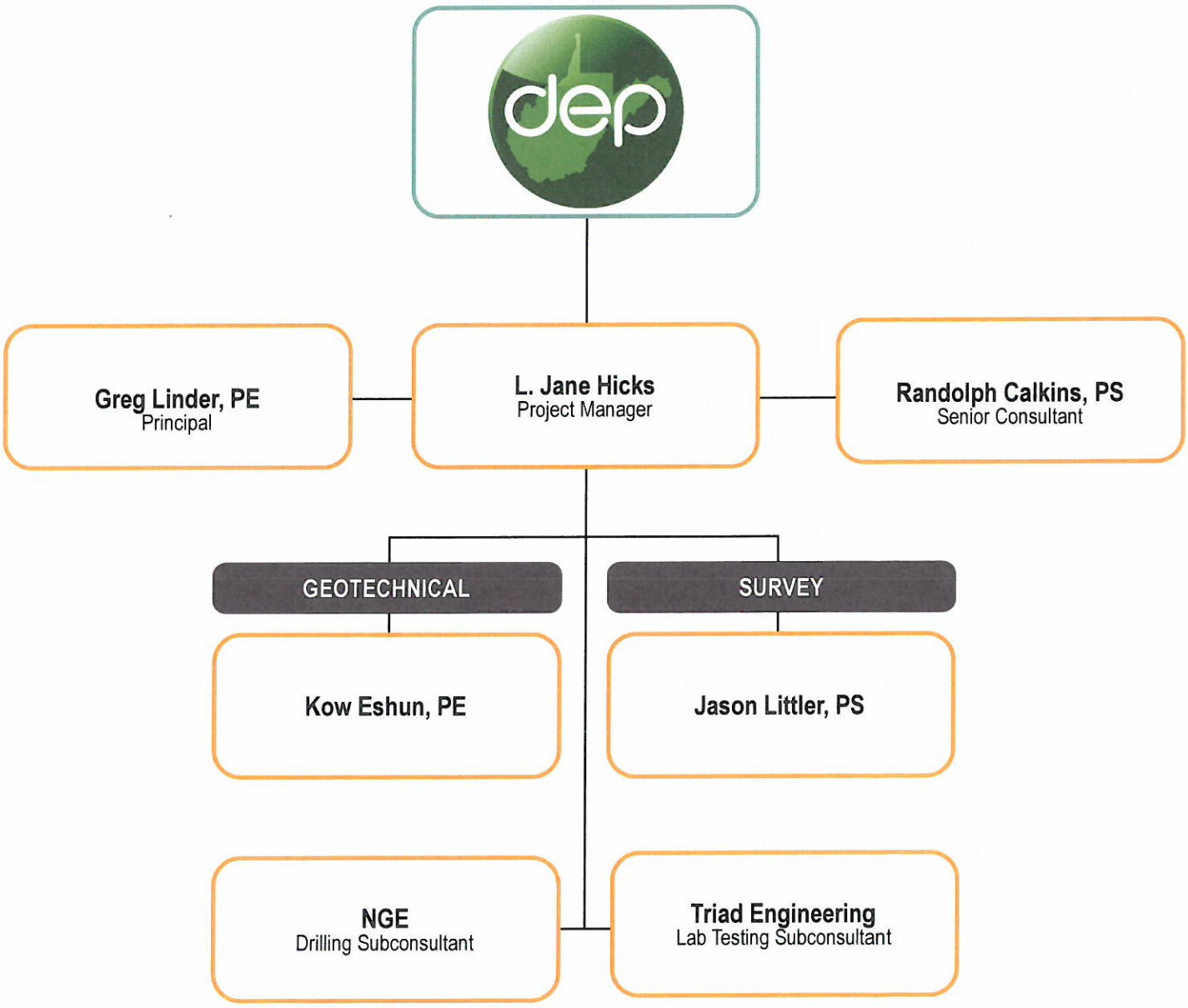
CEC is an expanding company with:

- Civil Engineers
- Geotechnical Engineers
- Transportation Engineers
- Structural Engineers
- Environmental Scientists
- Environmental Engineers
- Chemical Engineers
- Geologists
- Hydrogeologists
- Hydrologists
- Ecologists
- Biologists
- Wetland Scientists
- Threatened & Endangered Species Experts
- Agronomists/Soil Scientists
- Emissions Testing Professionals
- Chemists
- Archaeologists
- Construction Managers & Inspectors
- Environmental Technicians
- Treatment Plant Operators
- Land Surveyors
- Landscape Architects
- GIS Analysts & Programmers

2.0 Key Personnel & Sub-consultants

The following key personnel will assist in the Sardis (Saas) landslide. Each of the individuals included on the project team have the technical knowledge, professional experience and project understanding to support the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands and Reclamation (WVDEP-DLR-AML) with the landslide remediation and mitigation of the dangerous impoundments. Each of the anticipated team members presented in the organizational chart that follows is based out of CEC's Bridgeport, West Virginia office.

In addition to the key personnel noted in the organizational chart below, CEC's Bridgeport, WV office has more than 100 personnel who can provide a wide range of services, including but not limited to Field Services, Environmental Engineering and Ecological Services.



The project team identified to work with the WVDEP has extensive experience performing site assessments and landslide remediation and design services throughout West Virginia. In addition, our team has extensive experience in AML Reclamation and Construction, Ecosystem Restoration, and Clean Water Act Permitting.

More specifically, CEC's services will be performed under the guidance/management of Mr. Greg Linder, P.E. from CEC's Bridgeport, West Virginia office. Mr. Linder will provide He is a West Virginia licensed civil and site engineer with over 20 years of experience in land development. Mr. Linder will oversee all land reclamation aspects of the project. Mr. Linder will oversee all grading and hydraulic aspects of the project.

Mr. Kow Eshun, P.E. will provide geotechnical project oversight and review as well as construction management. Kow has more than ten years of diverse experience in geotechnical engineering, transportation and Construction Quality Assurance. Kow has worked on and managed a wide range of subsurface investigations to provide recommendations for landslide remediation, foundations, slope stability analyses, ground improvement techniques, mine subsidence, and earthwork. Additionally, Kow has managed a wide range of projects in the transportation, health, natural gas, manufacturing, telecom and utilities industries including roadway projects, well pads, compressor stations, building projects, substation construction and expansion. Kow currently serves as our geotechnical practice lead in the Bridgeport office, runs our slip mitigation program, and manages our Construction Quality Assurance field personnel.

Ms. L. Jane Hicks will serve as the project manager coordinating with CEC's internal resources to meet the schedules of the projects. Jane has more than twenty years of diverse experience in geotechnical engineering. Jane has managed a wide range of projects to provide recommendations for landslide remediation, foundations, slope stability analyses, ground improvement techniques, mine subsidence, and earthwork. Jane is currently a senior project manager in the Bridgeport, WV office. Ms. Hicks will oversee all CEC personnel and sub-consultants utilized on the project.

Mr. Jason Littler, P.S. will provide survey project oversight. Jason has over 24 years of experience. His responsibilities have included positions as Roadway Designer and Survey Project Manager. He has performed roadway design, site civil design, drainage computations, construction layout, earthwork volumes, topographical surveys, aerial mapping control surveys, boundary surveys, WVDOH right of way plan development, courthouse research, deed work maps, survey plats, survey descriptions, earthwork volume computations, hydrology computations, WVDOH waste permits, plan preparation, subdivision plats, cell tower surveys, oil and gas landowner exhibits, pipeline as-builts, pipeline alignment sheets, pipeline routing, fine grade computations, and survey field crew management and oversight. Jason is a senior project manager in the Bridgeport, WV office.

Randolph Calkins, PS will act as a Senior Consultant in the development of the refuse reclamation designs. Mr. Calkins has over 40 years in abandoned mine land reclamation in the Appalachian coal fields and has completed over 80 AML projects. Skills include geologic and hydrogeological analysis, extensive grading, and design of hydrologic conveyances on AML.

Timothy Denicola, CFM will conduct water quality and soil chemical sampling. Mr. Denicola has a diverse background including expertise in geochemistry, geology, and hydrology. His environmental experience includes mine water remediation, stream restoration, and regulatory compliance. Specific capabilities include watershed based planning, site assessments and recommendations, design of passive and semi-active treatment systems, design of stream restoration corridors, hydrologic and geotechnical analysis, construction quality assurance, environmental compliance audits, and development of various spill control plans.

Robert Stewart, PhD, EIT, will provide ecosystem restoration design support. In his years of experience, Mr. Stewart has a keen understanding of hydraulics, sediment transport and geomorphology. He will help oversee any eco-related services for this project.

Resumes for the above-listed key personnel, including certifications, registrations and project experience have been included in **Attachment C.**

3.0 Project Overview

CEC has reviewed the WVDEP-DLR-AML's request for qualifications for the landslide currently impacting County Route (CR) 22 in Harrison County, West Virginia. The professional services will consist of providing the WVDEP-DLR-AML with a site reconnaissance, site access plans, a geotechnical subsurface investigation, preparation of a landslide remediation plans and specifications, preparation of design plans and specifications for site water control, preparation of plans and specifications for all limits of disturbance including storm water control and erosion and sediment prevention, and permit acquisition as necessary for the project's successful completion. The following sections of this letter include our understanding of the project requirements.

3.1 Understanding of Project Requirements

The following points comprise CEC's understanding of the project requirements:

1. CEC will conduct an on-site reconnaissance to view the existing slip and the steeply sloping hillside above CR 22 to document existing conditions, site limitations, and understand the natural landscape. The findings of this site visit will be incorporated into the layout and design of the remdiation of the landslide as well as restoration and management practices.

The reconnaissance will include viewing areas at the top of the landslide where abandoned mine entries may be currently discharging acid mine drainage (AMD) onto the slope. In addition, the site reconnaisance will include a review of existing and previous AML mine seals and conveyance systems, as well as scoping out possible site access for equipment. CEC will conduct a desktop review of available landslide mapping and soil maps to identify additional high risk areas near the area prior to the site visit.

2. CEC will plan and supervise a subsurface investigation to determine cause and aid in remedial design for the landslide. The

location of planned test borings will be determined after the site reconnaissance.

3. CEC will provide a survey crew to perform the topographic survey necessary for design and subsequent construction drawings. If requested, planimetric, LIDAR or aerial photography may be utilized.

4. CEC will plan and implement a water chemistry testing program if needed based on the site reconnaisance.

5. CEC will develop a mitigation option for slope stabilization with construction plans and specifications.

6. CEC will develop plans and specifications for control of water at the site. Drainage control could include installation of drainage channels, underdrains, and/or other controls as deemed necessary by the engineer.

7. CEC understands that existing impoundments may be the cause of the drainage problems. Furthermore, an existing AML mine seal and conveyance system may be failing. As such, CEC will review the existing system and decide if a potential repair is possible, or if replacement of the system is warranted.

8. CEC will complete the layout of the reclamation of the disturbed areas and establish the proposed final elevations and grades for the site. CEC will finalize the site plan for the proposed development in accordance with the WVDEP/AML requirements. The plan will show the proposed grading features, access, and dimensions. CEC will prepare the final site grading plan, to include two-foot contours to represent proposed site grading and spot elevations within the proposed disturbance. CEC will attempt to provide a balanced earthwork cut-to-fill ratio, and will prepare an adjusted earthwork volume calculation for cost estimating purposes. However, due to limiting site constraints, an earthwork balance may not be possible and some import of soil or soil haul-off may be necessary. Information gleaned from onsite observation, the Geotechnical Investigation, site survey will be entered into AutoCAD Civil 3D 2018. Surfaces will be used and manipulated to create a balance in cut/fill quantities in disturbed refuse and spoil areas. Grading plans will show 1' contours and will provide an estimated cut/fill quantity for grading activities.

9. CEC will prepare and submit necessary permits which are anticipated to include a West Virginia Department of Environmental Protection Division of Water and Waste Management (WVDEP-DWWM) National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit; and a West Virginia Department of Highways (WVDOH) MM-109 Encroachment Permit.

10. CEC will develop temporary and permanent revegetation plans for disturbed areas. Revegetation plans will utilize either mining reclamation standard revegetation specifications or a more diverse native non-invasive planting scenario including grass seed mixes, woody and herbaceous shrubs, and hardwood trees.

4.0 References

We encourage WVDEP to contact the following client contacts to discuss our previous performance on similar projects. CEC has performed numerous landslide remediation projects with the following clients.

Mr. Michael Davis
WVDOT District 4
I79 & Meadowbrook Road, Clarksburg, WV 26302
Phone: 304-842-1500
Email: Michael.R.Davis@wv.gov

Mr. Jeff McCauley
Antero Resources Corporation
Roadway Design Manager
535 White Oaks Blvd., Bridgeport, WV 26330
Phone: 304-859-4209
Email: jmccauley@anteroresources.com

Mr. Dustin Vincent
MarkWest Energy Partners
320 South View Drive, Bridgeport, WV 26330
Phone: 304-641-4316
Email: dbvincent@marathonpetroleum.com

Appendix A -
AML Consultant Qualification Questionnaire

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "B"

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
Sardis Landslide	3 September 2020	25-1599565

1. FIRM NAME	2. HOME OFFICE BUSINESS ADDRESS	3. FORMER FIRM NAME
Civil & Environmental Consultants, Inc.	333 Baldwin Rd, Pittsburgh PA 15205	N/A

4. HOME OFFICE TELEPHONE	5. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE Disadvantaged Business Enterprise)
412.429.2324	1989	☐ Individual ☒ Corporation ☐ Partnership ☐ Joint-Venture	☐ Yes ☒ No

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE
Bridgeport Office | 600 Marketplace Ave., Suite 200, Bridgeport, WV 26330 | 304.933.3119 | Jane Hicks

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS
Kenneth Miller | PE | CEO Dan Szwed | PE | COO Dennis Miller | PS | Vice President & Office Lead	Kow Eshun | Principal | Geotech | 304-848-7142

9. PERSONNEL BY DISCIPLINE

83	ADMINISTRATIVE	83	ECOLOGISTS	14	LANDSCAPE ARCHITECTS	12	STRUCTURAL ENGINEERS
0	ARCHITECTS		ECONOMISTS	9	MECHANICAL ENGINEERS	144	SURVEYORS
15	BIOLOGIST	5	ELECTRICAL ENGINEERS		MINING ENGINEERS	8	TRAFFIC ENGINEERS
61	CADD OPERATORS	162	ENVIRONMENTALISTS		PHOTOGRAMMETRISTS	191	OTHER
7	CHEMICAL ENGINEERS		ESTIMATORS		PLANNERS: URBAN/REGIONAL		
276	CIVIL ENGINEERS	37	GEOLOGISTS	1	SANITARY ENGINEERS		
18	CONSTRUCTION INSPECTORS		HISTORIANS	3	SOILS ENGINEERS		
	DESIGNERS	1	HYDROLOGISTS		SPECIFICATION WRITER	**1160**	**TOTAL PERSONNEL**

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE:
7 WV Professional Engineers in Bridgeport (40 companywide)

*RPEs other than Civil and Mining must provide supporting documentation that qualifies them to supervise and perform this type of work.

10. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? ☒ Yes ☐ No

11. …TSI…EY …ULT…S/S…ONS…NTS …TIC…ED …E U… At…h "A… Con…ant …ualifi…tion Questionnaire".

NAME AND ADDRESS: Novel Geo-Environmental, LLC 650 MacCorkle Avenue West St. Albans, WV 25177	SPECIALTY: geotechnical investigation services including drilling investigation and technical reporting of findings	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
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE ☐ Yes ☐ No

2. Experience

A. Is your firm's personnel experienced in Abandoned Mine Lands Remediation/Mine Reclamation Engineering?

YES Description and Number of Projects:

1. Island AMD Passive Treatment System (non-BFS) - iron oxidation, acid neutralization, metal precipitation/collection, hydrologic conveyances
2. North Taylor AMD Passive Treatment System (non-BFS) - acid neutralization, mixing basin, aerobic wetlands, hydrologic conveyances, revegetation
3. Virginia DMME AMD Passive Treatment System (non-BFS) - sulfate reducing bioreactor, settling pond, aerobic wetlands

CEC personnel have successfully completed 20 acid mine drainage evaluation and abatement design projects.

NO

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: CEC has routinely completed soil analysis for the Oil & Gas Industry focusing on VOCs, PAHs, Phthalate Esters, Petroleum Compounds, Metals, Anion, and Radionuclides. CEC has routinely completed soil analysis on AML for stream restoration focusing on ABA, Pyritic Sulfur, and Nutrient Content. CEC has completed soil analysis on approximately 50 projects.

NO

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects:

1. Shinns Run Portals (WVDEP) - field surveying, subsurface investigations of impounded mine pools, records review, HEC-RAS hydrologic evaluation, streambed seals, ditchwork, piping, subsurface drains, stream bank protection, roadbed protection, soil testing, preliminary and final designs / construction plans, dewatering operation, mine drainage treatment, opinion of cost, bid schedule, calculation brief, meeting attendance
2. Pageton (Lambert) Portals (WVDEP) - Reclamation design of coal refuse pile with 51,000 cubic yards of excavation, 24 wet mine seals, 13,700 L.F. sediment control, 1,600 L.F. ditchwork, piping, streambank protection, 24 acres revegetation, topographic surveying, construction mapping, soil testing, hydraulic studies and design, preliminary and final design, construction plans and specifications, engineers cost estimate, bid schedule, calculations brief, onsite preliminary design/pre-bid/pre-construction meetings, reporting and invoicing
3. Birds Creek Number 4 (WVDEP) - Reclamation design of coal refuse pile with 35,000 cubic yards of excavation, 8 wet mine seals, 5 bat gate designs, 18 acres revegetation, topographic surveying, construction mapping, soil testing, hydraulic studies and design, preliminary and final design, construction plans and specifications, engineers cost estimate, bid schedule, calculations brief, onsite preliminary design/pre-bid/pre-construction meetings, reporting and invoicing.

CEC personnel have successfully completed numerous hydrology and hydraulics projects associated with bridges, box culverts, piping, ditchwork, and sediment ponds. CEC personnel have completed 60 AML related hydrology and hydraulics projects.

NO

D. Does your firm produce its own aerial photography and Digital Contour Mapping?

YES Description and Number of Projects: CEC routinely collects LIDAR topographic data and aerial photography on minimum 200 projects. LIDAR data is processed into contour mapping with 1.0 ft. resolution.

NO

E. Is your firm experienced in domestic waterline design? (Include any experience your firm has in evaluation of aquifer degradation as a result of mining.)

YES Description and Number of Projects: CEC completes extensive water transfer projects for the oil & gas industry and municipal water supplies on approximately 50 projects.

NO

F. Is your firm experienced in Acid Mine Drainage Evaluation and Abatement Design?

YES Description and Number of Projects: CEC routinely assesses AMD and designs passive and active treatment management practices for treatment of acid mine drainage. CEC has completed approximately 20 AMD remediation projects. CEC employs mining geochemists with nearly 30 AMD remediation projects in prior employment.

NO

13. PERSONNEL STATEMENT PRINCIPAL AND ASSOCIATE RESPONSIBLE FOR PROJECT DESIGN (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Eshun, Kow, PE Bridgeport, WV Office			

Brief Explanation of Responsibilities
Mr. Eshun is a Principal with in CEC's Bridgeport Office and will be responsible for geotechnical aspects as well as monitoring project progress.

EDUCATION (Degree, Year, Specialization)
B.S., Civil Engineering, Kwame Nkrumah University of Science and Technology, 2005
M.S., Geotechnical Engineering, The University of Akron, 2013

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
American Society of Civil Engineers, Project Management Institute, Deep Foundations Institute	Professional Engineer - TX [redacted] KY [redacted] MD [redacted] WV [redacted] PA [redacted] VA [redacted] OH [redacted]

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Calkins, Randolph M., PS Bridgeport, WV Office	40	40	

Brief Explanation of Responsibilities
Mr. Calkins will act as Senior Consultant in the development of the refuse reclamation designs.

EDUCATION (Degree, Year, Specialization)
A.S., Surveying Engineering, The Pennsylvania State University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	Professional Surveyor, West Virginia 627

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Linder, Gregory S., PE Bridgeport, WV Office	8	13	

Brief Explanation of Responsibilities
Mr. Linder will serve as an Engineer on this project. He will oversee all land reclamation aspects of the project.

EDUCATION (Degree, Year, Specialization)
B.S., Civil Engineering, West Virginia University
B.S., Biology, Fairmont State College

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	Professional Engineer, 2003, West Virginia Professional Engineer, 2006, Pennsylvania Professional Engineer, 2006, Kentucky

NAME TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Denicola, Timothy A., CFM Bridgeport, WV Office	5	8	

Brief Explanation of Responsibilities
Mr. Denicola will conduct water quality and soil chemical sampling

EDUCATION (Degree, Year, Specialization)
M.S., 2013, Geology, West Virginia University
B.S., 2006, Chemistry, Clarion University of Pennsylvania

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Member of several northern WV non-profit watershed associations

REGISTRATION (Type, Year, State)
Erosion and Sediment Control Responsible Personnel (Green Card), 2015, Maryland, No. [redacted]

State Highway Administration Erosion and Sediment Control (Yellow Card), 2015, Maryland, No. [redacted]

Association of State Floodplain Managers (ASFPM) Certified Floodplain Manager (CFM), No. [redacted]

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Hicks, Jane Bridgeport, WV Office			

Brief Explanation of Responsibilities
Ms. Hicks will serve as the project manager and oversee all project related activity. She provides the team with over 20 years of experience in geotechnical engineering.

EDUCATION (Degree, Year, Specialization)
B.S., Mining Engineering, West Virginia University, 1981
M.A., Education, West Virginia University, 1989

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, Year, State)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Stewart, Robert Bridgeport, WV Office			

Brief Explanation of Responsibilities
Mr. Stewart will provide ecosystem restoration design support.

EDUCATION (Degree, Year, Specialization)
B B.S., Civil Engineering, Tennessee Technological University, 2009
M.S., Civil Engineering, University of Kentucky, 2009
Ph.D., Civil Engineering, University of Kentucky, 2014

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, Year, State)
Engineer in Training TN 27760

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES	
1.	AutoCAD Civil 3D
2.	ESRI ArcGIS
3.	Topcon, Nikon, and Trimble Robotic Total Stations
4.	Topcon, Trimble RTK-GPS
5.	Leica Terrestrial LIDAR 3D Scanner
6.	Velodyne Mobile LIDAR (ground and aerial based)
7.	DJI small unmanned aircraft system (sUAS)
8.	Topcon, Nikon automatic levels
9.	Trimble GeoExplorer 6000 Series
10.	YSI ProPlus Multi-parameter Probe
11.	Marsh McBirney Flow Meter
12.	Hanna HI 98703 Turbidity Meter
13.	Hanna HI 99121 Direct Soil pH Meter
14.	Submersible and Peristaltic Pumps
15.	Mini RAE 3000 Portable Handheld VOC Monitor
16.	Corel 98 Suite
17.	Microsoft Office Suite
18.	North American Green Erosion Control Blanket Software
19.	KY Pipe Water and Sewer Line Software
20.	Bentley MicroStation with InRoads

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Chiselfinger Ridge Road Upgrade Wetzel County Route 20/1 and 28/1	Antero Resources Corporation	Roadway widening and stormwater system improvement	N/A	90%
River Road Slips Monongalia County, WV	WVDOH District 4	Slip repair and roadway rehabilitation	N/A	80%

TOTAL NUMBER OF PROJECTS:	TOTAL ESTIMATED CONSTRUCTION COSTS:

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PROJECT NAME, TYPE AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
Holbert Road Rockfall, US250, Marion County, WV	Topographic Survey and Mapping	West Virginia Division of Highways, Engineering Division, Capitol Complex, Building 5, 1900 Kanawha Blvd., East, Charleston, WV	2020	Unknown	
WVU Athletic Performance Center, Monongalia County, WV	Site, geotech, survey	Omni Associates 207 Jefferson St. Fairmont, WV 26554	2021-2022		

6. [illegible] WO[illegible]ITH [illegible]AST [illegible]YEA[illegible]N W[illegible] YC[illegible]IRM[illegible]S TI[illegible]ESI[illegible]ED [illegible]NEF[illegible]F R[illegible]D [illegible]

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
TS&T Site Phase II Assessment	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$500,000 - $3,000,000	2015	Yes
Huff Creek Watershed Stream Restoration	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$460,055	2015	Yes
Hodgesville (Wright)Mine Blowout	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$500,000 - $3,000,000	2015	Yes
Jefferson County Leachate Tank Study	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	NA	2015	Yes
Tub Run Highwall and Refuse Phase III	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	TBD	2017	No
TS&T Site Phase II Assessment	WVDEP, Office of Abandoned Mine Lands 601 57th St. SE, Box 20 Charleston, WV 25340	$500,000 - $3,000,000	2015	Yes
Oxbow Mitigation Bank	EIP III Credit Co., LLC 5550 Newbury St, Ste B Baltimore, MD 21209	$5,999,095	2018	
Snake Run Adaptive Management Stream Restoration	West Virginia Conservation Agency 179 Northridge Drive Lewisburg, WV 24901	$100,000		Design 100% Construction 100%
Lower Dempsey Stream Restoration on AML	Ecosystem Investment Partners, LLC 5550 Newbury St, Ste B Baltimore, MD 21209 Canaan Valley Institute, Inc. 494 Riverstone Rd Davis, WV 26260	$5,200,000		Design 100% Construction 100%
Howards Creek Stream Restoration	West Virginia Conservation Agency 179 Northridge Drive Lewisburg, WV 24901	$385,440	2018	

17. [illegible] OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE)

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
Corduroy Inn at Snowshoe	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$21,000	2019		Omni Associates
MCPARC Wave Pool Improvements	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$24,000	2018	Yes	Omni Associates
Elkins Mon General	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$24,000	2018	Yes	Omni Associates
East Side Fire Station	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$22,000	2019		Omni Associates
Bridgeport Rec Center, Site Development	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$600,000	2019		Omni Associates
First Exchange Bank	Omni Associates 207 Jefferson St. Fairmont, WV 26554	$23,000	2019		Omni Associates

18. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Abandoned Mine Lands Program.

Civil & Environmental Consultants, Inc. (CEC) personnel have experience with esoteric aspects of mine land reclamation and mine water remediation. CEC does not employ generic remediation strategies, but assesses and evaluates critical details of water chemistry, reaction dynamics, soil properties, hydrologic properties, regional geology, and client and landowner needs. CEC personnel have decades of experience in the reclamation community, familiarity with modern reclamation techniques, and access to a suite of engineering design/geochemical software. Site grading, volumetric analysis, and hydraulic assessments constitute a bulk of work completed by CEC Bridgeport. CEC presents an interdisciplinary team utilizing a data and client driven approach to mine land reclamation and mine water remediation.

19. The foregoing is a statement of facts.

Signature: _____ Title: Principal

Date: September 3, 2020

Printed Name: Greg Linder, PE

Appendix B -
AML and Related Project Experience Matrix

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personnel *	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS															PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional					
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/ Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/ Structure Removal	Stream Restoration	Geotechnical/Stability	Greg Linder, P.E. Principal	Randy Calkins, P.S. Designer	Jason Littler, P.S. Staff Engineer	4 Survey Crews	5 CADD Operators	
McAlpin Portals and Drainage	C		X	X	X	X			X		X	X		X		X	X	M		P	P	P	
Hodgesville (Wright) Mine Blowout	C		X	X	X	X			X		X	X		X				M		P	P	P	
Arlington (Gain) Highwall*	C		X			X					X							M		P	P	P	
Camden (Hartley) Dangerous Landslide*	C		X			X					X	X					X	M		P	P	P	
Shinns Run Portals*	C			X	X	X			X		X	X		X		X		M		P	P	P	
Special Rec. Multiple Projects****	C		X	X	X	X			X		X	X		X			X	M		P	P	P	
Norton Highwall #1*	P		X	X	X	X					X			X	X			M	P	P	P	P	
Tub Run Highwall and Refuse Phase II*	P		X	X	X	X				X	X			X	X				P		P	P	
Tub Run Highwall and Refuse Phase I*	P		X			X					X				X				P		P	P	
Newburg Waterline Feasibility Study*	P					X						X		X				M				P	
Point Mtn. Waterline Feasibility Study*	P					X						X		X				M				P	
Greenbrier Hollow Refuse*	P		X	X	X	X					X			X	X				P		P	P	
Sauls Run (Carpenter) Landslide*	P		X	X	X	X					X			X	X		X		P	P	P	P	
Pageton (Lambert) Portals*	P		X	X	X	X					X			X	X				P		P	P	
Birds Creek #4*	P		X	X	X	X					X			X	X				P		P	P	
Church Creek/Manown Highwall*	P		X		X	X					X				X	X			P		P	P	
Racine (Bradshaw) Portals*	P			X	X	X					X				X	X			P		P	P	
Hampton #4 Maintenance*	P		X			X					X	X				X	X		P	P	P	P	
Howesville Sites*	P		X	X	X	X				X	X	X			X	X	X	M	P		P	P	
Sandy Run Highwall and Portals*	P		X	X	X	X				X	X	X			X	X	X	M	P		P	P	
Wilsie-Rosedale Waterline Feasibility I.D. # 324*	P					X						X		X			X					P	
Laurel Valley (Daniels) Landslide*	P		X			X					X						X	M	P	P	P	P	
Price Hill Airshaft/Buildings*	P			X	X	X					X	X		X	X		X			P	P	P	
Glady Fork AMD Trmt. Plant.****	P			X		X					X	X	X	X			X	M		P	P	P	
Weaver Portals, Ph. I & II*	P		X	X	X	X			X		X	X	X	X	X	X	X	M	P	P	P	P	
Nixon Run AMD*	P		X	X	X	X					X	X		X	X	X	X			P	P	P	

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personnel *	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS														PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional					
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/ Mitigation/ Replacement	Construction Inspection/ Management	Water Treatment	Equipment/ Structure Removal	Stream Restoration	Geotechnical/Stability	Greg Linder, P.E. Principal	Randy Calkins, P.S. Designer	Jason Littler, P.S. Staff Engineer	4 Survey Crews	5 CADD Operators	
Taylor Waterline Feasibility, I.D. # 309*	P					X						X		X								P	
Poplar Ridge Waterline Feasibility, I.D. # 298*	P					X						X		X								P	
Summit Park Waterline Feasibility I.D. # 288*	P					X						X		X								P	
Fairmont (Hendrickson) Subsidence*	P			X		X			X		X	X					X			P	P	P	
Tunnelton (Dillsworth) Landslide*	P			X		X			X	X	X				X		X	P		P	P	P	
Arlington (Cox) Drainage*	P			X	X	X			X		X		X				X			P	P	P	
Sauls Run Strip and Landslide*	P		X			X					X		X			X	X	P	P	P	P	P	
Hodgesville Waterline Feasibility I.D. # 275*	P					X						X		X								P	
McElwain Waterline Feasibility I.D. # 271*	P					X						X		X								P	
Old Bridgeport Hill Mine Drainage, Ph II*	P		X	X	X	X			X		X	X		X	X	X	X			P	P	P	
Flint Run East Acid Mine Drainage**	P		X			X				X	X	X		X	X	X	X				P	P	
Murray City AMD and Art Project***	P			X	X	X					X	X		X							P	P	
Danehart Acid Mine Drainage**	P		X			X			X		X	X		X			X				P	P	
Nutters Tipple Bond Forfeiture**	P		X			X				X	X				X	X	X				P	P	
Lake Milton Acid Mine Drainage*	P		X			X					X	X		X	X	X	X				P	P	

* List whether project experience is corporate or personnel based or both.

** Use this area to provide specific sections or pages if needed for reference.

*** List Primary Design personnel and their functional capacity for the projects listed.

Attachment "C"

Appendix C -
Key Personnel Qualifications & Resumes

Greg S. Linder
Principal

32 YEARS EXPERIENCE

EDUCATION

B.S., Biology, Fairmont State College, 1993

B.S., Civil Engineering, West Virginia University, 1998

REGISTRATIONS

Professional Engineer
- WV [redacted]
- PA [redacted]

Mr. Linder's project experience has included the design, inspection, evaluation, and rehabilitation of highway and railroad bridges; secondary responsibilities have included all aspects of roadway design, hydrologic and hydraulic analyses, civil/site engineering, and permitting.

Mr. Linder has been involved with the engineering design and/or inspection of numerous bridges, including highway, railway, and pedestrian bridges. He has designed bridge structures for large, governmental clients, as well as smaller governmental units and private sector organizations. Several of these projects have been "high profile" projects, allowing Mr. Linder the experience of working under intense public scrutiny. In addition to bridge design, Mr. Linder has been involved with roadway design, floodplain evaluation projects, streambank protection projects, site development projects, and environmental projects.

PROJECT EXPERIENCE

Transportation

U.S. Route 35, Mason County, WV*
Project Manager responsible for oversight, design, and plan preparation for the 1.85 mile section of four-lane divided highway. The section of highway also includes dual 414.5' bridges over Three Mile Creek and dual 106.75' bridges over Two Mile Creek. In addition, the project includes 0.62 miles of side road relocation, a reinforced concrete box culvert carrying an access road over Twomile Creek, waterline relocation plans, and natural stream design.

Appalachian Corridor H, Davis to Bismark, Tucker and Grant Counties, WV*
Project Manager responsible for oversight, design, and plan preparation for the 1.61 mile section of four-lane divided highway near Davis, WV.

Weatherford Industrial Access Road, Upshur County, WV*
Project Manager responsible for oversight, design, and plan preparation for the 0.56 mile industrial access road in Buckhannon, WV.

King Coal Highway, Mingo County, WV
Staff Engineer responsible for designing the roadway and drainage system for a 3.2-mile section of the 96-mile, four-lane divided highway.

Coalfields Expressway, Pound Connector Section, Wise and Dickenson Counties, VA*
Project Leader responsible for oversight, design, and plan preparation for the 16 mile section of four-lane divided highway near Pound, VA.

Enterprise/I-79 Connector, U.S. Route 19 to I-79, Environmental Assessment, Marion County, WV
Staff Engineer responsible for the coordination of environmental and engineering services associated with the preparation of the NEPA document. Environmental services included data collection, field reconnaissance, and assessment of the environmental features encountered within the project area. The environmental features were delineated using 200:1 scale mapping. Engineering services included the development and evaluation of three alternative alignments that were approximately three miles

long using environmental features mapping and current WVDOH design criteria. The typical section included two 12-foot lanes and two 8-foot shoulders. Plans, profiles, and preliminary construction cost estimates were prepared for each alternative alignment. The environmental assessment will contain discussion of the impacts associated with each alternative and will identify the preferred alternative.

Southern Beltway, Allegheny and Washington Counties, PA
Staff Engineer responsible for performing Short-Eared Owl observations as part of the mitigation for the transportation project

Enterprise/I-79 Connector, U.S. Route 19 to I-79, Biological Assessment, Marion County, WV
Staff Engineer responsible for the field reconnaissance, literature review, and preparation of a biological assessment of the Indiana Bat. The biological assessment evaluated the potential impacts of the proposed two-lane highway on available summer habitat in the project study area. The United States Fish and Wildlife Service is expected to issue a Biological Opinion.

Meldahls Undercut Site, Wood County, WV
Staff Engineer responsible for providing environmental services for track rehabilitation. The existing embankment was to be removed and backfilled with engineered fill. The existing soil was sampled and tested for contaminants before disposal. Responsibilities included reviewing laboratory analyses of soil samples taken within the railroad right-of-way, documenting the findings, and providing recommendations in report format.

C&O Flats, Staunton, VA
Staff Engineer responsible for providing environmental services for propane tank and railroad cross tie removal. Performed a site visit to verify that two propane tanks and a large stack of cross ties were located on CSXT property. Prepared a brief letter report discussing findings and provided recommendations for removal. Coordinated the removal with contractors and provided inspection to verify that the removal was in compliance with CSXT safety requirements.

Nelsonville Bat Survey, Athens County, OH
Staff Engineer performing the field reconnaissance for possible Indiana bat hibernaculums within the alignment of the proposed four-lane expansion of U.S. Route 33.

Structural-Bridge

US Route 35, Mason County, WV*
Project manager responsible for oversight, design, and plan preparation for structures carrying US Route 35 over Threemile Creek and Twomile Creek near Point Pleasant, WV. The Threemile Creek bridge consists 414.5' dual plate girder structures that are both 44.5' wide. The bridge substructure consists of integral abutments and cap and column piers supported on pile foundations. . The Twomile Creek bridge consists 106.75' dual plate girder structures that are both 44.5' wide. The bridge substructure consists of integral abutments.

Mile Branch Truss Bridge, McDowell County, WV
Project manager responsible for oversight, design, and plan preparation for the 180-foot, 22-foot wide steel bridge crossing the Dry Fork River. The bridge substructure consists of integral abutments and T-Type piers supported on caisson foundations. The project also involved 370' of new two-lane roadway design.

Upper Tract Bridge, Pocahontas County, WV
Project manager responsible for oversight, design, and plan preparation for the 346-foot long, 30-foot wide curved steel bridge crossing the South Branch of the Potomac River. The bridge substructure consists of integral abutments and T-Type piers supported on caisson foundations. The project also involved 740' of new two-lane roadway design.

SR4027 over Bentley Creek, Bradford County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consisted of superstructure replacement of the 159-feet, continuous P/S adjacent box beam bridge crossing Bentley Creek. The project also involved 412' of new two-lane roadway design.

Greg S. Linder
Principal

SR4033 over Brady Run, Beaver County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consisted of replacement of the 45-feet, P/S spread box beam bridge crossing Brady Run. The bridge substructure consists of full height abutments supported on driven piles. The project also involved 267' of new two-lane roadway design.

SR388 over Big Run, Lawrence County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consisted of replacement of the 77-feet, P/S spread box beam bridge crossing Big Run. The bridge substructure consists of integral abutments. The project also involved 288' of new two-lane roadway design.

SR1037 over Trump Run, Fayette County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consists of replacement of the 103-feet, P/S bulb-tee beam bridge crossing Trump Run. The bridge substructure consists of integral abutments. The project also involves 310' of new two-lane roadway design.

SR2003 over Jacobs Creek, Westmoreland County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consists of replacement of the 90-feet, P/S spread box beam bridge crossing Jacobs Creek. The bridge substructure consists of integral abutments. The project also involves 356' of new two-lane roadway design.

SR249 over Losey Creek, Tioga County, PA*
Project manager responsible for oversight, design, and plan preparation for the design build project. The project consists of replacement of the 53-feet, P/S spread box beam bridge crossing Losey Creek. The bridge substructure consists of spread footings supported on soil.

Mon/Fayette Expressway, S.R. 0043, Section 52G, Washington County, PA
Staff Engineer responsible for final design for dual, nine-span continuous, steel multi-girder bridges with overall lengths of 2,300 feet and 2,500 feet respectively, having maximum spans of 300 feet. Pier-substructure units are single-shaft, cast-in-place concrete with a maximum height of 230 feet. The structures span Mingo Creek, Froman Creek, S.R. 0088, and the Wheeling & Lake Erie Railroad.

Allegheny County Bridge Inspection Program, Allegheny County, PA
Staff Engineer responsible for conducting National Bridge Inspection Standards (NBIS) inspections and load ratings for approximately 20 bridges comprised of a variety of structural forms and materials, including steel, concrete, and wooden elements. Regional Transit Authority* Inspection Team Leader responsible for the in-depth inspection of three railroad bridges and three culverts. Two of the bridges were twin, rolled-beam structures; and the other bridge was a twin, built-up girder structure. Two of the culverts consisted of 96" corrugated metal pipes and the other culvert was a 371' twin box culvert.

S.R. 0056 over Stony Creek, Cambria County, PA
Staff Engineer responsible for redesign of the superstructure replacement for a 406', four-span steel girder bridge. Responsibilities included design of a horizontally curved steel superstructure using finite element analysis. Tasks included the design of primary and secondary steel members and redesign of the deck. The design consisted of four simple spans to prevent increasing the forces in the existing substructure.

S.R. 0309 over Church Road, Montgomery County, PA
Staff Engineer responsible for final design for the structure rehabilitation. The rehabilitation of the sharply skewed welded steel structure involved the replacement of the deck, primary and secondary superstructure elements, and the bearings.

Star City Bridge (WV Route 7) Over the Monongahela River, Monongalia County, WV*
Assistant Investigator responsible for preparing a confidential report outlining the conditions that led to a visibly out-of-plane distortion in the steel girder system at the completion of erection.

S.R. 0022 over Stony Run, Pennsylvania Department of Transportation, District 12-0, Westmoreland County, PA
Staff Engineer responsible for the preliminary alternative design, Type Size, and Location preparation, and cost estimate preparation for the replacement of S.R. 0022 over Stony Run.

Bridge Design Group H, Allegheny County, PA
Staff Engineer responsible for the replacement of Girty's Run Bridge No. 16 (GI16), Thompson Run Bridge No. 2 (TN02), Thompson Run Bridge No. 3 (TN03), and Thompson Run Bridge No. 4 (TN04). Responsibilities included structural inspection, evaluation, and preparation of the inspection report for each bridge. Type, Size, and Location Reports were also prepared for each bridge.

PA Route 28, Galleria Mall Interchange, Allegheny County, PA*
Staff Engineer responsible for preliminary and final design of a 274' chorded prestressed I-beam bridge as part of the new interchange on S.R. 28 (also known as the Allegheny Valley Expressway). The superstructure consists of 96" deep I-beams. The interchange serves a privately developed regional mall along a rural portion of the highway approximately 1.1 miles northeast of the Harwick Interchange. The project was fast-tracked for the developer with coordination with PENNDOT.

Replacement of Scotia Hollow Bridge No. 1 (XC01) and Licks Run Bridge No. 9 (LC09) and the rehabilitation or replacement of Catfish Run Bridge No. 3 (CTO3), Allegheny County, PA
Project Engineer. The project included structural inspection for each bridge and preparation of the inspection reports. After evaluation, it was determined XC01 and LC09 would need replaced. CT03 would need rehabilitated. Plans and construction sequences for emergency repairs were developed for XC01 and LC09. Subsequent to the structural inspection and emergency repairs, preliminary design was performed for the replacement of XC01 and LC09, and the rehabilitation of CT03. Responsibilities included the preparation of Erosion and Sediment Control Plans, and Hydrologic and Hydraulic Reports for each structure, and preliminary design.

NJ Route 18 Extension, Section 2F, New Brunswick, NJ*
Project Engineer responsible for Quality Assurance/Quality Control for the final design calculations for two pedestrian bridges. The first bridge is the Carpender Road Pedestrian Bridge over NJ Route 18. The bridge is a 156' prefabricated truss structure. Responsibilities included reviewing the substructure and foundation design calculations. The second bridge is the Richmond Street Pedestrian Bridge over NJ Route 18. The bridge is a 200' prefabricated truss structure with 145' elevated approach ramps. The approach ramps consist of prestressed concrete plank beam structures. Responsibilities included reviewing the substructure and foundation design calculations for the main span and reviewing the superstructure and substructure design calculations for the approach spans.

North Shore Connector, Aerial Structure, Allegheny County, PA*
Project Engineer responsible for final design of a 16-span light-rail elevated structure. The structure will connect Pittsburgh's light rail system to the North Shore area of the city, including Heinz Field and PNC Park. The superstructure design consists of finite element analysis of curved steel box girders.

S.R. 836 Extension From NW 107th Avenue to NW 137th Avenue, Miami-Dade County, FL
Project Engineer for the S.R. 836 Extension design/build project, which consists of a new four-lane facility extending westward from the Homestead Extension of the Florida Turnpike (HEFT) to NW 137th Avenue and improvements to the existing S.R. 836 main line and ramps to the east of the S.R. 836/NW 107th Avenue interchange. The project includes the construction of new and reconstructed roadways, ten new bridges, retaining walls, and noise abatement walls. Responsibilities included preliminary design for Bridge No. 2 and Bridge No. 3. Bridge No. 2 is a 724.5' curved steel box girder structure. Bridge No. 3 is a 645' curved steel box girder structure. Tasks included design of the primary and secondary superstructure elements and providing steel quantities to the contractor for the bid package.

Rail Rehabilitation Project, Akron and Canton, OH
Inspection Team Leader responsible for the in-depth inspection of three railroad bridges and three culverts. Two of the bridges were twin, rolled-beam structures; and the other bridge was a twin, built-up girder structure. Two of the culverts consisted of 96" corrugated metal pipes and the other culvert was a 371' twin box culvert.

Stream Restoration and Streambank Protection

Greg S. Linder
Principal

Laurel Lake Sediment Removal Project, Mingo County, WV
Project Manager responsible for oversight, design, and plan preparation for the sediment removal project. The project involves the removal of seven (7) feet of sediment in the upper portion of the lake to restore recreational benefit. The project also includes the design of a 0.25 mile access road along the lake and 0.5 miles of natural stream restoration to Laurel Creek upstream of the lake.

Parchment Valley Streambank Protection, Jackson County, WV
Project Manager responsible for oversight, design, and plan preparation for a streambank protection project near Ripley, WV. The project involved geotechnical investigation and riprap revetment design.

Berger Slope Failure, Brooke County, WV
Project Manager responsible for oversight, design, and plan preparation for a streambank stabilization on Harmon Creek near Weirton. The project involved geotechnical investigation and a gabion wall design. The project was an emergency project since the streambank failure endangered the stability of a local residence along Harmon Creek.

Fisher Landslide Stabilization, Jackson County, WV
Project Manager responsible for oversight, design, and plan preparation for a soldier pile retaining wall to stabilize a streambank failure on Mill Creek. The project was an emergency project since the streambank failure endangered the stability of a furniture store.

Cairo Streambank Protection, Ritchie County, WV
Project Manager responsible for oversight, design, and plan preparation for a streambank protection project in Cairo, WV. The project involved structure stabilization to a commercial business and a riprap revetment design.

Barkers Creek Streambank Protection, Wyoming County, WV
Project Manager responsible for oversight, design, and plan preparation for a streambank protection project in Bud, WV. The project involved structure stabilization to a local residence and a riprap revetment design.

Retail

Texas Roadhouse, Wood County, WV
Project Manager responsible for oversight, design, and plan preparation for the site development of a proposed Texas Roadhouse and other commercial development in Parkersburg, WV. Services include parking layout, drainage design, traffic studies, and curb layout.

CGP Development, Barbour County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this 5-acre commercial development site in Philippi, WV. Proposed businesses are Shop-n-Save and Dollar General. The project also involved a hydrologic and hydraulic evaluation of Anglins Run to determine impact on the base flood elevation due to the proposed construction and a bridge over Anglins Run.

CGP Development, Grant County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Petersburg, WV. Proposed businesses are Shop-n-Save and Dollar General.

CGP Development, Ritchie County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Harrisville, WV. Proposed businesses are Shop-n-Save and Dollar General.

CGP Development, Upshur County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Buckhannon, WV. Proposed businesses are Dollar General.

Greg S. Linder
Principal

CGP Development, Lewis County, WV
, , WV* Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Jane Lew, WV. Proposed businesses are Dollar General.

Power

Greenland Gap Wind Project, Grant County, WV
Project Manager responsible for oversight, design, and plan preparation for the civil engineering design for a 142 turbine wind power project. The project includes 22 miles of access road design, drainage system design, and an erosion and sediment control plan. In addition, the project included the relocation of Grassy Ridge Road (Grant County Route 42/1).

Bluestone River Wind Power Project, Tazewell County, VA
Project Manager responsible for oversight, design, and plan preparation supporting a local transportation study for a proposed 82.5 MW Wind Power Project. The Project consists of 33 2.5 MW wind turbines, approximately 15 miles of access roads, 20 miles of underground interconnection cables, a 3-acre project substation, a 2-mile transmission line to the point of interconnection at the AEP Lonesome Pine substation, as well as a 3-acre operations and maintenance facility, a temporary 3-acre concrete batch plant and 2-3 permanent meteorological towers.

Trans-Allegheny Interstate Line (TRAIL-CO), Northern West Virginia*
Project Manager responsible for oversight of the design and preparation of nearly 140 Driveway Encroachment Permits for access roads onto West Virginia Division of Highways Right of Way to support the construction of the major transmission line. In addition, Mr. Linder was responsible for the oversight, design, and plan preparation of approximately five miles of access roads.

Municipal

Deegan Lake Dam Rehabilitation and Hinkle Lake Dam Breech, Environmental Assessment, Bridgeport, WV
Staff Engineer providing environmental services for the completion of the environmental clearance for the rehabilitation of Deegan Lake Dam and the breeching of Hinkle Lake Dam.

Mining

ICG/Arch Coal Sentinel Mine, Philippi, WV
Project manager responsible for oversight, design, and plan preparation for structure modifications at the Sentinel Mine. The project consisted of: column and beam strengthening of a building to increase hoist capacity from 10 to 15 tons; repairing/strengthening columns on the refuse bin and installing reinforced concrete barriers to guide trucks through the loadout without impacting the support columns; installing new cables on the wash thickener to re-plumb the drive unit.

ICG/Arch Coal Tygart Mine, Grafton, WV
Project manager responsible for oversight, design, and plan preparation for new structures at the Tygart Mine. The project consisted of: design of 400 linear feet of tunnel extension; design of a stacked tubes; and design of a radial stacker pad.

ICG/Arch Coal Wolf Run and Bismark Mines, Sago and Bismark, WV
Project manager responsible for oversight, design, and plan preparation for the structural design of a beltline extension at the Bismark Mine. The project consisted of: structural inspection of the beltline tube at Wolf Run prior to relocation to Bismark; tower and foundation design at the Bismark Mine; floor slab and foundation design for the drive assembly.

Laurel Mountain Wind Farm Operation and Maintenance Building, Elkins, WV
Project manager responsible for oversight, design, and plan preparation for the structural design of a beltline extension at the Bismark Mine. The project consisted of: structural inspection of the beltline tube at Wolf Run prior to relocation to Bismark; tower and foundation design at the Bismark Mine; floor slab and foundation design for the drive assembly.

Glady Fork Alkaline Mine Drainage Treatment Plant, Buckhannon, WV
Project manager responsible for oversight, design, and plan preparation for the reinforced concrete of the following elements at the Glady Fork plant: aeration basin tank, flocculator tanks, control building floor slab, settling basin tanks, sludge thickener tank, and geotube slab.

Greg S. Linder
Principal

Hampton AML Site, Boone County, WV
Structural Engineer responsible for the bridge inspection, rating, and strengthening of an existing bridge located on the road accessing the reclamation site.

Permit D-35-82, Glady Fork Mining Inc., Upshur County, WV
Project Manager responsible for oversight, design, and plan preparation for the design of an acid mine drainage treatment facility. The project involves the civil, structural, process, mechanical, and electrical engineering design of a remotely operated 2,000 gallon per minute treatment facility. The facility includes intake boreholes, flow control, mechanical aeration basins, variable speed flocculators, chemical injection buildings, settling basins, sludge thickeners, and sludge removal equipment. The project also includes design of two access roads with a bridge over the Right Fork of Stonecoal Creek.

Manufacturing/Industrial/Warehouse

Jacksons Mill Livestock Arena, Lewis County, WV
Project Manager responsible for oversight of the project team that prepared the site grading plan and architectural plans for a livestock arena at Jackson's Mill. The project also involved a fire suppression and alarm system and construction management.

Hospitality & Recreation

Holiday Inn Express, Lewis County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Weston, WV. Proposed businesses are Holiday Inn Express.

Microtel, Upshur County, WV
Project Manager responsible for oversight of the project team that designed and produced the site grading plan, paving plan, stormwater management and erosion & sediment control plans for this commercial development site in Buckhannon, WV. Proposed businesses are Microtel.

Floodplain Management

Spencer Hydraulic Study, Roane County, WV
Project Manager responsible for oversight, design, and plan preparation for a floodplain improvement project in Spencer, WV. The project involves performing a hydraulic study to verify the benefit of constructing a bankfull bench for flood storage and developing construction plans and specifications for the bench.

Coalwood Floodplain Improvement, McDowell County, WV
Project Manager responsible for oversight, design, and plan preparation for a floodplain improvement project in Coalwood, WV. The project involves floodplain excavation between the bankfull elevation and the toe of slope to improve storage capacity in the floodplain, thereby reducing property damage resulting from flood events.

Back Creek Floodplain Evaluation, Berkeley County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of Back Creek to determine impacts to the base flood elevation as a result of the proposed stream restoration.

Charles Rhodes Floodplain Investigation, Tucker County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of Shavers Fork to determine impacts to the base flood elevation as a result of the proposed residential construction.

Carol Thomas Floodplain Evaluation, Tucker County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of Shavers Fork to determine impacts to the base flood elevation as a result of the proposed residential construction.

Rachel Floodplain Improvement, Marion County, WV
Project Manager responsible for oversight, design, and plan preparation for a floodplain improvement project in Rachel, WV. The project involves floodplain excavation between the bankfull elevation and the toe of slope to improve storage capacity in the floodplain, thereby reducing property damage resulting from flood events.

Greg S. Linder
Principal

Krout Creek H&H Investigation, Wayne County, WV
Project Manager responsible for oversight for the hydrologic and hydraulic investigation to identify sources of flooding problems in the community of Spring Valley, WV. The study was performed in cooperation with the Army CORPS of Engineers to augment Phase II of their study. In addition, construction documents were developed for the floodplain excavation project.

Parsons First Baptist Church H&H Study, Tucker County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of Shavers Fork to determine impacts to the base flood elevation as a result of the proposed expansion project.

Martin Oil Company H&H Study, Lewis County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of a tributary of Hackers Creek to determine impacts to the base flood elevation as a result of the proposed site development. The project involved the construction of approximately five feet of embankment within the 100-year floodway.

Freemans Creek H&H Study, Lewis County, WV
Project Manager responsible for oversight on the Hydrologic and Hydraulic Investigation of Freemans Creek which is a tributary of the West Fork River to determine impacts to the base flood elevation as a result of the construction of a proposed Livestock Arena at Jackson's Mill. The project involved the construction of approximately four feet of embankment within the 100-year floodway to elevate the structure one foot above the base flood elevation.

North Fork Watershed Management Plan, Pendleton and Grant Counties, WV
Staff Engineer responsible for various tasks associated with the watershed management plan such as the review of water resources, forest management, wetland documentation, sedimentation and erosion control, and flood prevention.

Academic & Institutional

Talcott Elementary School, Talcott, WV
Responsible for oversight of the project team for the design and development of the site (including above- and below ground utilities, pedestrian walkways, access roads, fill slopes, lighting and signage, and landscaping design) and all site-related construction documents (specifications, drawings, NPDES permit) for the new Talcott Elementary School.

Buckhannon-Upshur High School Site Improvement and Drainage Project, Buckhannon, WV
Responsible for oversight of the project team that designed improvements to the existing football facility, including the installation of a multi-purpose synthetic turf at the football field and a stormwater dentention / storage system underneath the football field. The project team repsonsibilties included the design and development of the contract specifications and drawings, the preparation of the NPDES permit, and the coordination of efforts between all parties involved due to the "fast-track" requirements of this project (design to construction to completion in three (3) months).
** Work performed prior to joining CEC*

TRAINING

West Virginia Division of Highways Natural Stream Design Levels I, II, III, IV

Kow O. Eshun, P.E.
Senior Project Manager

15 YEARS EXPERIENCE

EDUCATION

B.S., Civil Engineering, Kwame Nkrumah University of Science and Technology, 2005

M.S., Geotechnical Engineering, The University of Akron, 2013

REGISTRATIONS

Professional Engineer

- TX [redacted]
- KY [redacted]
- MD [redacted]
- WV [redacted]
- PA [redacted]
- VA [redacted]
- OH PE [redacted]

CERTIFICATIONS

Project Management Professional (PMP), Project Management Institute

10-Hour OSHA Construction Safety (Occupational Safety & Health Administration), OSHA

Mr. Eshun has 15 years of diverse experience in Geotechnical engineering, Logistics, Transportation and Construction Quality Assurance. Mr. Eshun has worked on a wide range of subsurface investigations to provide recommendations for shallow foundations, intermediate foundations, deep foundations, retaining structures, slope stability analyses, ground improvement techniques, mine subsidence, and earthwork for both greenfield and brownfield projects. Experience also includes geohazard characterization for pipeline projects, landslide mitigation and landslide remediation.

Additionally, Mr. Eshun has managed a wide range of projects in the transportation, health, natural gas, manufacturing, telecom and utilities industries including roadway projects, well pads, compressor stations, building projects, substation construction and expansion.

PROJECT EXPERIENCE

Transportation/Aviation

Charleston Interstate Roadway Lighting Renovation, WVDOH, Charleston Kanawha, WV*
Overall project manager for the geotechnical exploration and design of foundations for the high mast lighting poles for the I-64 in Charleston. Kow managed a 4-week drilling schedule on a busy interstate road working night shift to minimize the interruption to traffic. Project involved the design of over 25 drilled caissons. Managed and coordinated the structural design of the caissons with our subcontractor (Michael Baker Jr., Inc.)

Mingo County Regional Airport, Chapman Technical Group, Williamson Mingo, WV*
The project involved the construction of airport on a post mine land. Mr. Eshun coordinated and managed the soil improvement aspect of the site for the hangar and fuel farm. The improvement technique for the project was deep dynamic compaction. Managed field work and also the post improvement testing for the site.

Upshur County Regional Airport, Chapman Technical Group, Buckhannon Upshur, WV
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations for earthwork, pavement design for the rehabilitation of the apron and taxiway.

Tabler Station Connector Roadway, WVDOH, Martinsburg Berkeley, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses for the proposed roadway. Prepared both preliminary and final recommendations for earthwork, construction, karst treatment and cut/fill slope stability and construction for the proposed roadway

Kow O. Eshun, P.E.
Senior Project Manager

East Burke Bridge Replacement, WVDOH, Martinsburg Berkeley, WV*
Served as staff engineer for this project which consisted of the replacement of the existing bridge. He managed subsurface exploration, laboratory testing and was involved with the preparation of recommendations for the foundation of the bridge abutments

WVDOH Thomas Buford Pugh Bridge, Orders Construction Company, Prince Fayette, WV*
Project involved the replacement of the existing bridge with a new one. Managed the drilling and laboratory testing services for the preinstallation borings. Information from the borings was used to provide design recommendations for the caissons for the foundations

Meathouse Fork Bridge, Thrasher Engineering, New Milton Doddridge County, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations concerning earthwork and the design and construction of foundations for the proposed bridge

Shipping and Logistics

Maersk Line Vessel Operations, AP Moller Maersk, Cape Town South Africa*
Maersk Line is the global container division and the largest operating unit of the A.P. Moller Maersk Group, a Danish business conglomerate. It is world's second largest container shipping company having customers through 374 offices in 116 countries. It employs approximately 7,000 sea farers and approximately 25,000 land-based people. Maersk Line operates over 600 vessels and has a capacity of 2.6 million TEU. Mr. Eshun was part of the team that migrated Africa vessel operations from the global operation center in London to Cape Town, South Africa. Kow also managed the development of cost cutting measures and documentation of standard operation procedures for a variety of operations.

Real Estate

Taco Bell Site 310603, Huntington Cabell, WV*
Managed and coordinated the subsurface exploration, laboratory testing, geotechnical analyses and environmental screening. Prepared both preliminary and final recommendations for earthwork, ground improvement options and foundation design recommendations for the construction of the new Taco Bell

Reserve at Rosebud, Miller-Valentine Group, Clarksburg Harrison, WV
Managed Construction Quality Assurance (CQA) aspect of the project which consisted of construction of a residential block of flats. Services provided to contractor included testing of concrete, earthwork monitoring and testing, and general construction observations.

Power

AEP Nuttall Substation, American Electric Power, WV*
Project Manager for the geotechnical exploration and providing recommendations for earthwork, seismic consideration and foundations design and construction for the new substation.Evaluated the risks associated with developing the site that was previously deep mined. The project included developing methods to reduce the risks associated with construction over the abandoned deep mine workings and associated cost estimates Exploration also included Electrical Earth Resistivity (EER) testing for the grid design.

AEP Mollys Creek Substation, American Electric Power, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations for earthwork, foundation design (both shallow and deep foundations) and slope stability for the proposed new substation. Evaluated the risks associated with developing the site that was previously deep mined. The project included developing methods to reduce the risks associated with construction over the abandoned deep mine workings and associated cost estimates.

AEP Bradley Substation, American Electric Power, Bradley Rayleigh, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses for the proposed expansion of the existing substation. Prepared both preliminary and final recommendations for earthwork, foundation design (both shallow and deep foundations)

Kow O. Eshun, P.E.
Senior Project Manager

AEP Amos-Chemical 138 kV Rebuild, American Electric Power, WV*
Managed the geotechnical site exploration for the construction of transmission lines linking two stations. The project consists of using deep foundation (drilled caissons) to support the proposed towers

AEP Union Carbide Station 8, American Electric Power, Institute Kanawha, WV*
Managed the expansion of an existing electric substation at the plant. Managed and coordinated the Electrical Earth Resistivity testing for the ground grid design of the proposed expansion

AEP Proposed Backup Generator Foundation, American Electric Power, Radford Pulaski, VA*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared recommendations for earthwork, foundation design (shallow foundation) for a generator pad

Beech Ridge Battery Storage, Invenergy, LLC, Rupert Greenbrier County, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Site was filled with mine spoils and deep dynamic compaction option was recommended to improve soil. Managed and supervised the DDC and post testing work to permit the use of shallow foundations to support the proposed structure.

AEP Elk Creek Tap 46 kV, American Electric Power, Verner Logan, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses for the proposed expansion of the substation. Provided geotechnical recommendations for design and construction of deep foundations to support proposed structures

AEP Amos-Turner 138 kV Line Project, American Electric Power, Institute Kanawha, WV*
Managed the geotechnical site exploration and laboratory testing for the construction of new transmission lines . The project consists of using deep foundation (drilled caissons) to support the proposed towers

AEP Turner -Chemical 138 kV Line Project, American Electric Power, Institute Kanawha, WV*
Managed the geotechnical site exploration and laboratory testing for the construction of new transmission lines . Provided design and construction recommendations for deep foundations for support of the proposed towers

AEP Jackson Ferry Wythe 138 kV Line Project, American Electric Power, Wytheville Wythe, VA
Kow was the staff engineer responsible for the management of the field exploration and testing for the transmission line project. He was also involved with the preparation of the geotechnical report detailing recommendations for treating of karst conditions, design and construction of deep foundations for the proposed transmission towers.

Oil & Gas

CNX Morris Tank Pad, CNX Gas Company, WV*
Served as staff engineer on this project which involves the management of the field exploration and testing services for a proposed water tank and access road. Project consisted of drilling and sampling 11 borings. Kow used the information from the exploration to develop geotechnical recommendations for site preparation, embankment construction, roadway construction, slope stability and foundations design

CNX Frye Tank Pad, CNX Gas Company, WV*
Served as staff engineer on this project which involves the management of the field exploration and testing services for a proposed water tank and access roads. Project consisted of drilling and sampling 29 borings. Information from the exploration was used to develop geotechnical recommendations for site preparation, embankment construction, roadway construction, slope stability and foundations

CNX OXFD 14 Well and Tank Pad, Doddridge County, WV
Served as staff engineer on this project which involves the management of the field exploration and testing services for a proposed water tank and access roads. Project consisted of drilling and sampling 24 borings. Information from the exploration was utilized to develop geotechnical recommendations for site preparation, embankment construction, roadway construction, slope stability and foundations

Kow O. Eshun, P.E.
Senior Project Manager

CNX Miller AST Pad, CNX Gas Company, WV*
Served as staff engineer on this project which involves the management of the field exploration and testing services for a proposed water tank and access roads. Information from the exploration was utilized to develop geotechnical recommendations for site preparation, embankment construction, roadway construction, slope stability and foundations for the AST

CENT 22 AST, WV
Managed the project the field exploration and testing services for a proposed water tank and access roads. Information from the exploration was utilized to develop geotechnical recommendations for site preparation, earthwork and the design and construction of foundations and slabs for the AST

Goodwin Well Pad, WV
Served as staff engineer on this project which involves the management of the field exploration and testing services for a proposed water tank and access roads. Project consisted of drilling and sampling 25 borings. Information from the exploration was used to develop geotechnical recommendations for site preparation, embankment construction, roadway construction, slope stability and support of proposed well pad

Moore to Revival Pipeline Slip, Antero Resources, Salem Doddridge, WV
Managed the investigation and remedial design of a landslide along a pipeline right of way in Doddridge County, WV. CEC was retained by gas company to develop an approach to stabilize the landslide because it was threatening the integrity of the pipeline. CEC developed an approach to regrade the slope, provide adequate drainage, and construct a toe key to stabilize the slope.

Varner Well Pad Slip, Antero Resources, Salem Doddridge, WV
Managed the investigation and remediation of a landslide at a well site in Doddridge County, West Virginia. CEC was retained by an oil & gas company to investigate a landside that had the potential to slide down into existing ponds downslope of a gas well pad. The landside was occurring along the slope of an active well pad. CEC investigated the landslide and developed an approach to regrade the slope to stabilize the landslide.CEC provided drawings and specifications for the work. CEC is in the process of providing oversight for the slip repair.

Slope Monitoring and Landslide Remediation, Nisource, Southern West Virginia, WV*
Project Engineer for the investigation, monitoring and design of landslide remediation plans for various gas pipelines in southern West Virginia. The projects involved the two stages; designing landslide remediating plans and monitoring stability of slopes using a combination of piezometers and inclinometers. Managed the field investigations, modeled the slopes to develop remediation plans for failed slopes and a ranking system for the management of the risk of slope failures.

Sherwood Plant, MarkWest Energy, Sherwood Doddridge County, WV
Project involved the construction of bridges to provide access for the construction of a substation for the Sherwood Plant. Managed the geotechnical investigations and provided recommendations for the foundation design for the bridge foundations

PEN 40 Well Site, EQT, Pennsboro Ritchie, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability.

FAW 55, EQT, Monongah Marion, WV
Provide geotechnical engineering services relating to the county road improvement for FAW 55 well pad site. Managed the geotechnical subsurface exploration and provided design recommendations for a soldier pile and lagging along access road to the site.

Nixon Compressor Station, CNX Gas Company, LLC, Lost Creek Lewis, WV
The project involved the construction of a compressor station on an existing farmland. Mr. Eshun planned, initiated, and coordinated the geotechnical investigations for the proposed site and provided earthwork, slope stability, and foundation recommendations for the proposed structures at the site.

Kow O. Eshun, P.E.
Senior Project Manager

Tonys Bridge Well Pad, Mountaineer Keystone, LLC, Mt Clare Harrison, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability. Also managed the compaction testing and construction monitoring for the project.

FAW 70, EQT, Monongah Marion, WV
Managed the geotechnical investigations at the proposed well site and prepared report providing recommendations for site earthwork, cut and fill recommendations and slope stability. The project involved building over an abandoned coal mine with overburden of less than 60 feet. Perform subsidence evaluation and development recommendations to reduce the risk of mine subsidence.

T. Hamilton Well Site, Mountaineer Keystone, LLC, Wexford Allegheny, PA
Managed construction material testing services for the construction of the well pad and access roads.

Gould Well Pad, XTO Energy, Warrendale Upshur, WV
Managed the geotechnical investigations and construction monitoring for the repair of a landslide affecting a portion of the well pad. Prepared a geotechnical engineering report and landslide repair drawings for construction purposes. Also provided recommendations for the disposal of soil to be excavated from the closure of an existing impoundment at the site.

Tennessee Well Pad, Antero Resources, Kincheloe Harrison, WV
Project manager for the geotechnical engineering services for the development of the well pad site. Perform subsurface investigations to develop opinions on site soil, bedrock, and groundwater and provided recommendations concerning earthwork, slope stability, and foundations.

Pool and North Fork Well Pad Sites, Antero Resources, Tollgate Ritchie, WV
Managed the geotechnical investigations at the sites for the proposed well pad and provided recommendations for site earthworks, foundations, slope stability, and construction phase services.

JB Tonkin Compressor Station, Dominion Transmission, Inc, Murrysville, PA
The project involved the expansion of an existing compressor station in PA as part of the Supply Header Project. Mr. Eshun planned, initiated, and coordinated the geotechnical and Stormwater BMP investigations for the proposed site and provided earthwork, slope stability, and foundation recommendations for the proposed structures at the site.

Mockingbird Hill Compressor Station, Dominion Transmissions, Inc., Pine Grove Wetzel County, WV
The project involved the design of a new compressor station at the site of the Mockingbird Hill Compressor Station as part of the Supply Header Project. Mr. Eshun planned, initiated, and coordinated the geotechnical investigations for the proposed site and provided earthwork, slope stability, and foundation recommendations for the proposed structures at the site. Also managed the electrical earth resistivity testing program for the site.

Supply Header Pipeline Project , Dominion Transmissions, Inc., Pine Grove Wetzel County, WV
Provided a desktop review of the soil types and bedrock along the Supply Header Pipeline alignment. The project also involved calculating a preliminary estimates of bedrock and soil quantities to be excavated during the construction of the pipeline.

Sherwood to Majorsville Pipeline ROW Slip Repairs , MarkWest Energy Partners, Littleton Doddridge, Wetzel and Marshall County, WV
Provided design for slips repairs along the pipeline ROW and managed the construction and field testing for the slips remediation. Also provided similar services for the Yankee Camp Pipeline Slip, Twenty Inches Sales Loop Pipeline Slip for MarkWest.

Trent Slip , Antero Resources, New Milton Doddridge County, WV
Managed the investigation and remedial design of a landslide along a pipeline right of way in Doddridge County, WV. Provided oversight and testing services for Antero during the construction stage of the project. Also provided similar services for Gum Run Road Slip Repairs for Antero.

Kow O. Eshun, P.E.
Senior Project Manager

Summersville City Plant , Dominion Resources Services, Summersville Nicholas County, WV
Plan and managed the geotechnical investigations for the proposed City plant in Summerville. Provided recommendations for earthwork, settlement, foundation design for the proposed project.

Manufacturing

Plant Expansion, Hino Motor Manufacturing U.S.A., Williamstown Wood, WV*
Project involved the expansion of the existing manufacturing building. Managed and coordinated the subsurface exploration and laboratory work of the project. Exploration encountered very poor/marginal soil up to about 30 feet below the ground surface. Utilized the information from the exploration and laboratory work to recommend the use of intermediate foundation system (Aggregate piers) for the foundations. The recommended option was to reduced distress to the existing foundation during construction and also provide an efficient but affordable design

Healthcare

Rite Aid, Belle Kanawha, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared both preliminary and final recommendations for earthwork, ground improvement option and foundation design for the brownfield project

CAMC General Family Practice Building, Charleston Kanawha, WV*
Managed and coordinated the subsurface exploration, laboratory testing and geotechnical analyses. Prepared geotechnical recommendations for earthwork, foundation design (deep foundations) and construction for the proposed building extension

Electrical Upgrade Phase II, Louis A. Johnson VA Medical Center, Clarksburg Harrison, WV
The project involved the construction of an addition to an existing building at the hospital. Managed the geotechnical investigations at the site of the proposed upgrade. Prepared geotechnical engineering report providing deep foundation recommendations for the proposed addition. Also provided recommendations for site earthwork.
** Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Project Management Institute

Deep Foundations Institute

PUBLICATIONS

Sett, K., Eshun, K. O., Chao, Y.-C., and Jeremi?, B., "Effect of Uncertain Spatial Variability of Soils on Nonlinear Seismic Site Response Analysis", Geotechnical Special Publication No. 225: State of the Art and Practice in Geotechnical Engineering (Proceedings of Geo-Congress 2012, Oakland, CA, March 25-29), Roman D. Hryciw, Adda Athanasopoulos-Zekkos, and Nazli Yesiller, Eds., pp.2856-2865, 2012

Alexandros Nikellis, Kow O Eshun, Mojtaba Dyanati, David A Roke, Qindan Huang, Akhilesh Chandra, Kallol Sett, "Effect of Site-Specific Soil Nonlinearities and Uncertainties on Ground Motion Intensity Measures and Structural Demand Parameters ", Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards Volume 12, Issue 4, pp.279-296, 2018

L. Jane Hicks
Senior Project Manager

23 YEARS EXPERIENCE

EDUCATION

B.S., Mining Engineering, West Virginia University, 1981

M.A., Education, West Virginia University, 1989

Ms. Hicks has more than 20 years of geotechnical engineering experience as well as a decade of project management experience. Ms. Hicks has conducted geotechnical investigations for a myriad of clients including coal companies, power generation facilities, manufacturing plants, municipalities, engineering companies and developers. She routinely develops scope and fees for small to moderate single discipline projects or for the geotechnical aspect of multi-discipline projects. She manages and coordinates the subsurface exploration and laboratory testing, provides geotechnical engineering analysis and design which includes preparation of design calculations and completion of design submission reports and specifications.

Jane's technical skills include development of deep and shallow foundation recommendations, slope stability analysis, fill slope design, reinforced soil slope design, and development of geotechnical recommendations for difficult sites.

PROJECT EXPERIENCE

Wind Power

Mortenson Wind Power, Mortenson, Mount Storm Grant, WV*
Performed the geotechnical evaluations necessary to aid in the design of the proposed 2.0MW turbines on 256 foot towers to be supported by mat foundations. Supervised the field work for eighty-two turbine sites in Grant County near Mount Storm, WV. Supervision included thermal resistivity testing, soil resistivity testing, and excavation of test pits in areas of old surface mine spoil. Supervised laboratory testing services and compiled the design report which included earthwork and foundation recommendations.

Transportation/Aviation

Raleigh Street Extension, Parsons Brinckerhoff, Martinsburg Berkeley, WV*
This WVDOT project included the proposed construction of six new bridges. Ms. Hicks prepared subsurface investigation plans, assisted and supervised the collection of subsurface data in the Karst terrain, and assigned laboratory testing. She prepared design reports which included foundation recommendations, cut and fill slope recommendations, slope stability analyses, LPILE analyses, and pile drivability studies.

Morgantown Airport, Alpha Engineering, Morgantown Monongalia, WV*
Ms. Hicks prepared several proposals and detailed reports of geotechnical evaluation for the growing local airport. Supervised the subsurface investigations and geotechnical evaluations for the proposed administration building, maintenance building, taxi-way extension, and runway extension. Developed a deep mine remediation plan for the administration building with the site stabilized prior to construction activities. Provided a mixed fill slope design for the Runway South Safety Extension which included a steepened slope and reinforced soil slope design.

Oil & Gas

Well Pad and Access Roadway Development, Statoil, Clarington Monroe, OH*
Supervised the drilling operations, reviewed the subsurface information, and developed the geotechnical design reports for multiple sites in Monroe County Ohio. Evaluated slope stabilities, designed reinforced soil slopes as necessary, and prepared bearing capacity and settlement calculations as stipulated by the ODNR.

L. Jane Hicks
Senior Project Manager

Well Pad and Access Roadway Development, Statoil, Middlebourne Tyler, Wetzel, WV*
Managed drilling operations, reviewed subsurface information and developed the geotechnical design reports for multiple sites in Tyler and Wetzel counties. Evaluated slope stability, interpreted laboratory test results, and provided specialized earthwork recommendations.

Well Pad Development, CNX, Stone Energy, EQT, Various Doddridge, Harrison, Monongalia, Tyler, Wetzel, WV*
Managed drilling operations, reviewed subsurface information and developed the geotechnical design reports for multiple sites in Tyler and Wetzel counties. Evaluated slope stability, interpreted laboratory test results, and provided specialized earthwork recommendations.

Local Government

Dorsey Knob Slide, Morgantown BOPARC, Morgantown Monongalia, WV*
Ms. Hicks investigated a slide at Morgantown's Dorsey Knob Park. She developed a subsurface investigation, monitored the drilling operations, and prepared a geotechnical evaluation report. She performed a slope stability analysis and design a new fill embankment. Ms. Hicks provided supervision and QC during construction activities to remediate the slope.

Higher Education

WVU Baseball Stadium, WVU, Morgantown Monongalia, WV*
Ms. Hicks served as geotechnical consultant during the preliminary planning stage of the WVU Baseball Stadium. The undeveloped site was underlain by several feet of coarse coal refuse. In addition, past deep mining activity was documented in two coal seams beneath the site. As part of the preliminary geotechnical investigation, subsidence and settlement risks were discussed. Jane developed a preliminary deep mine remediation plan and provided estimated fees for implementation of the plan to WVU to aid in planning.

WVU Coliseum Upgrades and Shell Building Additions, WVU, Morgantown Monongalia, WV*
Ms. Hicks planned a subsurface investigation to aid in the design of the planned coliseum upgrades and additions to the existing shell building, and provided a geotechnical report which provided earthwork and foundation recommendations. Portions of the existing structures had damages due to swelling pressures exerted by pyritic sulfur in the underlying black shale. Therefore, the recommendations included provisions to limit potential foundation and slab-on-grade movements.

Forensic Investigation

Forensic Investigations, West Virginia Board of Risk and Insurance Management, Charleston Various WV Counties, WV
Ms. Hicks has performed forensic investigations for more than ten years for properties whose owners filed for assistance through the WVBRIM. The typical project includes historical research to determine the extent of deep mining beneath the property in question, a site visit to document damages, and a report documenting finding and providing recommendations.

Coal

Upgrades to Bailey Complex, Consol Energy, Enon, PA*
Ms. Hicks supervised the geotechnical evaluation and provided deep foundation recommendations for proposed raw and clean coal silos and conveyor bent supports. Shallow foundation recommendations were also provided for various support structures.

Shoemaker Raw Coal Facilities, Consol Energy, Moundsville Marshall, WV*
Ms. Hicks supervised the excavation of test pits and compiled additional subsurface information from a drilling program for a proposed conveyor system to serve the Shoemaker Mine. The conveyor and service roadway were to be constructed on a steep, slide prone hillside. In addition, she investigated old landslides and performed stability analyses for different sections of the conveyor system. She also provided earthwork recommendations and deep foundation recommendations for the proposed bent structures.

Winding Way Slip Repairs, Clarksburg, West Virginia
Role: Project Manager
CEC will plan, coordinate, and execute the office and field work. CEC representatives have already visited the site, assessed the existing landslide conditions, and developed preliminary landslide remediation approaches, as described in Section 1.0. Based on the findings of the subsurface exploration, these approaches could change if another option is deemed more feasible. A site-specific Health and Safety Plan (HASP) will be generated for the safety of CEC representatives working at the site. The HASP will be used for all field work involved with the project

L. Jane Hicks
Senior Project Manager

South Gate Road Slope Stabilization Design, Preston County, Kingwood, West Virginia
Role: Project Manager
CEC will plan, coordinate, and execute the office and field work. CEC representatives will visit the site, assess the existing embankment and roadway conditions, and develop an embankment stabilization and roadway reconstruction approach. A site-specific Health and Safety Plan (HASP) will be generated for the safety of CEC representatives working at the site. The HASP will be used for all field work involved with the project.
** Work performed prior to joining CEC*

Jason H. Littler, P.S.

Senior Project Manager

24 YEARS EXPERIENCE

EDUCATION

A.S., Civil Engineering Technology, West Virginia Institute of Technology, 1995

B.S., Engineering Technology - (Survey Emphasis), West Virginia Institute of Technology, 1996

REGISTRATIONS

Professional Surveyor

- WV [redacted]

Mr. Littler has over 24 years of experience with proven leadership skills, including managing, supervising, and motivating staff to achieve company objectives. Responsibilities have included positions as Roadway Designer and Survey Project Manager. He has performed roadway design, site civil design, drainage computations, construction layout, earthwork volumes, topographical surveys, aerial mapping control surveys, boundary surveys, WVDOH right of way plan development, courthouse research, deed work maps, survey plats, survey descriptions, earthwork volume computations, hydrology computations, WVDOH waste permits, plan preparation, subdivision plats, cell tower surveys, oil and gas landowner exhibits, pipeline as-builts, pipeline alignment sheets, pipeline routing, fine grade computations, and survey field crew management and oversight. He has been in direct charge with as many as 12 survey crews, which all reported to him and were supervised by him for direction and client satisfaction. He has been in professional charge of several boundary surveys ranging in size from small lot and partition surveys to large multi-tract 1000 acre surveys. He has performed numerous ALTA/ASCM land title surveys all throughout West Virginia for various banks, title insurance companies and development companies.

PROJECT EXPERIENCE

Surveys / Geomatics

WVDOH-Red Jacket Postal Facility ALTA Survey, Mingo County, WV*
Performed an ALTA/ASCM land title survey for this project. Mr. Littler served as Survey Project Manager coordinating all survey crews and managing the daily field collection of data in accordance to ALTA survey procedures along with utility coordination, record research and computations.

Robinson Run Overland Conveyor Project, Harrison County, WV
Mr. Littler served as Survey Project Manager in charge of surveying on this 4.1 mile, overland conveyor belt line being constructed for Consol Energy. This project consisted of the survey layout, volume computations, and as-built mapping of the 4.1 mile overland conveyor along with over 4 miles of access roads and over 500,000 cubic yards of excavation. Mr. Littler was responsible for the crew scheduling, reviewing of all data, final cross section data, checking of all computations.

Robinson Run Preparation Plant, Harrison County, WV*
Mr. Littler served as Survey Project Manager in charge of surveying on this 2200 TPH coal preparation plant being constructed for Consol Energy. This plant was built to replace the existing plant which had served its time. This project was unique in that the new prep plant was positioned directly behind the existing plant and the existing conveyor feed line to the plant was to only be extended from the old plant into the new plant. The tolerances on alignment tie in was minimal and final tie-in between the old conveyor feed line and the new conveyor feed line was accomplished in a couple of days with no misalignment problems.

WVDEP Office of Abandoned Mine Lands and Reclamation Northern Mapping Services, northern counties of West Virginia*
Mr. Littler served as Survey Project Manager in charge of surveying and mapping on these individual Projects with the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. This contract consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the northern counties of West Virginia. Currently in the Northern contract, Mr. Littler has been in charge of the successful completion of the mapping for 40 individual projects with a total

mapped acreage of 5,800 acres. Mr. Littler was responsible for the client maintenance, field visits, billing, invoicing and oversight for this three year assignment.

WVDEP Office of Abandoned Mine Lands and Reclamation Southern Mapping Services, southern counties of West Virginia*
Mr. Littler served as Survey Project Manager in charge of surveying and mapping on these individual Projects with the West Virginia Department of Environmental Protection, Division of Land Restoration, Office of Abandoned Mine Lands. This contract consisted of a 3 year assignment with the WVDEP and involved surveying and mapping services to be used for the design and construction of Abandoned mine lands projects located throughout the southern counties of West Virginia. Currently in the southern contract, Mr. Littler has been in charge of the successful completion of the mapping for 53 individual projects with a total mapped acreage of 5,000 acres. Mr. Littler was responsible for the client maintenance, field visits, billing, invoicing and oversight for this three year assignment.

Tygart Valley Dam, Grafton, WV*
Served as survey crew chief producing as-built surveying diagrams of piping within the dam. Surveying was conducted inside the dam for all as-built locations. Information was to be used for realignment of new pipes being replaced. Also performed original ground topography surveying for an access road leading to the base of the dam for access of equipment.

Pine Bluff Tipple Complex, Pine Bluff, WV*
This project is a Bond Forfeiture site located in Pine Bluff, WV. Mr. Littler produced all original ground sections and monthly pay volumes for submittal to the State of West Virginia. He also constructed an as-built map of the completed site.

Dolphin Communications, Bridgeport, WV*
Mr. Littler performed a complete boundary survey of this tract and produced original ground mapping for the proposed road location to the new KISS FM radio station. Mr. Littler acquired all necessary permits and contracted all state agencies necessary for the construction of this road. He also performed runoff calculations and sized all culverts along the road.

Taylor Creek Impoundment, Widen, WV*
Mr. Littler was involved in this Abandoned Mine Land (AML) project. The project consisted of two (2) sites of which all original ground sections were produced and monthly pay volumes were submitted for approval.

Roadways

Philippi Bridge and Bypass, Philippi, WV*
Mr. Littler assisted in the construction layout for both the bridge and the bypass for Orders Construction and Central Contracting.

Bridgeport Bypass, Bridgeport, WV*
Mr. Littler performed the construction layout of this four-lane road for Ground Breakers Construction.

Price Hill Road, Marlington, WV*
Project Manager in charge of surveying for the construction layout and computations for Alan Stone Construction Company. This project consisted with the layout of several pile walls and road fine grading along US Route 219 outside of Marlington, WV.

Appalachian Corridor H, Tucker and Grant Counties, WV*
Mr. Littler was involved with all phases of this project to design a 1.2-mile portion of Appalachian Corridor H, a major four-lane, divided highway. Mr. Littler's responsibilities have included producing cross sections, plan and profile sheets, Right of Way plans, and all surveying and mapping related tasks. Also, he has been involved in several meetings with the WVDOH concerning this project. Mr. Littler served as project manager in charge of Right of Way development with involvement with right-of-way placement, rights of entries, right-of-way questionnaires and courthouse research. He was also involved with all right-of-way submissions to the WV Department of Highways, RW1, RW2, RW3, and RW4's.

U.S. Route 35, Mason County, WV*
Mr. Littler has been involved with all phases of this project to design a 1.6-mile portion of U.S. Route 35, a four-lane, divided highway. Mr. Littler's responsibilities have included all surveying and mapping related tasks, along with Right of Way Plan development. Also, he has been involved in several meetings with the WVDOH concerning this project.

Jason H. Littler, P.S.
Senior Project Manager

Appalachian Corridor H, Hardy County, WV*
Mr. Littler served as Survey Project Manager on this 1.5 mile section of Corridor H in which he responsible for the surveying. Mr. Littler was responsible for the crew scheduling, reviewing of all data, final cross section data, and checking of all computations. This project was opened to traffic in 2005.

US Route 23, South Bloomfield, OH*
This project consisted of the widening of 1,400 feet of US Route 23 to provide turn lanes at the intersection of Bloomfield Hills Drive and US Route 23. Mr. Littler worked with the design team to produce construction plans.

State Route 142 Widening, London, OH*
Mr. Littler performed all civil design, which consisted of producing cross sections (original ground and final grade) and all plan and profile sheets for this project to widen a two-lane road into a three-lane road. Mr. Littler also worked with the design team with completion of a set of construction plans for submittal to the State of Ohio.

Route 622 Widening Survey, WVDOH, Kanawha County, West Virginia
Mobile LiDAR and Conventional Survey for Route 622 widening project in WVDOH including boundary evidence location and topographic map preparation through the use of a vehicle-mounted LiDAR sensor and georeferenced 360-degree imagery. Responsibilities included quality control of control data and mapping checks.

Holbert Road Rockfall Survey , TRC Solutions, Marion County, West Virginia
Survey work consisted of Base map preparation, Map edits, Establishing survey control, Mobile and Lidar mapping, Planimetrics, Drainage identification, WVDOH R/W questionnaires, deed research, R/W and property line verification and locations, utility identification, Bore Hole stakeout. Responsibility included quality control of all survey deliverables, survey crew coordination, utility coordination.

Coal Fields Expressway, WVDOH, Wyoming County, West Virginia
Surveying services for this project consisted of conducting remote sensing lidar collection of previously constructed roadway grade along the alignment for the Coalfields Expressway at Slab Fork to Wyco consisting of approximately seven miles and two hundred acres. CEC set needed control targets utilizing the WVDOH's control network. Submittal consisted of a triangulated surfaces and planimetrics in a computer aided drafting format compatible with WVDOH standards along with a georeferenced orthomosaic.

Rum Creek Connector UAV LiDar As-built, WVDOH, Logan County, West Virginia
UAV-based acquisition of LiDAR and georeferenced Photography for As-Built of the 8 mile highway project prior to opening to Traffic in Logan, WV. Involved the collection of 2.5 billion LiDAR data points along an 8 mile highway corridor including hill cuts upwards of 700-feet in elevation relief. Responsibility included quality control review of all survey deliverables and survey crew coordination.

Power

Laurel Mountain 138/34.5kv Substation, W.R. Casteel Co., Inc. Renewable Energy Services, Barbour and Randolph Counties, WV
Survey Project Manager responsible for oversight of all survey layout and client management for the construction of this 138/34.5kv power substation which served as the collection point for the 65 turbine wind at the Laurel Mountain Wind Power Project. Project is scheduled for completion this year.

Laurel Mountain Wind Power Project, Tennessee Valley Infrastructure Group, Barbour and Randolph Counties, WV*
Survey Project Manager responsible for oversight of all surveying for the construction of this 65 turbine wind energy project. Located in the mountains of West Virginia the terrain is exceptionally challenging and surveying consisted of road layout, clearing limits stakeout, met tower layout, and centerline stakeout for 10 miles of access roads and associated spur roads. This project is scheduled for completion this year.

TrAIL Co., Various Counties, WV*
Worked with the design team on design, and plan preparation for the civil engineering design of approximately 12, 500 LF. of access road, surveying and eventual survey layout of these roads for this transmission line that runs from Virginia, through West Virginia and into Pennsylvania. Performed survey layout for earthwork on the proposed tower locations.

Greenland Gap Substation, Nedpower Mount Storm Wind Project, Grant County, WV*
Project Manager in charge of surveying and scheduling for the layout of all elements of the Substation, which services the 138 Turbine wind farm discussed above. Professional Surveyor in Charge of quality control and checks and balances for the accurate location of all foundations on this 7 Acre Substation site.

Nedpower Mount Storm Wind Project, Grant County, WV*
Worked with the design team on design, and plan preparation for the civil engineering design for an 82 turbine wind farm project. The project includes 14.2 miles of access road design, drainage system design, and an erosion and sediment control plan. A phase 1A and Phase II have also been included on this project which consisted of an additional 56 wind turbines and over 8 miles of additional access road design. Also served as survey project manager performing all mapping, volume, boundary, etc which came about during the life of the project. Responsible for all day to day activities associated with the management of this project along with communications with all parties involved with the development of this large wind farm.

Blacksville #2 Powerline, Greene County, PA*
Survey Project Manager in charge of centerline surveying of approximately 17,500 feet of a proposed overhead transmission line for Consol Energy. Provided original ground centerline, 25 foot left, and 25 foot right profiles for wire clearances. Also in charge of clearing limits and property line locations along centerline. End product consisted of Plan and Profile sheets showing centerline, 25 foot left and 25 foot right original ground profiles. Project also consisted of field surveying of wire height sag of an existing 500 KV transmission line for identification of the lowest wire to ground clearance so the location of the proposed line met clearance requirements.

Cambell's Run to 11D Air Shaft, Marion County, WV*
Survey Project Manager in charge of center line surveying of approximately 10,200 feet of a proposed overhead transmission line for Consol Energy. Provided original ground center line, 25 foot left, and 25 foot right profiles for wire clearances. Also in charge of clearing limits and property line locations along center line. End product consisted of Plan and Profile sheets showing center line, 25 foot left and 25 foot right original ground profiles.

Oil and Gas

Panhandle Gas Gathering System, Brooke, Ohio, and Marshall County, WV*
Project Manager in charge of the development of the natural gas infrastructure for this gathering system located in WV. Was responsible for leading the surveying and engineering efforts for all gathering lines and well connects and associated CDP's and compressor stations associated with this system. Work consisted of route development, engineering alignment sheets, NWP 12 permit compliance, survey LOD stakeout, and survey as-built. Managed the conceptual through final design of these pipelines for operations in the Marcellus Shale. Individual projects included a broad range of permitting, civil engineering and construction oversight. Maintained close interaction with project team members (route development, land, permitting, construction, environmental, etc.) to ensure all engineering aspects of the project were considered, evaluated, and incorporated into the final pipeline design documentation. Coordinate survey staking with client, land department, engineering and surveying and surveying sub consultants. Worked with construction to answer and resolve engineering related questions or concerns, as well as changes that may occur during pipeline construction. Reported progress, hurdles, and road blocks to the client weekly so that solutions could be identified quickly to keep the project on a fast track schedule. Scheduled route development and environmental teams to meet client demands and project timelines. Supervised the survey layout and survey as-built of compressor facilities, CDP's, and natural gas pipelines. Total Project consisted of approximately 200 miles of pipeline route development, in which 150 miles was permitted for construction, 3 compressor stations and a CDP. Project consisted of 2 year time frame of development.

Wheeling Pipeline, Access Midstream Partners, L.P., Wheeling, WV
Survey Project Manager in charge of the as-built surveying of 4.7 miles of 12-inch gathering line in Ohio County, WV. In charge of the survey crews for collecting of the pipe tally information from actual pipe strung on the ground and through pipe tally notes. Managed the generation of the pipeline tally report based upon data collection procedures performed in the field and data was produced on an approved client provided weld map spreadsheet template. Survey crews collected all attributed data required

which was reported in the spreadsheet. The survey crew then obtained pipeline as-built data (x,y,z coordinate locations) at major PI's, OB's, Sag's, Weld joints, bends, valves, etc. along the Pipeline. Was an integral part of the office management quality control before final submittal to the client.

West Alexander Pipeline, Access Midstream Partners, L.P., Tridelphia, WV
Survey Project Manager in charge of the Limits of disturbance stakeout of 2.4 miles of 12-inch gathering line in Ohio County, WV. In charge of the survey crew coordination of the stakeout, creating stakeout drawing files, and quality control of field stakeout data and progress meetings with the client.

Cross Creek Pipeline and Well Connects, Access Midstream Partners, L.P., Tridelphia, WV
Survey Project Manager in charge of the as-built surveying of a 2.0 miles of 6-inch gathering line, 2,000 feet of 6-inch well connect pipeline, and 2,800 feet of 6-inch well connect pipeline, all in in Brooke County, WV. In charge of the survey crews for collecting of the pipe tally information from actual pipe strung on the ground and through pipe tally notes. Managed the generation of the pipeline tally report based upon data collection procedures performed in the field and data was produced on an approved client provided weld map spreadsheet template. Survey crews collected all attributed data required which was reported in the spreadsheet. The survey crew then obtained pipeline as-built data (x,y,z coordinate locations) at major PI's, OB's, Sag's, Weld joints, bends, valves, etc. along the Pipeline. Was an integral part of the office management quality control before final submittal to the client.

Panhandle Pipeline Phase III, Access Midstream Partners, L.P., Wheeling, WV
Survey Project Manager in charge of the as-built surveying of a 5.4 mile 12-inch gathering line in Brook County, WV. In charge of the survey crews for collecting of the pipe tally information from actual pipe strung on the ground and through pipe tally notes. Managed the generation of the pipeline tally report based upon data collection procedures performed in the field and data was produced on an approved client provided weld map spreadsheet template. Survey crews collected all attributed data required which was reported in the spreadsheet. The survey crew then obtained pipeline as-built data (x,y,z coordinate locations) at major PI's, OB's, Sag's, Weld joints, bends, valves, etc. along the Pipeline. Was an integral part of the office management quality control before final submittal to the client.

Midstream Gathering Pipelines, Antero Midstream, Various Counties, WV
Project Manger overseeing the route development, alignment sheets, NWP 12 permit compliance coordination, survey LOD stakeout, and survey as-built of various natural gas pipelines throughout Doddridge and Ritchie Counties, WV. Pipelines consisted of approximately 1.68 miles of 20-inch, 2.96 miles of 16-inch, and 1.00 mile of 12-inch. The pipeline right-of-way consisted of a maximum 100-foot-wide construction easement with a typical 75-foot-wide permanent easement. The purpose of the Projects were to transport natural gas from existing well pads to valve tie-ins. Managed the conceptual through final design and peremitting of the pipeline for operations in the Marcellus Shale.

Land Development

Sun Mountain Resort, Mount Hope, WV*
This project consisted of the development of approximately 1,000 acres of land located on the west side of US Route 19, north of the exit to Mount Hope in Fayette County, WV. Preliminary plans for the Sun Mountain Resort included an amphitheater, hotel, Gary Player golf course, and a conference facility. Mr. Littler was responsible for all storm drainage and some of the civil design associated with the construction of the complex The construction of this project was not completed.

Northeast Quad Development, Bridgeport, WV*
Mr. Littler was involved in performing all site design for the development of this proposed commercial site, such as producing a detailed set of plans showing all site grading and drainage structures and performing all runoff calculations and sediment pond sizing. He also submitted a National Pollution Discharge Elimination System (NPDES) permit for approval.

Fairskies Development, Buckhannon, WV*
Mr. Littler performed a complete site design to produce the most available land use for this development. He also calculated pre and post runoff curve numbers with discharges, designed all structures accordingly, and provided mapping and placement of a relocated gas line. He also completed and submitted an NPDES permit.

Higher Education

Jason H. Littler, P.S.
Senior Project Manager

West Virginia Wesleyan College Performing Arts Center, Highpoint Construction Group, Buckhannon, WV*
Survey Project Manager responsible in charge for construction layout and oversight on this new performing arts center. Performed curbing and grading layout. Project consisted of a new building associated parking lot and entrances.

West Virginia Wesleyan College, David E. Reemsynder Science Center, Buckhannon, WV*
Survey Project Manager responsible in charge for base mapping, utility identification, survey layout, sewer and storm layout.

Talcott Elementary School, Raleigh County, WV*
Survey Project Manager responsible for oversight of all surveying for base mapping and construction layout. Project consisted of a expanded parking lot and entrance layout

Bridges

Rough Run Bridge, Pendleton County, WV*
Survey Project Manager in charge of surveying on this WVDOH project. Mr. Littler supervised the survey crew on accurate survey layout for construction for this box beam bridge. Total Project length was 100 feet with an asphalt overlay. Construction consisted of a new 42 foot long, 21 foot wide box beam bridge.

Lower Mingo Bridge, Randolph County, WV*
Survey Project Manager in charge of surveying on this WVDOH project. Mr. Littler supervised the survey crew on accurate survey layout for construction for this box beam bridge. Total Project length was 180 feet with an asphalt overlay. Construction consisted of a new 80 foot long, 15 foot wide box beam bridge.

Upper Tract Bridge, Pocahontas County, WV*
Survey Project Manager in charge of surveying on this WVDOH project. Mr. Littler supervised the survey crew on elevations and topographic surveying of the site. He produced an original ground map and calculations brief for submittal to be used in the redesign of a replacement bridge over the South Branch of the Potomac River. Design consisted of a new 346 foot long, 30 foot wide curved steel bridge.

Mile Branch Truss Bridge, McDowell County, WV*
Survey Project Manager in charge of surveying on this WVDOH project. Mr. Littler supervised the survey crew on elevations and topographic surveying of the site. He produced an original ground map and calculations brief for submittal to be used in the redesign of a replacement bridge over Dry Fork River. Design consisted of a 180-foot by 22 foot wide steel bridge.

Varney Slab Bridge, Varney, WV*
Project Manager in charge of surveying on this WVDOH project, Mr. Littler supervised the survey crew on elevations and topographic surveying of the site. He produced an original ground map and calculations brief for submittal to be used in the redesign of a replacement bridge over Oldfield Branch which ties into Pigeon Creek along US Route 52.

Dolls Run Slab Bridge, Core, WV*
Survey Project Manager in charge of surveying, supervised the survey crews performing elevation and topographic surveying of this proposed bridge replacement project over Dolls Run along West Virginia Route 7. Responsible for all day to day activities associated with the management of this project and the final submittal to the State of WV.

Jacksonburg Bridge, Jacksonburg, WV*
Mr. Littler was project manager and supervised the survey crews performing elevation and topographic surveying of this proposed bridge replacement project. He was responsible for all day to day activities associated with the management of this project and the final submittal to the State of WV.

Headsville Bridge, Headsville, WV*
Served as survey project manager and supervised the survey crews performing elevation and topographic surveying of this proposed bridge replacement project over Patterson Creek along West Virginia Secondary Route 16. Responsible for all day to day activities associated with the management of this project and the final submittal to the State of WV.

Jason H. Littler, P.S.

Senior Project Manager

Granny Creek Bridge, Sutton, WV*
This project consisted of the replacement of the existing bridge over Granny Creek on State Route 4. Mr. Littler was responsible for all construction coordination, computations and construction layout on this project.

Buffalo Bridge, Buffalo, WV*
The Buffalo Bridge was redesigned and will be constructed beside the site of the old bridge. Mr. Littler was involved in the redesign of the roadway approach to the new bridge. Also, as Survey Manager on this WVDOH project, Mr. Littler supervised the survey crew on elevations and topographic surveying of the site. He produced an original ground map to be used in the design of the bridge and access road.

Kittsonville Bridge, Weston, WV*
Survey crew chief in charge of the construction layout of the new bridge and entrances for McCoy Construction.

Monongah Precast Bridge, West Virginia Department Of Transportation, Marion County, West Virginia
Role: Survey Project Manager
The project consists of the surveying, design and contract plan development for a 131'-6" by 33'-0" simple span welded plate girder bridge carrying Marion County Route 56 over Booths Creek. The bridge substructure consists of semi-integral abutments supported on pre-drilled steel bearing piles. The project also involves 398 feet of relocation of County Route 56. Mr. Litter's responsibilities included all surveying and mapping related tasks, along with Right of Way Plan development. Other services for the project include utility coordination, verification and relocation.

Monongah Precast Bridge, WVDOH, Marion County, west Virginia
The project consists of the surveying, design and contract plan development for a 131'-6" by 33'-0" simple span welded plate girder bridge carrying Marion County Route 56 over Booths Creek. The bridge substructure consists of semi-integral abutments supported on pre-drilled steel bearing piles. The project also consisted of 398 feet of relocation of County Route 56. Other services for the project include right of way plans and utility verification and relocation. Responsibility included quality control review, survey crew management, Right of Way Plan review, Deed Research and Utility coordination.

Airports & Aviation

Buckhannon Upshur Airport Authority, Buckhannon, WV*
Surveyor Project Manager in charge for the site surveying and topography for the design and construction of a new T-hanger.

Barnesville Airport, Barnesville, OH*
Lead surveyor on the site surveying and topography for the design of a new access road and taxiway / apron rehabilitation.

Marshall County Airport, Moundsville, WV*
Lead surveyor on the site surveying and topography for the rehabilitation of the airport apron. Performed boundary surveying and computations on portions of airport property lines for location of existing property monuments.

Woodsfield Airport, Woodsfield, OH*
Lead surveyor on the site surveying and topography for the rehabilitation of the apron and taxiway.

Buckhannon Upshur Airport Authority, Buckhannon, WV*
Lead Surveyor for the construction layout to repair slips on both sides of the runway. Project consisted of excavation of slide material on both sides of the runway, and then the replacement of engineered fill to finish grade.
** Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

West Virginia Society of Professional Surveyors

Ohio Oil & Gas Association

Timothy A. Denicola, GIT, CFM

Project Manager II

10 YEARS EXPERIENCE

EDUCATION

M.S., Geology, West Virginia University, 2013

B.S., Chemistry, Clarion University of Pennsylvania, 2006

REGISTRATIONS

Geologist in Training
- PA [redacted]

CERTIFICATIONS

Certified Floodplain Manager, Association of State Floodplain Managers

Mr. Denicola is a project manager whose multi-disciplined background includes expertise in geochemistry, geology, and hydrology. His experience includes mine water remediation, ecosystem restoration, and environmental compliance. Specific capabilities include soil and water chemical analysis, hydrologic data collection, design of passive and semi-active treatment systems, design of stream restoration corridors, geotechnical soil and rock exploration drilling, construction quality assurance, environmental compliance, and development of various spill control plans. Mr. Denicola manages projects from conceptual through final completion in collaboration with a qualified team of personnel.

Mr. Denicola is adept at managing projects with personal experience in watershed based planning, laboratory analysis, software based geochemical and statistical evaluations, funding source identification and management, regulatory permitting, and construction specification, cost, and bid package preparation. Mr. Denicola has managed technical, administrative, and educational components related to watershed restoration, managed project and institutional budgets for non-profit, public and private clientele, communicated with landowners and local, state and federal agencies. Mr. Denicola has managed environmental regulatory compliance including aboveground storage tank (AST) inspections and preparation of Spill Prevention and Response Plans (SPRP), Spill Prevention Control and Countermeasure Plans (SPCC), Groundwater Protection Plans (GPP), and Stormwater Pollution Prevention Plans (SWPPP).

PROJECT EXPERIENCE

Mine Water Remediation | Watershed Restoration

Herods Run Passive Treatment Project, U.S. Army Corps of Engineers (USACE) Regional General & WV Department of Natural Resources (WVDNR), Upshur County, WV*

Herods Run is impacted by acidic, iron contaminated water emanating from an abandoned coal surface mine. Mr. Denicola prepared the winning conceptual design, developed the preliminary and final engineering design drawings, and prepared the construction specifications, cost estimates, and bid package. Mr. Denicola prepared permit application packages for the U.S. Army Corps of Engineers (USACE) Regional General for AML permit and WV Department of Natural Resources (WVDNR) Stream Activity permit. Throughout the project Mr. Denicola facilitated open communication between a non-profit watershed association, various landowners, and a private energy company owning easements.

Technical Assistance Grants Program, Trout Unlimited, PA Statewide*

Mr. Denicola participated as one of several on-call consultants for the Trout Unlimited (T.U.) Technical Assistance Grants (TAG) Program. Each year various entities request assistance from T.U. to complete existing abandoned mine water (AMD) treatment system assessments with recommendations for improvements, rapid AMD characterizations, and rapid watershed snapshots, develop conceptual designs for AMD treatment systems, conduct construction oversight of AMD treatment systems, develop monitoring plans. Mr. Denicola completed all tasks associated with each request totaling approximately six per year.

Semi-Active AMD Treatment, Sewickley Creek, Brinkerton, Westmoreland County, PA*

The Brinkerton Semi-Active AMD Treatment project was affected by a high volume of alkaline mine water discharge and the existing passive treatment system required refurbishment. Mr. Denicola assisted in redesign of a Maelstrom Oxidizer, pond berm stabilization, incorporation of top flow weirs to allow collection of chemical and hydrological data, and conversion of a smaller acidic

mine water collection area into an anoxic limestone drain. Mr. Denicola also performed construction oversight at various stages of project completion.

Active AMD Treatment Conceptual Design, Brubaker, Clearfield County, PA*
Mr. Denicola developed the winning conceptual design for active treatment at the abandoned Dean Clay Mine discharge in the Brubaker Run watershed. The design utilized calculations for acid neutralization and sludge production rates. The design included active treatment BMPs, surface water diversion and high flow bypasses, and a proposal for an on-site sludge disposal assessment requiring a geotechnical study of the nearby mine workings.

AMD Assessments and Recommendations,, Buck Mountain #2 and Lausanne Tunnel, Eastern Pennsylvania*
Several passive AMD treatment systems required an assessment and recommendations report to evaluate treatment efficacy. Mr. Denicola conducted chemical and hydrological sampling and completed an assessment of each location including recommendations and associated costs. Development of the recommendations required calculations of acid and metal loads, alkalinity generation and acid neutralization rates, ferrous iron oxidation rate, sludge volume, and BMP sizing for necessary hydrologic retention time.

Watershed Assessment, Lehigh River Basin*
Mr. Denicola was provided chemical data from approximately two dozen abandoned mine discharges (AMD) in several impaired subwatersheds of the Lehigh River. Utilizing spatial and statistical software, Mr. Denicola prepared an assessment and recommendations report identifying priority AMDs and priority subwatersheds for remediation. Based on geochemical calculations, site-specific treatment options were recommended including associated engineering and construction costs.

Severe AMD Characterized by High Acidity, Iron, and Aluminum, Satcher Pre-Treatment Pond (SPTP)*
The SPTP was constructed to handle severe AMD characterized by high acidity, iron, and aluminum. In 2013, the system required refurbishment. Chemical and hydrologic assessment, funding acquisition, design, and construction were completed by Mr. Denicola and the landowner. The resulting system is an improved flushing limestone bed with improved hydrologic capacity, acid neutralization, and metals removal.

AMD Remediation, Slabcamp Tributary, Preston County, WV*
Four severe AMDs are impairing a tributary to Slabcamp Run and a 5.4-acre wetland. Mr. Denicola completed pre-construction monitoring, execution of landowner right-of-entry agreements, acquisition of an environmental consulting firm, communication with the U.S. Army Corps of Engineers (USACE) regarding wetland and waterways permitting, communication with the State Historic Preservation Office (SHPO) to complete a Section 106 review, communication with West Virginia Department of Natural Resources (WVDNR) to complete a National Environmental Policy Act (NEPA) review and composed an Environmental Assessment (EA), communicated with Region VI Planning and Development Council for the necessary consultation letter, and assisted development of a conceptual design.

AMD Remediation,, Ingrand Mine, Preston County, WA*
Two severe AMDs impairing Dills Run required development of a passive remediation system. Mr. Denicola oversaw pre-construction monitoring, completion of land purchase through execution of a subdivided land deed, acquisition of an environmental consulting firm, communication with the USACE, SHPO, NEPA, and Region VI, and assisted development of a final design with associated specifications, bid, and contract documents. The passive treatment system utilizes a flushing limestone leach bed, two settling ponds, an anaerobic vertical flow wetland (AVFW), and a polishing wetland and is successfully reducing contaminant loads to Dills Run and Kanes Creek.

Valley Point #12 Refurbishment, Kanes Creek South Site #1 and Valley Highwall #3 Upgrades, Deckers Creek Watershed*
After years of successful acid neutralization and metals load reductions at numerous systems within the Deckers Creek Watershed, system efficacy had reduced at several systems and refurbishments were necessary. Mr. Denicola oversaw extensive system assessments and coordinated with landowners and the Deckers Creek Restoration team to facilitate improvements. The result was award of funding for two projects, a completed design for one, and a funding request for the final system.

Timothy A. Denicola, GIT, CFM

Project Manager II

Successive Alkalinity Producing System and Active Lime Doser Assessments, Deckers Creek Watershed*
As a responsibility of project management, Mr. Denicola thoroughly audited all existing systems within the Deckers Creek watershed. The most extensive audits were conducted at a successive alkalinity producing system (SAPS) that utilizes flushing limestone leach beds, settling ponds, and an AVFW. Chemical, hydrologic, and redox potential data were collected, and geochemical software was utilized to evaluate the iron reducing capability of the AVFW, which ultimately proved to be highly successful. The SAPS was receiving AMD with pH=2.6 and high ferric iron and aluminum concentrations and was discharging water of circum-neutral pH with metals below minimum detection limits. The AVFW alone displayed a redox potential of -0.093 V and conversion of all ferric iron into the ferrous form. In addition, the Deckers Creek watershed utilizes two active tipping bucket lime dosers for neutralization of severely degrading AMD. Mr. Denicola thoroughly audited both active systems through a series of geochemical sampling and evaluation techniques. The results of the audits substantiated the necessity of future funding for refurbishment.

Geochemical Study, Richard Mine*
The Richard Mine discharges 400 gallons per minute of water characterized by pH=4.0 and high iron and aluminum concentrations. The discharge emanates from a partially flooded mine pool within a 2,300-acre mining complex. Treatment will require a full-scale active facility. To assess the design requirements, Mr. Denicola oversaw acquisition of an environmental consulting firm for successful installation of a 342-foot-deep monitoring well and assessed collected chemical data. To facilitate the project Mr. Denicola executed a notarized landowner entry agreement, obtained and evaluated mine maps, and utilized field pumps and transducers to monitor water level and chemistry of the Richard Mine pool.

Clean Creek Program, Friends of Deckers Creek*
Since 2002, the Friends of Deckers Creek has participated in the Clean Creek Program (CCP) which consists of quarterly chemical, biological, and flow sampling at 13 key locations along the 24-mile length of Deckers Creek. In addition, collected data are compiled into an annual State of the Creek Report for distribution to community members and funding agencies. Mr. Denicola took an active role in performing CCP duties, funding acquisition, and report writing.

AMD Treatment, Broad Top Township, Bedford County, PA*
Various active and passive AMD treatment systems currently operate within Broad Top Township. Mr. Denicola conducted geochemical calculations that directly translated into several passive system designs, conducted chemical and hydrological sampling as part of an assessment and recommendations study, and conducted the post-construction final inspection of the most recently construction AMD treatment system.

Kanes Creek South Site #3, Office of Surface Mining (OSM) Watershed Cooperative Agreement (WCAP), Preston County, WV*
Several acid mine discharges impairing Dills Run, required development of a passive remediation system. Mr. Denicola oversaw the final stages of system design, construction stormwater permitting, and West Virginia Non-Point Source (NPS) 319 and Office of Surface Mining (OSM) Watershed Cooperative Agreement (WCAP) grants management, as well as conducted construction oversight and completion of pre- and post-construction monitoring. The final system ultimately consists of a flushing limestone bed followed by two settling ponds in series. The system is successfully neutralizing all acidity, introducing residual alkalinity, and is removing all metals to analytical minimum detection limits.

Coalfields Expressway Habitat Assessment, WV*
Mr. Denicola obtained and interpreted mine maps from four coal beds to assist the ecological team. Dozens of historic mine openings were identified, thereby directing the ecological team to potential Indiana Bat hibernacula.

Environmental Compliance Audits, Various Locations in Pennsylvania, West Virginia and Kentucky*
Throughout 2015, Mr. Denicola conducted environmental compliance audits at regulated mining properties. Audits consisted of reviewing toxic waste inventories and hazardous materials handling, verifying that proper pond and fill certification protocols were met, and ensuring that NPDES daily monitoring and compliance was met.
* *Work performed prior to joining CEC*

Stream Restoration

Snake Run Stream Restoration, Greenbrier County, WV
The Snake Run Stream Restoration project addressed a 1,000 foot stream corridor displaying extensive aggradation and lateral migration across agricultural land. Mr. Denicola completed a geomorphic and topographic survey to collect bankfull, channel, berm, and thalweg data. From empirical data, Mr. Denicola produced a longitudinal profile and cross-sections, calculated appropriate bankfull area, shear stress, and stream power, and designed a restoration corridor including hydraulic structures and floodplain to return Snake Run to proper pattern, profile, and dimension.

Oxbow Mitigation Bank, Ritchie County, WV
The Oxbow Mitigation Bank will restore approximately 26,000 feet and enhance approximately 48,000 feet of heavily degraded stream corridor. The property has been heavily timbered and traversed with access routes resulting in excess sedimentation, disconnected stream channels, and reduced biological diversity. Off road vehicle traffic and the county right-of-ways utilize the stream corridor resulting in substantial geomorphic degradation. Mr. Denicola has managed and/or completed stream restoration designs, geotechnical rock drilling exploration, oil & gas infrastructure relocations, county right-of-way decommissioning, and contractor coordination to facilitate successful project completion.

Brushy Fork Mitigation Bank, Harrison, Barbour, Taylor Counties, WV
The Brushy Fork Mitigation Bank will restore approximately 95,000 feet of streams and 9.5 acres of wetland. Portions of the property were extensively coal mined and streams will be constructed into poor quality spoil with the potential for acid generation and iron precipitation. Mr. Denicola has conducted extensive chemical and hydrologic data collection to characterize the construction material and has selected various mitigation techniques to prevent negative spoil influences on water quality. A combination of alkaline reagent, organic compost, aerobic wetlands, impermeable liners, and spoil excavation will be utilized to ensure acceptable water quality beneficial to establishment of aquatic habitat post-construction.

Kanawha Mitigation Banks (Sapsucker Run and Yeager Fork), Mason County, WV
The Kanawha Mitigation Banks will restore, enhance, and preserve a combined 61,000 feet of stream and 1.1 acre of wetlands. The properties were heavily timbered and traversed by access routes. Surface disturbances have heavily altered hydrology and impacted stream corridor geomorphology, floodplain, vegetation, and ecological function. Mr. Denicola has completed geotechnical rock drilling exploration to identify suitable material for stream restoration hydraulic structures, composed site SWPPPs and filed the application paperwork for the NPDES Construction Stormwater Permit, and coordinated county right-of-way decommissioning.

Indian Creek Mitigation Bank, Ritchie County, WV
The Indian Creek Mitigation Bank will restore 12,000 feet of stream and 0.66 acre of wetlands. Mr. Denicola reviewed the USACE Section 404 Permit Application and managed completion of credit projections and associated supporting information to ensure conformance to 33 CFR 332.

Howards Creek Stream Restoration, Greenbrier County, WV
The Howards Creek Stream Restoration will address a 4,000 foot stream corridor displaying impacts from urban development and channelization. Mr. Denicola oversaw aerial mapping to collect high resolution LIDAR and orthoimagery, and personally completed a geomorphic survey to collect water surface and thalweg data. High-resolution LIDAR imagery was used to identify bankfull and berm features. All empirical data will be utilized to calculate bankfull area, shear stress, and stream power, and to compose a stream enhancement plan. Stream enhancement will achieve greater flood management in an area where standard restoration techniques are restricted by development.

Regulatory Compliance

Regulatory Compliance, Antero Treatment, LLC., Doddridge County, WV
Antero Treatment, LLC, operates a water treatment facility that requires onsite storage and handling of industry wastewater and regulated reagents. Mr. Denicola became intimately familiar with site-specific processes and oversaw completion of Aboveground Storage Tank (AST) fit-for-service inspections. Mr. Denicola personally developed the Spill Prevention Response Plan (SPRP) and Spill Prevention Control and Countermeasure (SPCC) Plan in conformance with 47 CSR 63 and 40 CFR 112, respectively. Mr. Denicola prepared spill compliance training documentation and administered training to Antero personnel.

Timothy A. Denicola, GIT, CFM

Project Manager II

Water Quality Monitoring, Antero Treatment, LLC, Doddridge County, WV
Antero Treatment, LLC, as a requirement of federal, state, and local regulation requires environmental monitoring. Mr. Denicola performed stream and site-specific water quality and hydrologic monitoring in support of company operations. Monitoring included collection of field chemical parameters and laboratory samples for analysis of volatile organic compounds, poly-nuclear aromatic hydrocarbons, phthalate esters, petroleum related oils, metals, anions, and radionuclides. Monitoring required analysis of gases including methane and dihydrogen sulfide. Flow data was collected using a USGS Wading Rod with a Marsh-McBirney flow meter and the cross-sectional area method.

Regulated Mining Property AMD Treatment and Refuse Research Study, Sequatchie County, TN*
An extensively reclaimed, regulated mining property treats acidic groundwater emanating from various locations. Mr. Denicola conducted an assessment of various treatment options ultimately identifying a potentially more cost-effective method of meeting NPDES compliance at several discharge points. In addition, Mr. Denicola was involved with a treatment test cell study to assess techniques for mitigating acid production in mine spoil, in attempt to eliminate the need for long-term AMD treatment.

Watershed Based Plan and Quality Assurance Protection Plan, WV*
As a responsibility of project management, Mr. Denicola composed a Watershed Based Plan (WBP) and Quality Assurance Protection Plan (QAPP) for approval by the United States Environmental Protection Agency (U.S. EPA). The WBP identifies priority remediation sites to meet compliance with West Virginia Department of Environmental Protection (WVDEP) Total Maximum Daily Loads (TMDL) requirements for the WV 303(d) list of impaired streams. In addition, Mr. Denicola composed a QAPP to ensure that the U.S. EPA-accepted sampling and data handling protocols were being utilized universally across all staff members and sampling events within the watershed.

Public Sector | State

Gas Well Abandonment, PA*
A Pennsylvania highway expansion required the plugging and abandonment of a relic gas well. Mr. Denicola acted as the Health and Safety Officer, oversaw all on-site activities, reviewed daily site activities with the contracted driller, and ensured that all required state approvals and paperwork were diligently submitted.

ATV Trail System Development, VA*
Mr. Denicola assisted in conducting the design and geospatial mapping of a recreational ATV trail system. Trail design followed a specific set of protocols to manage stormwater, thereby reducing erosion and sedimentation impacts and long-term operations and maintenance costs. The protocols required that Mr. Denicola conduct soil studies utilizing the Natural Resources Conservation Service soils database.

TRAINING

Rosgen Level I: Applied Fluvial Geoorphology

Rosgen Level II: River Morphology and Applications

Rosgen Level III: River Assessment and Monitoring

PUBLICATIONS

Updates to Deckers Creek Watershed Based Plan. Friends of Deckers Creek, Monongalia County, West Virginia. November 2014.

Quality Assurance Protection Plan, Deckers Creek Watershed, West Virginia. Friends of Deckers Creek, Monongalia County, West Virginia. November 2013.

Geochemistry of Mine Pool Discharges in the Pittsburgh Coal Basin. West Virginia University Electronic Thesis and Dissertation. August, 2013.

PRESENTATIONS

In Proceedings, Geological Society of America, Denver, Colorado; October 2013: Geochemistry of Mine Pool Discharges in the Pittsburgh Coal Basin. Paper No. 245-9. Denicola, T. 2013.

Timothy A. Denicola, GIT, CFM

Project Manager II

Mid-Atlantic Stream Restoration Conference, Baltimore, Maryland; September 2017: Stream Restoration on Coal Mining Impacted Properties, West Virginia. Civil & Environmental Consultants, Inc., Bridgeport, WV.

West Virginia Mine Drainage Symposium, Morgantown, West Virginia; March 2018: Stream Restoration in Mining Impacted Watersheds, WV. Civil & Environmental Consultants, Inc., Bridgeport, WV.

Mid-Atlantic Stream Restoration Conference, Baltimore, Maryland; November 2019: Floodway Improvements & Habitat Restoration Post-Disaster, Howards Creek, West Virginia. Civil & Environmental Consultants, Inc., Bridgeport, WV.

Randolph Calkins, P.S.

Senior Consultant

REGISTRATIONS

Professional Surveyor
- WV [redacted]

40 YEARS EXPERIENCE

EDUCATION

A.S. Surveying Engineering, The Pennsylvania State University

Mr. Calkins has 40 years of experience specializing in abandoned mine lands reclamation as both a project manager and principal designer. He has completed more than 80 abandoned mine lands projects in Ohio and West Virginia, 11 of which involved groundwater studies to determine if local aquifers had been impacted by past mining operations. Investigations involved groundwater sampling and reporting, overburden sampling, delineating the extent of past mining operations, geology and hydrology of the study area, and developing mitigation alternatives for affected residents.

Mr. Calkins is experienced in reclaiming drastically disturbed mine lands for both small and large, more-complex abandoned mine lands sites. One project included more than 300,000 cy (cy) of regrading, 15,000 linear feet (lf) of drainage conveyances and an estimated construction cost of nearly $3 million.

Mr. Calkins has designed sixteen passive acid mine drainage treatment systems ranging from simple limestone beds to complex interactive systems that boost AMD pH to precipitate metals, settle and filter dissolved metals, and polish effluent water with alkalinity prior to release of near neutral waters from project areas. His expertise includes coal mine, 404/401, and NPDES permitting, overburden and water sampling, coal reserve studies, surveying, road construction, dam construction, and ALTA surveys. Mr. Calkins is skilled with AutoCAD, SurvCAD, Haestads, HydroCAD, HY8, and AMD Treat.

PROJECT EXPERIENCE

Norton Highwall #1, Randolph County, WV.

Project Manager on this $2,200,000 abandoned mine lands reclamation project. The reclamation design eliminated 8,900 lf of highwall with 170,000 cy of earthwork. The project had 53 acres of clearing and grubbing and revegetation, 11,145 lf of drainage ditches, and 940 lf of installed pipes of varying sizes. The project had fifteen (15) wet mine seals, seven subsurface drains totaling 1,500 lf, and involved sediment and erosion control with an approved NPDES permit. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation with five (5) piezometers set to monitor the mine pool during initial investigations, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Tub Run Highwall and Refuse Phase II, Tucker County, WV.

Project Manager on this $2,800,000 abandoned mine lands reclamation project. The reclamation design eliminated 12,500 lf of highwall with 309,000 cy of earthwork. The project had 114 acres of clearing and grubbing and revegetation, 11,400 lf of drainage ditches, and 9,500 feet of constructed access road. The project had four (4) wet mine seals and involved sediment and erosion control with an approved NPDES permit. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation with one (1) piezometer set to monitor the mine pool during initial investigations, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Tub Run Highwall and Refuse Phase I, Tucker County, WV.
Project Manager on this $2,300,000 abandoned mine lands reclamation project. The reclamation design eliminated 10,000 lf of highwall with 265,000 cy of earthwork. The project had 74 acres of clearing and grubbing and revegetation, 9,900 lf of drainage ditches, four (4) pipes, an 8-foot by 8-foot box culvert installation, stream bank protection, and 8,500 feet of constructed access road. The project involved sediment and erosion control with an approved NPDES permit and ACOE permit to install the box culvert and associated stream bank protection. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Greenbrier Hollow Refuse, McDowell County, WV.
Project Manager on this $834,000 abandoned mine lands reclamation project. The reclamation design removed a cast-over-the-hill coal refuse pile located directly behind the First Baptist Church of McDowell to a stable configuration that involved 51,000 cy of earthwork. The project included two (2) wet mine seals and 8 acres of vegetation. The project had 1,015 lf of drainage ditches, two (2) manholes, and a temporary stream crossing. The project involved extensive coordination with utility companies having lines inside the project area. The project involved treating AMD during mine dewatering and construction, and a sediment control plan and approved NPDES permit to control construction runoff. Other permits completed for the project included MM109 permits to work in the right-of-way of State roads and a USACE permit for the stream crossing. The project involved topographical surveying to supplement project mapping, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Sauls Run (Carpenter) Landslide, Lewis County, WV.
Project Manager on this $450,000 abandoned mine lands reclamation project. The reclamation design involved mitigation of a landslide within five feet (5') of the Carpenter residence. The project involved assessing mitigation alternatives with stabilizing the slide as the preferred alternative. The project involved 40,000 cy of earthwork. The project involved 7 acres of vegetation and had 610 lf of drainage ditches, three (3) pipes, one (1) manhole, and subsurface drains to transport groundwater from the slide area. The project involved extensive coordination with utility companies having lines inside the project area. The project involved topographical surveying to develop project mapping, a subsurface investigation with eight (8) boreholes to delineate the slip plane and monitor groundwater levels. The project involved a sediment control plan, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Pageton (Lambert) Portals, McDowell County, WV.
Project Manager on this $1,100,000 abandoned mine lands reclamation project to remove a cast-over-the-hill coal refuse pile to a stable disposal area that involved 56,500 cy of earthwork. The project included twenty three (23) wet mine seals and one (1) dry mine seal installation with drainage pipes and 24 acres of vegetation. The project had 840 lf of drainage ditches, one (1) permanent pipe, nine (9) temporary pipes, and a temporary stream crossing. The project involved extensive coordination with utility companies having lines inside the project area. The project involved treating AMD during mine dewatering and construction, and a sediment control plan and approved NPDES permit to control construction runoff. Other permits completed for the project included MM109 permits to work in the right-of-way of State roads and a USACE permit for the stream crossing, stream bank protection, and channel upgrading. The project involved topographical surveying to supplement project mapping, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Birds Creek Number Four, Preston County, WV.
Project Manager on this $920,000 abandoned mine lands reclamation project. The reclamation design eliminated 4,300 lf of highwall with 34,600 cy of earthwork. The project included nine (9) mine seals, including four (4) wet mine seals,

four (4) bat gate mine seals, and one (1) dry mine seal installation with drainage pipes and 28 acres of vegetation. The project had 5,210 lf of drainage ditches, two (2) pipes, an AMD treatment plan during mine dewatering and construction, and a sediment control to control construction runoff. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation with four (4) piezometers installed to monitor mine pools during initial investigations, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Church Creek/Manown Highwall, Preston County, WV.
Project Manager on this $2,600,000 abandoned mine lands reclamation design to eliminate 11,800 lf of highwall with 220,600 cy of earthwork. The project included twenty six mine seals, including 21 wet mine seals, two dry mine seals, and two bat gate installations with drainage pipes and 85 acres of vegetation including 17 acres of reforestation complying with the ARRI five step process. The project had 14,882 lf of drainage ditches, one pipe, an AMD treatment plan during mine dewatering and construction, and a sediment control to control construction runoff. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation with nine piezometers to monitor mine pools during initial investigations, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Racine (Bradshaw) Portals, Boone County, WV.
Project Manager on this $445,000 abandoned mine lands project. Several abandoned deep mine entries are located near a group of homes along County Route 94. The reclamation design involved six non-contiguous sites requiring approximately 2,500 cy of earthwork to backfill the sites to approximate original contours and 5 acres of revegetation. Sixteen abandoned mine entryways had mine seals installed, including six wet mine seals, two dry mine seals, and eight bat gate installations with drainage pipes. Most of the abandoned mine entryways were located across Short Creek that required an Army Corps 404 permit to gain construction access. The project had 1,062 lf of drainage ditches, nine pipes, an AMD treatment plan during mine dewatering and construction, and a sediment control plan to control construction runoff. The project involved topographical surveying to supplement project mapping, soil and refuse testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Hampton Number Four Maintenance, Boone County, WV.
Project Manager on this $970,000 abandoned mine lands project. An abandoned sidehill coal refuse fill center ditch has failed resulting in coal refuse washing into Spruce Laurel Fork, a trout fishery. The reclamation design involved filling the erosion breech (up to forty feet deep in spots) with soil borrow material and installing a six foot flat bottom ditch lined with a concrete filled fabric liner. Other project highlights include removal of petroleum contaminated soil, construction of 2,927 lf of ditches with engineered lining, grout filled fabric streambank protection, 25,000 cy of earthwork, upgrading an existing bridge to allow construction traffic, 4,180 lf of sediment control, and revegetation of 16 acres. The project involved topographical surveying to supplement project mapping, a subsurface and geological investigation, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Howesville Sites, Preston County, WV.
Project Manager on this $1,580,000 abandoned mine lands project. The reclamation design involved two non-contiguous sites with approximately 4,000 linear foot of highwall requiring 63,000 cy of earthwork to backfill. The reclamation design involved 5,676 lf of ditches with engineered lining, 91 lf of pipe from 12" to 24" in diameter, grouted riprap streambank protection, 11 wet mine seals, 4 wet mine seals with bat gates, AMD treatment plan during mine dewatering and construction, 17,700 linear foot of sediment control, and revegetation of 35 acres. The project involved topographical surveying of 46 acres to develop project mapping, a subsurface and geological investigation with four piezometers set to monitor mine pools during initial investigations, water and soil testing, preliminary designs, final

designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Sandy Run Highwall and Portals, Preston County, WV.
Project Manager on this $1,026,000 abandoned mine lands project. The reclamation design involved approximately 1,850 lf of highwall requiring 47,200 cy of earthwork to backfill. The project also included 4,148 linear foot of designed ditches with engineered lining, 258 lf of pipes ranging from 18" to 36" in diameter, a drop inlet, grouted riprap streambank protection, 6 wet mine seals, AMD treatment plan during mine dewatering and construction, 8,800 linear foot of sediment control, and revegetation of 17 acres. The project involved topographical surveying of 22 acres to develop project mapping, a subsurface and geological investigation, water and soil testing, preliminary designs, final designs, specifications, calculation brief, bid schedule, engineer's estimate of probable construction costs, pre-bid and pre-construction conferences, and monthly reports, and invoicing.

Laurel Valley (Daniels) Landslide, West Milford, Harrison County, WV.
Project Manager on this Emergency abandoned mine lands Project. Due to the emergency classification, fieldwork and generation of construction plans and specifications was on an accelerated time frame. Cast-over-the-hill mine spoil had slipped against a single family dwelling in the Laurel Valley Subdivision. The project involved removing slipped material to a stable slope configuration and placing excavated spoil against a nearby orphan highwall. The $ 217,000 reclamation project included 13,000 cy of excavation; elimination of approximately 500 lineal feet of highwall; hydraulic and hydrologic design of 181 lineal feet of ditches, 801 lineal feet of pipes, three (3) drop inlets, and a manhole. Drainage control from the reclaimed site was problematic on this project and required collection of storm water runoff and ground water into a 615 foot long pipe that was constructed along Oak Street to the nearest existing drainage system. Construction of this piping system projected along a road through a subdivision. Other project highlights include a sediment control plan, subsurface drains, and a revegetation plan.

Weaver Highwall and Mine Drainage - Barbour & Randolph Counties, WV.
Project Manager on this $2,500,000 abandoned mine lands Project. The project involved approximately 4,200 lf of highwall varying in height from 25 feet to 50 feet; at least 20 collapsed openings, thirteen (13) of which were discharging acid mine drainage; several scattered refuse piles and numerous subsidence features above the orphan highwall, some of which capture surface streams; scattered household trash and abandoned automobiles; and uncontrolled mine drainage that impacted down gradient residents. Historic water data estimates of acid mine drainage flowing from the seeping collapsed portals was approximately 95 gallons per minute exhibiting a pH of 3.2 with acidity concentrations around 200 mg/l, iron concentrations around 10 mg/l, aluminum concentrations around 15 mg/l, and manganese concentrations around 2 mg/l. The project involved approximately 50,000 cy of backfill, regrading, and refuse cover, approximately 4000 feet of constructed ditches in the form of open limestone ditches (an integral part of the passive treatment system), four (4) limestone pond passive acid mine drainage treatment systems, sediment control, clearing and grubbing and trash removal and revegetation of all disturbed areas. The project also involved a large subsurface investigation program to quantify mine pools within the large abandoned deep mine complex feeding the seeping collapsed portals. A total of fourteen (14) holes were drilled and four (4) piezometers were installed to monitor the mine pool during the design phase. Wetlands were delineated and a State 401 Certification and USACE Nationwide 27 Permit was obtained for the construction Project.

Sauls Run Strip and Landslide Emergency, Lewis County, WV.
Project Manager on this $985,000 Emergency abandoned mine lands Project. Due to the emergency classification, fieldwork, and generation of construction plans and specifications was on an accelerated time frame. The project was completed from start to finish in four (4) weeks, and included field surveying to supplement existing aerial photography, design and implementation of an extensive subsurface investigation plan, and design of the project to meet WVDEP goals. The project involved three (3) slips threatening three (3) homes located in Lewis County, West Virginia. The project also involved removing and regrading approximately 50,000 cy of material to provide stable slopes behind these houses. The project also involved approximately 4,100 feet of constructed ditch, sediment control, clearing and

grubbing, and revegetation of all disturbed areas. The project involved a comprehensive subsurface investigation plan and analyses of existing slope stability, as well as proposed slope stability. The accompanying construction specifications allowed prospective contractors to choose from two (2) reclamation plans. One plan stated to haul all excess material off-site to a disposal area approved by the WVDEP and the other plan involved keeping all excavated materials on-site. The on-site approach required design and installation of rock underpads and rock french drains to ensure slope stability and provide free draining of placed backfill materials.

Dillsworth Landslide, Tunnelton, West Virginia.
Project Manager on this $200,000 Emergency abandoned mine lands Project. The abandoned Kingwood Gas, Coal, and Iron Company was impacting the Dillsworth residence. A small outbuilding located behind the Dillsworth garage has collapsed due to excessive soil pressures from upgradient saturated, unstable slopes. In addition, the Dillsworth basement and garage were constantly being inundated with alkaline mine water. The project involved installation and construction of an 84-foot long by 18-foot high Gabion Basket Retaining Wall and three (3) Subsurface Drains to capture and divert uncontrolled deep mine drainage, groundwater, and surface water around the Dillsworth basement and garage.

Ohio Abandoned Mine Lands Projects, ODNR - Flint Run Acid Mine Drainage Reclamation Project, Jackson County, Ohio.
Project Manager on this $1.3 million abandoned mine lands Reclamation Project. The Flint Run Acid East Acid Mine Drainage Reclamation Project required 44-drafted construction plan sheet (24" x 36") and Detailed Conditions and detailed Specifications. The Project hydrologically isolated a coal refuse fill area and constructed passive acid mine drainage treatment systems to add alkalinity to Project waters. The Project also involved implementation of a sediment and erosion control plan, clearing and grubbing operations and controlled release of approximately 12.8 M gallons of impounded waters within the Project area. The scope of the work will be to excavate approximately 73,091 cy of material to install and construct site drainage conveyance structures through and around the Project area. An additional 207,600 cy of materials will be moved to provide positive drainage toward constructed drainage conveyance structures and away from the coal refuse fill area. Approximately 17,381 cy of material will be moved to construct passive acid mine drainage treatment systems and approximately 42,143 cy of these materials will be required for construction of compacted embankments associated with the passive acid mine drainage treatment systems and soil lining for ditches and channels. Some encountered materials and some cleared and grubbed materials will require special handling and placement. Site drainage conveyances include approximately 2,450 lf of vegetation lined "vee" bottom ditches, 4,200 lf of rock riprap "vee" bottom ditches, and 8,750 lf of flat bottom and broad crested spillway rock riprap channels. A 24-inch, twin 30-inch and 36-inch PE culvert will be installed in connection with construction of site drainage conveyances. Passive acid mine drainage treatment systems to be constructed include a Sediment Pond, a SAPS Pond, a Wetland Ditch, a Horizontal Limestone Bed Pond, a Fresh Water Storage Pond, a Steel Slag Leach Bed and three (3) associated Flush Ponds. Construction activities will include installation of custom and standard perforated underdrain piping systems and header pipes; solid outlet pipes (with anti-seep collars through embankments), various riser pipes, and construction of connector and outlet ditches between system structures. Outlet pipes will require either butterfly or screw gate valves to control flows and connector ditches will require construction and installation of flow measurement weirs. Other components of the passive treatment system include ODOT sized No. 2 Stone (limestone), Mushroom Compost and various sized Steel Slag.

Robert Stewart, Ph.D., E.I.T.

Project Manager I

6 YEARS EXPERIENCE

EDUCATION

B.S., Civil Engineering, Tennessee Technological University, 2009

M.S., Civil Engineering, University of Kentucky, 2009

Ph.D., Civil Engineering, University of Kentucky, 2014

REGISTRATIONS

Engineer in Training
- TN [redacted]

Robert is a professional ecosystem restoration designer with over 6 years of experience working on private and public sector projects. He has expertise and multiple publications in the fields of open channel hydraulics, sediment transport, and geomorphology. Robert has worked on a variety of research and restoration projects in many different ecosystems and geographic provinces and states including CA, KY, MD, NC, PA, SC, and WV. Ecosystem restoration project experience includes existing conditions site survey, hydrologic and hydraulic modelling, stream and wetland design, species specific habitat estimations, construction quality assurance, project management, as-built survey, and post construction project monitoring. Robert has over 10 miles of stream restoration design experience. Robert uses his expertise in 2D hydraulic modelling, sediment transport, and natural channel design principles to develop innovative sustainable ecosystem restoration solutions constrained by site-specific constraints to meet project goals.

PROJECT EXPERIENCE

Deep Gulch, US Bureua of Reclamation, Junction City, Trinity County, CA*
Robert worked with public land managers as well as private property owners during the design and implementation of this salmon habitat restoration project. Robert used AutoCADD and hydraulic modeling to create a surface that provided appropriate depth and velocity characteristics for juvenile Chinook salmon while ensuring that the project would be self-sustaining into the future.

Sediment Transport in the Trinity River, CA: Data Synthesis, TRRP, Weaverville, Trinity County, CA*
Robert collaborated with a fluvial geomorphologist to summarize a decade of fine and coarse sediment transport monitoring efforts. This analysis identified spatial temporal trends in transport rates and described how these trends relate to sediment management objectives.

Dutch Creek, California Department of Water Resources, Junction City, Trinity County, CA*
Robert provided engineering support to propel the Dutch Creek project from a conceptual level design to a completed peer-reviewed 30% design report. Project objectives include providing appropriate depth and velocity characteristics for juvenile Chinook Salmon, establishing a self-perpetuating channel morphology, and creating floodplains to naturally recruit riparian vegetation. To meet these objectives Robert analyzed local hydrology and determined the range flows most commonly experienced by juvenile Chinook salmon. The hydrologic analysis also identified flows that should be targeted during the riparian recruitment window. Surfaces where graded in AutoCAD and analyzed using a hydraulic model to evaluate the ability of the proposed surface to increase juvenile Chinook habitat.

Trinity River Delta Monitoring, Trinity River Restoration Program, Weaverville, Trinity County, CA*
Robert designed and implemented a survey routine to monitor tributary derived coarse sediment delivery to the Trinity River. The project combined a variety of survey techniques including sonar, photogrammetry, Lidar, GPS, and conventional survey to monitor changes in topography following flooding events. This monitoring effort reduced uncertainty in coarse sediment delivery down from a factor of about 70% to around 15%.

Yeager, Ecosystem Investment Partners, WV
Robert used two-dimensional hydraulic modelling to value engineer the Yeager stream restoration design and improve project performance. He designed over 3,800 feet of stream restoration with this project. Robert provided onsite review of construction activities and recommended modifications when unforeseen site conditions arose.

Howard's Creek, West Virginia Conservation Agency, White Sulfur Springs, Greenbriar County, WV
Robert and colleagues conducted a geomorphic survey of Howard's Creek following the 2016 flood that resulted in major property damage. Using AutoCADD Civil 3D and two dimensional hydraulic modelling Robert created a stream restoration design of 2,500 feet to provide long-term stability of the stream and improve aquatic habitat for trout.

Four Mile Run, Pittsburgh Water and Sewer Authority, Pittsburgh, PA
As Assistant Project Manager, Robert led the detailed stream survey efforts of 6,250 feet of stream. Streams were assessed for stability, sediment supply, and hydraulic capacity. During urbanization and the industrial revolution over a mile of stream was buried in brick sewer conduits approximately 65 feet below current grade. Robert completed the design of 6,250 feet of stream restoration and 2,750 feet of stream daylighting.

Tyger Mitigation Bank, South Carolina
Role: Project Manager, Lead Designer
Stream and wetland survey, permitting, and design project for mitigation bank to restore, enhance, reestablish, and preserve 71,520 feet of streams, 12.39 acres of wetlands, and 458 acres of riparian and upland buffers within the 581-acre bank.

Rj Smith Slide, Doddridge County WV
Role: Project Manager, Lead Designer
Restore approximately 1,000 feet of stream impacted by a landslide. Design included the engineering of a dewatering system to enable slide material to be handled. Restoration design included using a combination of boulder and log cascades and boulder steps to create a stepped bed morphology.

Landsford, Chester County South Carolina
Role: Project Manager, Lead Designer
Design of 7,225 linear feet of stream restoration in the Piedmont region of South Carolina. The project design used a combination of log and boulder grade controls to create step bed morphology on steep incised head water streams and bioengineering on low gradient systems to provide ecological uplift.
** Work performed prior to joining CEC*

PROFESSIONAL AFFILIATIONS

American Geological Society

American Society of Civil Engineers

PUBLICATIONS

Stewart, R. L., & Fox, J. F. (2017). Outer region scaling using the freestream velocity for nonuniform open channel flow over gravel. Advances in Water Resources, 104, 271-283.

Stewart, R. L., & Fox, J. F. (2015). Role of macroturbulence to sustain turbulent energy in decelerating flows over a gravel bed. Geomorphology, 248, 147-160.

Stewart, R. L., & Fox, J. F. (2017). Light Attenuation Model for Waters: Linear and Nonlinear Dependencies on Suspended Sediment. Journal of Hydraulic Engineering, 143(9), 04017033.

Stewart, R. L., Fox, J. F., & Harnett, C. K. (2014). Estimating suspended sediment concentration in streams by diffuse light attenuation. Journal of Hydraulic Engineering, 140(8), 04014033.

Schmandt, B., Gaeuman, D., Stewart, R., Hansen, S. M., Tsai, V. C., & Smith, J. (2017). Seismic array constraints on reach-scale bedload transport. Geology, 45(4), 299-302.

Fox, J. F., & Stewart, R. L. (2014). Mixed Scaling for Open-Channel Flow over Gravel and Cobbles. Journal of Engineering Mechanics, 140(10), 06014010.

Stewart, R. L., Fox, J. F., & Harnett, C. K. (2012). Time-Average Velocity and Turbulence Measurement Using Wireless Bend Sensors in an Open Channel with a Rough Bed. Journal of Hydraulic Engineering, 139(7), 696-706.

Schmandt, B., Gaeuman, D., Stewart, R., Hansen, S. M., Tsai, V. C., & Smith, J. (2017). Seismic array constraints on reach-scale bedload transport. Geology, 45(4), 299-302.

Gaeuman, D., Stewart, R. L., Schmandt, B., & Pryor, C. (2017) Geomorphic response to gravel augmentation and high-flow dam release in the Trinity River, California. Earth Surface Processes and Landforms.

Gaeuman, D., Stewart, R. L., & Pittman, S. (2018). Toward the prediction of bed load rating curve parameter values: The influence of scale, particle size, and entrainment threshold. Water Resources Research, 54. https://doi.org/10.1002/2017WR021627

PRESENTATIONS

Stewart, R. L., & Gaeuman, D. Examination of High Resolution Channel Topography to Determine Suitable Metrics to Characterize Morphological Complexity. AGU Fall Meeting, San Fransisco California, December 2015

Stewart RL, Gaeuman D. Geomorphic Response of Trinity River Tributary Deltas under High Flow Restoration Hydrology, In AGU Fall Meeting Abstracts , San Francisco CA, 2016 Feb.

Stewart R. L., Fox J. F., and Harnett C. K., Time Average Velocity Characteristics of Decelerating Open Channel Flows, Kentucky Water Resources Annual Symposium, Lexington, KY, March 10, 2014

Stewart R. L., Fox J. F., Harnett C. K., and Husic A., Environmental Sensor Network for Watershed Monitoring Louisville, KY, Oct 17, 2013 KY EPSCoR Annual Conference

Stewart R. L., Fox J. F., and Harnett C. K., Dimensionless Light Attenuation Number for Modeling Suspended Sediment Concentration in Open Channels, 2013 World Environmental & Water Resources Congress, EWRI, ASCE, Cincinnati, Ohio, May 19-23, 2013

Fox, J. F. and Stewart, R. L., Scaling of the Outer Region for Turbulent Open Channel Flow Modeling over Gravel Beds, 2013 World Environmental & Water Resources Congress, EWRI, ASCE, Cincinnati, Ohio, May 19-23, 2013

Stewart R. L., Fox J. F., and Harnett C. K., Velocity Bend Sensor Results for Modeling Mean Velocity and Turbulence in Open Channels, 2013 World Environmental & Water Resources Congress, EWRI, ASCE, Cincinnati, Ohio, May 19-23, 2013

Stewart R. L., Fox J. F., and Harnett C. K., Sensor Network for Suspended Sediment Monitoring, Kentucky Water Resources Annual Symposium, Lexington, KY, March 18, 2013

Stewart, R. L., Fox, J. F., and Harnett, C. K., Sediment Transport Measurements for Intelligent Sensor Networks, Hydraulic Measurement and Experimentation Meeting 2012, ASCE Hydraulics Division, Snowbird, Utah, August 12-15, 2012

Stewart, R. L., Lawrence, T., Fox, J. F., and Harnett, C. K., Laboratory Calibration of Experimental Velocity and Sediment Concentration Sensors to Monitor Water and the Environment, Kentucky Water Resources Annual Symposium, Lexington, KY, March 19, 2012

Stewart, R. L. and Fox, J. F., Development of New Sensors for Monitoring Velocity and Sediment Discharge in a Watershed, World Environmental & Water Resources Congress 2011: Bearing Knowledge for Sustainability, Palm Springs, California, May 22-26, 2011

Stewart, R. L., Ford, W., Fox, J. F., and Harnett, C. K., Development of New Sensors for Monitoring Velocity and Sediment Discharge in a Watershed, Kentucky Water Resources Annual Symposium, Lexington, KY, March 21, 2011

Stewart, R. L., Fox, J. F., and Harnett, C. K., Real Time Sediment Discharge Estimates Using a Turbidity and Velocity Bend Sensor Network, Kentucky Water Resources Annual Symposium, Lexington, KY, March 22, 2010

Appendix D -
Related Project Experience

Civil & Environmental Consultants, Inc.

LANDSLIDE REPAIR

OWNER/CLIENT

Rice Olympus Midstream, LLC

LOCATION

Monroe County, OH

CEC SERVICES

Erosion & Sedimentation Control/NPDES Permitting

Geotechnical Engineering

Integrated Project Delivery

Landscape Assessment/ Remediation

Site Grading/Earthwork Analysis

Site Infrastructure Maintenance/ Rehabilitation

Wetland & Stream Mitigation Design

Wetlands and Waters Delineations

Erosion & Sediment Control Design and Inspection

Stormwater BMP Design and Inspections

Construction Services

OWNER OBJECTIVE

Rice Energy and its subsidiary, Rice Olympus Midstream, LLC (Rice), form a rapidly growing regional gas company operating primarily in the Marcellus and Utica Shale Formations in Washington and Greene Counties, Pennsylvania, as well as the Utica Shale in Belmont and Monroe Counties, Ohio.

As part of an infrastructure purchase, Rice inherited a large landslide on a pipeline right-of-way in Monroe County, Ohio, that would require a remedial design.

CEC APPROACH

CEC was originally contracted by the previous owner, and was later retained by Rice, to investigate and develop a remedial design for the landslide.

During construction, while the site of the landslide was inspected, a number of new landslide areas were discovered outside the original area of interest. To keep the construction contractor on site continuously so as to avoid the need to re-mobilize in between fixing different landslide areas, CEC developed additional remedial designs with a quick turnaround, ultimately saving Rice money.

CEC's overall approach to repairing the pipeline landslides was to provide designs that were safe and cost-effective. CEC performed an investigation and analysis appropriate for the access constraints (fairly rugged terrain requiring large support equipment to safely navigate with a drill rig), the landslide size (considered large at 28,000 cubic yards), and the risk to right-of-way infrastructure and the environment (relatively high as the landslide exposed a significant length of pipeline and resulted in a large sediment deposit blocking the stream below). CEC developed a design to protect both the environment and pipeline infrastructure utilizing new materials, saving Rice money relative to conventional construction in the rugged terrain. Each of the landslide repairs utilized an optimized repair concept that was completed with the same equipment. The work was performed in a single construction season. The project was investigated and designed in early 2016 and construction was completed in the summer of 2016.

Civil & Environmental Consultants, Inc.

RHL 27/28 GEOCELL LANDSLIDE MITIGATION

OWNER/CLIENT

CNX Midstream Partners, LP

LOCATION

Greene County, PA

CEC SERVICES

Erosion & Sedimentation control/NPDES Permitting

Geotechnical Engineering

Landslide Assessment/ Remediation

Predevelopment Site Investigations

Site Grading/Earthwork Analysis

Slope Stability/Retaining Structure Design

Stormwater Management/BMP Design

Utility Design

Wetlands & Waters Delineations

OWNER OBJECTIVE

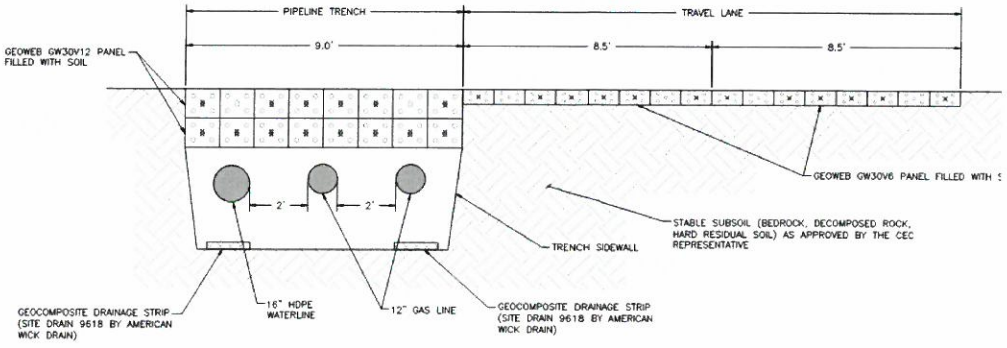
CNX Midstream Partners, LP, a large regional natural gas producer, was looking to develop two well connect natural gas pipelines and an HDPE waterline between two of its well pads in the landslide-prone terrain of Greene County, Pennsylvania.

CEC APPROACH

One particular slope along the proposed pipeline route that could not be avoided was a 70-foot, approximate 1.3H:1V slope immediately above a stream. In a preliminary study, CEC flagged the area as high risk for post-construction landslides associated with the loose pipe trench backfill, which, if a landslide occurred, would likely end up in the stream. CNX engaged CEC to develop a landslide mitigation plan for the construction of the pipelines.

CEC proposed a novel use of geocells to achieve both the cover thickness and soil stability objectives in a cost-efficient manner utilizing on-site soils. The design was hyper-focused on the construction aspects of the project given the difficult operating conditions on the slope. CEC's design also permitted the slope to be vegetated using conventional hydroseeding techniques already being utilized on the rest of the pipeline project.

Because CNX was proactive with landslide mitigation, an effective landslide mitigation system was designed to be implemented during construction in an area with a high risk and high consequence of future landsliding, utilizing only standard construction techniques. Implementing the designed proactive approach represents a significant cost savings over the limited suite of post-construction landslide mitigation/remediation options that would have been available had a landslide occurred once the pipelines were operational. The design, which was not a permit requirement, also allowed the client to present a proactive approach to landslide mitigation and protecting natural resources to the regulators.



Civil & Environmental Consultants, Inc.

HARRY GREEN CHEVROLET, INC. LANDSLIDE REMEDIATION

OWNER/CLIENT

Harry Green Chevrolet, Inc.

LOCATION

Clarksburg, WV

CEC SERVICES

Geotechnical Engineering

Landslide Assessment /Remediation

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Topographic Surveys

Structural Engineering

OWNER OBJECTIVE

Harry Green Chevrolet, Inc. is a car dealership in a in a landslide-prone area of Clarksburg. A landslide had occurred on the steep hillside to the rear of the dealership and it had impacted a gas pipeline. Harry Green Chevrolet intended to remediate the landslide and stabilize the area surrounding the pipeline. Old surface mining and deep mining operations had occurred at the site. Thick surface mine spoil had to be considered in the design.

CEC APPROACH

CEC designed two wall options that would remediate the landslide, stabilize the slope, and provide for stormwater control. Harry Green Chevrolet selected the ReCon block retaining wall option. CEC ensured that grading behind the wall covered the exposed pipeline. A v-ditch was constructed across the top of the slope for added drainage. Stabilizing the slope and covering the exposed gas line kept Harry Green Chevrolet out of a potentially expensive lawsuit with the owner of the line.

CEC constructed the wall in a manner that added usable space at the rear of the dealership's existing parking area while presenting a pleasing view, thus not only fixing the problem but also improving aspects of the property.

Civil & Environmental Consultants, Inc.

LANDSLIDE REMEDIATION FOR ZINNIA SLIP #8

OWNER/CLIENT

Antero Resources

LOCATION

New Milton, WV

CEC SERVICES

Geotechnical Engineering

Landslide Assessment/Remediation

Site Grading/Earthwork Analysis

Slope Stability Analysis

Stormwater Management/BMP Design

Horizontal & Vertical Control Surveys

LiDAR Surveys—Short- and Long-Range

Oil & Gas Pipeline Surveys

Topographic Surveys

Construction Quality Assurance

OWNER OBJECTIVE

Headquartered in Denver, Colorado, Antero Resources Corporation is an independent oil and natural gas company engaged in the exploration, development, and production of natural gas, natural gas liquids, and oil properties located in the Appalachian Basin of West Virginia and Ohio.

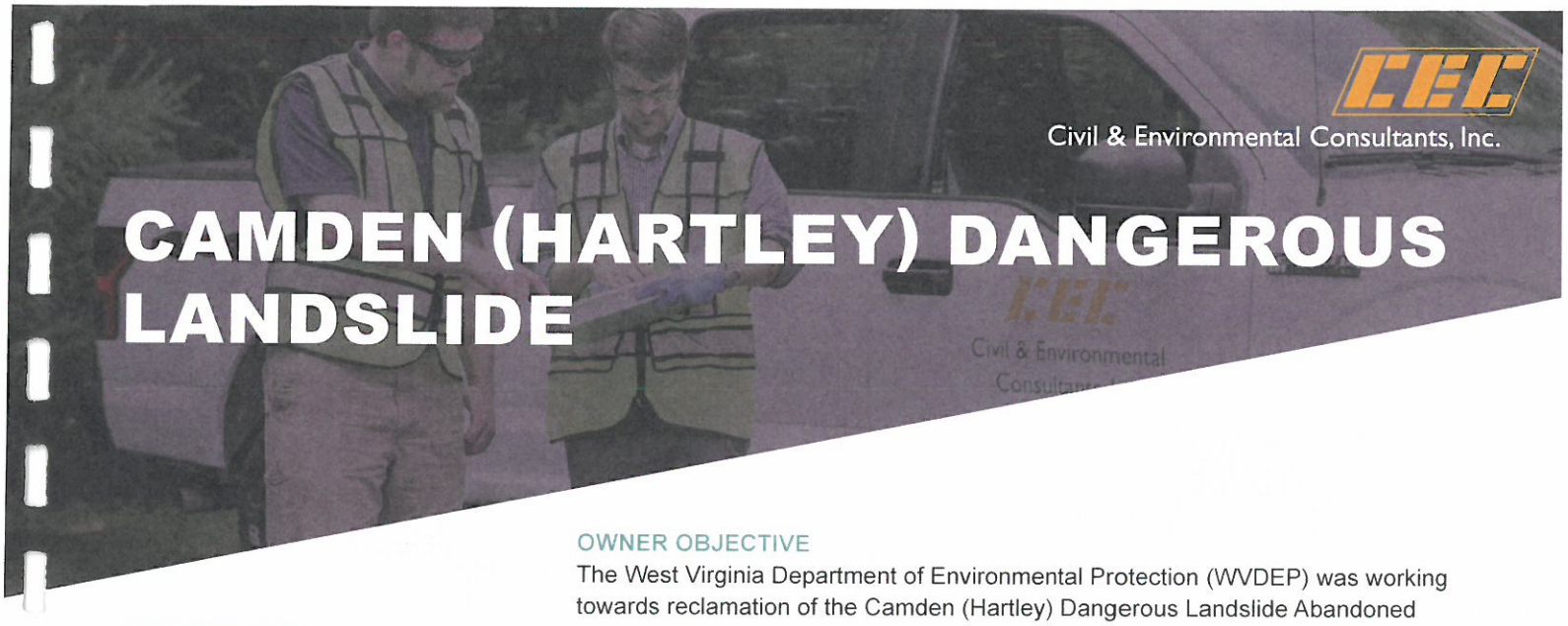
Antero Resources was seeking to remediate a landslide on a shared pipeline right-of-way (ROW) containing three gas pipelines and one waterline belonging to Crestwood Midstream Partners, LP, Antero Resources Corporation, and Summit Midstream. Antero Resources wanted to ensure that the slope would be stable going forward. The site was located on a steeply sloping hillside, and the landslide was located in an area where a previous repair was attempted. A significant amount of groundwater was escaping from the hillside, causing the soils to become saturated. The project area contained wetlands and streams.

CEC APPROACH

CEC worked with Antero to design a slip repair, which minimized impacts to the wetlands and streams. CEC's repair approach involved the excavation of a toe key and an intermediate fill key to support the structural fill placed back in the slip area. Numerous drains were placed during the repair process to divert the groundwater outlet away from the landslide area.

CEC utilized geocomposite drains (AWD Sheet) drains on the back slopes of the excavations as blanket drains which resulted in significant cost savings in both material and labor cost for the problem. The fill keys and improved drainage will lessen the potential for future slope movement.

CEC also provided construction quality assurance services during remediation to ensure the project conformed to project specifications.



Civil & Environmental Consultants, Inc.

CAMDEN (HARTLEY) DANGEROUS LANDSLIDE

OWNER/CLIENT

West Virginia Department of Environmental Protection

LOCATION

Camden, WV

CEC SERVICES

Site Grading/Earthwork Analysis

Stormwater Management/BMP Design

Hydrogeology and Groundwater Modeling

Groundwater/Surface Water Remediation Systems

Topographic Surveys

Calculation Brief

Construction Plans and Specifications

Bid Estimate and Engineer's Cost Estimate

OWNER OBJECTIVE

The West Virginia Department of Environmental Protection (WVDEP) was working towards reclamation of the Camden (Hartley) Dangerous Landslide Abandoned Mine Lands, located near Camden in Lewis County, West Virginia. A pre-SMCRA cast-over-the-hill mine spoil was slipping and threatening four houses.

CEC APPROACH

CEC was awarded a contract to perform engineering services for the reclamation design of the Camden (Hartley) Dangerous Landslide Abandoned Mine Lands Project. CEC performed field surveying tasks to complement aerial mapping supplied by the DEP; developed and implemented a detailed subsurface investigation to determine the stability of the cast-over-the-hill mine spoil in the project area; and performed a detailed preliminary investigation to include public and private records. The preliminary investigation obtained available mine maps, interviewed affected landowners, evaluated construction and drill access, and located sources for materials to be used in reclamation of the project.

CEC developed reclamation cost alternatives that compared installation of a retaining structure by removing cast-over-the-hill spoil to a stable configuration. CEC designed approximately 500 linear feet of ditches; 200 linear feet of subsurface drains; and hydraulic and hydrologic analyses for project area pipes. CEC also performed topographic surveying; generated construction mapping; analyzed soil test results to determine soil amendments for vigorous vegetative growth; developed sediment control design as well as submitted an NPDES permit for the project; developed preliminary and final design construction plans and specifications; designed mine pool dewatering operations and mine drainage treatment plans; developed an engineer's cost estimate, bid schedule, and calculation brief; attended initial on-site, preliminary design, and final design meetings.

The project was completed in September 2014.

Civil & Environmental Consultants, Inc.

LANDSLIDE STABILIZATION

OWNER/CLIENT

Confidential

LOCATION

Pennsylvania

CEC SERVICES

Surveying Services

Geotechnical Engineering

Site Grading/Earthwork Analysis

Landslide stabilization design

Construction Quantity Estimating

Overview of landslide area

OWNER OBJECTIVE

A landslide occurred within a lateral pipeline Right-Of-Way (ROW), extending across the entire ROW on the bottom portion of steep slope adjacent to a Pennsylvania Department of Transportation (PennDOT) state roadway. The slide mass encroached on both PennDOT's ROW and roadway. The owner of the pipeline desired to repair the slide and address PennDOT's concerns about the long-term stability of the slope. Slide repair options would be complicated by the narrow limits of the pipeline ROW and limited space available for remedial construction.

CEC APPROACH

Site reconnaissance was conducted to evaluate site conditions and delineate the landslide limits. CEC provided topographic survey services to document the slide geometry and site topography for use in conducting slope stability evaluations and developing design plans. A drilling firm was subcontracted to conduct a subsurface investigation.

Earthwork remedial solutions generally are the most cost-effective, but require enough working space to excavate slide material and stage it prior to reconstructing the slope as an engineered fill. The client indicated that real estate was not available to stage and condition excavated slide material. Therefore, CEC developed a remedial approach consisting of drilled shafts to stabilize the slide, which would significantly reduce earthwork requirements and limit the space required for construction. CEC subsequently submitted the design and investigation report to PennDOT for review. In addition, CEC conducted preliminary engineering for an earthwork solution so that the client could further evaluate repair alternatives and costs. This is an on-going project.

Drilling on Landslide

Civil & Environmental Consultants, Inc.

STREAM CROSSINGS 52 & 53 LANDSLIDE REMEDIATION

OWNER/CLIENT

Confidential

LOCATION

Marshall County, WV

CEC SERVICES

Survey / GPS / GIS Services

Geotechnical Engineering

Site Grading / Earthwork Analysis

Erosion & Sedimentation Control / NPDES Permitting

Construction Services

Integrated Project Delivery

OWNER OBJECTIVE

A leading provider in the natural gas midstream industry was faced with regulatory violations caused by landslides impacting two streams along existing pipeline routes. The site is a remote wooded hillside with a natural gas pipeline right-of-way (ROW) adjacent to two unnamed tributaries. The steeply sloped ROW was plagued by active and historic landslides, related to surface water runoff and ground water seeps from the hillside.

CEC APPROACH

In 2013, CEC visited the site to observe landslides adjacent to a 10-inch-diameter gas pipeline along this ROW. CEC observed ground movement, which threatened the integrity of the pipeline, and recommended the pipeline be re-installed by trenching into bedrock on the upslope side of the ROW. During a site visit in Spring 2014, CEC observed four landslides within the ROW and three adjacent to the limits of disturbance (LOD). Due to the pipeline relocation, the gas line was not in danger of rupture and, at that time, streams were not being impacted. The client installed a second 10-inch-diameter gas line along the ROW in Fall 2014. CEC revisited the site in Spring 2015 and noted that while the landslides along the ROW were partially remediated during installation of the second gas line, surface and groundwater issues were not properly addressed. CEC identified four major areas of concern; two of which included landslide debris blocking the unnamed tributaries.

CEC's subcontractor built access roads and installed seven stream and pipeline crossings to mobilize a drill rig to the site. The same subcontractor then created access roads and stabilized soil benches within slide areas to facilitate geotechnical test drilling. A combination of drone- and ground-based LiDAR and traditional survey methods helped create 3-D images of the existing landslides, stream channels, and groundwater seeps.

CEC's landslide remediation design included battered soil nails to stabilize an area of the slope, allowing construction of an overlying geogrid reinforced soil buttress within the most severe landslide area. Shallow landslides will be remediated using cement-stabilized soils and flattened slopes. Temporary cofferdams and a system of by-pass pumps will be constructed to remediate the streams to their original path. Surface water will be directed via waterbars into surficial channels that gently wind down the slope, slowing velocity before emptying into one of the existing tributaries. Ground water will be collected via a system of Hydroplanks and subsurface drains that connect to one of the surficial channels. Other considerations during design were to provide an access road for the landowner over the pipeline ROW and to maintain a natural feel to the valley; therefore, no stormwater pipes, inlet structures, manholes, or concrete could remain visible to visitors to the area. The project is currently out to bid, with CEC holding the construction contract to remediate approximately 1,200 linear feet of ROW and the corresponding landslides/water issues. CEC will provide daily on-site project management/CQA services.

Civil & Environmental Consultants, Inc.

LANDSLIDE STABILIZATION

OWNER/CLIENT

Confidential

LOCATION

West Virginia

CEC SERVICES

Surveying Services

Geotechnical Engineering

Site Grading/Earthwork Analysis

Landslide stabilization design

OWNER OBJECTIVE

When a landslide impacted a slope just west of a well pad on this company's active take-away pipeline right-of-way (ROW), the pipeline in the ROW was exposed at multiple locations. Repairs would need to be made to protect the integrity of the pipeline, but the slide area was difficult to access as it was located on a very steep hillside adjacent to a creek.

CEC APPROACH

CEC conducted a site reconnaissance to assess site conditions and determined that water had triggered the slide. CEC surveyors provided topographic survey services to document the slide limits and collect site topography for use in development of slope reconstruction plans. The approach was to develop and implement a remedial design, making modifications as needed based on field conditions encountered during construction, as opposed to the traditional approach of conducting a subsurface investigation and then preparing a design. This approach was selected in order to limit intrusive investigation in the vicinity of the active pipeline and to facilitate expedited implementation of a repair.

CERTIFICATE OF *Authorization*

STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS

The West Virginia State Board of Registration for Professional Engineers having verified the person in responsible charge is registered in West Virginia as a professional engineer for the noted firm, hereby certifies

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
C02231-00

Engineer in Responsible Charge: STEVEN A. CAIN - WV PE 015264
has complied with section §30-13-17 of the West Virginia Code governing the issuance of a Certificate of Authorization. The Board hereby notifies you of its certification with issuance of this Certification of Authorization for the period of:

January 1, 2020 - December 31, 2021

providing for the practice of engineering services in the State of West Virginia.

IF YOU ARE REQUIRED TO REGISTER WITH THE SECRETARY OF STATE'S OFFICE.
PLEASE SUBMIT THIS CERTIFICATE WITH YOUR APPLICATION.

IN TESTIMONY WHEREOF, THE WEST VIRGINIA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS HAS ISSUED THIS COA UNDER ITS SEAL, AND SIGNED BY THE PRESIDENT OF SAID BOARD.

BOARD PRESIDENT

WEST VIRGINIA BOARD OF PROFESSIONAL SURVEYORS

Certificate of Authorization

Civil & Environmental Consultants, Inc.

Pittsburgh, Pennsylvania

CERTIFICATE OF AUTHORIZATION # 20-5615

This certificate is issued by the West Virginia Board of Professional Surveyors in accordance with *W.Va. Code §30-13A-20*
The person or organization identified on this certificate is licensed to conduct professional surveying and mapping services in the State of West Virginia for the period

January 1, 2020 through December 31, 2020

This certificate is not transferrable and must be displayed at the office location for which issued.

In witness whereof, I have put my hand, this 31st day of December 2019

2020

Sefton R. Stewart, P.S., Chairman

Lantz G. Rankin, P.S., Member

James T. Rayburn, P.S., Secretary

Gary D. Facemyer, P.E, P.S., Member

Douglas C. McElwee, *Esq.*, Public Member

Appendix F -

Addendum Acknowledgment Form, Disclosure of Interested Parties to Contracts, Purchasing Affidavit, Vendor Preference Certificate

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Devanna M. Corley, Principal
(Name, Title)
Devanna M. Corley, Principal
(Printed Name and Title)
600 Marketplace Ave. Suite 200
(Address)
304-848-7110
(Phone Number) / (Fax Number)
dcorley@cecinc.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
(Company)

, PRINCIPAL
(Authorized Signature) (Representative Name, Title)

GREG LINDER, PRINCIPAL
(Printed Name and Title of Authorized Representative)

9-2-2020
(Date)

304-933-3119
(Phone Number) (Fax Number)

ADDITIONAL TERMS AND CONDITIONS
(Architectural and Engineering Contracts Only)

1. PLAN AND DRAWING DISTRIBUTION: All plans and drawings must be completed and available for distribution at least five business days prior to a scheduled pre-bid meeting for the construction or other work related to the plans and drawings.

2. PROJECT ADDENDA REQUIREMENTS: The Architect/Engineer and/or Agency shall be required to abide by the following schedule in issuing construction project addenda. The Architect/Engineer shall prepare any addendum materials for which it is responsible, and a list of all vendors that have obtained drawings and specifications for the project. The Architect/Engineer shall then send a copy of the addendum materials and the list of vendors to the State Agency for which the contract is issued to allow the Agency to make any necessary modifications. The addendum and list shall then be forwarded to the Purchasing Division buyer by the Agency. The Purchasing Division buyer shall send the addendum to all interested vendors and, if necessary, extend the bid opening date. Any addendum should be received by the Purchasing Division at least fourteen (14) days prior to the bid opening date.

3. PRE-BID MEETING RESPONSIBILITIES: The Architect/Engineer shall be available to attend any pre-bid meeting for the construction or other work resulting from the plans, drawings, or specifications prepared by the Architect/Engineer.

4. AIA DOCUMENTS: All construction contracts that will be completed in conjunction with architectural services procured under Chapter 5G of the West Virginia Code will be governed by the attached AIA documents, as amended by the Supplementary Conditions for the State of West Virginia, in addition to the terms and conditions contained herein. The terms and conditions of this document shall prevail over anything contained in the AIA Documents or the Supplementary Conditions.

5. GREEN BUILDINGS MINIMUM ENERGY STANDARDS: In accordance with West Virginia Code § 22-29-4, all new building construction projects of public agencies that have not entered the schematic design phase prior to July 1, 2012, or any building construction project receiving state grant funds and appropriations, including public schools, that have not entered the schematic design phase prior to July1, 2012, shall be designed and constructed complying with the ICC International Energy Conservation Code, adopted by the State Fire Commission, and the ANSI/ASHRAE/IESNA Standard 90.1-2007: Provided, That if any construction project has a commitment of federal funds to pay for a portion of such project, this provision shall only apply to the extent such standards are consistent with the federal standards.

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

- [x] Addendum No. 1
- [ ] Addendum No. 2
- [ ] Addendum No. 3
- [ ] Addendum No. 4
- [ ] Addendum No. 5
- [ ] Addendum No. 6
- [ ] Addendum No. 7
- [ ] Addendum No. 8
- [ ] Addendum No. 9
- [ ] Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
Company

Authorized Signature

9-2-2020
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

West Virginia Ethics Commission

Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of $1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

"Business entity" means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation, but does not include publicly traded companies listed on a national or international stock exchange.

"Interested party" or *"Interested parties"* means:

(1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
(2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
(3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

"State agency" means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of W. Va. Code § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: ethics@wv.gov; website: www.ethics.wv.gov.

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

Authorized Signature: _____ Date: 9-2-2020

State of West Virginia

County of Harrison, to-wit:

Taken, subscribed, and sworn to before me this 2 day of September, 2020.

My Commission expires March 24, 2021.

AFFIX SEAL HERE

NOTARY PUBLIC OFFICIAL SEAL
SYDNEY JACOBS
State of West Virginia
My Comm. Expires Mar 24, 2021
Civil & Environmental Consultants Inc
600 Marketplace Suite 200
Bridgeport WV 26330

NOTARY PUBLIC Sydney Jacobs

West Virginia Ethics Commission

Disclosure of Interested Parties to Contracts

(Required by *W. Va. Code* § 6D-1-2)

Name of Contracting Business Entity: CIVIL & ENVIRONMENTAL CONSULTANTS, INC. **Address:** 600 MARKETPLACE AVE, SUITE 200, BRIDGEPORT, WV 26330

Name of Authorized Agent: GREG LINDER **Address:** SAME

Contract Number: CEDI 0313 DEP 2100000001 **Contract Description:** SARDIS (SAAS) LANDSLIDE AMTA

Governmental agency awarding contract: WVDEP AML

☐ **Check here if this is a Supplemental Disclosure**

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below *(attach additional pages if necessary)*:

1. **Subcontractors or other entities performing work or service under the Contract**
   ☒ Check here if none, otherwise list entity/individual names below.
   NGE, LLC, JOHN NOTTINGHAM
   TRIAD ENGINEERING, JOHN HARNES
2. **Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**
   ☒ Check here if none, otherwise list entity/individual names below.
3. **Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**
   ☒ Check here if none, otherwise list entity/individual names below.

Signature: _____ Date Signed: 8-2-2020

Notary Verification

State of West Virginia, County of Harrison:

I, Greg Linder, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 2nd day of September, 2020.

Sydney Jacobs
Notary Public's Signature

To be completed by State Agency:
Date Received by State Agency: _____
Date submitted to Ethics Commission: _____
Governmental agency submitting Disclosure: _____

NOTARY PUBLIC OFFICIAL SEAL
SYDNEY JACOBS
State of West Virginia
My Comm. Expires Mar 24, 2021
Civil & Environmental Consultants Inc
600 Marketplace Suite 200
Bridgeport, WV 26330

Revised June 8, 2018

Appendix G -
Schedule of Terms and Conditions

EXPRESSION OF INTEREST

Sardis (Saas) Landslide

SECTION FIVE: TERMS AND CONDITIONS

Terms and conditions begin on the next page.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or "Agencies" means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or "Proposal" means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or "Vendors" means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

Initial Contract Term: Initial Contract Term: This Contract becomes effective on _____ and extends for a period of _____year(s).

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☑ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within One thousand ninety five (1,095) calendar days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that maintenance, monitoring, or warranty services will be provided for _____ year(s) thereafter.

☐ **One Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Other:** See attached.

4. NOTICE TO PROCEED: Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☑ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☐ **One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

☐ **BID BOND (Construction Only):** Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

☐ **PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of 100% of the contract. The performance bond must be received by the Purchasing Division prior to Contract award.

☐ **LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under $100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

☐ **MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

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The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below and must include the State as an additional insured on each policy prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

Vendor must maintain:

☑ **Commercial General Liability Insurance** in at least an amount of: $1,000,000.00 per occurrence.

☑ **Automobile Liability Insurance** in at least an amount of: $1,000,000.00 per occurrence.

☑ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: $1,000,000.00 per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____ per occurrence.

☐ **Cyber Liability Insurance** in an amount of: _____ per occurrence.

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

☐ **Pollution Insurance** in an amount of: _____ per occurrence.

☐ **Aircraft Liability** in an amount of: _____ per occurrence.

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Notwithstanding anything contained in this section to the contrary, the Director of the Purchasing Division reserves the right to waive the requirement that the State be named as an additional insured on one or more of the Vendor's insurance policies if the Director finds that doing so is in the State's best interest.

9. WORKERS' COMPENSATION INSURANCE: The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. [Reserved]

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____

☐ Liquidated Damages Contained in the Specifications

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

14. PAYMENT IN ARREARS: Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

20. TIME: Time is of the essence with regard to all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

> **SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/default.html.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR CERTIFICATIONS: By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. PURCHASING AFFIDAVIT: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State, Vendors are required to sign, notarize, and submit the Purchasing Affidavit to the Purchasing Division affirming under oath that it is not in default on any monetary obligation owed to the state or a political subdivision of the state.

38. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE: This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts ("Other Government Entities"), provided that both the Other Government Entity and the Vendor agree. Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

39. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

40. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☑ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.requisitions@wv.gov.

41. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

42. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.

b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or

d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

43. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a

"substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

44. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least $1 million, the vendor must submit to the Agency a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-award interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

45. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.