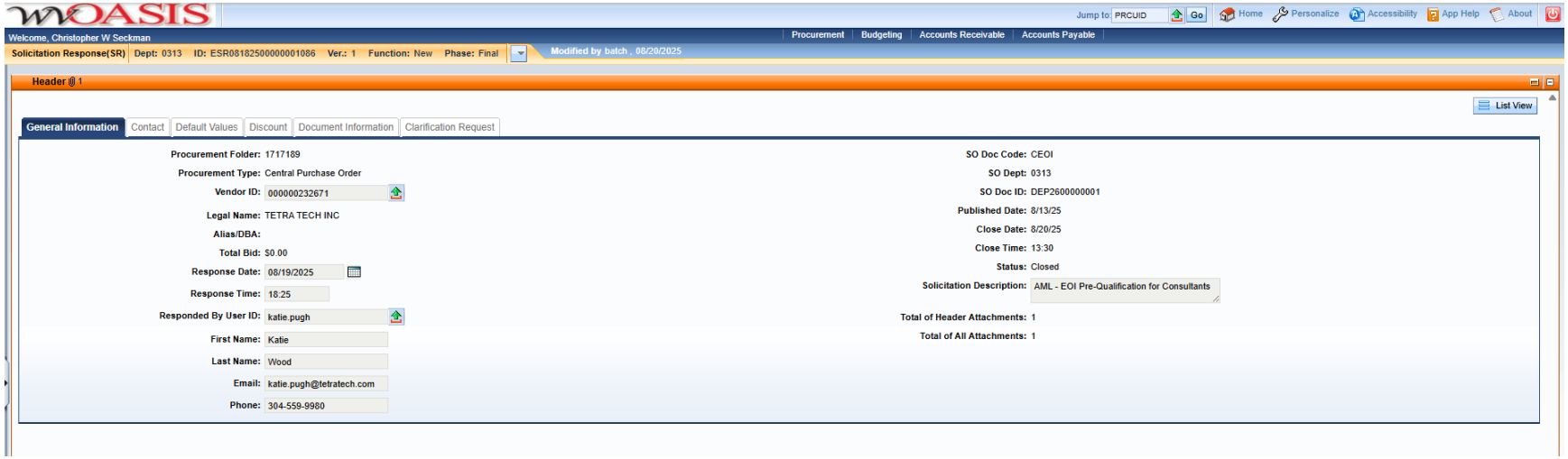
The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.


WVOASIS
Jump to PRCUID Go
Home
Personalize
Accessibility
App Help
About
Welcome, Christopher W Seckman
Procurement
Budgeting
Accounts Receivable
Accounts Payable
Solicitation Response(SR) Dept: 0313 ID: ESR08182500000001086 Ver.: 1 Function: New Phase: Final
Modified by batch , 08/20/2025
Header 1
List View
General Information
Contact
Default Values
Discount
Document Information
Clarification Request
Procurement Folder: 1717189
Procurement Type: Central Purchase Order
Vendor ID: 000000232671
Legal Name: TETRA TECH INC
Alias/DBA:
Total Bid: $0.00
Response Date: 08/19/2025
Response Time: 18:25
Responded By User ID: katie.pugh
First Name: Katie
Last Name: Wood
Email: katie.pugh@tetratech.com
Phone: 304-559-9980
SO Doc Code: CEOI
SO Dept: 0313
SO Doc ID: DEP2600000001
Published Date: 8/13/25
Close Date: 8/20/25
Close Time: 13:30
Status: Closed
Solicitation Description: AML - EOI Pre-Qualification for Consultants
Total of Header Attachments: 1
Total of All Attachments: 1

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder:	1717189
Solicitation Description:	AML - EOI Pre-Qualification for Consultants
Proc Type:	Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2025-08-20 13:30	SR 0313 ESR08182500000001086	1

VENDOR

000000232671
TETRA TECH INC

Solicitation Number: CEOI 0313 DEP2600000001

Total Bid: 0 **Response Date:** 2025-08-19 **Response Time:** 18:25:47

Comments:

FOR INFORMATION CONTACT THE BUYER
Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor
Signature X **FEIN#** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	EOI Engineering Design Services				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

EOI Engineering Design Services

EXPRESSION OF INTEREST
Pre-Qualification for Design Firms

EOI AML Engineering Design Services

Prepared for:

West Virginia Department Environmental Protection

2019 Washington ST. E
Charleston, WV 25305
joseph.e.hageriii@wv.gov

Submitted by:

Tetra Tech

The Maxwell Center, 32 Twentieth Street
Suite 100
Wheeling, WV 26003

RFP: CEOI 0313 DEP2600000001

August 20, 2025

Document status

Version	Purpose of document	Authored by	Reviewed by	**Approved by**	Review date
1	Expression Of Interest	Katie Wood	Heather Dial	Eric Cavazza, PE	8/19/25

Approval for issue

Eric Cavazza, PE		August 18, 2025

Restriction on Disclosure and Use of Data This proposal includes data that shall not be disclosed outside The Client and shall not be duplicated, used, or disclosed - in whole or in part - for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of - or in connection with - the submission of this data, The Client shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit The Client's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are constrained on each sheet of this submittal.

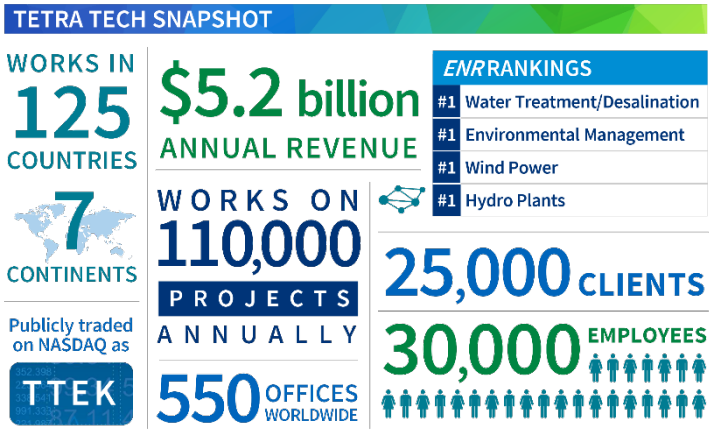
Prepared by:	**Prepared for:**
Tetra Tech	West Virginia Department Environmental Protection
Eric Cavazza, PE Vice President, Legacy Coal Remediation	Joseph (Josh) E Hager III
The Maxwell Center, 32 Twentieth Street Suite 100 Wheeling, WV 26003	2019 Washington ST. E Charleston, WV 25305
T (412) 522-9764 E Eric.Cavazza@tetratech.com	E joseph.e.hageriii@wv.gov

Table of Contents

Appendices

1.0 Who Is Tetra Tech

Tetra Tech Inc. (Tetra Tech) is a leading global provider of environmental, consulting, engineering, and technical services, specializing in mining sites. Throughout its history Tetra Tech has completed thousands of mining projects worth hundreds of millions of dollars. Tetra Tech is a leading provider of innovative solutions in consulting, engineering, portfolio and program management, construction management, and technical services worldwide. With over 30,000 associates at locations around the globe, we are proud to have on staff leading technical experts in every discipline who provide value added service throughout the project life cycle. We have over 3,000 associates specializing in mining services providing a comprehensive lifecycle support service. Our commitment to safety and environmental protection are ingrained in our culture and are at the forefront of every project.



In 2025, Tetra Tech achieved high environmental rankings as the #7 environmental firm in the top 200 Environmental Firms, and high design rankings in Water Treatment and Desalination (**#1** for 12 consecutive years), Environmental Management (#1), and the #3 overall design firm among the top 500 firms.

Tetra Tech brings extensive experience managing Abandoned Mine Land (AML) reclamation and Abandoned Mine Drainage (AMD) treatment and abatement projects for a wide range of Federal and State agencies, watershed groups, and non-governmental organizations nationwide. Our team is deeply committed to supporting the mission of mitigating environmental pollutants and addressing safety hazards associated with legacy mining activities.

The bituminous and anthracite coalfields of the Appalachian region once fueled significant economic growth; however, this development came at great environmental cost prior to the implementation of modern reclamation laws and regulations. Tetra Tech understands the historical context and evolving regulatory landscape that guide today's reclamation and treatment efforts.

We recognize the complex management requirements of AML and AMD projects and have developed proven procedures to ensure the successful execution of each project. This includes robust systems for contract administration, regulatory compliance, health and safety oversight, and technical execution. Furthermore, we prioritize stakeholder engagement throughout every phase of the project, ensuring timely communication and coordination to meet project goals effectively and efficiently.

> *"Tetra Tech is a reliable, experienced, cost-conscious project partner that consistently provides precision, accuracy, timeliness, and peace-of-mind."*
> ***Michael S. Lazorcik, PE, PA DEP Bureau of Abandoned***

Locations

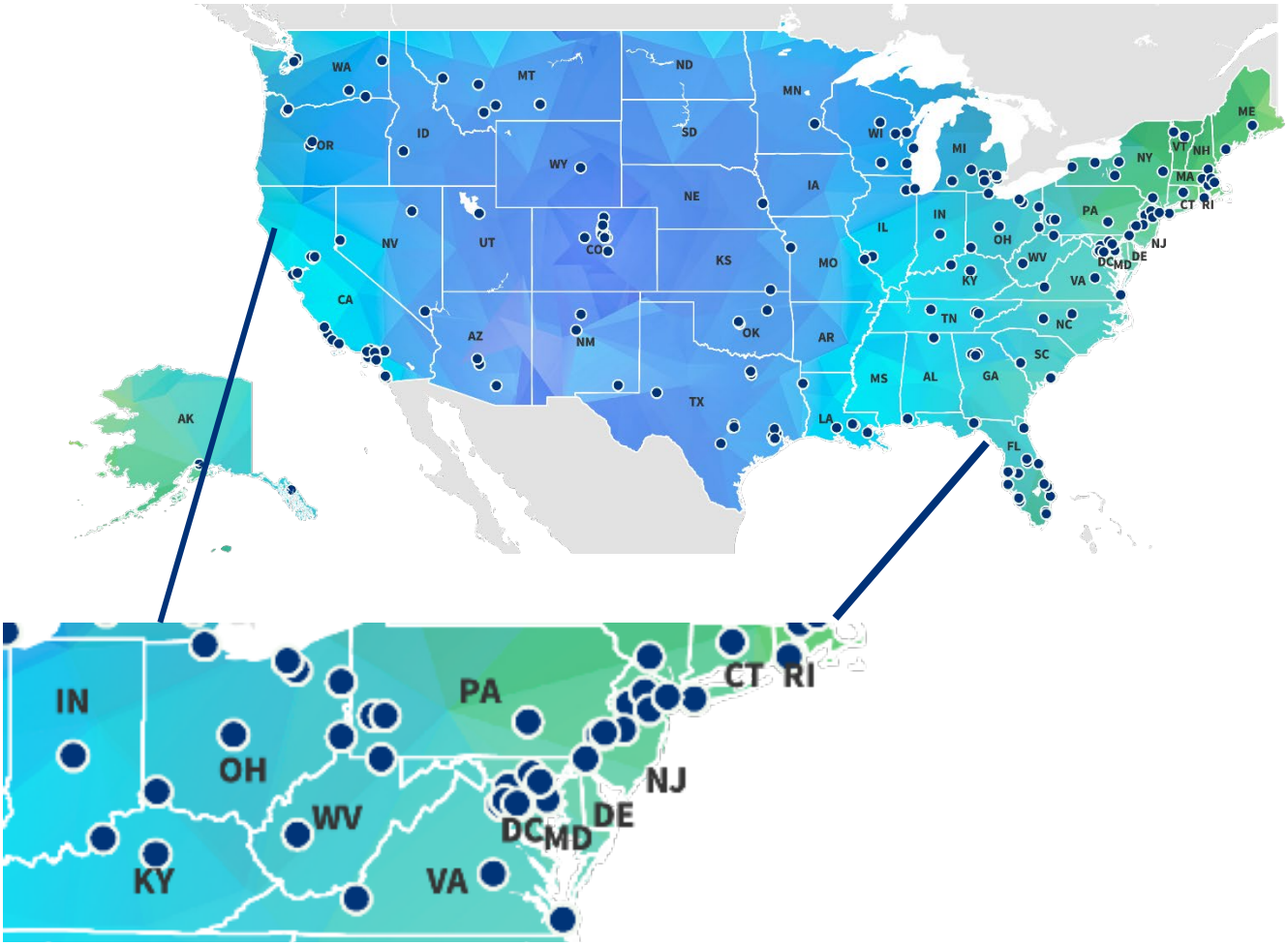
Tetra Tech offers strong, localized support for the West Virginia Department of Environmental Protection's Office of Abandoned Mine Lands and Reclamation (WVDEP-AML&R) through our well-established presence across the state and surrounding region. We maintain fully staffed offices in Charleston, Morgantown, and Wheeling, providing convenient proximity to AML&R's headquarters and key project sites across the state.

Our Charleston office, located just minutes from AML&R's facility on 57th Street SE, enables quick coordination and in-person meetings, fostering efficient communication and project responsiveness. This office serves as a central hub for mobilizing staff and resources statewide, particularly for time-sensitive or emergency-response assignments.

In addition to our in-state offices, Tetra Tech operates regional facilities in Ohio, Pennsylvania, and Virginia, each staffed with professionals experienced in mine land reclamation, environmental remediation, permitting, hydrology, and geotechnical engineering. This regional network allows us to:

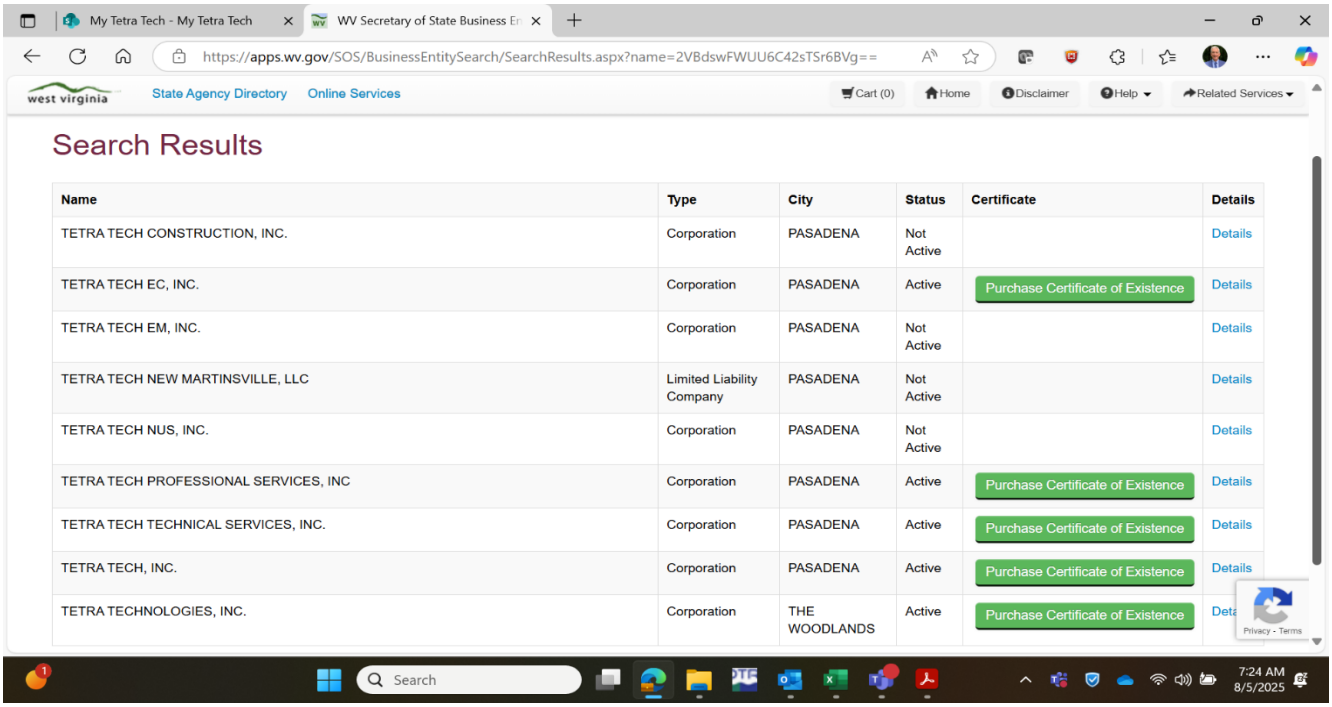
- Rapidly mobilize personnel and equipment to remote or urgent field locations
- Scale staffing and technical expertise to meet varying project demands
- Maintain continuity of service throughout long-term engagements

Our accessible and regionally integrated office structure ensures that WVDEP receives responsive, consistent, and technically sound support—delivered by professionals who understand the unique environmental, cultural, and regulatory context of West Virginia and the broader Appalachian region.



Licenses and Professional Registrations

Certificate of Authorization



State of West Virginia

Certificate

I, Kris Warner, Secretary of State of the State of West Virginia, hereby certify that

TETRA TECH, INC.

a corporation formed under the laws of Delaware filed an application to be registered as a foreign corporation authorizing it to transact business in West Virginia. The application was found to conform to law and a "Certificate of Authority" was issued by the West Virginia Secretary of State on December 13, 2002.

I further certify that the corporation has not been revoked by the State of West Virginia nor has a Certificate of Withdrawal been issued to the corporation by the West Virginia Secretary of State.

Accordingly, I hereby issue this Certificate of Authorization

CERTIFICATE OF AUTHORIZATION

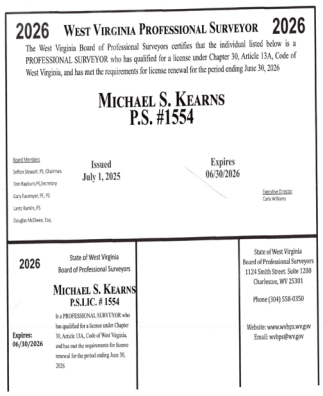
Validation ID:2WV5H_XWW98

Given under my hand and the Great Seal of the State of West Virginia on this day of August 13, 2025

Secretary of State

Notice: A certificate issued electronically from the West Virginia Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Certificate Validation Page of the Secretary of State's Web site, https://apps.wv.gov/sos/businessentitysearch/validate.aspx entering the validation ID displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate.

Engineer on Record (Mike Kearns)



2026 WEST VIRGINIA PROFESSIONAL SURVEYOR 2026

The West Virginia Board of Professional Surveyors certifies that the individual listed below is a PROFESSIONAL SURVEYOR who has qualified for a license under Chapter 30, Article 13A, Code of West Virginia, and has met the requirements for license renewal for the period ending June 30, 2026

MICHAEL S. KEARNS
P.S. #1554

Issued
July 1, 2025

Expires
06/30/2026

2026
State of West Virginia
Board of Professional Surveyors

MICHAEL S. KEARNS
P.S.LIC. # 1554

Is a PROFESSIONAL SURVEYOR who has qualified for a license under Chapter 30, Article 13A, Code of West Virginia, and has met the requirements for license renewal for the period ending June 30, 2026

Expires:
06/30/2026

State of West Virginia
Board of Professional Surveyors
1124 Smith Street, Suite 1210
Charleston, WV 25301

Phone (304) 558-0350

Website: www.wvbps.wv.gov
Email: wvbps@wv.gov

West Virginia State Board of Registration
for Professional Engineers

MICHAEL S. KEARNS
WV PE #008748

This is to certify that the above named PROFESSIONAL ENGINEER has met the requirements of the law, is duly registered and is entitled to practice engineering in the State of West Virginia.

EXPIRES December 31, 2026

1.0 Key Staff

Tetra Tech's proposed team brings together nationally recognized experts in AML reclamation, engineering, surveying, and construction oversight. Each key team member offers decades of specialized experience directly aligned with the WVDEP-DLR-AML requirements for "full service" planning, design, and construction support. Our leadership's combined expertise ensures every project is designed, permitted, and delivered in compliance with NEPA, SMCRA, IIJA, and all applicable federal, state, and local regulations, while meeting schedule and budget commitments with minimal oversight from the Agency.

Eric E. Cavazza, P.E. – Vice President, Legacy Coal Reclamation
Mr. Cavazza brings over 38 years of state, federal, and private-sector experience in managing environmental restoration projects for AML hazards. His leadership spans program management, engineering design oversight, and regulatory compliance for multi-million-dollar programs. As former Bureau Director for the Pennsylvania DEP Bureau of Abandoned Mine Reclamation and Field Office Director for OSMRE, he has directed large, multi-disciplinary teams, overseen more than $50M in annual budgets, and served as a national technical instructor for AML design topics including mine subsidence, fires, and drainage treatment.

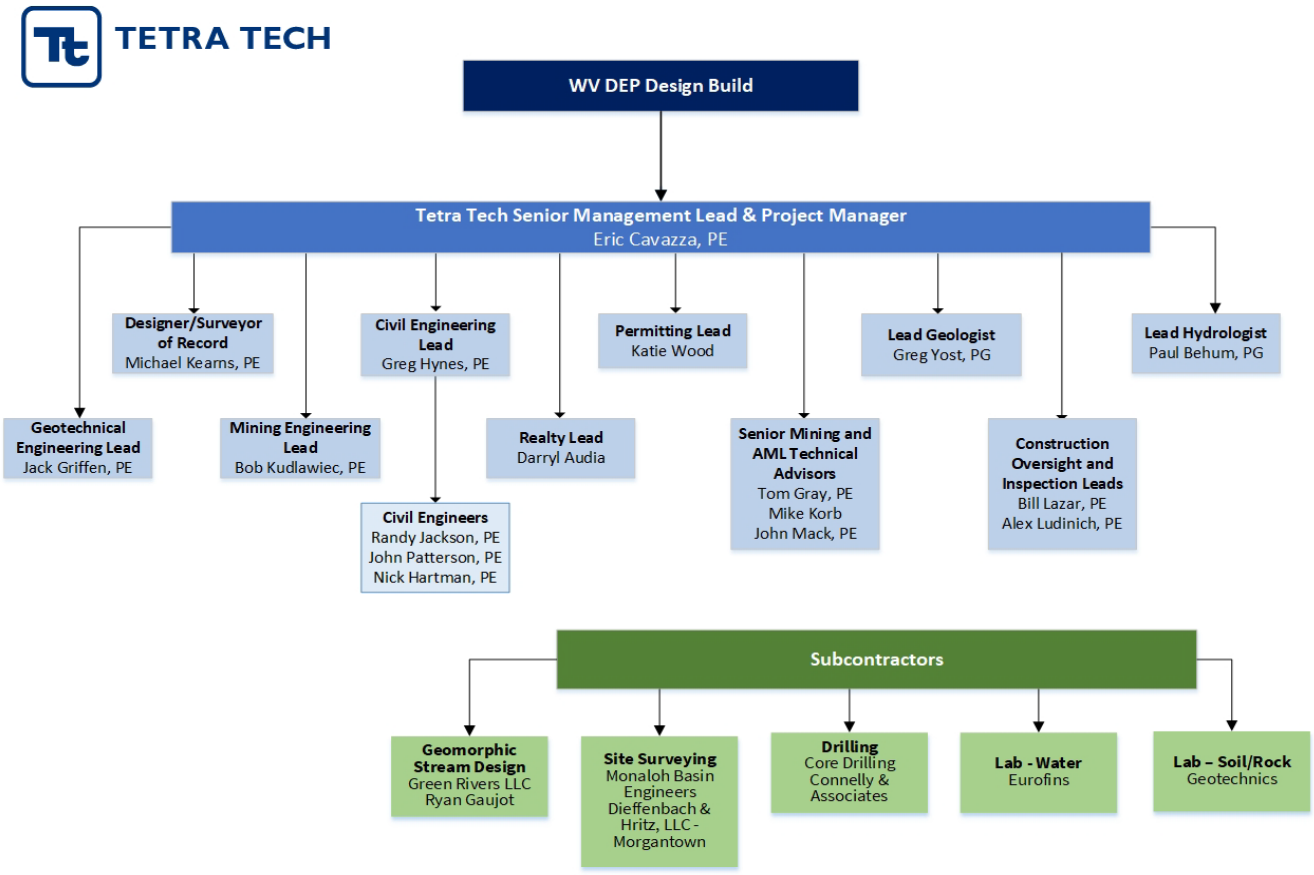
Michael S. Kearns, P.E., P.S. – Senior Civil Environmental Engineer (Engineer & Surveyor of Record)
Mr. Kearns is a licensed Professional Engineer in WV, OH, and PA, and a licensed Professional Surveyor in WV, with over 43 years of experience. He will serve as the engineer and surveyor stamping all project deliverables, ensuring accuracy, regulatory compliance, and constructability. His career includes hundreds of surface and underground coal mine permits, impoundment designs, stormwater control systems, and wetland/stream mitigation plans. He is MSHA-certified as an impoundment inspector and instructor and is experienced in complex permitting under WVDEP, PADEP, and ODNR-DMRM regulations.

Thomas A. Gray, P.E. – Senior Mining and AML Technical Advisor
With over 43 years in mining engineering, mine reclamation, coal ash utilization, and rare earth element assessment, Mr. Gray has managed numerous AML design contracts for PADEP, WVDEP, and other agencies. His work includes highwall elimination, subsidence mitigation, refuse pile removal, and acid mine drainage abatement. He is known for successfully leading technically complex, multi-agency projects that combine engineering innovation with environmental restoration and long-term site stability.

Michael C. Korb – Senior Mining and AML Technical Advisor

Mr. Korb offers more than 50 years of expertise in mining operations, reclamation design, and AML hazard abatement. He has directed the development, design, and construction of over 170 in-house and 90 contracted AML projects, addressing hazards such as highwalls, dangerous openings, mine fires, and drainage impacts. His background includes award-winning emergency response projects and leadership in integrating reclaimed mine lands into economic redevelopment initiatives.

John Francis Mack, P.E. – Senior Mining and AML Technical Advisor
Mr. Mack has 32 years of mining engineering experience, including extensive AML inspection and compliance oversight for OSMRE. He has served as lead engineer on more than 150 emergency AML reclamation projects, managing investigations, design, and construction in accordance with SMCRA and NEPA. His work includes high-hazard site mitigation, subsidence control, and dangerous openings abatement, along with serving as a national NTTP instructor for AML design course



Together, this leadership team combines over two centuries of collective expertise in engineering, surveying, mine reclamation, environmental permitting, and construction oversight. Our personnel have directed award-winning AML projects, served as trusted advisors to state and federal agencies, and led large-scale, multi-disciplinary teams to deliver safe, compliant, and sustainable reclamation solutions. With multiple West Virginia–licensed Professional Engineers and a Professional Surveyor, we are fully authorized to stamp and certify all required deliverables in accordance with WVDEP-DLR-AML and solicitation requirements. Leveraging Tetra Tech's nationwide resources and proven project management systems, our key staff ensure that every assignment is completed to the highest technical standards, on schedule, and in full compliance with NEPA, SMCRA, IIJA, and Build America, Buy America provisions.

Resumes for the full team are included in **Appendix A: Key Staff Resumes**

2.0 Staffing Plan

Tetra Tech's staffing plan is structured to provide WVDEP with a highly qualified, multidisciplinary team that ensures **full-service support** for planning, permitting, design, and construction oversight of AML projects. Our plan establishes clear lines of authority while maintaining flexibility to scale resources based on project complexity, schedule, and funding availability.

Organizational Structure

The team is led by **Eric E. Cavazza, P.E.**, who will serve as Principal-in-Charge and oversee all project assignments. He is supported by **Michael S. Kearns, P.E., P.S.**, who will act as Engineer and Surveyor of Record, ensuring that all design and survey deliverables are certified and compliant with WVDEP standards. Senior technical advisors, including **Thomas A. Gray, P.E.**, **Michael C. Korb**, and **John F. Mack, P.E.**, provide subject matter expertise in reclamation design, subsidence mitigation, and emergency response.

Supporting this leadership team are specialized staff in hydrology, geology, civil engineering, surveying, and environmental permitting. These professionals are drawn from Tetra Tech's West Virginia offices in Charleston, Morgantown, and Wheeling, ensuring **local presence and rapid mobilization**. Additional expertise in water treatment, construction management, and stakeholder engagement is available from our regional offices in Pennsylvania, Ohio, and Virginia.

Roles and Responsibilities

- **Principal-in-Charge (Cavazza)** – Provides executive oversight, assures quality, and serves as primary liaison with WVDEP leadership.
- **Engineer & Surveyor of Record (Kearns)** – Stamps all plans, specifications, and survey deliverables; responsible for regulatory compliance and technical accuracy.
- **Senior Technical Advisors (Gray, Korb, Mack)** – Guide project teams on complex AML issues, provide technical review, and support permitting and design decision-making.
- **Project Managers** – Assigned to individual tasks, responsible for budget, schedule, and day-to-day communication with WVDEP.
- **Discipline Leads** – Civil, geotechnical, hydrology, and environmental engineers who prepare designs, analyses, and permit applications.
- **Construction Oversight Staff** – Inspectors and resident engineers who provide field verification, contractor coordination, and QA/QC throughout construction.
- **Realty Specialists** – Coordinate rights-of-entry (ROE) and landowner negotiations, maintaining compliance with AML program requirements.
- **Safety and Quality Control Leads** – Ensure compliance with Tetra Tech's corporate H&S program and ISO 9001:2015 quality standards.
- **Flexibility and Surge Capacity**

Tetra Tech maintains a large pool of qualified engineers, scientists, and field personnel who can be mobilized quickly to meet overlapping schedules or unexpected project demands. This surge capacity ensures WVDEP will receive timely and uninterrupted support across all project phases.

Integrated Team Approach

Our staffing model emphasizes collaboration between disciplines, with early integration of construction and permitting specialists into the design process to improve constructability and reduce schedule risk. Regular team coordination meetings, both internal and with WVDEP staff, will ensure that responsibilities remain clear, deliverables are completed on schedule, and project objectives are consistently achieved.

3.0 Experience

Project 1. Gladden AMD Treatment Plant

Client

South Fayette Conservation Group

Location

South Fayette Township, Allegheny County, Pennsylvania

Duration

2019-2022

Cost

$13.5M

Project Team

Farley Wood – Project Manager

George Kay – Process Engineer

Michael Kearns - Civil Engineer

Katie Pugh - Permitting

References

Stephen Frank, P.E., President of South Fayette Conservation Group
Stephen.Frank@genon.com

KEY FEATURES

- Design engineering of AMD treatment plant
- Permitting
- Procure equipment
- Construction Management
- Operation of plant including sludge management/disposal
- Design flow average 750 gpm at 100 ppm Iron

PROJECT DESCRIPTION

Tetra Tech completed the Gladden AMD Treatment Plant (Cuddy, PA) on a greenfield site in design/build fashion in 15 months. The work was performed for the South Fayette Conservation Group (SFGC) and was funded by Office of Surface Mining Reclamation and Enforcement AML Pilot Program. The plant has a capacity of 1.5 MGD. Mine water from the abandoned Montour No. 2 Complex is pumped to the surface and treated prior to discharge to Miller's Run, a tributary to Chartiers Creek. Tetra Tech, working jointly with SFCG and their contracted plant operator, shares responsibility for operation and maintenance of the plant for its first full year of operation. The project also included an analysis of the underground mine pool and siting of locations to inject the sludge from the treatment plant back underground to a remote section of the mine where it would not migrate to the locations of the extraction wells.

Engineering Design and Permitting

Tetra Tech conducted bench scale and treatability testing for the process and equipment selection. Tetra Tech provided process, mechanical, civil, architectural, structural, and electrical/instrument design for the treatment plant, mine water pump extraction, sludge management and injection, and conveyance systems. This is a unique facility for typical acid coal mine discharges across PA in that it is the first of its kind, to use an oxidizer (Hydrogen Peroxide) as the primary treatment chemical because the raw mine water is not acidic. Tetra Tech prepared permits Ch 102 and Ch 105 permits and PennDOT HOPS for construction of the facility. Tetra Tech coordinated with a railroad company for a boring under a rail line.

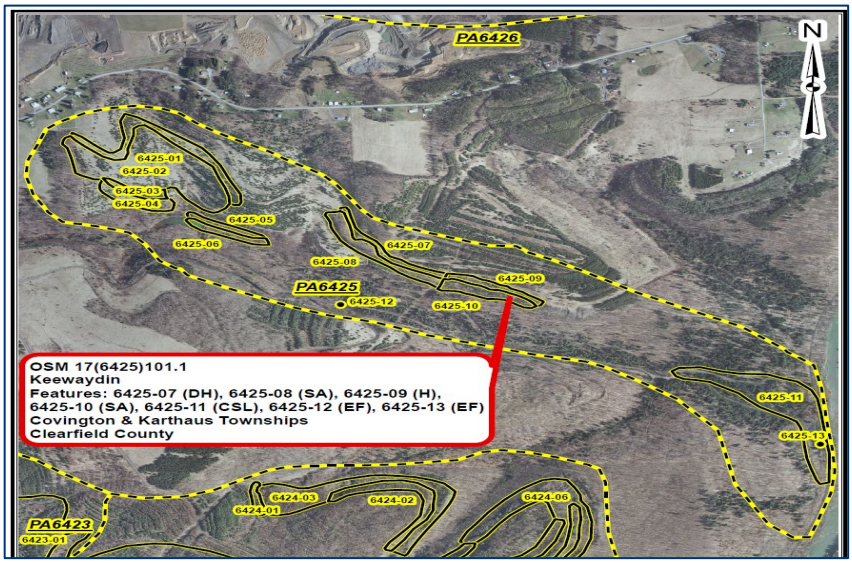
Construction and Operations

During start-up, Tetra Tech and the plant operators worked to update design settings to reflect operating conditions. Project partners included Chapman construction as the general contractor, John Kosky Contracting as the site civil contractor and landowner, and AMD Industries as the treatment plant operators.

PROJECT GOALS AND ACHIEVEMENTS

Goals:	Achievements:
→ **Design & Build** a high-capacity AMD treatment plant (750 gpm, 1.5 MGD) to treat mine water from the abandoned Montour No. 2 Complex before discharge to Miller's Run.	✓ **Completed in 15 Months** from greenfield site to operational facility.
→ **Obtain Permits** for construction and environmental compliance, including Ch 102, Ch 105, and PennDOT HOPS.	✓ **Secured All Permits** and coordinated with railroad for successful utility boring under rail line.
→ **Implement Innovative Treatment** using hydrogen peroxide oxidation for iron removal from non-acidic mine water—a first in Pennsylvania.	✓ **Bench-Scale & Treatability Testing** conducted to optimize process and equipment selection.
→ **Develop Sludge Management Plan** to safely inject treatment residuals into remote underground mine pool areas without affecting extraction wells.	✓ **Successful Innovation** with hydrogen peroxide treatment process, improving efficiency and adaptability for unique water chemistry.
→ **Deliver On Time & Budget** in a design/build format despite COVID-19 constraints.	✓ **Safe Sludge Disposal** achieved through detailed underground hydrogeologic analysis and strategic injection location selection.
→ **Operate & Maintain** the facility for its first year to ensure performance and reliability.	✓ **No COVID-19 Incidents** during construction; maintained continuous workflow and safety compliance.
	✓ **Collaborative Operations** with South Fayette Conservation Group and AMD Industries during the first year, fine-tuning design settings to real-world conditions.

Project 2. Keewaydin Abandoned Surface Mine Reclamation Project



PROJECT DESCRIPTION

The intent of the Keewaydin Abandoned Mine Reclamation Project to eliminate public health and safety hazards associated with surface abandoned mine land (AML) located within PA State Game Lands 100. The principal intent is to:

- Clear the site of existing vegetation, as needed
- Backfill the dangerous highwall with coal refuse/lime mixture. (DH)
- Remove the abandoned building, mining equipment and facilities
- Clean up the clogged stream land (CSL)
- Design selective grading and drainage controls to result in more stable and non-erosive slopes.
- Install three stream crossings suitable for Aquatic Organism Passage
- Revegetate the site to enhance habitat for wildlife, including elk

Tetra Tech is the prime consultant on this project. Monaloh Basin Engineers provided surveying services serving as a sub-consultant to Tetra Tech.

Erosion and Sedimentation Control

Erosion and Sediment Control (E&S) facilities are being installed prior to construction, according to an approved E&S Permit. These facilities are being removed when construction is completed, vegetation established, and approved by the Construction Inspector.

Remove Refuse Material from CSL

Refuse material remains on the site in close proximity to Potter Run.. This refuse material is eroding and directly entering Potter Run, which outlets into the West Branch of the Susquehanna River. This refuse material is being removed, mixed with alkaline addition, and used as part of the backfill material for the DH.

Backfilling Dangerous Highwall to Approximate Original Contour (AOC)

The DH has a steep slope and dry pit, with some spoil material adjacent to it. This spoil, along with the refuse/alkaline mix, is being placed in the DH/pit area and the slopes are being restored to AOC

Removing Abandoned Building and Mining Equipment

An abandoned building, concrete pillars, a tipple structure, and numerous metal remnants are still on site from the mining operations. These are being removed and disposed of properly. If asbestos is discovered, are to be evaluated and handled according to industry standards and governmental regulations.

Client

Pennsylvania Department of Environmental Protection

Bureau of Abandoned Mine Reclamation – Cambria District Office

286 Industrial Park Road
Ebensburg, PA 15931

Location

State Game Lands 100

Covington and Karthaus Townships, Clearfield County Pennsylvania

Duration

Commencement Date 5-7-24

Estimated Completion Date of April 30, 2025 (ongoing Design)

Cost

Initial cost to Design the Reclamation Project was $253,216.31 (ongoing Design)

Project Team

Michael Kearns, P.E. – Project Manager

References

Joshua Schaffer, P.E. – Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation

Phone: 814-472-1841

Email: joschaffer@pa.gov

Stream Crossings

Stream Crossings are necessary in 3 different locations, to allow for the Game Commission to cross Potter Run with dump trucks for hauling of supplies, and to also allow for Aquatic Organism Passage. A Rock Ford will be installed for one of the crossings, while the other 2 crossing will utilize elliptical reinforced concrete pipes, partially embedded into the existing stream.

Revegetation of Site

After completion of the reclamation work, the site will be ripped, and tree seedlings will be planted. The site will also be seeded with a Wildflower seed mix to enhance wildlife. Specific seed mixtures and plantings, as recommended by the State Game Commission Biologist, have been specified for the local elk population.

Access Road Improvements

An existing access road runs through the project site which is currently used by the State Game Commission (owner) and hunters. Due to the area being a wildlife hunting area, primarily Elk, minimal disturbance is proposed in improving the access to the site.

EVALUATION OF ALTERNATIVES, CONCEPTUAL DESIGN AND COST ESTIMATES

- Cost and feasibility options were evaluated for removal of the coal refuse from the CSL area, including trucking the refuse to a cogen plant, trucking the refuse to a coal refuse disposal area (CRDA), and adding alkaline material and using the mixture for backfill of the DH. Due to cost and the unknown quality of the refuse material, mixing the refuse with alkaline material and using it for backfill was chosen.
- Three seperate stream crossing locations were evaluated for cost, constructability, hydraulics, and aquatic organism passage. Each crossing was discussed with the Game Commission, and the types of crossings were selected accordingly.
- The initial rough order of magnitude (ROM) cost estimate for construction was $3,300,000. The Pre-Final Engineer's Estimate for construction is currently approximately $1,500,000. Design is ongoing. Currently, preparing the seventy-five percent submittal of the construction plans and specifications.

PROJECT GOALS AND ACHIEVEMENTS

Goals:	Achievements:
→ **Eliminate** Public Health & Safety Hazards by reclaiming abandoned surface mine land within State Game Lands 100.	✓ **Ongoing Design & Engineering** led by Tetra Tech with Monaloh Basin Engineers providing surveying services.
→ **Stabilize and Restore** Site by backfilling the dangerous highwall (DH) with a coal refuse/alkaline mixture to approximate original contour (AOC).	✓ **Regulatory Compliance** with approved E&S permits and planned removal of temporary controls post-construction.
→ **Remove Legacy Mining Structures** including abandoned buildings, equipment, tipple structure, and metal remnants.	✓ **Cost-Effective Backfill Solution** selected after evaluating multiple alternatives—chosen method uses site refuse mixed with alkaline material for backfill, reducing cost and environmental risk.
→ **Clean Up Clogged Stream Land** (CSL) by removing eroding coal refuse near Potter Run and preventing further sedimentation into the West Branch Susquehanna River.	✓ **Stream Crossing Designs Finalized** after evaluating cost, constructability, hydraulics, and ecological needs—solutions include one rock ford and two embedded elliptical concrete pipe crossings.
→ **Improve Drainage & Erosion Control** through selective grading and installation of erosion and sediment control (E&S) facilities.	✓ **Significant Cost Optimization** reducing projected construction cost from an initial $3.3M ROM to ~$1.5M in the pre-final engineer's estimate.
→ **Install Three Stream Crossings** to enable Aquatic Organism Passage and Game Commission vehicle access.	
→ **Revegetate for Wildlife Habitat** using wildflower seed mix and tree seedlings to enhance elk habitat.	
→ **Enhance Access Roads** while minimizing disturbance in this high-value elk hunting and wildlife area.	

Project 3. Blacklick Creek Treatment Facility Acid Mine Drainage Abatement Project

Client

Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation

Location

Vintondale, PA

Duration

2019-2022

Cost

$1.9M

Project Team

G. Hynes – Civil

T. Dunaway - Civil

References

Andrew Gaul, PE
Civil Engineer Manager
PADEP
400 Market St
Harrisburg, PA 17106

KEY FEATURES

- Design engineering of AMD treatment plant
- Design engineering of extraction, injection and conveyance systems
- Permitting & utility coordination & H&H Analysis
- Treatability and bench scale testing
- Mine opening abandonment
- Exploratory drilling and Geotechnical Evaluation
- Evaluation of mine hydrology
- Preparation of construction plans, specifications & engineer's estimate
- Assistance with construction procurement and during construction

PROJECT DESCRIPTION

Tetra Tech provided a solution for treating acid mine drainage (AMD) from three abandoned coal mines in East Wheatfield and Buffington Townships, Indiana County, and Blacklick Township, Cambria County, Pennsylvania, near Vintondale, PA. The project involved performing preliminary water chemistry and treatability studies; designing of closures or seals of mine openings, state and federal permitting, investigating underground mine pool elevations and determining acceptable means of accessing the mine pool.

Tetra Tech designed a process system that will satisfactorily treat 5,000 gallons/day of contaminated mine water (low pH, high iron) to restore the North Branch Blacklick Creek and the main stem of Blacklick Creek to a viable sport fishery down to the confluence with Two Lick Creek, approximately 25 stream miles.

The design of the AMD system included water extraction pumps from two mines, transporting the water to a central treatment system and performing the actual treatment. Disciplines involved included chemical, structural, mechanical, electrical, instrumentation & control, and civil/environmental. Designs included large outdoor treatment vessels, including clarifiers, a lime storage in supply system, and a process building that houses mechanical pumping equipment, polymer storage and dosing equipment, a lavatory, office space and a wet chemistry laboratory space, pump stations, conveyance lines and sludge disposal.

Utility and communication connections were also designed for the system with two electrical drops and a telephone / broadband communication drop. The system is to be automatically controlled by process controllers and a SCADA system which can notify remote operations personnel of alarms and upsets as well as allow those same people to view and control the system remotely via VPN.

Additionally, Tetra Tech has provided purchasing, and means & methods specifications for use in bidding the construction of the facility at which time Tetra Tech will act as construction consultants for field RFIs and equipment submittals.

Permitting

Tetra Tech prepared submittals for the following:

- Joint Application for Chapter 105/106 Water Obstructions and Encroachment General Permit Registration
- PAG-02 NPDES General Permit for Discharges of Stormwater Associated with Construction Activities
- US Army Corp Individual Permit and Environmental Assessment
- PennDOT Highway Occupancy Permits (HOPs)
- State Historic Preservation Office (SHPO) review and consultation
- Penelec electric utility coordination
- Municipal Authority sewer and potable water connections
- PA Labor and Industry Building Permit

In addition, Tetra Tech conducted a floodplain study for the project to evaluate the impacts of the proposed installation of two extraction wells housed in two separate permanent buildings adjacent to North Branch Blacklick Creek. Hydrologic and Hydraulic (H&H) calculations were completed to estimate and route the 100-year flood flow rate through North Branch Blacklick Creek. The project area was not part of a detailed FEMA Flood Insurance Study and is designated as a Zone A (approximate) floodplain, defined by FEMA as areas within the 100-year floodplain but does not have 100-year water surface elevations or a delineated floodway. The results of the analysis indicate that the addition of the buildings will only cause a maximum increase in the 100-year water surface elevations of 0.01 feet relative to the existing conditions within the study reaches and will not result in a threat to property or hazard to life.

Mine evaluations and opening abandonment

Tetra Tech reviewed mine maps and conducted evaluations of the mine workings for several tasks, such as:

- Evaluate current mine pool elevations, prepare mine pool operating plan to lower the mine pools to allow for 30-day of average inflow without a breakout of mine water to the surface.
- Identify overlying surface properties with private water supplies that have the potential to be impacted by the lowering of the mine pool
- Identify preferred locations for mine water extraction pumps and treated sludge injection.
- Conduct exploratory drilling at proposed extraction/injection locations to verify depth to the mine and mine voids.
- Locate vertical mine openings that were partially backfilled with the use of geophysics and exploratory drilling.
- Evaluate potential for subsidence for treatment plant overlying mine workings
- Prepare abandonment/sealing plans for shafts, slope, and relief boreholes

PROJECT GOALS AND ACHIEVEMENTS

Goals:	Achievements:
→ **Design and Construct an AMD treatment facility** to address discharges from three abandoned coal mines impacting North Branch Blacklick Creek and main stem Blacklick Creek. → **Restore Stream Quality** to enable viable sport fishery habitat downstream to the confluence with Two Lick Creek (~25 miles). → **Conduct Preliminary Studies** including water chemistry, treatability testing, geotechnical investigations, and mine hydrology evaluation.	✓ **Bench-Scale and Treatability Testing** completed to guide process selection and optimize treatment performance. Innovative AMD System Design capable of treating 5,000 gallons/day of low-pH, iron-rich mine water with clarifiers, lime storage and supply, polymer dosing, sludge management, and a central process building including office, lab, and support facilities. ✓ **Mine Hydrology Evaluations** conducted, including exploratory drilling, mine pool elevation monitoring, and subsidence risk assessment for plant siting.

Goals:	Achievements:
→ **Ensure Safe Mine Management** by sealing abandoned openings, preventing uncontrolled discharges, and planning sludge injection into mine voids. → **Deliver Comprehensive Engineering** covering process, mechanical, civil, electrical, instrumentation, and structural design. → **Secure Permits & Approvals** from multiple regulatory agencies (PA DEP, USACE, SHPO, PennDOT, etc.). → **Provide Resilient Infrastructure** with automated SCADA system for monitoring, alarm notifications, and remote operation. → **Support Construction** with procurement documents, bid specifications, and consultant services during field execution.	✓ **Mine Opening Abandonment** and sealing plans developed for shafts, slopes, and relief boreholes using geophysics and drilling verification. ✓ **Hydrologic & Hydraulic (H&H) Analysis** of floodplain impacts showed negligible effect (<0.01 feet increase in 100-year water surface elevation), ensuring no hazard to life or property. ✓ **Multi-Agency Permitting Secured,** including NPDES stormwater, Chapter 105/106 water obstruction, USACE individual permit/EA, PennDOT HOPs, SHPO consultation, and municipal utility connections. ✓ **Utility Integration** completed with Penelec electric, municipal sewer, potable water, and broadband communications for SCADA connectivity. ✓ **Construction Procurement Support** provided through preparation of detailed plans, specifications, and cost estimates; Tetra Tech also served as construction consultant for RFIs and submittals.

4.0 Project Management Plan

Internal Systems for Tracking Deliverables, Schedules, and Progress

Tetra Tech uses an integrated, proven **Project Delivery System (PDS)** specifically structured to meet the WVDEP's requirements for scope, schedule, and quality control on AML projects. Our approach ensures every deliverable is tracked from assignment through submission, with full accountability and transparency to the Agency.

Deliverable Management

All project deliverables are logged in a **centralized document control system** that records:

- Description and scope of the deliverable.
- Responsible staff or subcontractor.
- Due dates and review cycles.
- Status of WVDEP and internal reviews.

Document control is managed in compliance with **ISO 9001:2015** quality standards, ensuring:

- Full version control and audit history.
- Defined QA/QC review steps (preparatory, initial, and follow-up).
- Secure distribution to authorized team members and WVDEP reviewers.

Our Document Control Manager coordinates closely with design leads, field staff, and subcontractors to ensure every submittal is complete, technically sound, and delivered on schedule.

Schedule Development and Control

At project start-up, the Project Manager develops a **baseline schedule** in **Primavera® P6** or **Microsoft Project®**, integrating:

- Work Breakdown Structure (WBS) tied to each deliverable.
- Sequenced tasks showing dependencies and milestones.
- Allocation of resources to each activity.

The baseline schedule serves as the reference for tracking progress. Updates are performed **weekly**, capturing:

- Actual start and finish dates.
- Percent complete.
- Forecast completion dates for upcoming tasks.
- **Critical Path Method (CPM)** analysis to identify and mitigate potential delays.

Progress Monitoring

Project performance is measured using earned value principles:

- **Schedule Performance Index (SPI)** and **Cost Performance Index (CPI)** charts to assess efficiency.
- Monthly variance analysis comparing planned vs. actual progress.
- Early identification of trends that could affect delivery dates.

These metrics are reviewed at internal coordination meetings and discussed with WVDEP during formal progress reviews.

Risk and Change Management

A **live risk register** is maintained to document:

- Identified schedule or deliverable risks.
- Assigned risk owners.
- Mitigation and contingency actions.

Changes in scope or schedule are processed through a **formal change management procedure**, reviewed by the Project Manager, and approved by WVDEP before implementation.

Communication and Reporting

We maintain **weekly internal meetings** and **bi-weekly WVDEP updates** (or as directed by the Agency) to review:

- Deliverable status logs.
- Schedule adherence and milestone tracking.
- Budget and cost performance summaries.
- Pending permits and coordination items.

Reports include narrative status updates, deliverable logs, milestone charts, and any schedule recovery actions.

Accountability

Our management systems ensure:

- Every task has an assigned responsible individual.
- Due dates are linked to the contract schedule.
- QA/QC and schedule requirements are embedded in the workflow.

This structured, transparent system — used successfully on numerous WVDEP AML projects — provides the Agency with confidence that all deliverables will be completed accurately, on time, and in full compliance with project specifications.

5.0 Risk Mitigation Plan — Avoiding Delays, Managing Permitting, and Securing Landowner Access

Tetra Tech applies a structured, proactive risk management process designed to anticipate, address, and eliminate potential schedule threats related to permitting, rights-of-entry (ROE), and stakeholder coordination. This plan integrates with our Project Delivery System (PDS) to keep WVDEP AML projects on time and within scope.

Avoiding Delays

- Early Mobilization of Key Tasks: Initiate permitting, ROE, and data collection tasks immediately after notice to proceed.
- Parallel Task Execution: Schedule permitting, survey, and preliminary design work concurrently to compress timelines.
- Critical Path Analysis: Maintain a live Primavera® P6 schedule with critical path monitoring. Any slip in a permitting or ROE milestone triggers an immediate escalation and recovery plan.
- Contingency Planning: Identify potential schedule threats early (weather, access delays, agency review times) and build float into critical activities.

Managing Permitting

- Early Identification of All Required Permits: At project kickoff, the Permitting Lead compiles a permit matrix and confirms submittal timelines with agencies.
- Pre-Application Coordination: Contact permitting agencies before submission to confirm requirements.
- Complete and Accurate Submittals: Use proven WVDEP AML permit templates to avoid re-submittals.
- Permit Tracking System: All permit actions are logged in the Document Control System with due dates, responsible party, and status updates.

Securing Landowner Access

- Early Title and Ownership Research: Initiate courthouse research immediately upon NTP.
- Dedicated Realty Lead: Maintain direct communication with landowners to address concerns and keep access negotiations moving.
- Clear, Concise Access Agreements: Use WVDEP AML ROE forms with clear language on scope, duration, and restoration.
- Relationship Building and Responsiveness: Schedule in-person visits where feasible and respond promptly to landowner inquiries.
- Escalation Protocol: If access negotiations stall, escalate to WVDEP AML leadership with documented efforts.

Integrated Coordination

Permitting and ROE activities are tied directly into the project schedule and risk register:

- Assign owners for each permit and ROE milestone.
- Track progress in weekly internal meetings.
- Include permitting and ROE updates in biweekly WVDEP reports.
- Link milestones to dependent design and construction activities.

Accountability

- Project Manager: Overall schedule control and risk management.
- Permitting Lead: Tracks, coordinates, and expedites permit actions.
- Realty Lead: Manages landowner communications and ROE agreements.
- Project Controls Specialist: Maintains integrated schedule and milestone monitoring.

6.0 Compliance Plan

Tetra Tech will ensure full compliance with all applicable federal requirements. Under the IIJA, we will implement rigorous project controls, transparent financial reporting, and sustainable infrastructure practices consistent with federal funding accountability standards. For SMCRA, our team will adhere to 30 CFR Parts 700–955 through strict permitting, environmental protection measures, and post-construction reclamation in coordination with regulatory agencies. In accordance with the Davis-Bacon Act, we will incorporate prevailing wage determinations into all contracts, maintain certified payrolls, and conduct routine compliance audits. To meet Build America/Buy America (BABA) requirements, we will source all covered iron, steel, manufactured products, and construction materials from U.S. suppliers, maintaining full documentation and verifying domestic origin before procurement.

7.0 Communication Plan

Internal and External Communication Strategy; Progress Updates; and Issue Resolution

Tetra Tech will implement a clear and proactive communication framework to keep all stakeholders fully informed and engaged throughout the project. Internally, we will use established project management platforms and weekly coordination meetings to align tasks, monitor progress, and quickly address emerging issues. Externally, our Project Manager will serve as the single point of contact for the client, delivering regular progress updates, milestone briefings, and immediate notifications of any schedule or scope impacts. We will also apply a rapid-response protocol to address issues efficiently, ensuring transparency, accountability, and minimal disruption to project momentum.

- **Internal Coordination:** Conduct weekly team meetings and use centralized project management platforms to align tasks, track deliverables, and address emerging issues across all disciplines.
- **Client Communication:** Designate the Project Manager as the single point of contact to ensure consistent, clear communication with the client.
- **Progress Updates:** Provide regular progress reports and milestone briefings supported by current Primavera® P6 schedule data and action item tracking to maintain transparency.
- **Issue Resolution:** Implement a rapid-response protocol to document issues, assess impacts, engage technical or management leads, and execute corrective actions while keeping the client informed throughout the process.

Attachment A Questionnaire is included as **Appendix B** and Attachment B AML Matrix is included at **Appendix C**.

All other documents/Forms required are included as **Appendix D** (Addendum Acknowledgement, Certificate and signature page, COI, OMB)

Appendix A Resumes

Eric E. Cavazza, PE

VP, Legacy Coal Reclamation

EXPERIENCE SUMMARY

Mr. Eric Cavazza has over thirty-eight (38) years of extensive experience administering state and federal environmental programs including extensive experience managing the development, design and construction of environmental restoration projects to eliminate hazards and restore environmental degradation associated with abandoned mine lands, including 34 years of management experience with special skills in:

- Cost estimation
- Program management
- Engineering design management
- Technical instruction
- Environmental compliance (NEPA)
- Treatment of acid mine drainage (AMD)
- Geologic/hydrologic assessments
- Construction contracting
- Strategic Planning and Implementation
- Technical report preparation
- Alternative design analysis
- Public presentations
- Permitting and mitigation analysis
- Budgeting and Personnel Management
- Interpretation and application of Federal and state regulations

RELEVANT EXPERIENCE

Tetra Tech, Inc., Pittsburgh, Pennsylvania

- **Vice President, Legacy Coal Reclamation (January 2022 to Current)**
  - Manages a group of technical staff including engineers, geologists, and other technical staff working to solicit and complete mining, abandoned mine reclamation, mine drainage treatment/abatement, oil and gas, brownfields, and alternative/renewable energy projects.

Pittsburgh Field Office (PFO), Office of Surface Mining Reclamation and Enforcement (OSMRE)U.S. Department of the Interior, Green Tree, PA

- **OSMRE Field Office Director (FOD) (January 2021 to December 2021)**
  - Provided management, direction, and supervision of subordinates in the administration of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 and associated Federal Regulations
  - Provided inspection, enforcement, and oversight of State and Federal SMCRA programs and Abandoned Mine Land (AML) reclamation programs in the PFO states of Maryland, Ohio, and Pennsylvania
  - Reviewed, conducted oversight studies, and monitored state programs to recommend changes in environmental policy, legislation, regulations, and guidelines

Education

Bachelor of Science, Mining Engineering, The Pennsylvania State University, University Park, PA, December 1983

Master of Engineering, Environmental Engineering, The Pennsylvania State University, University Park, PA, August 1995

Area of Expertise

Abandoned Mine Reclamation

Program Management

Registrations/Affiliations

Professional Engineer

- Pennsylvania, PE-038484-E
- West Virginia, PE-25669
- Kentucky, PE-38424
- Indiana, PE-12300090
- Ohio, PE-89035

American Society of Reclamation Sciences (ASRS)

Society of Mining, Metallurgy, and Exploration (SME)

Training/Certifications

Extensive Management Training

OSM AML Design Workshops

- Mine Subsidence
- Mine Fires
- Dangerous Highwalls
- Dangerous Openings
- Passive Treatment

OSM Instructor Training Academy

Wetland Delineation and NEPA Compliance Training

Emergency Response Training

Surface & Groundwater Hydrology

Contracting Procedures

Years of Experience

38

- Provided oversight and monitoring of SMCRA related programs being utilized by the state to ensure the proper administration and accountability of state awarded OSMRE financial assistance grants, and assisted states with the development and implementation of their AML Reclamation plans

Commonwealth of Pennsylvania, Department of Environmental Protection, Bureau of Abandoned Mine Reclamation (04/04/1985 to December 2020)

- **Bureau Director, Bureau of Abandoned Mine Reclamation, Harrisburg, PA (January 2012 to December 2020)**

  Directed the activities of the Bureau of Abandoned Mine Reclamation (BAMR) in the Department of Environmental Protection. BAMR includes 175 staff which administers and oversees the Abandoned Mine Reclamation and the Acid Mine Drainage Programs in Pennsylvania with an average annual budget of approximately $50 million.

  Served as Pennsylvania's delegate to the National Association of Abandoned Mine Land Programs (NAAMLP) and as a member of the Abandoned Mine Land Committee for the Interstate Mining Compact Commission (IMCC), (2012 – 2020).

  Served as a technical instructor for the Federal Office of Surface Mining's National Technical Training Program from 1994 to 2021. Instructed Acid-Forming Materials Workshops; AML Design Workshops for Dangerous Highwalls, Dangerous Openings, Mine Subsidence, and Mine Fires; and Passive Mine Drainage Treatment Design Workshops.

- **Environmental Program Manager (District Engineer), BAMR Cambria Office, Ebensburg (January 2010 to January 2012)**

  Manager of the BAMR Cambria Office which included 78 multi-disciplined staff that investigate, develop, design, permit, and construct all types of abandoned mine land (AML) projects in the 32 counties comprising the Cambria District. The office also operated six active mine drainage treatment facilities.

- **Acting Chief, Division of Acid Mine Drainage Abatement, BAMR, Harrisburg (May 2008 to January 2010)**
  Managed a staff of 11 civil engineers and civil engineer managers responsible for the development and design of abandoned mine reclamation projects including bond forfeiture projects.

- **Mining Engineering Supervisor/Manager, BAMR Cambria Office (September 1987 to May 2008)**

  Managed civil and mining engineers, geologists, draftsman designers, responsible for the investigation and development (1987 to 1993) or design (1993 to 2008) of environmental restoration projects with particular emphasis on surface mine reclamation, mine fire extinguishment, subsidence control, backfilling/sealing entries and shafts, mine drainage abatement/treatment, erosion and sedimentation controls, re-mining and reprocessing analysis, revegetation/wildlife habitat creation, public water supply projects, wetland mitigation, passive/active mine drainage treatment, and NEPA compliance. Managed the design of over 250 abandoned mine restoration projects with a total construction cost of over $240 million between 1993 and 2008 as the Cambria Office Design Section Chief including both AML hazard projects and passive and active AMD treatment projects.

- **Mining Engineer, Dept. of Environmental Resources, BAMR Cambria Office, Ebensburg (April 1985 to September 1987)**

  Investigated and developed environmental restoration projects with emphasis on subsidence control, reclamation of surface mines, exploratory drilling, underground and refuse fires. Duties included fieldwork, surveying, design and capacity calculations, watershed analysis, specification writing, cost estimation, preparation of drawings and the completion of technical reports.

CEDCO Engineering, Luthersburg, PA

- **Design/Mining Engineer, (April 1984 to September 1985)**

  Assisted in the design of two deep mine complexes; completed deep and surface coal mine permit applications; prepared technical reports such as reserve analyses and feasibility studies; prepared erosion and sedimentation control plans; designed water treatment facilities; completed property and site surveys.

Michael S. Kearns, P.E.

Senior Civil Environmental Engineer

EXPERIENCE SUMMARY

Michael Kearns has over 40 years of diversified engineering experience in Civil Engineering field. Mr. Kearns is a licensed Professional Engineer in the States of West Virginia, Ohio and Pennsylvania. He is also a licensed Professional Surveyor in the State of West Virginia.

Mr. Kearns' past professional experiences have largely been in the mining industry, site development, municipal engineering and highway engineering as well as environmental engineering disciplines.

Mr. Kearns has extensive experience in the areas of Surface and Underground coal mine permitting, Preparation of the Storm Water Pollution Prevention Plans and mine plan aspects which consist of the drainage and sedimentation control design, sedimentation pond design, diversion ditch design, surface mine planning, preparation of wetland and stream mitigation plans and design and evaluation of Division of Water and MSHA size impoundment structures. Mr. Kearns also performs the calculation of earthwork quantities, stability analyses of slopes and the preparation of the final plans for permitting or bidding purposes. He has also prepared Emergency Action Plans (EAP) for these types of structures and has designed large raw coal storage and refuse facilities. Mr. Kearns is an MSHA certified impoundment inspector and instructor.

Mr. Kearns has worked on hundreds of surface mine and deep mine permits over his career. As an engineering consultant in his field, Mr. Kearns coordinates all engineering work, manages budgets, schedules tasks, prepares proposals, and oversees all designs. Mr. Kearns responsibility is the coordination of the engineering regulatory aspects associated with the mining industry and requirements of West Virginia, Pennsylvania DEP and Ohio ODNR-DMRM. Permit requirements would also include property research, hydrologic investigations and determination of hydrologic consequences, stream and wetland delineation, associated 404/401 permitting, NPDES permitting, performing associated due diligence, sub-surface investigation and addressing all other state and federal regulatory requirements. Other areas of expertise include soils engineering, water/sewer engineering, transportation engineering, and site development.

RELEVANT EXPERIENCE

Senior Civil Environmental Engineer, 6 North 6 South Bleeder Shaft Sites, The Marshall County Coal Company, 2018-2019. Performed the site design for the two (2) bleeder shaft sites located in Marshall County near the Pennsylvania/West Virginia border. Design included determination of earthwork quantities, preparation of the E&S plan, determinization of permit issues and addressing slope stability for the site.

Senior Civil Environmental Engineer, 6 North No 1 Bleeder Shaft Site, The Marshall County Coal Company, 2018-2019. Performed the site design for the two (2) bleeder shaft sites located in Marshall County, near Cameron, West Virginia. Design included determination of earthwork quantities, preparation of the E&S plan, determinization of permit issues and addressing slope stability for the site.

Education

B. S. Civil Engineering,

West Virginia University, 1977

M.S. Civil Engineering,

WV College of Graduate Studies, 1982

Area of Expertise

Diversified Engineering

Registrations/ Affiliations

Professional Engineer, WV 1981, #08748

Professional Engineer, OH 1991, #46650

Professional Engineer, PA 1992, #43471-R

American Society of Civil Engineers

National Society of Professional Engineers

National ASCE Committee on Employment Conditions

Office

St. Clairsville, OH (Pittsburgh)

Years of Experience

43

Years within firm

3

Contact

mike.kearns@tetratech.com

Engineering Manager, Annual Impoundment Inspections, The Marshall County Coal Company, 2013- 2018. Performed the Annual Impoundment Inspections of the permitted sediment ponds and submittal of the annual certifications to WVDEP.

Engineering Manager, Annual Impoundment Inspections, The Ohio County Coal Company, 2013- 2018. Performed the Annual Impoundment Inspections of the permitted sediment ponds and submittal of the annual certifications to WVDEP.

Engineering Manager, Package Sewer Plant Design, The Marshall County Coal Company, 2018. Design and NPDES & WV Bureau of Health Permitting for a sewage treatment plant for a coal facility located in Marshall County, Franklin-Woodland area. Preparation of the contract/permit drawings and specifications.

Senior Project Manager, 5 North No 2 Portal Site Design, The Marshall County Coal Company. Performed the site design and WVDEP & NPDES permitting for a 26 acre mine portal site located in Marshall County, near Cameron, West Virginia Design included overall site design, determination of earthwork quantities, preparation of the E&S plan, determinization of permit issues and addressing slope stability for the site, Sewage Package Plant (25,000 gpd) design and permitting.

Senior Project Manager, 7 North No 1 Portal Site Design, The Marion County Coal Company. Performed the site design and WVDEP & NPDES permitting for a 32 acre mine portal site located in Marion County, West Virginia. Design included overall site design, determination of earthwork quantities, preparation of the E&S plan, determinization of permit issues and addressing slope stability for the site, Sewage Package Plant (25,000 gpd) design and permitting.

Senior Project Manager, Short Creek Preparation Plant Site, The Tunnel Ridge Coal Company. Performed the site design and WVDEP & NPDES permitting for a 40 acre coal mine preparation plant site located in Ohio County, north of Wheeling West Virginia. Design included overall site design, determination of earthwork quantities, siting of the prep plant facilities, preparation of the grading plan, design of the sediment and treatment ponds on the preparation plant site and preparation of the overall E&S plan.

Senior Project Manager, Rayle Coal Company, Short Creek, Clearview Mining Area. Preparation of a WVDEP Surface Mine and NPDES permit for mining of the No 11 coal approximately 124 acres adjacent to a coal refuse facility. Preparation of the erosion and sediment control, coordination of sub-surface investigation, prime farmland investigations, and other aspects and requirements of the surface mine permit.

Project Manager/Engineer, Avella Preparation Plant Site, The Penn Ridge Coal Company. Performed the site design and WVDEP & NPDES permitting for a 35 acre coal mine preparation plant site located in Washington County, Pennsylvania. Design included overall site design, property research, determination of earthwork quantities, siting of the prep plant facilities, preparation of the grading plan, design of the sediment and treatment ponds on the preparation plant site and preparation of the overall E&S plan.

Senior Project Manager, Expert Witness/Testimony, Confidential Client. Appeared before the Ohio Division of Reclamation Review Board as an expert witness relative to the condition and acceptability of an existing impoundment that was to remain permanent on a property owner's land.

Project Engineer, Jack A. Hamilton & Associates, Flushing, Ohio, 2003-2011. As a consultant with this firm, performed hundreds of annual pond inspections/certifications for numerous clients. Field reviewed ponds for maintenance and functionality issues or defects. Annual pond inspections were completed in West Virginia and Ohio.

Project Engineer, Rosebud Prep Plant and Refuse Site, Rosebud Mining Company. Performed the site design and WVDEP & NPDES permitting for a coal mine preparation plant site and coal refuse disposal site Design included overall site design, property research, determination of earthwork quantities, siting of the prep plant facilities, preparation of the

Gregory P Hynes, PE

Project Manager

EXPERIENCE SUMMARY

Mr. Hynes has 34 years of professional engineering experience including land development, energy facilities, utilities, surface water conveyance systems, pipelines, pumping systems, and abandoned mine land reclamation. He has developed plans for stormwater pollution protection, erosion and sediment control, and spill prevention, controls and countermeasures. Recently he has provided design and plan reviews of overland gas pipelines and solar power farms and has also designed and managed dozens of sanitary, storm sewer, and potable water distribution projects totaling hundreds of miles through rural, suburban, and urban settings.

His site design experience includes gas well pads, mining facilities, abandoned mine land reclamation, commercial developments, and more recently solar power sites. In these projects he acted as principal engineer or project manager responsible for design calculations, cost estimates, plans, and technical specifications including over 75 mining, gas production, and reclamation project sites primarily in West Virginia, Pennsylvania, and Ohio. These design projects variously included land grading, site access roads, utilities, stormwater drainage, and erosion and sediment controls. His responsibilities also included tracking schedules and budgets, project billing, and hiring sub-consultants. Mr. Hynes has also prepared permit applications and construction level drawings and specifications for proposed surface mine facilities in PA, WV, and NC including raw water pipelines, shaft sites, boreholes, preparation plants, pit mines, refuse storage areas, slurry impoundments, treatment ponds, stream enclosures, sedimentation ponds, E&S controls and numerous minor permit modifications.

His utility pipeline experience includes acting as District Engineer for an Ohio public water utility. His municipal experience includes eighteen years as the engineering representative to the Industry Borough Municipal Authority, six years representing the Ohioville Borough Municipal Authority, and also was engineering representative to The Boroughs of Midland, Baden, and the Midland Municipal Authority in western Pennsylvania. Responsibilities to these clients included attendance at monthly meetings, preparation of annual engineering and capital improvements budgets, development of rate studies, and numerous municipal storm sewer, wastewater, potable water, and paving projects.

Education

M.S., Civil Engineering, 1997, Youngstown State University

B.E., Civil Engineering, 1987, Youngstown State University

Area of Expertise

Insert text

Registrations/ Affiliations

Professional Engineer,

PE044310E, PA

E-62948, OH

013850, WV

Training/Certifications

HES General Orientation

PA DEP ESGP2, 2013

Office

Canfield, OH

Years of Experience

34

Years within firm

8

Contact

Greg.Hynes@tetratech.com

RELEVANT EXPERIENCE

Project Manager/Senior Engineer; RNG landfill development (2021); Confidential Client; Two sites in NE Ohio. Responsible for initial development of site civil development plans including, stormwater planning, erosion and sediment control plans, pad layouts, utility evaluations and upgrade designs, utility connections, determined permitting and zoning requirements and schedule impacts, prepared construction quantities, and assisted with preparation of cost estimates.

Project Manager; Holmes Cheese Company Treatment System (2020) ; Millersburg, Ohio Provide permitting, design, and construction oversight for system upgrade to the facility wastewater treatment system. Design included mixing tanks, flow metering, and controls for automatic adjustment of treatment flows based on water quality. Tetra Tech hired civil

construction and electrical contractors to install the system and provided construction oversight, review of submittals and RFI's, and approval of invoicing. Tetra Tech also oversaw system startup and commissioning.

Senior Engineer/Task Manager; AEUG Union Solar LLC; Union County, Ohio Assisted in the preparation of the Ohio Power Siting Board application including analysis of engineering and construction factors for site selection including constraint mapping and project layout. Also obtained county structure data, directed field investigations, and provided tabulations and narrative for an inventory assessment report for bridges and culverts in and around the project site with emphasis on identification of visible deficiencies and potential impacts due to anticipated increases to roadway traffic.

Project Manager; Energy Marketing Slurry Impoundment Reclamation (2018-2019); West Virginia Land Stewardship Corp. for the WVDEP Office of Special Reclamation; Barbour County, WV. Responsible for project management and oversight of engineering design, development of construction and erosion sediment control plans, specifications, quantities and cost estimates. The project included design of the reclamation of an abandoned 30-acre fine coal refuse slurry impoundment and development of a construction plan for dewatering and grading the impoundment. The plan required spreading coarse coal refuse obtained from the embankment over the fine refuse utilizing a variation of the "surge" method. Geogrid and geotextile underlayment were proposed as bid alternatives to a thicker layer of coarse aggregate for added strength. The anticipated construction sequence includes an incrementally enlarged working platform of coarse coal refuse from which the fine refuse is to be access and graded.

Project Manager/Senior Engineer; Isabella Refuse (2020 - Present); Pennsylvania DEP; Fayette County, PA. Responsible for project management and oversight of engineering design; grading, reclamation, and erosion sediment control plans; specifications; and cost estimates for a large abandoned coal strip mine and reprocessing site near the town of Isabella near the Monongahela River. The project included dewatering plans for permanently reducing water levels of a 100 acre impoundment by over 40 feet, design of permanent spillway outlet structures, grading plans to address unstable refuse piles and fine coal slurry impoundments, site access , surface drainage, and passive treatment of mine seeps. Siphoning plans have been developed to lower impoundment water levels. Detailed plans and specifications are currently being developed for permanent site reclamation. Design of passive treatment systems will be undertaken in the future based on observed impacts to the seeps from lowering the impoundment water levels.

Project Manager/Senior Engineer; Jennings Run AMD (2020 - Present); Maryland Department of the Environment; Allegany County, MD. Responsible for project management and oversight of engineering design, development of construction plans, specifications, quantities and cost estimates for a lime silo site. The project included site development of a proposed lime silo for in stream treatment of am AMD impacted tributary to Jennings Run. The design includes a selection and design of a 40-ton lime silo and foundation, lime feed equipment, electrical power supply, and site access. Detailed plans and specifications were submitted to MDE in September with bidding anticipated in the very near future. Bid phase and inspection services will be provided.

Project Manager/Senior Engineer; Buffalo Coal AMD collection system and treatment (2018- Present); West Virginia Land Stewardship Corp. for the WVDEP Office of Special Reclamation; Grant County, WV. Responsible for project management and oversight of engineering design, development of construction and erosion sediment control plans, specifications, quantities and cost estimates. The project included site characterization and development of an active AMD treatment system to meet NPDES discharge limitations of several bond forfeiture sites around the vicinity of the Mount Storm Reservoir. The design includes a selection and design of an AMD collection and pumping system to provide centralized active treatment of discharges from 4 permit sites spread over a 6-mile area. Detailed plans and specifications are currently being developed to include site grading, drainage control, and an active water treatment system.

Project Manager/Senior Engineer; LaRosa Fuels AMD collection and treatment (2018 - 19); West Virginia Land Stewardship Corp. for the WVDEP Office of Special Reclamation; Monongalia/Marion County, WV. Responsible for project management and oversight of engineering design, development of construction and erosion sediment control

plans, specifications, quantities and cost estimates. The project included site characterization and development of an active AMD treatment system to meet NPDES discharge limitations of a bond forfeiture site on the Monongahela River. The selected system included a 60 feet tall hydrated lime storage silo, mixing vault, control building, sludge pumps and storage cells, 50' diameter concrete solids contact clarifier, and polishing ponds. Detailed plans and specifications were developed to include site grading, drainage control, and the active water treatment system including detailed electrical drawings.

Senior Engineer/Task Manager; Ohio River Pipe and Diffuser (2019), Buckeye Water District/Dallis Dawson Associates; Wellsville, Ohio. Responsible for pipeline and diffuser design for an outfall for a proposed power facility. Design included layout of ductile iron ball and socket river pipe and fittings as needed to connect to the proposed shore pipe and extend to the terminal diffuser consisting of a flanges ductile iron pipe section with welded diffuser nozzles supported by H-piles.

Project Manager; Little Conemaugh Treatment Plant Site Evaluation (2018); Pennsylvania DEP, Bureau of Abandoned Mine Reclamation; Portage Township, PA. Responsible for project management and oversight of site evaluation for suitability as a treatment plant location. Site assessments included review of available geologic, mining, hydrologic data, drilling information, borehole logs, and water level information from shallow and deep monitoring wells. Based on the collection and evaluation of geotechnical and water data, perform a quantitative assessment of the risk of vertical mining induced subsidence. Additional assessments of impacts to two downstream bridges, the Little Conemaugh River channel, and adjacent properties were required.

Senior Engineer; Bird Mine AMD Treatment Plant and permit areas (2018 - Present); Glenn Springs Holdings Co, Tire Hill, PA Responsible for design and /or project management for various tasks associated with an existing AMD treatment facility. Recent tasks include: design and construction oversight for a new 4" service water line and storage tank and replacement of the plant polymer system. Current design work includes a new raw waterline, dual 2,100 gpm 350 HP vertical turbine pumping system, new 500 foot deep borehole with 20" steel casing, electrical and instrumentation upgrades, diversion and culvert work to improve site drainage and sealing of subsidence holes.

Water Acquisition and Design Engineer; Chevron Appalachian/Michigan Business Unit; Ohio & WV (2013- 2016) During this three year assignment I provided full time route engineering planning, budgeting, hydraulic design, E&S reviews, and construction management support services for the Marshall County waterline project including 13½ miles of 24" HDPE pipe over very rugged terrain, a 4 MGD intake with triplex pumping station near the Ohio River, three water booster stations, and several thousand feet of above ground waterline extensions to support individual well development.

Senior Engineer; EQT; Mountain Valley Pipeline Project, WV& VA (2016- Present) Provide design quality assurance reviews and coordination assistance as needed for development of E&S plan and permit drawings and details for a 300+ mile gas pipeline across WV and Virginia.

Project Manager/Engineer of Record; City of Canfield Ohio, Fairview Ave Drainage Improvements (2014) Engineering analysis, design, bidding, and construction management services for stormwater piping improvements. The project required hydrologic analysis and design of system improvements that included replacement of 800 feet of existing 18" CMP stormwater piping along residential streets with 30" HDPE including site restorations and relocations of existing water and sanitary pipe where required.

Project Manager/Engineer of Record; Gulfport and Rice Energy, Ohio Well Development projects (2013-15) Well site predrill surveys, permitting, E&S and design plans for two dozen well sites including grading, access, surface water and E&S controls. Projects also included evaluation of potential water sources for frac operations.

Project Manager; Parker Run Highwall (2014); WVDEP; Marion County, WV. Responsible for project management, engineering design, and development of construction plans, specifications, and cost estimates. The project included exploratory drilling, and preparation of reclamation plans and specifications for five sites containing steep refuse piles, numerous suspected mine entries, acid mine drainage, and stream impacts. Design measures included site grading of steep refuse piles to provide stable slopes and positive drainage, installation of wet and dry mine seals, bat gates, access roads, collection channels, E&S controls, preservation of mine headings considered as historic structures, removal of refuse encroachments into stream banks, demolition of dilapidated buildings and foundations, and final revegetation.

Project Manager; Review of Coal Mining and Reclamation Permit Applications (2013), Ohio Department of Natural Resources; Locations in Harrison and Jefferson County, Ohio. Responsible to provide engineering review and comment for coal mine and reclamation permit applications including the Sterling Mining Corporation, Shean Hill No. 6 Surface Mine in Jefferson County, and the Oxford Mining Company, Branson Ridge Underground Mine in Harrison County.

Project Manager; Energy Marketing Slurry Impoundment Sediment Pond Rehabilitation (2013); WVDEP Office of Special Reclamation; Barbour County, WV. Responsible for project management and oversight of engineering design, development of construction plans, specifications, quantities and cost estimates. The project included development of a feasibility level reclamation plan and cost estimate for the 30 acre abandoned coal slurry impoundment and 130 foot tall impoundment embankment in accordance with the requirements of the original mine permit. Detailed plans and specifications were developed for rehabilitation of a dilapidated sedimentation pond and spillway located at the base of the impoundment, which would be required for future dewatering of the main impoundment.

CHRONOLOGICAL EMPLOYMENT

- Project Manager, Tetra Tech, Inc., December 2012 – Present, Canfield, Ohio
- Project Manager/Senior Engineer, Michael Baker Corp., 1991- 2012, Beaver, PA
- Engineer, Widmer Engineering, 1989-1991, Beaver Falls, PA
- District Engineer, Ohio Water Service Company, 1987-1989, Struthers, Ohio

Gerald R. Jackson, P.E.

Senior Engineer

EXPERIENCE SUMMARY

Mr. Jackson has deep expertise in Abandoned Mine Lands (AML) reclamation, including seven years of Project Development experience and 28 years of experience in Project Design. Mr. Jackson currently assists with various engineering tasks related to reclamation projects.

RELEVANT EXPERIENCE/PREVIOUS EMPLOYMENT

- **Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation (1987 – 2012; 2019 - 2022)**
  - PA Senior Civil Engineer: Broad experience in the remediation of Abandoned Mine Lands, including site investigations, property owner contact, and liaising with state and local municipalities
    Responsible for Design of numerous AML reclamation projects, including preparation of grading and seeding plans, engineer estimates, erosion and sediment pollution control plans and permits, and various other technical applications
    Successfully completed multiple projects while working remotely during the COVID-19 pandemic.
    Achieved full retirement (35 years) in March 2022.
  - Civil Engineer Manager: Responsible for all aspects of Project Development related to a vast assortment of AML projects.
    Successfully managed and was directly accountable for a division consisting of five full-time employees.
- **STV Sanders & Thomas (1987)**
  - PA Full Time Consulting: Performed various consulting functions for road construction inspection and related projects.
- **Pennsylvania Department of Transportation (1985 - 1986)**
  - Summer Intern: Assisted in various tasks related to road construction inspections.

Education

B.S. Civil Engineering, Pennsylvania State University, 1987

Area of Expertise

AML Reclamation

Project Development

Project Design

Registrations/ Affiliations

Professional Engineer:

Pennsylvania, 1993

Ohio, 2023

West Virginia, 2023

Years of Experience

37

Years within Firm

3

Office

Pittsburgh, PA

Contact

randy.jackson@tetratech.com

TETRA TECH

John R. Patterson, P.E.
Civil Engineer

EXPERIENCE SUMMARY

John Patterson is a Civil/Environmental Engineer with more than 15 years of experience in pipeline and site permitting, and stormwater design. His knowledge and background of erosion and sediment control design, stormwater control design, ESCGP-2 and 3 permit applications, NPDES permit applications, and civil site design provide a wide platform of experience and skills to draw from when creating permit applications. Mr. Patterson has created and designed multiple pipeline and site projects in Civil3D, adding to his experience in engineering design. John has also observed various forms of construction in the field.

Specialize in environmental engineering permitting and civil site design.

- Written numerous Erosion and Sediment Control General Permit (ESCGP)-1 / ESCGP 2 and ESCGP 3 and NPDES permits, including Erosion and Sediment Control (E&SC) Plans and Post Construction Stormwater Management (PCSM) Best Management Practice (BMP) Design.
- Conducted construction monitoring of E&SCs and PCSM controls, and have conducted stormwater sampling and prepared Discharge Monitoring Reports (DMR).
- Proficient in Civil 3D - AutoCAD, Hydraflow Hydrographs, and HY-8.

RELEVANT EXPERIENCE

Pennsylvania Department of Environmental Protection

- Dolph Mine Fire
  - Engineer responsible for NPDES Permit, including E&S and PCSM Design.
  - The project involved multiple phases of construction to excavate earth to quench the mine fire.

Soltec America, LLC

- Amsterdam
  - Project Manager responsible for client contact, E&S Control design, PCSM Design, general site design and creating SWPPP documents.
  - Civil Engineer on Record, guiding construction of the civil engineering components of site construction.

AES Distributed Energy

- Glengarry Farms
  - Engineer responsible for E&S Control design, PCSM Design, general site design and creating SWPPP documents.
  - Civil Engineer on Record, guiding construction of the civil engineering components of site construction.

Distributed Sun

- Weierheizer
  - Engineer responsible for E&S Control Design, PCSM Design and creating SWPPP documents. Designed solar panes in AutoCAD Civil 3D for inclusion in project drawings.

National Fuel Gas Supply Corporation

- Porterville Compressor Station Expansion Project
  - Served as the Engineer on the project responsible for leading conceptual stormwater design, alternative layouts, H&H Calculations, SPDES Permit Application Submittal, and creating construction drawings and specifications.

EDUCATION

B.S. Civil and Environmental Engineering, University of Pittsburgh, 2007

AREA OF EXPERTISE

Civil Engineering

Environmental Permitting

Erosion and Sediment Control (E&SC) Design

Post-Construction Stormwater Management (PCSM) Design

National Pollutant Discharge Elimination System (NPDES) Permitting

Civil Industrial Site Design

REGISTRATIONS/ AFFILIATIONS

Professional Engineer, Pennsylvania and New York

TRAINING/CERTIFICATIONS

Confined Space Awareness Training

Pennsylvania Design Call Training for the Use of Web Ticket Entry

OFFICE

Pittsburgh, PA

YEARS OF EXPERIENCE

15

YEARS WITHIN FIRM

6

CONTACT

john.patterson@tetratech.com

- This project involved the installation of multiple access roads, buildings, large gravel pads for a Metering and Regulation Station and other buildings, and associated stormwater mitigation facilities at an existing site.
- The stormwater mitigation facilities included stormwater planters with earthen walls and outlet culverts. John prepared necessary documentation and calculations to obtain an SPDES Permit.
- Also, prepared construction drawings, construction quantities, cost estimates and worked with the geotechnical report to prepare specifications for a pre-bid meeting and contractor use.
- The construction drawings and construction specifications package included detailed direction required to build the pad and access road.

- Wheatfield Dehydration Station Project
  - Served as the Engineer on the project responsible for leading conceptual stormwater design, alternative layouts, H&H calculations, SPDES Permit Application submittal, and creating the construction drawings and specifications.
  - The project also included the design and layout of large earthen berms and spoil piles, the design and implementation of cement-soil stabilization, layout of workspace areas, the design and placement of multiple trees used to mitigate stormwater runoff and as a visual barrier for the site, and design of a stormwater wet pond.
  - Prepared construction drawings, construction quantities, cost estimates and worked with the geotechnical report to prepare specifications for a pre-bid meeting and contractor use.
  - The construction drawings and construction specifications package included detailed direction required to build the pad and access road.
- Pendleton Compressor Station Project
  - Served as the Engineer on the project responsible for leading conceptual stormwater design, alternative layouts, H&H calculations, SPDES Permit Application submittal, and creating the construction drawings and specifications.
  - The project also included the design and layout of large earthen berms and spoil piles, the design and implementation of cement-soil stabilization, layout of workspace areas, the design and placement of multiple trees used to mitigate stormwater runoff and as a visual barrier for the site, and the design of a stormwater wet pond.
  - Prepared construction drawings, construction quantities, cost estimates and worked with the geotechnical report to prepare specifications for a pre-bid meeting and contractor use.
  - The construction drawings and construction specifications package included detailed direction required to build the pad and access road.

Mountain Valley Pipeline

- Mountain Valley Pipeline Project – Virginia Portion
  - Engineer responsible for designing water bar end treatments for multiple segments of pipeline project.
- Transco Interconnect Site
  - Engineer responsible for site E&S and PCSM Design, including design of sediment traps, sediment basins and stormwater ponds.

Eastern Gas Transmission & Storage

- Approximately 30 pipeline projects in Pennsylvania for Williams Field Services Company, LLC
  - Work occurred over a one-year period:
    - ✓ Engineer responsible for leading all aspects of creation of E&S Plan and General Permit, including determining relevant permitting strategies and engineering design.
    - ✓ Multiple projects involved the permanent placement of mats and rock subgrade within streams to repair exposures.

Sunoco LP

- Mariner East 2 Pipeline Project
  - Professional Engineer responsible for meeting on-site to discuss project erosion and sediment control design and site-layout with the PaDEP.
  - Professional Engineer responsible for driving to site locations with erosion and other water control issues, at the request of the contractor, to design solutions to issues.

ETC Northeast Pipeline, LLC

- Revolution Cryogenic Plant Project
  - Reviewed construction quantity estimates, performed and checked stormwater design calculations, and assisted in the preparation of permit and construction level documents for a cryogenic natural gas plant facility.

Williams Field Services Company, LLC.

- Pennsylvania Mainline Natural Gas Pipeline Project

- Acted as engineering Task Manager responsible for leading ESCGP-2 Permit Application submittal, coordinating local permitting and creating construction drawings and specifications.
- The Project was a large and complex pipeline project that involved a high amount of coordination among project staff.
- Also, prepared necessary documentation and to obtain ESCGP-2 Permit.

- NBLT Wetland Mitigation Project
  - Assisted a wetland scientist with creating and modifying grading used to design and build new wetlands.
  - Prepared necessary documentation and calculations to obtain an ESCGP-1 Permit.
- Stillwagoner Power Line Access Roads Project
  - In charge of the site grading plan, NPDES Permit Application submittal and the construction package.
  - Utilized Civil 3D to design and analyze stormwater runoff and potential impacts to FEMA 100-year floodplain.
  - Wrote the narrative document for the NPDES Permit Application and designed all E&SCs for the permit application submittal.
  - Prepared necessary documentation and calculations to obtain an NPDES Permit.
- Central HP Pipeline Project
  - Performed studies at various locations along the project to determine where future culverts would be installed under future access roads and to take notes for culvert design.
  - The culverts were designed using Hydrologic Engineering Centers River Analysis System (HEC-RAS) modeling software.
  - Also, performed all aspects of E&SC design for the Project.
- Approximately 50 pipeline projects in Pennsylvania for Williams Field Services Company, LLC
  - Work occurred over a four-year period:
    - ✓ The first two years included assisting in the preparation of E&SC design, PCSM design, and creation of all ESCGP-1 documents for submission to the PaDEP.
    - ✓ Subsequent two years included leading the design of E&SC, PCSM design, and creation of all ESCGP-1 permit documents for submittal to the PaDEP.
    - ✓ During the course of the last two years, worked with the engineer and clients to analyze different routes in an effort to minimize environmental impacts.
    - ✓ Also, created the alignment sheets on multiple occasions that included the location and sizes of E&SCs and preparing the necessary documentation to obtain the land disturbance permits.

E.ON-U.S.

- Ghent Generating Station Ash Pond and Landfill Project
  - Provided civil engineering design and environmental permitting support related to the future storage of Coal Combustion Byproducts (CCBs).
  - In the Final Conceptual Design phase of the project, responsible for providing necessary calculations for landfill design and preparing the final report to send to the client.
- Cane Run Generating Station Landfill Project
  - Provided civil engineering design and environmental permitting support related to the future storage of CCBs at the Cane Run Generating Station located on the Ohio River.
  - In the Conceptual Design phase, responsible for providing necessary calculations for landfill design and preparing the final report to send to the client.

Allegheny Energy

- Williams Creek Project
  - On-site E&SC Inspector responsible for keeping the jobsite up to date with West Virginia Department of Environmental Protection requirements.

Equitable

- 2008 Repair Projects for Equitable
  - Assisted in the development of E&SC Permit Application Packages for the Compliance 1, Compliance 3, Compliance 7, LUF 3, LUF 7, LUF 8, LUF 9, LUF 10, and LUF 11 Projects.

TETRA TECH

Nicholas Hartman, P.E.

Civil Engineer III

EXPERIENCE SUMMARY

Mr. Hartman is a professional civil engineer licensed in the state of Pennsylvania with 8+ years of experience in site-civil design projects for the commercial, industrial, oil & gas, residential, and solar industries, including 4+ years of experience in land development. This work has encompassed data compilation; civil engineering (site layout and design, grading, stormwater management, and erosion and sedimentation control design); report preparation; review and incorporation of municipal, state, and federal regulatory programs and requirements; permitting; construction monitoring; and quality assurance/quality control (QA/QC).

Mr. Hartman also has additional experience in the construction industry including project estimating; material procurement; construction oversight; experience with wastewater treatment facility practices; and QA/QC.

RELEVANT EXPERIENCE

Addison Road Solar

- Vertical Bridge Solar Project, Maryland
  - Erosion & Sedimentation Control Facility Design, Calculation, and Narrative Support
  - ESD Site Design/Stormwater Management Facility Design and Calculation Narrative Support
  - AutoCAD Civil 3D Drawing Support
  - SWPPP Preparation

AES Solar

- White Creek Solar Project, New York
  - Decommissioning Plan Support

Century Link

- Reading to Allentown Segment 2
  - HASP Preparation
  - Post-construction Inspection Support

Education

University of Pittsburgh
Bachelor of Science in Civil Engineering

Area of Expertise

Post-Construction Stormwater Management Design/Plan

Erosion & Sedimentation Control Design/Plan

Permitting (municipal, NPDES or equivalent)

Training/Certifications

Professional Engineer, Licensed in Pennsylvania - PE092850

Office

Home Office
Allentown, PA

Pittsburgh Office
661 Andersen Dr., Ste. 200
Pittsburgh, PA 15220

Years of Experience

8+ years

Years within firm

Since August 2022

Contact

E-mail

nick.hartman@tetratech.com

Phone

(610) 295-9464 (Mobile, preferred)

(412) 921-7090 (Office)

CertainTeed

- Warehouse Addition Project, Maryland
  - Civil Site Design
  - ESD Site Design/Stormwater Management Facility Design, Calculation, and Narrative Support
  - AutoCAD Civil 3D Drawing Support

Graphics Packaging International

- Flood Protection project, Pennsylvania
  - Civil Site Design
  - Stormwater Management Facility Design and Calculation Support
  - AutoCAD Civil 3D Drawing Support

Nevada Gold Energy

- TS Solar Project, Nevada
  - Erosion & Sedimentation Control Facility Design and Calculation Support
  - Stormwater Management Facility Design and Calculation Support
  - AutoCAD Civil 3D Drawing Support
  - SWPPP Preparation
  - NPDES General Permit Preparation
  - Construction Submittal Review and Coordination

MarkWest

- Imperial Compressor Station, Pennsylvania
  - Industrial NPDES Preparation and Support

Northland Power

- Alfred Oaks Solar Project, New York
  - Stormwater Management Facility Design and Calculation Support
  - Decommissioning Plan Support

Presidential Land Company

- Woodberry Residential Subdivision Project, Pennsylvania
  - Civil Site Design
  - Erosion & Sedimentation Control Facility Design, Calculation, and Narrative Support
  - Stormwater Management Facility Design, Calculation, and Narrative Support
  - AutoCAD Civil 3D Drawing Support

Recurrent Energy

- Acadiana Solar Project, Louisiana
  - Decommissioning Plan Support
- Bayou Galion Solar Project, Louisiana
  - Decommissioning Plan Support

Walden Renewables

- Walker Solar Project, Pennsylvania
  - Stormwater Management Design and Permitting Support
  - Stormwater Management Facility Design, Calculation, and Narrative Support
  - AutoCAD Civil 3D Drawing Support
  - PAG-02 NPDES General Permit Preparation

Williams Energy

- Riter Well Connect Pipeline Project, West Virginia
  - SWPPP Preparation
  - NPDES General Permit Preparation
  - IFC Drawing Support
- Vernon Johnson Loop Pipeline Project, West Virginia
  - SWPPP Preparation
  - NPDES General Permit Preparation
  - IFC Drawing Support
- West Alexander Loop Pipeline Project, West Virginia
  - SWPPP Preparation
  - NPDES General Permit Preparation
  - IFC Drawing Support

Williams Solar

- Station 605 Solar Project, Pennsylvania
  - Civil Site Design
  - Erosion & Sedimentation Control Facility Design, Calculation, and Narrative Support
  - Stormwater Management Facility Design, Calculation, and Narrative Support
  - AutoCAD Civil 3D Drawing Support
  - PAG-02 NPDES General Permit Preparation
  - Municipal Permitting Support

TETRA TECH

Katherine A. Wood

Environmental Scientist

EXPERIENCE SUMMARY

Ms. Wood is experienced in the permitting and environmental compliance field, including five years working for major coal mine operators. In addition, she has experience in wetland delineation and field biology. Her experience includes both actual performance of work and project management.

Ms. Wood's expertise encompasses all aspects of environmental permitting including SMCRA, Clean Water Act 401/402/404 and Clean Air Act permitting. She also has extensive experience with endangered plant and animal species coordination specifically Indiana Brown Bat and development and installation of mitigation projects. In addition, Ms. Wood has worked extensively in the environmental compliance field. Ms. Wood has extensive experience in water sampling in both field and industrial settings. Her experience includes SPCC and Stormwater development and compliance, TRI reporting, NPDES compliance including water treatment, sampling and reporting and mitigation monitoring and reporting.

RELEVANT EXPERIENCE

Sample Support and Data Management *Technology Laboratory, Rare Earth Elements Associated with Coal and Coal By-Products, Appalachian Coal Basins***:** Organizing sample collection, packaging and shipment to lab and Data Management of sample information for a federal project to identify and quantify the existence high levels of rare earth elements in coal seam and associated geology in the Northern Appalachia and Central Appalachia coal basins.

Sample Support and Data Management *Technology Laboratory, Rare Earth Elements Associated with Coal and Coal By-Products, Rocky Coal Basins***:** Organizing sample collection, packaging and shipment to lab and Data Management of sample information for a federal project to identify and quantify the existence high levels of rare earth elements in coal seam and associated geology in the Rocky Mountain coal basins.

Permitting Support *Various Oil and Gas Pipeline Projects* Have assisted multiple pipeline projects in various permitting roles. Have assisted in different roles in the permitting process such as stormwater permits and LEDPA analysis. Have worked on both state and local permitting actions.

Field Reconnaissance Leader *Maryland Department of the Environment, Scenic Rail Road Subsidence Evaluation*. Lead the field reconnaissance in subsidence the identification along an undermined section of the Maryland Scenic Railroad in Frostburg Maryland.

Sampling Lead, *AEP, ELG Water Balance Monitoring* Responsible for developing and executing sampling plans for multiple power plants. The sampling plan captures water quality at all stages of the power generation process and all sampling events are performed in one day to allow for a representative snap shot of the plant's operations.

Permit and Compliance Manager, AK Coal Resources subsidiary of AK Steel Holdings located in Somerset County Pennsylvania. Was in charge of obtaining all necessary permits for opening and

Education

B.S. Environmental Biology, Heidelberg University, 2009

B.S. Water Resource Management, Heidelberg University

Area of Expertise

Environmental Permitting and Compliance

Registrations/ Affiliations

Captina Creek Conservancy, Secretary, 2011-2013

Training/Certifications

US Army Corp of Engineers Wetland Delineation Training

Ohio EPA Qualitative Habitat Evaluation Index (QHEI) Level II Certification

Ohio Department of Natural Resources Wildlife Collectors Permit

Pennsylvanian DEP Wildlife Collectors Permit

Office

St. Clairsville, OH

Years of Experience

16

Years within firm

10

Contact

Katie.wood@tetratech.com)

operation of an underground coal mining complex. Also responsible for all environmental compliance requirements for the operation.

Project Manager; SPCC Plan Development. In charge of writing, updating SPCC plans for multiple active operations.

Project Manager; TRI Reporting, Responsible for collecting and compiling information to be submitted for the EPA's annual TRI report for multiple active operations.

Project Manager; Permitting. Responsible for all aspects of permitting for multiple coal mines and associated preparation plant. Agency coordination included PADEP Bureau of District Mining Operations

Project Manager; CWA 402 Compliance. Responsible for compliance of several CWA 402 permits which included water treatment and reporting. PADEP Bureau of Clean Water.

Project Manager; Coal Innovations Refuse. Responsible for all aspects of overseeing design and permitting of both the existing coarse coal refuse disposal site and a proposed site. PADEP Bureau of District Mining Operations, PADEP Bureau of Clean Water, Army Corps of Engineers, US Fish and Wildlife Service.

Biologic Coordinator, Murray Energy Corporation Responsible for all permitting, monitoring and compliance of all biological related functions for all coal mining, processing and waste disposal operations for a national company. These functions included CWA 401/402/404 permitting, air permitting, endangered species coordination specifically Indiana Brown Bat, water quality treatment SPCC and Stormwater development and compliance

Project Scientist; SPCC Plan Development. In charge of writing, updating SPCC plans for multiple active operations.

Project Manager; TRI Reporting, Responsible for collecting and compiling information to be submitted for the EPA's annual TRI report for multiple active operations.

Project Scientist; Andelex Mine Drainage Sulfate Reducing Bioreactor, KenAmerican Resources, McLean County KY. Worked as project scientist to install a Sulfate Reducing Bioreactor to treat mine drainage. Oversaw the sampling and compliance of the system.

Project Scientist: Century Mine Wetland and Stream Mitigation, American Energy Company, Belmont County, Ohio. Worked on overseeing compliance and remediation of a large wetland and stream mitigation site. Included coordination with both the Army Corps of Engineers and Ohio EPA

Project Manager; 401/404 Permitting; Responsible for all aspects of 401/404 permitting for Murray Energy in multiple states for underground mines, surface mines and refuse disposal sites. Responsibilities included delineations and biological sampling, preparation and submittal of permits, agency coordination, mitigation and compliance. Agency coordination included Army Corps of Engineers, Ohio EPA and US Fish and Wildlife Service.

Project Manager; AMEI Mining Permit, AmericanMountaineer Energy, Harrison County, WV. Responsible for coordinating all aspects of permitting for a greenfield longwall coal mine, prep plant and refuse disposal area. Responsibilities included coordination of SMCRA, 401/402/404 and Air permits along with development of extensive mitigation plan and agency coordination. Agency Coordination included WVDEP, Army Corps of Engineers and US Fish and Wildlife Service.

Project Scientist; Casey Run, Ohio Valley Coal, Belmont County Ohio. Responsible for coordinating all aspects of permitting refuse disposal area in an exception value watershed. Responsibilities included coordination of SMCRA, 401/402/404 permits along with development of extensive mitigation plan and agency coordination. Agency coordination included ODNR, Army Corps of Engineers, US Fish and Wildlife Service, Ohio EPA and USEPA.

TETRA TECH

Gregory T. Yost, P.G.

Project Manager

EXPERIENCE SUMMARY

Mr. Yost has experience completing Phase I Environmental Site Assessments and performing investigations in determining contamination in both water and soil. Additionally, Mr. Yost has performed subsurface geotechnical investigations, including utilizing the information obtained to implement in foundation design and construction experience comprising of well pads and compressor discharge pads, pipeline right-of-way remediation, and landslide remediation. His experience also encompasses the evaluation of slope stability applied to cut slopes, fill slopes, and landslide susceptible slopes.

RELEVANT EXPERIENCE

ENVIRONMENTAL

Phase I Environmental Site Assessments, Multiple Clients, Various Locations

- Reviewed federal, state, and local databases for suspected releases and hazardous substances.
- Reviewed historical records (e.g. aerial photographs, topographic maps.
- Conducted written and phone interviews with current and past owners.
- Conducted site visits to identify current property uses and investigate for any signs of environmental issues.
- Ensure all ASTM guidelines were followed.

UST and Contaminate Removal, Various Clients, Various Locations

- Provided oversight for the removal of underground storage tanks and excavations to remove subsurface contamination.
- Confirmed all contaminates were removed, often utilizing a PID.
- Performed TerraCore soil sampling of excavation walls and collected water samples of any water seepage in excavations and forwarded samples for laboratory testing.
- Analyzed laboratory results to compile technical reports.

Monitoring Well Installation and Sampling, Various Clients, Various Locations

- Provided oversight for the installation of monitoring and injection wells.
- Collected water samples from installed monitoring wells and forwarded samples for laboratory testing.
- Generate groundwater elevation maps and when applicable contaminate flume maps.
- Analyzed laboratory results and additional data to compile technical reports.

GEOTECHNICAL

Geotechnical Investigations, Various Clients, Various Locations

- Assisted in the supervision of exploratory subsurface drilling and test pit investigation.
- Collected and logged soil and rock samples to be prepared for testing.
- Developed drilling plans, depth of drilling and sampling procedures.

Education

B.S. Geology, 2009, West Virginia University

Area of Expertise

Clean Water Act Permitting and Compliance

Registrations/ Affiliations

Professional Geologist, PA PG005221

Training/Certifications

Certified PennDOT Drilling Inspector 2014 (Current)

OSHA 40-Hour Hazwoper Training (29 CFR 1910.120(e)(8)), 2007

OSHA 8-Hour Hazwoper Supervisor Training.

OSHA 10-Hour Construction Safety Training

OSHA 30-Hour Construction

MSHA 24-Hour Above Ground Mining Training, 2019 (Current refresher)

Office

Morgantown, WV

Years of Experience

16

Years within firm

7

Contact

(304)-203-2402

greg.yost@tetratech.com

- Analyzed laboratory data reports to develop site soil and rock design parameters and assisted in the preparation for geotechnical recommendations for foundation designs.
- Performed infiltration and percolation testing.

Construction Inspection, Multiple Clients, Various Locations – WV & PA. Provided Inspection of toe key excavations to ensure depth and material were satisfactory for construction. Provided Inspection of reinforced soil slope to ensure the correct materials were utilized and installed in the correct sequences. Worked closely with the contractor to ensure the pad was constructed as designed including confirming material lifts were of the correct size and compaction.

Acid Producing Rock and Coal Review, Multiple Clients, Various Locations - WV & PA Compiled desktop studies for well pads to determine the probability of encountering coal seams during construction. Upon discovering a cut area would possibly encounter a coal seam, environmental borings were selected in the corresponding areas to determine the thickness of the coal seam and obtain samples. Laboratory testing of the coal samples was performed to determine the acidity and sulfur content of the coal encountered.

Well Pad Geotechnical Design, EQT Production Company, Various Locations - PA Drafted and implemented a subsurface exploration boring plan to determine design parameters for cut and fill slopes. Cross sections of relevant cut and fill slopes were analyzed for slope stability from the information obtained in the subsurface exploration using the computer program GSTABL. Toe key and intermediate bench dimensions and colluvium over-excavation depths were determined to meet an allowable slope stability factor of safety.

Slip/Slide Identification and Remediation, Various Clients, Various Locations

- Assisted in the design and initial assessment of various slip/slide areas throughout miles of pipeline right-of-way and constructed pads.
- Designed and implemented construction drawings and notes to remediate various slips/slides.
- Assisted in assessing multiple slips/slides to implement the appropriate corrective action.
- Provided construction oversight in slip/slide remediation.

Geohazard Assessment, Various Clients, Various Locations

- Conduct a desktop assessment of pipeline right-of-way and proposed pad locations including review of landslide maps, steepness of slope, soils, and geology.
- Perform site reconnaissance to determine areas susceptible to landslides including but not limited to areas with seeps, hummocky ground, leaning trees, and heavy erosion.
- Draft a geohazard evaluation report.
- Select geohazard BMPs on E&S plans to be incorporated during construction.
- Perform oversight on the installation of geohazard BMPs.

Paul T. Behum, Ph.D

Lead Hydrologist

EXPERIENCE SUMMARY

Dr. Paul T. Behum, Ph.D., PG, is a Senior Geoscientist with over 50 years of experience in geology, hydrogeology, and environmental resources, specializing in acid mine drainage (AMD) investigation, passive treatment system design, and coal resource evaluation. His career includes decades of service with the U.S. Department of the Interior, where he developed national methodologies for mine reclamation bonding, led AMD abatement projects, and contributed to the designation of protected lands such as New River Gorge National Park. Now with Tetra Tech, he applies his expertise to mine reclamation projects and water quality improvements. A recognized leader in his field, Dr. Behum has authored influential publications, received prestigious awards for service and reclamation, and remains active in professional organizations dedicated to advancing mine water management and geochemistry.

RELEVANT EXPERIENCE

Sr. Geoscientist, Legacy Coal Reclamation ■ 2025: Applied expertise in acid mine drainage (AMD) problem investigation and hydrology to mine reclamation problems and development of commercial improvements of mining affected lands. Activities include evaluation of water quality data, AMD treatment system design, investigation of mine pools and coal mine problem areas.
U.S. Department of the Interior 1974 - 2024:

Sr. Hydrologist, Office of Surface Mining, Mid-Continent Regional Coordinating Center ■ 1995 - 2024: Developed expertise in AMD problem investigation and specially the design of passive treatment systems with leadership role in numerous OSM-state abatement problems; lead instructor for OSM National training class in mine drainage passive treatment design.

Physical Scientist, Office of Surface Mining, Appalachian Regional Coordinating Center ■ 1984 - 1995: Contributed to the development of performance bond calculation methodology; developed methodology for review of alternative bonding programs (bond pools); lead teams of scientists and engineers evaluating the coal resource potential of lands impacted by valid existing rights (VER) claims, served as staff geologist and hydrogeologist. VER-related coal resource investigations aided land management agencies and the Congress in designation of protected lands including the New River Gorge National Park, Otter Creek Wilderness, and Cheat Mountain Roadless Area in West Virginia and the proposed Potoka River Wildlife Area in Indiana.

Physical Scientist, U.S. Bureau of Mines, Division of Policy and Analysis, Washington, D.C. ■ 1983 – 1984: Contributed to an extensive technology and economic evaluation of the impact of environmental regulation on the U.S. primary and secondary lead industry.

Education

Southern Illinois University,2016

Wright State University, Dayton, Ohio 1995 – 2001

University of Pittsburgh, Pittsburgh, PA 1984

University of Pittsburgh, Pittsburgh, PA 1974

Area of expertise

- Hydrology

Registrations / Certifications

The American Society for Reclamation (ASMR)

The International Mine Water Association (IMWA)

The Acid Drainage Technology Initiative (ADTI)

International Association of Geochemistry (IAGC)

Geologist/Physical Scientist, U.S. Bureau of Mines ■ 1974 – 1983: Collaborated research related to dust control in underground coal mining, assisted in development of mineral policy related to the coal industry, and conducted mineral land assessments on Federal lands which resulted in numerous published reports; assessments concentrated on evaluations of coal resource potential on Federal lands.

OTHER INFORMATION

- "Passive treatment of low-pH, high aluminum acid mine drainage: A critical review of sulfate-reducing bioreactor technology," In: "Effects of abandoned mine land reclamation on ground and surface water quality: Research and case examples from Indiana," Indiana Geological Survey Special Publication 72 ■ 2012
- "Passive treatment of a large flow, net acid mine drainage: The Enos Reclamation Project, Indiana," In: "Effects of abandoned mine land reclamation on ground and surface water quality: Research and case examples from Indiana," Indiana Geological Survey Special Publication 72 ■ 2012
- "Remediation of coal-mine drainage by a sulfate-reducing bioreactor: A case study from the Illinois coal basin, USA," Applied Geochemistry, Volume 26, Supplement 1 ■ June 2011
- "Coal reserve evaluation of the Proposed Patoka River Wildlife Area, Indiana"
  Final report OSM - U.S. Fish and Wildlife Service Interagency Agreement 14-16-0003-90-956 ■ 1991.
- "Handbook for calculation of reclamation bond amounts" Office of Surface Mining Reclamation and Enforcement special publication ■ 1986, revised 2000 and 2020.
- Awards

TETRA TECH

Jack W. Griffin, P.E.
Senior Geotechnical Engineer

EXPERIENCE SUMMARY

Mr. Griffin has over 15 years of experience in engineering and surveying with a focus on mining, geotechnical and civil design. He obtained a bachelor's degree in mining engineering and a master's degree in civil engineering at the University of Kentucky. His experience includes subsurface exploration; standard penetration testing; landfill design; foundations and settlement analysis; impoundment inspections; compaction testing; soil sampling, laboratory testing; water quality and resources; water retention/detention pond design; groundwater modeling and groundwater/surface water monitoring; permitting, environmental reclamation; geology; site development; and quality control construction monitoring. He has served clients with industrial, municipal, and commercial projects in the public and private sectors. Mr. Griffin is also a project manager that promotes quality customer service and value to his clients.

RELEVANT EXPERIENCE

MINE SUBSIDENCE INVESTIGATIONS

Mr. Griffin has many years of experience in identifying subsidence hazards, monitoring ground movement, risk assessment, and measures taken for mitigation and remediation. Mr. Griffin has performed over 60 residential and commercial underground coal mine subsidence investigations and monitoring projects throughout Kentucky for various insurance companies.

GEOTECHNICAL EVALUATION PROJECTS

Mr. Griffin has performed many geotechnical evaluation projects for industrial, municipal, and commercial clients throughout the southeast region of the United States. Project work consists of site characterization, drilling and sampling, laboratory soils testing, and bearing capacity determination of loads. Mr. Griffin has collaborated with structural engineers and general contractors to ensure that foundations are properly designed to support structures safely and efficiently while accounting for risk assessment and minimal environmental impact.

WASTE/SLURRY IMPOUNDMENTS AND REFUSE AREAS

Responsible for impoundment inspections and quality assurance for site compliance and hazard safety awareness. Conducted field instrumentation monitoring of piezometers, seepages, underdrains, decant pipes, extensometers, settlement monuments, and additional surface drainage monitoring. Coordinated with site operators and field personnel in meeting deadlines for construction stages of slurry impoundments and refuse areas under MSHA and state regulations.

Education

M.S. Civil Engineering, University of Kentucky, 2023

B.S. Mining Engineering, University of Kentucky, 2009

Area of Expertise

Geotechnical/Mining Engineering

Registrations/ Affiliations

Professional Engineer
FL, IL, KY, NC, SC, TN, WV

SME, Member

KGEG, Member

NPSE, Member

KCA, Member

Training/Certifications

NCESS Record Holder

Experienced Kentucky Surface and Underground Miner Certifications

Certified MSHA Impoundment Inspector

Certified Troxler Nuclear Density Gauge Operator with Hazmat Safety Awareness

Office

Lexington, KY

Years of Experience

16

Years within firm

1

Contact

jack.griffin@tetratech.com

DAM DESIGN PROJECTS

Mr. Griffin has been involved with the design modifications and construction of over ten coal refuse slurry dams. Work activities included foundation investigations, rock pressure testing, embankment materials testing, seepage and stability analyses, hydrology and hydraulic analyses, spillway design, and storm routings as well as the development of construction specifications. Construction monitoring and testing were part of each project.

MINING OPERATIONS IN SOUTHEAST KENTUCKY

Mr. Griffin has provided technical and administrative services for coal operations throughout Kentucky. He has been responsible for the transfer and the ownership/control review of multiple permits and has made modifications to existing permits for the feasibility of these operations. Specific projects acclimated to this surface coal mining permit include sediment structure designs; diversion ditch designs; haul road design; geological modeling and reserve analysis; surface and groundwater monitoring; right of entry information for surface and mineral ownership permissions of coal extraction; and surveying.

ENGINEERING DESIGN AND PERMITTING

Designed and submitted as-built pond specifications, annual pond certifications of maintenance, excess spoil fill certifications of construction, coal waste process bank certifications of construction, and surface blasting plans. Gathered and submitted water sampling tests, bio-monitoring reports, and quarterly discharge monitoring reports for all SMCRA permits. Conducted pre-blast surveys and groundwater/surface water user surveys. Gathered coal research and exploration/reserve analysis data. Developed geological models to locate coal seams. Developed cost analysis spreadsheets for environmental/water quality and permitting vendor spending.

OTHER TRAINING CERTIFICATIONS

- NCESS Record Holder
- TN EPSC Level 1 Certification
- KCSA Qualified Aggregate Technician
- Heartsaver First Aid CPE AED Certification

OTHER PROFESSIONAL AFFILIATIONS

- Association of State Dam Safety Officials (ASDSO) Member
- American Society of Civil Engineers (ASCE) Member
- Lexington Coal Exchange (LCE) Member

Robert P. Kudlawiec, P.E.

Professional Engineer

EXPERIENCE SUMMARY

A dedicated Professional Engineer and Executive with extensive experience in all facets of mining engineering, operation and management, from concept to reclamation. Also has a proven track record of executive business leadership, team building, project design, safety involvement, environmental compliance, and a passion for innovation and raising the performance of employees.

RELEVANT EXPERIENCE

Senior Project Manager, Operations/Marketing, Earthtech, Inc. Direction of multiple projects involving oil and gas well sites, compressor sites, pipeline installation, underground and surface mining, and refuse facilities. Provided expert testimony for mineral evaluations, economic modeling, and mine planning before the Board of Viewers, State Mining Commission, and Banking Industry. Responsible for permitting, capital and reserve evaluations, mine planning, operational evaluation, budgeting, and mineral assessments. Innovative product design and modeling for the bituminous and anthracite coal industry. Personal involvement with personnel and management with Department of Environmental Protection in Ebensburg, New Stanton, California, and Harrisburg, DEP Deep Mine Safety, Uniontown, MSHA in New Stanton, Pittsburgh, and Arlington, VA.

General Manger, Mining Operations, Prairie State Generating Company. Responsible for all mining operations, including production, engineering, health and safety, and maintenance for a 6MM ton operation feeding a power plant. Led reserve exploration, evaluation, negotiations, and acquisitions. Successfully managed capital and operational budgeting. Directed personnel evaluation, coordination, performance goals, and labor negotiations. Led team in the installation of Core Safety Program and Training. Responsible for developing revised mine planning in order to reduce mining costs and exceed budgeted production.

Vice President, Engineering, PBS Coals, Inc. Conducted due diligence studies and evaluations for land and mineral acquisitions. Responsible for mine permitting, permit modifications, and compliance interactions with local, state, and federal agencies. Extensive involvement with MSHA, DEP, and DEP DMS. Designed refuse impoundment facilities from inception to reclamation. Responsible for design, management and maintenance of numerous water treatment facilities. Provided expert testimony in litigation involving governmental and private parties. Managed underground and surface mining operations, including continuous, longwall, dragline, dozer, and truck and shovel methods. Responsible for developing long-term and short-term capital budgeting and production for an International Steel Company.

President and Project Director, Murray Energy Corporation.
Manager of Environmental Compliance, Maple Creek Mining, Inc. Responsible for all mining activities at Maple Creek and High-Quality Mines. Responsible for all

Education

M.B.A. Business Administration, Wheeling College, 1988

B.S. Mining Engineering, Penn State University, 1979

Area of Expertise

Engineering

Registrations/ Affiliations

Professional Engineer: PA, WV, IL, IN, KY, OH, MD

SME Past-Chairman Coal and Energy Division

Board Member SME C&E Executive Board

Distinguished Member Society of Mining Engineers

Board Member Pennsylvania Professional Engineers, Geologists and Surveyors

Member of the Pennsylvania Coal Alliance

Vice President Pittsburgh Coal Mining Institute of America

Office

Pittsburgh, PA (Monroeville)

Years of Experience

42

Years within firm

3

Contact

bob.kudlawiec@tetratech.com

compliance activities for operations in Pennsylvania, Ohio, Illinois and Utah. Responsible for reclamation activities at several non-active operations in numerous states. Handled all corporate permitting and engineering issues for Murray Energy Corporation in their states of operation. Engaged in negotiations with Regulatory Agencies, DEP and MSHA in numerous states of operations.

Senior Project Manager, Hatch Mott MacDonald Consulting Engineers. Conducted all phases of mine planning, including permitting, route selection, feasibility investigations, design and specification review, site investigation, erosion and sedimentation design, bridge investigations, refuse disposal, and impoundment design. Managed municipal water and sewage systems, storm water projects, and building designs. Engaged in all aspects of the mine design process.

TETRA TECH

Darryl J. Audia
Real Estate Specialist

EXPERIENCE SUMMARY

Mr. Audia has 47 years of licenced real estate experience both in the abandoned mine lands program and private sector. His extensive experience includes site development, appraisal preparation, surface and subsurface title examination, consulting, negotiation, and construction management. As an educator for Federal and State agencies his contributions have permitted license recertification as well as providing state, federal and Tribal employees resources to operate their realty sections with less liability and more efficiency. His skills include:

- Property appraisal
- Map correlation, surface owner property investigation and identification
- Mineral and gas rights ownership Investigation
- Title examination determining severed interests affecting project sites
- Agreement preparation, presentation, and negotiation
- Deed review, notarizing, and recording when necessary
- Creation of documents for special conditions, or perpetual use.
- Non-Profit real estate consulting acquiring property for grant projects
- Instructs in real estate nationally and at state level
- Testifies as a real estate expert witness

RELEVANT EXPERIENCE

Commonwealth of Pennsylvania, Department of Environmental Protection, Bureau of Abandoned Mine Reclamation (1989 – 2020). Real Estate Appraiser, Bureau of abandoned Mine Reclamation, Harrisburg, Ebensburg, New Castle PA February 1989 to June 2020:

- Consulted in real estate and collaborated in project development, design, and construction directly with engineers, geologists, hydrologists working closely with the Director, Assistant Director and Division Chiefs of the Bureau of Abandoned Mine Reclamation.
- Appraised abandoned mine land properties for twenty (20) years for the Department of Environmental Protection in most of the counties in western Pennsylvania.
- Charged with identifying, confirming and certifying the surface and subsurface property ownerships, including isolating particular stratus's of mineral and gas rights in order to determine exact ownership interests to be inserted in a variety of instruments to provide legal access for government and nongovernment entities.
- Charged with the responsibility of acquiring fee and fractional interests in real estate from individuals, corporations, government entities, railroads, gas and mineral owners using Rights of Entry license agreements, easements, and fee transfers to complete a variety of abandoned mine land projects normally without the use of the power of eminent domain or forced entry.
- Led, coordinated, and/or participated in public meetings involving mine subsidence, mine fire, water line projects, and acid mine water treatment plants for the PA Department of Environmental Protection or their grant recipient partners. Mine subsidence control projects ranged from 20 homes to 300 homes and were located in Neshannock Township, Lawrence County; Plum Borough, Allegheny County; Chartiers Township, Washington County; Connellsville Borough, Fayette County; Leechburg Borough, Armstrong County; Houtzdale Borough, Clearfield County; and sites in Elk County Pennsylvania.

EDUCATION

B.A. Communications, University of Pittsburgh, 1975
Post-Graduate Real Estate course study at American Institute and Local Colleges
OSMRE NTTP - multiple Environmental Courses

AREA OF EXPERTISE

Abandoned Mine Reclamation
Real Estate Specialist, Appraiser, Educator

REGISTRATIONS/ AFFILIATIONS

Real Estate Broker License
Real estate Residential and Broker Appraiser License
Board of Realtors
Associate Broker License AB041402A
Broker Appraisal license BA004106L
Residential license RL00561L

TRAINING/CERTIFICATIONS

Extensive OSMRE NTTP Environmental Certificates
OSM Instructor Training Academy
Interpersonal Coal Field Communication training
Pennsylvania Department of Transportation Real Estate Acquisition, Appraisal and Title Examination Training

YEARS OF EXPERIENCE

49

YEARS WITHIN FIRM

3

CONTACT

darryl.audia@tetratech.com

- Charged with the responsibility of real estate negotiations, acquisition of surface and subsurface rights and appraisal reviews for acid mine drainage treatment projects including but not limited to 1) the Gladden Mine Water Treatment Project; (2) the Lancashire Acid Mine Drainage Treatment Facility; (3) the Clyde Mine Water Treatment Facility (re-routing of injection lines); (4) the Toby Creek Acid Mine Drainage Treatment Facility, and other acid mine water treatment projects

Relevant Private Sector Work Experience

- **Keller Williams Pittsburgh North 2/1/2018,** Associate Broker Residential and Commercial Agent
- **Audia Real Estate Services 1990 – 2/1/2018,** Broker of Record and land developer, property manager
- **Cross Gates Century 21, Merrill-Lynch Real Estate, 1986-1989** Associate Broker
- **Audia-McPoland Real Estate, 1980-1986,** Broker of Record/Owner, land developer, property manager
- **Berg Agency Florida Division, 1980,** Florida real estate agent
- **Vogel Realty 1975-1980** real estate agent and assisted in land development
- Represented Pennsylvania American Water in acquiring and ground for new water treatment plant serving Lawrence County, Pennsylvania
- Represented clients before zoning boards, planning commissions, boards of view, and for tax appeals in Allegheny County, Westmoreland County, Lawrence County, Clearfield County in Pennsylvania and Austintown in Ohio
- Represented Real Estate interests of Commonwealth Bank and First Commonwealth Bank
- Represented Investors in developing Sunrise Estates and Whispering Winds both in Westmoreland County and Dixon Development in Lawrence County
- Purchased, subdivided and developed Orchard Park Estates in Lawrence County
- Managed 4-10 real estate agents at two agencies where I was Broker of Record and owner
- Past member and Appraiser Instructor for the Pennsylvania Assessors Association
- Real Estate Instructor for Butler Community College, Lodolce Academy of Real Estate
- Activated in the Commercial Real Estate division of Keller Williams Pittsburgh North

SELECTED ACCOMPLISHMENTS

- Coordinator and Instructor – Department of Interior, Federal Office of Surface Mining Realty Division, 4-day national realty course
- Appointed to the Lawrence County Board of View
- Appointed to the Industrial Development Authority
- Appointed Real Estate Consultant for the New Castle Historical Architectural Review Board
- Contributing Author – Federal Realty Manual for the Federal Office of Surface Mining 4-day national realty course
- Instructor – Statewide Acid Mine Drainage Conference and Regional Sewage Enforcement Officer Recertification Course
- President – Lawrence County Board of Realtors (Two Terms)
- Vice-President – Lawrence County Board of Realtors (Two Terms)
- Real Estate Talk-Show Host – Talk Real Estate – WKST and WBZY Radio 7 years

TETRA TECH

Thomas A. Gray, P.E.

Project Manager

EXPERIENCE SUMMARY

Mr. Gray has more than 43 years of professional experience. He is a technical expert in mining engineering, mine reclamation, coal ash disposal and utilization, coal evaluations – including assessing rare earth elements in coal seams. His project management responsibility has included construction, engineering, regulatory compliance, and research and development. He has been responsible for the successful completion of many unique projects.

Education

B.S. Mining Engineering, Pennsylvania State University, 1973

M.B.A. University of Pittsburgh, 1977

Area of Expertise

Mining Engineering

Registrations/ Affiliations

Professional Engineer, WV, 1988, 10523

Professional Engineer, PA, 1978, 26978-E

Professional Engineer, MD, 1989, 17048

Professional Engineer, VA, 1980, 11628

Professional Engineer, OH, 2009, 73686

Office

Pittsburgh, PA

Years of Experience

43

Years within firm

9

Contact

tom.gray@tetratech.com

RELEVANT EXPERIENCE

Plans for Reclamation of Abandoned Mine Lands

Township of Upper St. Clair in conjunction with PADEP, Three Rivers Wet Weather Development Corporation, EPA, and Heinz Foundation; Upper St. Clair, PA

- Abandoned Coal Mine Pool Wastewater Overflow Elimination
  - Senior Project Manager
    - Investigated feasibility of eliminating wastewater overflows by diverting the flow into a pumped down abandoned underground coal mine pool as a temporary storage reservoir. After weather event subsides the overflow would be pumped out of the mine to a treatment facility. The project addressed not only the pollution from the sewer overflow but also the pollution from the mine drainage as both would be treated together. The DOE's National Energy Technology Laboratory and the University of Pittsburgh assisted with the project by researching the combined treatment of alkaline sewage and acidic mine water.

WVDEP; Monongalia County, WV

- Coal Combustion Byproduct Based Grout Project
  - Project Manager
    - This R&D project injected coal combustion byproduct-based grout into 25 acres of abandoned mine workings to reduce the generation of AMD and to reduce subsidence potential. Responsible for research and development investigation, construction plans and specifications, monitoring construction, and preparing a research report. Project sponsors included Allegheny Energy, DOE, Consol, and the Electric Power Research Institute.

Cloudland, GA

- OSM Little River Mining Reclamation Project
  - Project Manager
    - The Office of Surface Mining Little River Reclamation project near Cloudland, Georgia, required regrading an abandoned coal mine strip pit to eliminate a highwall, construction of drainage channels, and revegetation of disturbed areas. The survey was conducted to prepare site topography and cross

sections at 50-foot intervals for reclamation and restoration of approximately 2,500 feet of abandoned highwall (as high as 100 feet) from surface mining. A grading plan was prepared that included site drainage features for two drainage channels.

Plans for Reclamation of Abandoned Mine Lands

NIOSH; Fayette County, PA

- Mine Seal Research
  - Senior Project Consultant
    - Research project to evaluate a potentially significant improvement to current state-of-the-art practice of constructing mine seals through vertical boreholes when direct access is prohibited. The new technology was tested and proved to be effective in providing barriers to airflow and to impound water and other inert materials.

Select US Coal Basins Final Report

- Assessment of Rare Earth Elemental Contents
  - Project Manager
    - Mr. Gray was the project manager for a study for the United States Department of Energy's National Energy Technology Laboratory evaluating coal-based rare earth elements (REE). The study was used to support the DOE Report to Congress summarizing the opportunities and challenges of recovering REE elements from coal and coal by-products. This report summarizes the results of the review and compilation of published information concerning the geology, geochemistry, and resource estimates of select coal basins in the United States, with emphasis on REEs. These data were evaluated with respect to criteria that could be useful in defining "sweet spots" of these metals in coals and associated waste rock and/or ash. To accomplish this, five western States (Arizona, Colorado, Montana, New Mexico, and Montana) and four eastern States (Pennsylvania, West Virginia, Virginia, and Kentucky) were chosen for study. The United States Geological Survey (USGS Coal Quality (CoalQual) Database was used extensively in this evaluation.

Coal and Coal Waste Products Final Report

- Study on the Utilization of Portable XRF Spectroscopy as Screening Tool for REEs in
  - Project Manager for the United States Department of Energy's National Energy Technology Laboratory evaluating coal-based rare earth elements (REE).
    - The report summarizes a study of the effectiveness of applying X-Ray fluorescence (XRF) spectrometer analysis as a field screening method to rapidly and economically evaluate coal and coal waste products to determine their potential to contain rare earth elements (REE).

Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation; PA

- 2012 Professional Design Services Contract
  - Project/Contract Manager
    - Currently managing this open-end contract to provide professional design services to remediate problems such as acid mine drainage, contamination of water supplies, degraded stream quality, subsidence, and abandoned refuse and waste piles, strip mines, highwalls, and landslide-prone areas.

Pennsylvania Department of Environmental Protection, Bureau of Mining Programs; PA

- 2012 Professional Design Services Contract
  - Project/Contract Manager

- Currently managing this open-end contract to provide professional design services to remediate problems such as acid mine drainage, contamination of water supplies, degraded stream quality, subsidence, and abandoned refuse and waste piles, strip mines, highwalls, and landslide-prone areas.

Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation; PA

- 2012 Professional Design Services Contract
  - Project/Contract Manager
    - Managed this open-end contract while with a previous consultant to provide professional design services to remediate problems such as acid mine drainage, contamination of water supplies, degraded stream quality, subsidence, and abandoned refuse and waste piles, strip mines, highwalls, and landslide-prone areas.

Maryland Department of the Environment Bureau of Mines; Frostburg, MD

- Open-End Contract;
  - Senior Project Manager
    - Managed an open-end contract to provide technical assistance in mine engineering, acid mine drainage treatment and mine reclamation. Completed 16 projects, including evaluating the use of solar or wind power to operate a mine water treatment plant.

MD Department of the Environment, BOM; Frostburg, MD.

- Mine Permitting Open-End Contract
  - Project Manager
    - Managed an open-end contract to assist small operators with permit applications. The emphasis was on geological exploration and hydrogeology and hydraulics pertaining to impacts from surface mining.

Maryland Department of the Environment Bureau of Mines; Frostburg, MD

- Open-End Hydrogeology/Mining Contract
  - Project Manager
    - Managed an open-end contract that provided hydrogeology services to the state agency.

Michael C. Korb
SENIOR MINING ENGINEER

EXPERIENCE SUMMARY

Mr. Korb has more than 50 years of professional experience. He is a technical expert in mining engineering, surface mine operations, mine reclamation, mine subsidence, acid mine drainage remediation, mine plant and water treatment operation, active and abandoned mine fire mitigation, mine equipment maintenance, mining heritage, and community and public relations. Mike specializes in active and abandoned mining projects, projects that have mining related concerns and reuse of reclaimed land for economic development. His project management responsibility has included operations, construction, engineering, regulatory compliance, and research and development. He has been responsible for mine startup and closure, profit and loss of several mining operations, and the successful completion of many important, unique projects.
Fellow of Society for Mining, Metallurgy & Exploration, 2018

EDUCATION

BS, Mining Engineering, 1968
University of Missouri, Rolla
(now Missouri Univ. S & T)

AREA OF EXPERTISE

Mining Engineering/
Mine Reclamation

YEARS OF EXPERIENCE

57

RELEVANT EXPERIENCE

Reclamation of Abandoned Mine Lands

Senior Mining Engineer Tetra Tech, Inc. Project Consultant for Abandoned Mine Land Economic Development Projects. Consultant to confidential Mine Land to Solar, Mine Drainage for Pumped Storage, Waste Disposal on Mine Reclamation, and Use of Mine Water for Geothermal Heating and Cooling clients. Background, studies, and feasibility of active and abandoned mine sites for clients. Coordination with Agencies for clients.

Environmental Program Manager PA DEP BAMR, Abandoned Mine Reclamation Management of Development, Design, Construction of Projects Built by In-House Construction. Managed development, design and specification, construction, construction management of 170 projects completed by the PA Bureau of Abandoned Mine Reclamation In-House Construction Crew. Projects abated or addressed AML features including Vertical Opening, Dangerous Highwall, Subsidence, Water, Portal, Spoil Area, Clogged Stream, Clogged Stream Land, Dangerous Slides, Underground Mine Fire, Pits, Mine Opening, Hazardous Water Body, Industrial or Residential Waste, and Hazardous Equipment & Facilities. Half of the In-House projects were handled as emergency response

Environmental Program Manager PA DEP BAMR, Management of Development, Design, Specification, Construction Abandoned Mine Reclamation Projects Built by Contractor. Managed development, design and specification, contracting, construction management of 91 projects completed by the PA Bureau of Abandoned Mine Reclamation utilizing AML Trust Funds. Projects abated AML features including (most to least) Vertical Opening, Dangerous Highwall, Spoil Area, Dangerous Pile and Embankment, Pits, Subsidence, Hazardous Equipment & Facilities, Hazardous Water Body, Portals, Mine Opening, Water Problems, Clogged Stream, Surface Burning, Clogged Stream Lands, Industrial or Residential Waste, Underground Mine Fire, Equipment/Facility, Dangerous Impoundments, Dangerous

Slides , Gases: Hazardous or Explosive, and Polluted Water: Agricultural & Industrial. Contracted cost of these was more than $61 million. 44 contracted projects were handled as emergency response.

Environmental Program Manager PADEP BAMR, Management of Development, Design, Specification, Construction of Abandoned Mine Reclamation Project Newport North, Newport Township Luzerne County, PA. Two fatal accidents with six casualties caused reclamation of a water-filled pit in Newport Township to be a high priority. Public and political pressure heightened the need to eliminate the hazard for fear that another incident might occur. The project was in the middle of a mountainside has hundreds of acres of abandoned mines. The Department opted to reclaim only about 36 acres of property immediately surrounding the fatality-causing pit. The remote location of the project dictated the need for a very long access road through rough terrain. More than 3,000 feet of highwall were eliminated during the backfilling of several pits including the waterbody that was the scene of the two accidents. 370,000 cubic yards of an on-site spoil pile were graded to resemble the pre-mining condition. The project installed more than 1,800 feet of rock-lined ditch to control storm runoff and a mine discharge that had fed the water-filled pit. Managed development, design, construction plans and specifications, construction supervision, and a Stay Out-Stay Alive event with MSHA, OSM, and PA State Police. Project won the 2011 Excellence in Abandoned Mine Reclamation National Award from OSMRE.

Environmental Program Manager PADEP BAMR, Planning, Development, Implementation of AML Pilot Projects – Anthracite Region. A FY 2016 Omnibus $30 million federal pilot program will fund the reclamation of 14 abandoned mine lands (AML) sites in 10 Pennsylvania counties. The projects were selected for funding based on their potential to create long-term economic benefits. Six anthracite region projects were proposed, justified and chosen for Pilot Projects funding. The Tresckow, Powderly, and Eckley projects were completely assembled in-house, and the Green Mountain AMD, Pioneer Tunnel/Bowmans Shaft, and Tamaqua CRIZ are projects with groups that will get direct grants developed by our direction.

Environmental Program Manager PADEP BAMR, Management of Development, Design, Specification, Construction of Abandoned Mine Reclamation Project Riverside East, Jessup and Archbald Boroughs, Lackawanna County, PA. The project eliminated a safety hazard by removing dangerous refuse piles ranging from 20 to 100 feet high and eliminating approximately 1,200 feet of highwalls ranging from 15 to 50 feet high. The refuse piles that were removed eroded into the Lackawanna River which is a HQ-CWF watercourse in the area. The spoil piles were very steep with loose material and very little vegetation. These piles were on the inside bank of the river and rose steeply. The strip pit's highwalls were located approximately 400 feet from a baseball field. The long-ago-destroyed floodplain was reestablished along the Lackawanna River for over 2,000 feet. This project reclaimed 19.6 acres by excavating and grading 283,145 cubic yards of material. The project area was revegetated with grass and legume seed mixtures and 800 trees were planted in the floodplain.

Environmental Program Manager PADEP BAMR, Management of Development, Design, Specification, Construction of Abandoned Mine Reclamation Project Boyers Knob Lookout, Coal Township, Northumberland County, PA. The site was deep mined between the 1840's and 1950's. The site was later strip mined in the 1950's and 1960's. This abandoned mine land had significant visitation by campers, trail riders, and garbage dumpers. The project involved the backfilling and grading of 2,000 feet of highwalls ranging in depth from 20 to 60 feet, removal of piles and embankments from 20 to 60 feet high, backfilling of sixteen mine openings, installing five bat gates and removing of three abandoned mine structures. The work reclaimed 86 acres of abandoned strip mine land by grading approximately ½ million cubic yards of on-site material. Over 300 feet of stream flow was returned to the surface. Storm water drainage ditches were constructed, and the project area seeded with grass, legumes, and tree seed mixes. The reclaimed area is currently being used as part of a large park for recreational vehicles, the Anthracite Outdoor Adventure Area.

John Francis Mack, P.E.

Senior Mining Engineer

EXPERIENCE SUMMARY

Mr. Mack has over 32 years of experience in the mining industry. Currently, Mr. Mack provides technical assistance and mining engineering expertise for mining and abandoned mine reclamation projects on an as-needed basis.

RELEVANT EXPERIENCE/PREVIOUS EMPLOYMENT

- **Mining Engineer, Office of Surface Mining, Reclamation and Enforcement (July 2012 - September 2019)**
  - Served as primary lead on Pittsburgh Field Division (PFD) oversight projects and aspects of mine inspections that are principally engineering in nature. My Abandoned Mine Land (AML) Inspections commenced in 2014 while working on an Erosion and Sedimentation Study that included many on site reviews of Pennsylvania AML Projects. This led to many other inspections that year. In 2015 and 2016, I conducted 23 AML Oversight inspections in Pennsylvania and 32 in Ohio and prepared detailed reports that discussed all aspects of state responsibility and compliance. Each inspection involved assurance that the states were in compliance with NEPA Policy and SMCRA Regulations. Participated in many regulatory oversight events including Federal Inspections, surveys, and office meetings to discuss remedies for violations at the McKay Mine. Conducted many ATP Reviews and prepared recommendations regarding AML Reclamation Projects in Ohio. Prepared and conducted a Tru Pulse 360B Training Class that instructed the OSMRE Reclamation Specialists how to operate the sophisticated Range Finder. Followed up afterwards with individual instruction to Reclamation Specialists who requested further direction. Instructed three NTTP AML Courses each year (Dangerous Openings, Subsidence & Mine Fires) that focused on investigation and various construction methods of abatement under SMCRA. Provided engineering assistance, mentoring, and training to the field personnel as requested.
  - Served as the primary lead on providing assistance to the States to improve their programs on engineering issues. Conducted detailed document and field research and prepared reports for The Regional Impoundment Breakthrough Study in Ohio, Pennsylvania and Kentucky. Provided the same work for The Regional Slope Stability Study in Ohio
- **Civil Engineer/Physical Scientist, Office of Surface Mining, Reclamation and Enforcement (August 2000 - July 2012)**
  - Project Management: Served as Project Manager on over 150 emergency abandoned mine reclamation projects included the following: Conducted technical investigations of mine-related problems. Recommended best abatement method and designed emergency mine area restoration projects. Developed design plans,

Education

M.B.A. Business Administration, New Mexico State University, 1993

B.S. Mining Engineering, New Mexico Institute of Mining and Technology Socorro, 1980

Area of Expertise

Mining Engineering

Registrations/ Affiliations

Professional Engineer, Pennsylvania, PE078894

Society of Mining Engineers-PennAnthracite Chapter - Past President/ Board of Directors

Toastmasters International - Past President - Blue Diamonds Club

National Technical Training Program (NTTP) - Instructor/Dave Bucknam Instructor Award

Training/Certifications

NTTP Instructor Training, 2002

NTTP Coalfield Communication, 2006

Oral Communications, 1989

Years of Experience

32

Years within Firm

1

Office

Dallas, PA

Contact

john.mack@tetratech.com

cost estimates and abatement specifications for competitive bidding on projects involving surface reclamation, drainage control, mine shafts, drilling and grouting, landslides, and mine fires often in populated areas around buildings and homes. These in-house designs included drawings, specifications, detailed cost estimates and other construction documents.

- Compliant Investigation: Performed all aspects of the Complaint Investigator function within 48 hours of contact in a professional manner and made recommendations on the disposition of the complaint. Investigations were thorough and defined site conditions such as materials classification, content, and stability. Utilized established policy in arriving at an ultimate recommendation as to whether the complaint is mining related. When dealing with abatement of abandoned mine related subsidence, it often involved ambiguous conditions and limited information.
- Mine Map Repository: Assisted visitors to the Mine Map Repository in a willing, courteous, and professional manner as I showed mine maps and interpreted the information for them. Served on the three member Mine Map Repository Committee which maintained and oversaw access to all original mine maps of the Anthracite Coalfields of Pennsylvania. Categorized and arranged maps in a usable format for future use by OSM or the public. Developed a system, requisitioned materials, and utilized the system to catalogue approximately 9,000 mine maps that had previously been unavailable due to their random storage.
- Construction Inspector Certification: Coordinated recruitment, training, orientation, and certification of contract Construction Inspectors from resume development through Orientation to Central Contacting Registration. Nineteen Construction Inspectors became certified during my seven years in this position. Supervised work of Construction Inspectors on as many as 6 mine reclamation projects at a time.

- **Assistant City Engineer, City of Scranton (April 1995 – August 2000)**
  - Prepared scopes of work, bid documents, technical specifications, and cost estimates for many Environmental and Capital Improvement Projects regarding stream alignment and storm water control. Performed structural building inspections after fires, a flood, accidents and during construction to insure safety and compliance with City Codes (BOCA). Served as City's engineer in charge of maintenance of facilities, structures, and vegetation control on the entire city levee system. This involved oversight of pumping stations, buildings and landscape on the entire $100 million system. Also, provided guidance, development and coordination for the planning, design and oversight of facility and equipment maintenance projects regarding the levee. Performed inspections during construction to insure that Contractor was installing the specified materials in the proper manner. Supervised a staff of five traffic maintenance technicians and oversaw all traffic maintenance assignments including line painting, traffic signal maintenance and repair, and emergency calls. I also supervised six craftsmen on the Catch Basin Maintenance Crew. Worked with PennDOT on the rehabilitation of 3 bridges and the replacement of another.
- **Mining Engineer, Pennsylvania Department of Environmental Protection (April 1987 – August 1991)**
  - Project Manager: Worked with the plans and specifications to manage construction work on abandoned mine land projects involving the extinguishment of mine fires, reclamation of coal refuse banks and abandoned strip mines, treatment of acid mine drainage, hydraulic mine flushing, exploratory drilling, building demolition, and sealing of abandoned mine portals and shafts. Conducted gradation and density tests. monitored underground mine fire temperatures, and performed water studies in abandoned strip pits. Performed belt scale tests and monitored the mine pool. Presided at job conferences with the Contractors and interested agencies. Planned and directed the work of a variable number of Inspector Supervisors and Environmental Project Inspectors on as many as six projects simultaneously. Elucidated both contract specifications and Department policy for the Contractor. Maintained records and documented work completed by the Contractor for the purpose of making monthly payments and to use in my preparation and negotiation of all Contract Modifications. Formulated the quantities necessary for backfilling strip pits. Reviewed and approved the Contractor's Erosion and Sedimentation Control Plan by computing storm water runoff and pipe sizes using topographic maps of the watershed to insure

the environmental stability of the work site. Worked in the field with survey crews to lay out proposed borehole locations, and to cross section borrow areas for the purpose of computing backfill quantities needed to backfill shafts or other mine openings. Also, worked with survey crews to determine grade lines and cross -sectioning for payment using the average end area method. Prepared all written correspondence regarding the project and maintained a record of all correspondence.

- Project Designer: Studied colliery maps, consulted with property owners, computed contract item quantities, prepared plans and specifications, estimated the project cost, directed drafting operations related to the project. Communicated orally and in writing with property owners, material suppliers, as well as municipal, state and federal agencies. I also represented the Bureau of Abandoned Mine Reclamation by taking reporters on tours of reclamation projects and providing them with an interview that related details of each project.

ADDITIONAL TRAINING/CERTIFICATIONS

- Blaster Training, 1987
- COTR Training, 2000
- COR/COTR Refresher, 2001
- NEPA Procedures...2001
- NTTP Subsidence Abatement...2001
- NTTP Historic and Archeological Resources...2002
- NTTP Dangerous Highballs...2002
- NTTP Mine Fires, 2003
- NTTP Dangerous Openings, 2003
- NTTP Landslides, 2004
- NTTP Surface and Groundwater Hydrology, 2004
- NTTP Underground Mining Technology, 2005
- Contract Officer Representative Certification, 2007
- NTTP Evidence Preparation and Testimony, 2009
- Master Instructor Training, 2009
- NTTP Blasters Training, 2010
- TIPS ArcGIS For Mining and Reclamation, May 2013
- GALENA Slope Stability, September 2013

AWARDS

- Department of Interior Honor Award for Superior Service on the Dolph Colliery Mine Fire Project and received 3 Quality Step Increases and Annual and On the Spot Awards.

William S. Lazar, P.E.

Senior Project Manager/Mining Engineer

EXPERIENCE SUMMARY

Engineering and Construction of large mining and heavy civil projects, both on the surface and underground. Related work, from conception to commissioning, includes mine development, infrastructure, highway and bridges, overland conveyor systems, port and transloading facilities, and blast design and design of blast resistant structures.

RELEVANT EXPERIENCE

Energy Development and Material Handling Department Manager/Senior Project Manager. Engineering responsibilities include managing the Energy Development and Material Handling Departments along with being a Senior Project Manager for major projects. Duties include managing department personnel such as Project Managers, Lead Engineers, Construction Managers, Safety Supervisor; and coordinate and direct cross-discipline departments' work for associated projects. Also responsible for contract review and negotiation, the development of Company and Project's budgets, and managing and developing staff.

- Project's areas of influence are the power, gas, mining, industrial, mills, and heavy infrastructure sectors.
- Functions include the overall managing of FEL1, FEL 2, FEL 3, and EPCM Projects' functions where we perform conceptual designs, project budgets, KPIs, create and monitor management and execution plans, detailed engineering, construction management, and commissioning.
- Mechanical equipment selection, sizing, installation, and specifications.

Senior Project Manager. Responsibilities included the development and implementation of capital construction projects through their Operational Support Group. The projects ranged from conception to commissioning with duties including the development of Project's individual budgets, financial evaluations, specifications, and bid packages; and implementation of the individual contract award, contractor safety program, and overseeing the engineering activities and field work for the desired scope of work. These Projects, in most cases, consisted of several different contracts based on a variety of engineering and construction disciplines such as earthwork or site development, material handling, building and industrial facilities, power distribution, utility infrastructure, mechanical equipment selection and upgrades.

- With the large scale of these Projects, I was responsible for coordinating with many departments and disciplines to provide:
  - Complete and thorough inputs into the conceptual proposal,
  - Creating and managing metrics that were developed based on the concerns or influence of many departments or critical to the project's scope,
  - Managing the project team as the projects develop through the conceptual to commissioning phases,
  - Managing and review of major project close-outs and follow-up with operation personnel.
- Presentation and project status with corporate executives

Education

B.S. Mining Engineering, Penn State University

M.P.M. Project Management, University of Pittsburgh

Area of Expertise

Mining/Construction/ Project Management

Registrations/ Affiliations

Professional Engineer, WV, SD

UC of SME

ASCE

AISC

Training/Certifications

OSHA 10-hour Construction Safety & Health

OSHA Competent Person Training in excavations and Trench Shoring

MSHA Part 48

MSHA Qualified Impoundment Inspector

MSHA Construction Surface Certified

WV MHST Coal Miner's Certificate (Underground)

WV MHST Coal Miner's Certificate (Surface)

WV MHST Surface Construction Supervisor

Office

Monroeville, PA (Pittsburgh)

Years of Experience

36

Years within firm

3

Contact

bill.lazar@tetratech.com

- Magnitude of projects usually exceeded $100MM.

Project Manager/Mine-Civil Engineer. Responsibilities included the development and implementation of construction projects, and surface mine planning and production.

- Construction project duties included the development of the budgets, specifications, and bid packages; and implementation of the individual contract award and overseeing the engineering activities and field work for the desired scope of work.
- Mine planning and production duties included the operations' permitting, reserve evaluation and equipment utilization.
- Responsibilities influenced underground, surface, and support facilities.

Senior Project Manager. Responsibilities included project management, estimating, engineering, and safety duties within the Heavy Civil Division. Projects included several elevated platform stations for Allegheny County Port Authority's Light Rail Transit System and river chamber demolition of the Charleroi Lock and Dam for the U.S. Corps of Engineers.

Senior Project Manager. Responsibilities included construction management, bidding, engineering, and safety of heavy construction projects. Areas of focus included carbon composite/epoxy resin structural upgrades, earthwork, structural concrete and steel, earthen dam construction, retaining walls, piling, and deep foundations. Duties included the engineering and design for design-build Projects in the above-mentioned focus areas.

Project Manager/Engineering Manager. Responsibilities included the supervision of the engineering staff of a large surface mining operation and implementation of capital construction projects. Engineering Manager duties included permitting, reserve evaluation, equipment utilization, quality assurance and environmental regulatory compliance. As the Project Manager, I supervised the contractor's scope of work for such tasks as tunnels, shafts, haul road construction, mine ventilation, surface facility development and upgrades.

Alex Ludinich, P.E.
Civil Engineer

EXPERIENCE SUMMARY

Mr. Ludinich is a Registered Professional Engineer with over 10 years of experience. Mr. Ludinich serves as a civil engineer out of Tetra Tech's Pittsburgh office. He specializes in earth disturbance permitting and stormwater design for linear and site development projects. Mr. Ludinich's experience is primarily with solar farm, overhead electric line, and oil and gas clients, including upstream, midstream, and downstream projects. Mr. Ludinich has experience related to local and state solar farm permitting, overhead electric lines, substations, natural gas pipelines, waterlines, interconnects, and meter pads. He has experience in earth disturbance permitting, stormwater and BMP design and permitting, hydrology and hydraulics, stormwater pollution prevention plans, and environmental permitting. He is proficient with Hydraflow Hydrographs, HY-8, PondPack, FlowMaster, AutoCAD, AutoCAD Civil 3D, HydroCAD, PVCase, Microsoft Office, and HEC-RAS.

RELEVANT EXPERIENCE

SOLAR FARM

Distributed Sun, LLC

- GP-0-20-001 Permit and Site Development Plans for 4 Solar Projects located in New York State
  - Civil Engineer
    - ✓ Prepared SWPPP Drawings including designing Erosion and Sediment Controls, Post-Construction Stormwater Controls, and Construction details.
    - ✓ Prepared Site Development Plan including subdivision plans.
    - ✓ Prepared SWPPP narrative, including all necessary components of GP-0-20-001 permit.
    - ✓ Design of panel locations, access roads, and proposed facilities to facilitate completion of Site Development Plans.

AES

- GP-0-20-001 Permit and Site Development Plans for 6 Solar Projects located in New York State
  - Civil Engineer
    - ✓ Prepared SWPPP Drawings including designing Erosion and Sediment Controls, Post-Construction Stormwater Controls, and Construction details.
    - ✓ Prepared Site Development Plan including subdivision plans.
    - ✓ Prepared SWPPP narrative, including all necessary components of GP-0-20-001 permit.
    - ✓ Used PVCase software to perform topographic site analysis and lay out solar arrays.

Education

BS / Civil and Environmental Engineering, University of Pittsburgh, 2010

Area of Expertise

Earth Disturbance Permitting

Erosion and Sediment Control Design

Post-Construction Stormwater Management

Environmental Permitting

Site Development

Registrations/ Affiliations

Professional Engineer – Pennsylvania, Ohio

Training/Certifications

Insert text

Office

Pittsburgh, PA

Years of Experience

10+

Years within firm

3

Contact

Alex.Ludinich@tetratech.com

ELECTRIC TRANSMISSION LINE

FirstEnergy Corporation

- Re-conductoring and rebuilding of over 40 miles of Overhead Electric Lines in Northwestern Pennsylvania
  - Civil Engineer
    - ✓ Prepared NPDES permit and design on 40+ miles of new and re-conductoring of overhead electric transmission lines.
    - ✓ Performed field visits to determine feasibility of access to structures. replacements.
    - ✓ Prepared E&S Plans, PCSM Plans, and construction sheets.
    - ✓ Prepared environmental permits including GP-5s and GP-8s.
    - ✓ Coordinated with internal and external structure design engineers.
    - ✓ Prepared highway occupancy permits.
- Design and permitting of multiple substations in Northwestern Pennsylvania
  - Civil Engineer
    - Prepared NPDES permit, including E&S Plans, PCSM Plans, and grading plans for substation and associated PCSM BMPs.
    - Prepared environmental permits including GP-5s and GP-8s.
    - Prepared highway occupancy permits.

Duquesne Light Company

- Proposed substation, approximately 10 miles of proposed overhead electric transmission lines, several miles of proposed distribution lines in Beaver County, Pennsylvania.
  - Civil Engineer
    - ✓ Prepared NPDES permit, including E&S Plans, PCSM Plans, and grading plans for substation and associated PCSM BMPs.
    - ✓ Prepared environmental permits including GP-5s and GP-8s.
    - ✓ Coordinated with internal and external structure design engineers.
    - ✓ Prepared highway occupancy permits
    - ✓ Performed field visits to determine feasibility of access to structures. replacements.
    - ✓ Designed drainage and permitting for approximately 1 mile of permanent access roads.

OIL AND GAS

Columbia Gas

- Proposed pipeline in Virginia
  - Civil Engineer
    - ✓ Prepared earth disturbance and other environmental permits for proposed pipeline.
    - ✓ Prepared Steep Slope Plan and performed coordinated with multiple agencies, including state, local, and United States Forest Service.

Energy Transfer

- Natural gas pipelines & anomaly repairs in Pennsylvania and Ohio
  - Civil Engineer
    - ✓ Prepared municipal permits and earth disturbance permits for anode bed protection installations.
    - ✓ Prepared modifications and performed site visits for multiple streambank restoration projects and block valve installations.
    - ✓ Prepared municipal permits and earth disturbance permits for anomaly repairs.
    - ✓ Designed BMPs and coordinated with construction crew for oversight
    - ✓

EQT

- Multiple EQT Compressor Stations in southwestern Pennsylvania
  - Civil Engineer
    - ✓ Prepared ESCGP-2 & ESCGP-3's and major modifications for multiple compressor stations and well pads within southwest Pennsylvania.
    - ✓ Prepared E&S Control Plans and PCSM Plans.
    - ✓ Worked with drafters to create grading plans for multiple permanent access roads and multi-acre facilities. Prepared construction plans.

Transco

- Multiple compressor stations and substations in New Jersey
  - Civil Engineer
    - ✓ Prepared 5G3 Earth disturbance permits and performed site design including grading, E&S and PCSM design.
    - ✓ Coordinated with and prepared statewide, county, and municipal permits.

Appendix B Attachment A Questionaire

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
AML CONSULTANT QUALIFICATION QUESTIONNAIRE **Attachment "A"**

PROJECT NAME	DATE (DAY, MONTH, YEAR)	FEIN
WVDEP AML Design Build / Pre-Qualification - Solicitation CEOI 0313 DEP2600000001		95-4148514

1. FIRM NAME 2. Tetra Tech, Inc	2. HOME OFFICE BUSINESS ADDRESS The Maxwell Center, 32 Twentieth Street Suite 100 Wheeling, WV 26003	3. FORMER FIRM NAME

3. HOME OFFICE TELEPHONE	4. ESTABLISHED (YEAR)	6. TYPE OWNERSHIP	6a. WV REGISTERED DBE (Disadvantaged Business Enterprise)
304-212-3600	1966	Corporation **Corporation**	YES NO X

7. PRIMARY AML DESIGN OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. AML DESIGN PERSONNEL EACH OFFICE
Morgantown, 947 Canyon Rd, Morgantown, WV 26508/304-534-4021/ Jacquie Brody, PE / 5 People
Pittsburgh, 661 Andersen Dr, Pittsburgh, PA, 15220/412-921-7090/Jacquie Brody, PE/116
The Maxwell Center, 32 Twentieth Street, Suite 100, Wheeling, WV 26003 /Mike Kearns/ 5 People

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM	8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS
Mr. Mark Perry, OU President, 412-921-7217	Mr. Eric Cavazza, PE – Project Manger – 412-522-9764

9. PERSONNEL BY DISCIPLINE

1,802 ADMINISTRATIVE	219 ECOLOGISTS	51 LANDSCAPE ARCHITECTS	240 STRUCTURAL ENGINEERS
679 ARCHITECTS	30 ECONOMISTS	788 MECHANICAL ENGINEERS	83 SURVEYORS
661 BIOLOGIST	706 ELECTRICAL ENGINEERS	180 MINING ENGINEERS	TRAFFIC ENGINEERS
522 CADD OPERATORS	1,943 ENVIRONMENTALISTS	17 PHOTOGRAMMETRISTS	15,293 OTHER
202 CHEMICAL ENGINEERS	82 ESTIMATORS	648 PLANNERS: URBAN/REGIONAL	
2,399 CIVIL ENGINEERS	443 GEOLOGISTS	184 SANITARY ENGINEERS	
234 CONSTRUCTION INSPECTORS	— HISTORIANS	350 SOILS ENGINEERS	
— DESIGNERS	227 HYDROLOGISTS	61 SPECIFICATION WRITERS	27,962 TOTAL PERSONNELL
— DRAFTSMEN			

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 6
***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? X YES ☐ NO

11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach "AML Consultant Qualification Questionnaire".

NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE
Green Rivers LLC 264 East Ave. Thomas, WV 26292	Geomorphic Stream Design	X Yes No
NAME AND ADDRESS: Monaloh Basin Engineers 300 Business Center Dr. Ste 304 Pittsburgh, PA 15205	SPECIALTY: Site Surveying	WORKED WITH BEFORE X Yes No
NAME AND ADDRESS: DIEFFENBAUCH & HRITZ, LLC 1095 Chaplin Road Ste 200 Morgantown, WV 26501	SPECIALTY: Site Surveying	WORKED WITH BEFORE X Yes No
NAME AND ADDRESS: Core Drilling, LLC 620 Lincoln Avenue Bentleyville, PA 15314	SPECIALTY: Drilling	WORKED WITH BEFORE X Yes No
NAME AND ADDRESS: Eurofins 2425 New Holland Pike Lancaster, PA 17601	SPECIALTY: Water Testing	WORKED WITH BEFORE X Yes No
NAME AND ADDRESS: Geotechnics 544 Braddock Avenue East Pittsburgh, PA 15112	SPECIALTY: Soil Testing	WORKED WITH BEFORE X 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

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

YES Description and Number of Projects: Tetra Tech brings extensive expertise in Abandoned Mine Land (AML) and mine reclamation engineering. Over the past five years, the firm has successfully completed more than 20 AML-related projects across multiple states, including ongoing efforts in several jurisdictions. Notably, Tetra Tech has delivered AML project work within West Virginia, demonstrating both regional experience and a proven track record in addressing complex mine reclamation challenges.

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: Tetra Tech has a dedicated team of specialists focused on geotechnical investigations, including comprehensive soil analysis. Over the past five years, this team has successfully completed more than 20 projects specifically involving soil analysis, highlighting their depth of experience and technical capability in this field.

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects: Tetra Tech has extensive experience in hydrologic and hydraulic evaluations, with specialized expertise in stormwater runoff, mine pool analysis and acid mine drainage (AMD) treatment systems. Over the past five years, the firm has completed more than 20 projects focused on hydrology and hydraulics, demonstrating its strong capabilities in water-related assessments and remediation solutions.

D. Does your firm produce its own Aerial Photography and Develop Contour Mapping?

YES Description and Number of Projects: Description and Number of Projects: Tetra Tech does produce its own Aerial Photography with the use of drone technology and we use that photography to develop contour mapping. We use this service across all disciplines and industries with hundreds of flights and maps developed on a yearly basis.

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: **Tetra Tech's extensive resources and multidisciplinary staff enable the firm to deliver specialized expertise across a wide range of project types.** This includes demonstrated experience in domestic waterline design, often integrated as a component within broader infrastructure and development projects.

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

YES Description and Number of Projects: Tetra Tech has a dedicated team focused on Acid Mine Drainage (AMD) projects, offering specialized expertise in AMD treatment solutions. The team is currently managing five active AMD treatment projects and has successfully completed over 10 similar projects within the past five years, demonstrating a strong track record in addressing complex mine water challenges.

G. Is your firm experienced in construction oversight?

YES Description and Number of Projects: Tetra Tech has extensive experience providing construction oversight on OSMRE and state AML-funded projects. Over the past five years, the firm has overseen more than a dozen mine reclamation and AMD treatment system construction projects. Services include on-site inspection, QA/QC, contractor coordination, and compliance monitoring to ensure successful project delivery within regulatory requirements.

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
Cavazza, Eric E. P.E.	40+	37	

Brief Explanation of Responsibilities

Mr. Eric Cavazza has over forty (40) years of extensive experience administering state and federal environmental programs including extensive experience managing the development, design and construction of environmental restoration projects to eliminate hazards and restore environmental degradation associated with abandoned mine lands. He served as Pennsylvania's AML Program Director for 9 years before retiring from there in December 2020.

EDUCATION (Degree, Year, Specialization)

BS, 1983 Mining Engineer/ MEng, 1995 Environmental Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME, ASRS	PE PA(1989),IN(2023),OH (2023),KY(2023)& WV(2023)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
Hynes, Gregory PE	31	31	

Brief Explanation of Responsibilities

Mr. Hynes has 31 years of professional engineering experience including utility pipelines and abandoned mine land reclamation. Additionally, he has designed and permitted numerous mine surface facilities, oil and gas well pad sites, potable water distribution systems, stormwater conveyance systems, sanitary sewerage systems, and developed E&S control plans.

EDUCATION (Degree, Year, Specialization)

BE, 1987 Civil Engineer/ MS, 1997 Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	PE 1993 PA, PE 1998 OH, PE 1998 WV

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Michael Kearns, PE	YEARS OF AML DESIGN EXPERIENCE: 43	YEARS OF AML RELATED DESIGN EXPERIENCE: 43	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
Michael Kearns, P.E., is a seasoned civil and environmental engineer with over 40 years of experience, much of it focused on AML (Abandoned Mine Lands) and mining-related engineering. He has led the design and permitting of numerous surface and deep mine sites, coal preparation facilities, and impoundment structures throughout West Virginia, Ohio, and Pennsylvania. His expertise includes stormwater management, slope stability, NPDES permitting, sedimentation pond design, and impoundment inspection—areas critical to AML remediation. Mr. Kearns is also an MSHA-certified impoundment inspector and has served as an expert witness on mine reclamation issues.

EDUCATION (Degree, Year, Specialization)
B. S. Civil Engineering, West Virginia University, 1977
M.S. Civil Engineering, WV College of Graduate Studies, 1982

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
American Society of Civil Engineers, National Society of Professional Engineers, National ASCE Committee on Employment Conditions	PE in WV (1981), PE in OH (1991), PE in PA (1992)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Randy Jackson, PE	YEARS OF AML DESIGN EXPERIENCE: 37	YEARS OF AML RELATED DESIGN EXPERIENCE: 37	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
Randy Jackson, P.E., is a senior engineer with 37 years of experience, including over three decades dedicated to Abandoned Mine Lands (AML) reclamation. He spent most of his career with the Pennsylvania DEP’s Bureau of Abandoned Mine Reclamation, where he led both project development and design. His work encompassed site investigations, property owner coordination, grading and seeding plans, erosion and sediment control design, and full permitting responsibilities. Randy also managed a team of engineers and consistently delivered complex AML projects, including during remote operations amid the COVID-19 pandemic.

EDUCATION (Degree, Year, Specialization)
B.S. Civil Engineering, Pennsylvania State University, 1987

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PE in PA (1993), PE in OH (2023), PE in WV (2023)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
John Patterson, PE	16	16	

Brief Explanation of Responsibilities
John Patterson has extensive experience in environmental permitting and civil site design with a focus on stormwater management, erosion and sediment control, and NPDES permitting for large-scale infrastructure projects. His work includes preparing and managing permit applications, developing best management practices, and overseeing compliance monitoring—key skills applicable to AML-related regulatory and environmental oversight.

EDUCATION (Degree, Year, Specialization)
B.S. Civil and Environmental Engineering, University of Pittsburgh, 2007

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PE in PA (2014)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
Nick Hartman, PE	7	7	

Brief Explanation of Responsibilities
Nicholas Hartman, P.E., is a licensed civil engineer with over eight years of experience in site-civil design and environmental compliance, including stormwater management, erosion and sedimentation control, and regulatory permitting. He has prepared SWPPPs, NPDES permit applications, and decommissioning plans, with extensive use of AutoCAD Civil 3D to support site design, grading, and water management infrastructure. His work on solar, pipeline, industrial, and flood protection projects demonstrates expertise directly applicable to AML reclamation, particularly in managing disturbed or environmentally sensitive lands.

EDUCATION (Degree, Year, Specialization)
University of Pittsburgh Bachelor of Science in Civil Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PE in PA (2018)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 16	YEARS OF AML RELATED DESIGN EXPERIENCE: 16	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Katie Wood			

Brief Explanation of Responsibilities

Katie Wood is an environmental scientist with 16 years of experience, including significant contributions to Abandoned Mine Lands (AML) projects through permitting, compliance, and biological coordination. She has managed environmental permitting for coal mines and refuse disposal areas, including SMCRA, Clean Water Act (401/402/404), and air permits across multiple states. Her AML-related work includes mitigation planning, subsidence evaluations, endangered species coordination, and water quality monitoring and treatment. Katie's deep understanding of regulatory frameworks and her practical field experience make her a critical asset on AML and mine reclamation projects.

EDUCATION (Degree, Year, Specialization)

B.S. Environmental Biology, Heidelberg University, 2009, B.S. Water Resource Management, Heidelberg University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 16	YEARS OF AML RELATED DESIGN EXPERIENCE: 16	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Greg Yost, PG			

Brief Explanation of Responsibilities

Greg Yost, P.G., is a geologist with 16 years of experience, including significant contributions to AML-related projects through environmental site assessments, geotechnical investigations, and acid-producing rock and coal evaluations. He has performed slope stability analyses, landslide remediation, and well pad design in coal-bearing regions of West Virginia and Pennsylvania—key components in AML reclamation. Greg also has experience with Clean Water Act compliance and permitting, particularly in relation to contamination assessment and mitigation. His technical skill set and field oversight background make him a valuable asset on reclamation and geohazard projects

EDUCATION (Degree, Year, Specialization)

B.S. Geology, 2009, West Virginia University

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PG in PA (2002)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Paul Behum, PG	YEARS OF AML DESIGN EXPERIENCE: 40+	YEARS OF AML RELATED DESIGN EXPERIENCE: 40+	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Dr. Paul T. Behum is a senior geoscientist specializing in the investigation and remediation of acid mine drainage (AMD) and other abandoned mine land (AML) impacts. He has extensive experience designing and implementing passive AMD treatment systems, conducting mine pool investigations, and developing reclamation strategies to restore environmental quality and commercial value to mining-impacted lands. His work includes coal resource evaluations to support land management decisions, technical leadership on AML abatement projects, and development of methodologies for reclamation bond calculations and alternative bonding programs. A published author and recognized expert, Dr. Behum has provided national training in passive treatment design and contributed to the protection of sensitive lands through collaboration with federal and state agencies. He is an active member of professional organizations dedicated to mine water management and reclamation science.

EDUCATION (Degree, Year, Specialization)

Southern Illinois University, Carbondale, IL (2016), Wright State University, Dayton, Ohio (1995-2001), University of Pittsburgh, Pittsburgh, PA (1974 and 1984)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
ASMR, IMWA, ADTI, IAGC	Professional Geologist, PA,

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Jack Griffin, PE	YEARS OF AML DESIGN EXPERIENCE:16	YEARS OF AML RELATED DESIGN EXPERIENCE: 16	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Jack W. Griffin, P.E., is a senior geotechnical engineer with over 15 years of experience in mining, geotechnical, and civil engineering, including extensive abandoned mine land (AML) work. He has led more than 60 underground coal mine subsidence investigations, designed and monitored slurry impoundments and refuse areas, and managed modifications for coal refuse dams under MSHA and state regulations. His expertise includes geotechnical evaluations, groundwater modeling, reclamation planning, permitting, geological modeling, and environmental monitoring for coal operations. Mr. Griffin’s work focuses on risk assessment, hazard mitigation, and engineering solutions to restore and protect mining-impacted lands.

EDUCATION (Degree, Year, Specialization)

M.S. Civil Engineering, University of Kentucky, 2023 B.S. Mining Engineering, University of Kentucky, 2009

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME, KGEG, NPSE, and KCA	Professional Engineer FL (2024), IL (2025), KY (2014), NC, SC, TN, WV (2024)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
Bob Kudlawiec, PE	42	42	

Brief Explanation of Responsibilities

Bob Kudlawiec, P.E., is a highly experienced mining engineer with over 40 years of expertise spanning mine planning, operations, reclamation, and environmental compliance. Throughout his career, he has overseen AML-related activities including mine permitting, impoundment and refuse facility design, water treatment systems, and reclamation planning across multiple states. Bob has led engineering and compliance efforts for major mining companies and has provided expert testimony on mineral evaluations and regulatory matters. His extensive leadership background and technical depth make him a valuable contributor to AML and reclamation projects.

EDUCATION (Degree, Year, Specialization)

M.B.A. Business Administration, Wheeling College, 1988

B.S. Mining Engineering, Penn State University, 1979

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME, Pennsylvania Coal Alliance, Pittsburgh Coal Mining Institute of America	Professional Engineer: PA (1984), WV (1997), IL (1993), IN (1993, KY (2004), OH (2007), MD (2016), AL (2020)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML 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:
Darryl Audia	49	49	

Brief Explanation of Responsibilities

Darryl Audia is a seasoned real estate specialist with 47 years of experience, including over three decades supporting the Abandoned Mine Lands (AML) program with the Pennsylvania Department of Environmental Protection. His AML expertise spans real estate appraisal, title examination, mineral and gas rights investigation, and acquisition of property interests for reclamation and acid mine drainage treatment projects. Darryl played a key role in securing access for numerous mine subsidence and water treatment projects, often without the use of eminent domain. He is also a nationally recognized instructor in real estate practices for federal, state, and tribal agencies.

EDUCATION (Degree, Year, Specialization)

B.A. Communications, University of Pittsburgh, 1975

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
Real Estate Broker License, Board of Realtors Associate Broker License AB041402A ,Broker Appraisal license BA004106L ,Residential license RL00561L	

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Tom Gray, PE	YEARS OF AML DESIGN EXPERIENCE:45	YEARS OF AML RELATED DESIGN EXPERIENCE: 45	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Tom Gray, P.E., is a seasoned mining engineer with over 43 years of experience, including substantial contributions to Abandoned Mine Lands (AML) reclamation. He has served as project manager on a wide range of AML projects involving acid mine drainage mitigation, highwall elimination, mine pool wastewater management, and mine seal research. Tom has led numerous professional services contracts for state agencies such as PADEP and the Maryland Bureau of Mines, focusing on remediation of strip mines, refuse piles, contaminated water supplies, and subsidence-prone areas. His expertise also extends to coal ash utilization and rare earth element assessments in coal and waste materials.

EDUCATION (Degree, Year, Specialization)

B.S. Mining Engineering, Pennsylvania State University, 1973, M.B.A. University of Pittsburgh, 1977

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	Professional Engineer in PA (1978), WV (1988), MD (1989), VA (1980), OF (2009)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Mike Korb	YEARS OF AML DESIGN EXPERIENCE:57	YEARS OF AML RELATED DESIGN EXPERIENCE: 57	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Mike Korb is a senior mining engineer with over 57 years of experience, including decades of leadership in Abandoned Mine Lands (AML) reclamation. As Environmental Program Manager with PA DEP BAMR, he managed the development, design, and construction of over 260 AML projects, addressing hazards such as highwalls, mine openings, subsidence, acid mine drainage, and refuse piles—many under emergency conditions. Mike also led innovative AML economic development efforts, including mine land repurposing for solar, pumped storage, and geothermal applications. His work has earned national recognition, including an OSMRE Excellence in Reclamation award for the Newport North project.

EDUCATION (Degree, Year, Specialization)

BS, Mining Engineering, 1968 University of Missouri, Rolla (now Missouri Univ. S & T)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
John Mack, PE	YEARS OF AML DESIGN EXPERIENCE: 32	YEARS OF AML RELATED DESIGN EXPERIENCE: 32	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
John Francis Mack, P.E., is a senior mining engineer with over 32 years of experience in mining and abandoned mine land (AML) reclamation, including extensive tenure with the Office of Surface Mining, Reclamation and Enforcement. His expertise spans AML inspections, project management for emergency reclamation, design and oversight of mine fire abatement, drainage control, subsidence repair, and acid mine drainage treatment, ensuring compliance with NEPA and SMCRA regulations. He has also provided engineering assistance, training, and mentoring for AML programs nationwide, with a proven record of regulatory oversight, technical design, and successful remediation of high-risk abandoned mine sites.

EDUCATION (Degree, Year, Specialization)
M.B.A. Business Administration, New Mexico State University, 1993
B.S. Mining Engineering, New Mexico Institute of Mining and Technology Socorro, 1980

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	PE in PA (1986)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Bill Lazar, PE	YEARS OF AML DESIGN EXPERIENCE:36	YEARS OF AML RELATED DESIGN EXPERIENCE:36	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
Bill Lazar, P.E., is a senior project manager and mining engineer with 36 years of experience in mining, heavy civil engineering, and project management. His AML-related expertise includes permitting, reserve evaluation, surface and underground mine planning, and construction management for remediation and infrastructure projects. Bill has overseen large-scale reclamation and development efforts involving earthwork, impoundments, site development, and environmental compliance across multiple mining and industrial facilities. His multidisciplinary leadership and experience from concept through commissioning make him a key asset on complex AML projects.

EDUCATION (Degree, Year, Specialization)
B.S. Mining Engineering, Penn State University M.P.M.(1986) Project Management, University of Pittsburgh (2008)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
SME	Professional Engineer, WV (2001), SD (2017)

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES **RESPONSIBLE FOR AML PROJECT DESIGN** (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
Alex Ludinich, PE	YEARS OF AML DESIGN EXPERIENCE:11	YEARS OF AML RELATED DESIGN EXPERIENCE:11	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities

Alex Ludinich, P.E., is a civil engineer with over 11 years of experience specializing in earth disturbance permitting, stormwater management, and environmental permitting. While his background is primarily focused on infrastructure projects in the solar, electric transmission, and oil and gas sectors, his expertise in erosion and sediment control, hydrology and hydraulics, and BMP design is directly applicable to Abandoned Mine Lands (AML) reclamation. His work includes designing and permitting for complex sites with steep slopes, stream crossings, and access roads—challenges commonly found in AML projects. Alex's technical capabilities and permitting knowledge position him well to support AML remediation efforts

EDUCATION (Degree, Year, Specialization)

BS / Civil and Environmental Engineering, University of Pittsburgh, 2010

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	Professional Engineer in PA (2017), OH (2019)

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE AML DESIGN SERVICES

AutoCAD Civil 3D, Carlson Civil Suite, HydroCAD, ArcView GIS, Google Earth Pro, Surfer, Microsoft Office – Word, Excel, PowerPoint, AMDTreat, (Slide, RSPile, RS2, Settle3/Rocscience), and ProMax

Computers (at least one per staff person), Printers, Plotters, file servers, tablets

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
Krayn Refuse Pile, Cambria County, PA	Cambria County Conservation District, Ebensburg, PA	Design Engineer of Record and Construction Oversight	$1,690,000	29
East Bernstadt Subsidence Control, Laurel County, KY	Kentucky AML Program, Frankfort, KY	Design Engineer of Record and Construction Oversight	$2,976,595	56
Whitesburg Group, AML Landslides, Letcher County, KY	Kentucky AML Program, Frankfort, KY	Design Engineer of Record and Construction Oversight	$4,500,000	45
Knott County Group, AML Landslides, Knott County, KY	Kentucky AML Program, Frankfort, KY	Design Engineer of Record and Construction Oversight	$3,000,000	69
Chris Johnson/Tim Malone Mine Fire, Pikeville, KY	Kentucky AML Program, Frankfort, KY	Design Engineer of Record and Construction Oversight	$7,500,000	45
Wallins Creek, Stream Rehabilitation, Harlan County, KY	Kentucky AML Program, Frankfort, KY	Design Engineer of Record and Construction Oversight	$7,500,000	25
Export Mine Portals, Westmoreland County, PA	Export Borough Historical Society, Export, PA	Design Engineer of Record and Construction Oversight	$1,185,869	93
Phillips Discharge, Fayette County, PA	Foundation for Pennsylvania Watersheds, State College, PA	Design Engineer of Record	$4,998,980	59
Little Conemaugh MDTP Design, Cambria County, PA	Foundation for Pennsylvania Watersheds, State College, PA	Design Engineer of Record	$29,840,000	25
Enoco Mine Refuse Reclamation, Knox County, IN	Indian AML Program, Jasonville, IN	Design Engineer of Record	$4,027,174	72
Powelson Run Wildlife Area Highwalls, Muskingum County, OH	Ohio AML Program, Columbus, OH	Design Engineer of Record	$2,044,840	84
Banning/WNCL Coal Refuse Pile, Westmoreland County, PA	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record	$33,574,426	99
Keewaydin Surface Mine Reclamation, Clearfield County, PA	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record	$2,532,163	75
Blacklick Creek AMD Treatment Plant, Indiana	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record and Construction Support	$26,158,500	100

County, PA				
Moshannon Creek Restoration, Clearfield and Centre Counties, PA	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record	$28,244,257	32
Good Spring South Surface Mine Reclamation, Schuylkill County, PA	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record	$11,857,240	20
AOAA Camp Mine Openings, Northumberland County, PA	Pennsylvania AML Program, Harrisburg, PA	Design Engineer of Record	$5,387,790	1
Clinton #2 & Tracy Overflow Passive Treatment, Schuylkill County, PA	Schuylkill County Conservation District, Pottsville, PA	Design Engineer of Record	$2,294,270	13
Quaker Run Stream Restoration, Northumberland County, PA	Shamokin Creek Restoration Alliance, Mt. Carmel, PA	Design Engineer of Record and Construction Oversight	$200,000	22
Big Mountain Road/Buck Run Refuse Pile, Northumberland County, PA	Shamokin Creek Restoration Alliance, Mt. Carmel, PA	Design Engineer of Record	$3,205,450	14
AMLER Pickleball Court Foundation Design, Bemont County, OH	Village of Bellaire, Bellaire, OH	Design Engineer of Record and Construction Oversight	$219,400.00	0
Richard Mine Drainage Control, Monongalia County, WV	WV AML Program, Charleston, WV	Design Engineer of Record and Construction Oversight	$2,055,952	41
Abram Creek Dosers, Grant County, WV	WV AML Program, Charleston, WV	Design Engineer of Record and Construction Oversight	$7,001,721	34
WVDEP Three Fork Creek, Preston County, WV	WV AML Program, Charleston, WV	Design Engineer of Record and Construction Oversight	$6,667,938	29
TOTAL NUMBER OF PROJECTS:24		**TOTAL ESTIMATED CONSTRUCTION COSTS:** **$ 195,821,433**		

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS

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
NA	NA	NA	NA	NA	NA

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Breckenridge Richard Mine Drilling, Monongalia County, WV	Breckenridge Corporation, Buckhannon, WV	$75,955.00	2024	Yes
Ashland North Mine Subsidence Evaluation, Boyd County, KY	Kentucky AML Program, Frankfort, KY	$ 302,340.41	2023	Yes
Askam Borehole AMD Discharge Treatability Study, Luzerne County, PA	Earth Conservancy, Ashley, PA	$55,340.00	2023	Study Only
Gun Club Road (Design-Build), Allegany County, MD	Maryland AML Program, Frostburg, MD	$591,546.68	2022	Yes
Magnolia Ranch Surace Mine Reclamation, Carroll County, OH	Ohio AML Program, Columbus, OH	$386,681.00	2024	Ecological Services
Snow Fork Dosers, Hocking and Athens Counties, OH	Ohio AML Program, Columbus, OH	$1,000,000.00	2024	In Construction
Shamokin Creek Wtrshd Rest Pln, Northumberland County, PA	Shamokin Creek Restoration Alliance, Mt. Carmal, PA	$235,000.00	2025	Study Only
Gladden AMD Treatment Plant (Design-Build), Allegheny County, PA	South Fayette Conservation Group, Morgan, PA	$13,927,890.00	2021	Yes
Pell Road Doser, Preston County, WV	WV AML Program, Charleston, WV	$2,010,000.00	2024	In Construction
Royal Coal Company, Fayette County, WV	WV Office of Special Reclamation, Charleston, WV	$2,148,310.00	2023	No
Breckenridge Richard Mine Drilling, Monongalia County, WV	Breckenridge Corporation, Buckhannon, WV	$75,955.00	2024	Yes

18. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS CONSTRUCTION OVERSIGHT ON PROJECTS				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
Ashland North Mine Subsidence Evaluation, Boyd County, KY (Design-Bid-Build)	Kentucky AML Program, Frankfort, KY	$302,340.41	2023	Yes
Gun Club Road (Design-Build), Allegany County, MD	Maryland AML Program, Frostburg, MD	$591,546.68	2022	Yes
Gladden AMD Treatment Plant (Design-Build), Allegheny County, PA	South Fayette Conservation Group, Morgan, PA	$13,927,890.00	2021	Yes
Quaker Run Stream Restoration, Northumberland County, PA (Design-Bid-Build)	Shamokin Creek Restoration Alliance, Mt. Carmel, PA	$200,000.00	2025	Out for Bid

19. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO OTHER FIRMS (INDICATE PHASE 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
NA	NA	NA	NA	NA	NA

20. 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.

21. The foregoing [illegible] t of facts.

Signature: Eric C. Cavazza Title: VP, Legacy Coal Reclamation Date: August 18, 2025

Printed Name: Eric Cavazza, PE

Appendix C Attachment B Project Matrix

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personnel *	Additional Info Provided in Section 4 of the EOI	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	Eq;uipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Eric Cavazza, PE	Gregory Hynes, PE	Gregory Yost, PG	Michaeal Kearns PE	Other Project Team Personnel	Other Tetra Tech Personnel
PADEP Gladden Acid Mine Drainage Treatment Plant	C&P	Yes		X		X					X	X	X	X		X	X	M	P	P	P	P	M
PADEP Banning/WNCL Refuse Pile Reclamation	C&P			X		X	X				X	X			X		X	P		P		P	M
WVDEP OSR Royal Coal Bond Forfeture	C&P		X			X					X						X				P	P	M
WVDEP Pell Run Doser	C&P					X					X			X		X	X			P	P	P	P	M
KYDAML East Bernstadt Mine Subsidence Project	C&P					X					X		X				X	P				P	M
PADEP Blacklick Creek AMD Treatment Plant	C&P	Yes			X	X					X	X		X			X	M			M	P	M
PADEP Dolph Mine Fire	C&P					X		X			X											P	P
KYDAML Tim Malone/Chris Johnson Mine Fire	C&P							X			X		X					M				P	P
PA DEP Keeywadin Surface Mine Reclamation	C&P	Yes	X			X					X						X	M			P	P	P
WVLSC Larosa Fuels	C&P		X			X					X	X		X	X				M			P	P
Glenn Springs Holdins Bird Mine Treatment	C&P					X			X		X	X	X	X			X	M	P	P		P	P
Export Historical Society Mine Entries	C&P			X	X	X			X		X		X					M				P	P
WVLSC Buffalo Coal	C&P		X			X					X	X		X					M			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 "B"

Appendix D Other supporting Documents (Addendum Acknowledgement, Certificate and signature page, COI, OMB)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CEOI 0313 DEP2600000001

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)

☑ Addendum No. 1	☐ Addendum No. 6
☐ Addendum No. 2	☐ Addendum No. 7
☐ Addendum No. 3	☐ Addendum No. 8
☐ Addendum No. 4	☐ Addendum No. 9
☐ Addendum No. 5	☐ 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.

Tetra Tech, Inc.
Company

Authorized Signature

08/19/2025
Date

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

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.

(Printed Name and Title) Eric Cavazza, VP Legacy Coal Restoration

(Address) The Maxwell Center, 32 Twentieth Street Suite 100 Wheeling, WV 26003

(Phone Number) / (Fax Number) 412-522-9764

(email address) eric.cavazza@tetratech.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract 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/Contract 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 this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; 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; 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.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Tetra Tech, Inc.
(Company)

Eric C. Cavazza
(Signature of Authorized Representative)

Eric E. Cavazza, VP Legacy Coal Restoration
(Printed Name and Title of Authorized Representative) (Date)

412-522-9764
(Phone Number) (Fax Number)

eric.cavazza@tetratech.com
(Email Address)

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
04/22/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Insurance Services West, Inc.
Los Angeles CA Office
707 Wilshire Boulevard
Suite 2600
Los Angeles CA 90017-0460 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** (800) 363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Safety National Casualty Corp	15105
INSURER B:	Allied World Surplus Lines Insurance Co	24319
INSURER C:		
INSURER D:		
INSURER E:		
INSURER F:		

INSURED
Tetra Tech, Inc.
3475 E Foothill Boulevard
Pasadena CA 91107-6024 USA

COVERAGES **CERTIFICATE NUMBER:** 570112210855 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE / X OCCUR X X, C, U Coverage GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / X PRO-JECT / X LOC OTHER:			GL6676804	10/01/2024	10/01/2025	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$2,000,000 $1,000,000 $10,000 $2,000,000 $4,000,000 $4,000,000
A	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY			CA 6676805	10/01/2024	10/01/2025	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
	UMBRELLA LIAB / OCCUR **EXCESS LIAB** / CLAIMS-MADE DED / RETENTION						EACH OCCURRENCE AGGREGATE	
A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		LDC4068970 AOS	10/01/2024	10/01/2025	X PER STATUTE / OTH-ER	
A				PS4068969 WI	10/01/2024	10/01/2025	E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	$1,000,000 $1,000,000 $1,000,000
B	Environmental Contractors and Prof			03120276 Prof/Poll-Claims Made Cov SIR applies per policy terms & conditions	10/01/2024	10/01/2025	Each Claim Aggregate	$1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Stop Gap Coverage for the following States: OH, ND, WA, WY.

CERTIFICATE HOLDER

Tetra Tech, Inc.
3475 E. Foothill Boulevard
Pasadena CA 91107 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Insurance Services West, Inc.

Holder Identifier : 221

Certificate No : 570112210855