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Header @ 1

List View

General Information | Contact | Default Values | Discount | Document Information | Clarification Request

Procurement Folder: 1047664

Procurement Type: Central Purchase Order

Vendor ID: 000000232671

Legal Name: TETRA TECH INC

Alias/DBA:

Total Bid: \$0.00

Response Date: 06/27/2022

Response Time: 15:15

Responded By User ID: katie.pugh

First Name: Katie

Last Name: Pugh

Email: katie.pugh@tetrattech.co

Phone: 740-298-9062

SO Doc Code: CEOI

SO Dept: 0313

SO Doc ID: DEP2200000018

Published Date: 6/1/22

Close Date: 6/28/22

Close Time: 13:30

Status: Closed

Solicitation Description: EOI - 2022 AML Contract 9 Project North

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: 1047664
Solicitation Description: EOI - 2022 AML Contract 9 Project North
Proc Type: Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2022-06-28 13:30	SR 0313 ESR06022200000007603	1

VENDOR
 000000232671
 TETRA TECH INC

Solicitation Number: CEOI 0313 DEP2200000018
Total Bid: 0
Response Date: 2022-06-27
Response Time: 15:15:19
Comments:

FOR INFORMATION CONTACT THE BUYER

Joseph 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	Professional Svcs - Three Fork Creek Watershed Restoration				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Three Fork Creek Watershed Restoration

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Professional Svcs - Abram Creek AMD Treatment Phase II				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Abram Creek AMD Treatment Phase II

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Professional Svcs - Richard (Shaver) Drainage				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

Professional Svcs - Richard (Shaver) Drainage



June 28, 2022

Mr. Joseph E. Hager III
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Re: EOI- 2022 AML Contract 9 Project North CEOI 0313 DEP2200000018


Dear Mr. Hager,

Please find enclosed Tetra Tech's Expression of Interest (EOI) for the 2022 AML Contract 9 Project North CEOI 0313 DEP2200000018

Tetra Tech has completed numerous similar mine reclamation and remediation projects in the past for numerous clients which include, but not limited to, landslide analyses design/remediations, design of portal seals, reclamation of coal refuse sites, highwall elimination, drainage design, mitigation of AMD drainage, and design or drainage facilities associated with the mining industry. Individual personnel to be assigned to these projects have as much as forty (40) to forty-five (45) years' experience in the mining industry addressing these items.

If you should have any questions or concerns please contact me at eric.cavazza@tetrattech.com or via phone at (412) 522-9764.

Sincerely,


Eric Cavazza, P.E., M.S.
Project Manager

EEC
Enclosures



Project : Three Fork Creek Watershed Restoration Project & Abram
Creek AMD Treatment Phase II Project -EOI

Richard (Shaver) Drainage- EOI

Attachment A

Attachment B

WVDEP-AMLR

EOI – Three Fork Creek Watershed Restoration project & Abram Creek AMD Treatment Phase II project

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

Upon receipt of formal notice to proceed, Tetra Tech will attend a project kick-off meeting to discuss the project work plan as proposed within this proposal to reach a consensus on the technical approach. It is assumed the kick-off meeting may include visitation to each project site to facilitate discussion of the system layout and provide an opportunity to obtain additional site information. Upon completion of the on-site project kick-off meetings a *Document of Understanding* will be prepared by Tetra Tech for each Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

Each site will have overall base topographical mapping prepared by Tetra Tech's sub-contractor, Dieffenbach & Hritz, Inc. which is located in Morgantown West Virginia. Tetra Tech's personnel have worked with this firm in the past with other successful projects. The surveying company will be responsible for the one-call (811) (WV Miss Utility) for the marking and identification of utilities on the project sites. A detailed survey for each site will encompass the necessary acreage and be prepared with one (1) foot contour interval, and index contours at ten (10) foot intervals. Digital copies of the site mapping will be developed in AutoCAD 2019 format. Plans will include horizontal and vertical position of existing natural features including, but not limited to, ground elevations, bodies of water, vegetation, wet zones and areas, streams, drainage ditches, culverts, existing constructed features and structures, roads, pipelines, water valves, buildings, walls, and existing surfaces such as pavements and concrete areas. In addition, the location of the northeast property line of the subject project property will be located by survey by established/found monuments or the property lines will be based on tax maps. Stream cross-sections will be surveyed in the vicinity of the proposed stream bank protection design area. Stream cross-sections will be surveyed at a fifty-foot interval for approximately two hundred fifty feet. Upon completion of the base mapping, the silo site conceptual design will commence including preliminary layout of the proposed silo, water line layout, pH monitoring stations layout, required routing of the truck turn-around and obtaining silo dimensions and component options from an approved vendor. Unloading of propane to the proposed propane tanks and the lime from the truck to the fill tube will be designed to efficiently perform the unloading tasks. Submittal of the preliminary

Conceptual Plans for each site will be submitted to WVDEP personnel for review and discussion. The completion of the preliminary Conceptual Plans will coincide with the scheduling and execution of the sub-surface drilling for the silo foundation designs. This assumes the drilling is highly unlikely to reveal any unusual abnormalities that would render the selected site unsuitable for the silo. At each site, two test borings will be drilled, one on each side, of the proposed lime silo location to determine the subsurface conditions for foundation design. Borings will be advanced by auger to refusal to determine depth to bedrock and continuous soil sampling by standard penetration counts will be performed to determine relative soil density. A rock core at one of the boreholes will be obtained to determine rock quality and verify that auger refusal reflects the true bedrock elevation/location. Core Drilling, Inc. will be utilized for the drilling work that will be overseen by a Tetra Tech Field Geologist. Tetra Tech's experienced foundation engineers will utilize the information obtained in the investigation above and design reinforced concrete pads for support and the lime silos.

Soil and rock testing will be performed by Tetra Tech's in-house soil laboratory located in Morgantown, West Virginia. Soil tests to be conducted will include the following tests:

Proposed Soil Testing

- Visual Description (3)
- Grain Size Analyses (2)
- Hydrometer Test (2)
- Moisture Content (35)
- Standard Proctor (2)
- Direct Shear (1)
- Rock Core Strength (1)
- Atterberg Limits (2)
- One Dimensional Consolidation (1)

The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

Location: Preston, Mineral and Grant Counties

2. **Projects and Goals:** Demolition and disposal of existing treatment systems and facilities, and design of fully automated, in-stream, auger-feeding hydrated lime dosing active treatment systems and facilities (including but not limited to silo's, controls systems and buildings, utilities infrastructure, in-stream mixing systems, foundations, etc.).

There are three (3) existing treatment systems in the Three Forks Creek watershed that require these upgrades, the fourth, 'Pell Road Doser', will only require complete integration of the system into the other treatment systems.

There are three (3) existing treatment systems in the Abrams Creek watershed that require these upgrades.

2.1. NEPA tasks and IJA compliance.

Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

To determine IJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).

Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).

2.3. Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.

Design demolition and disposal of existing systems and facilities: All existing systems and facilities will be disposed of in a fashion agreed upon during the pre-design on-site meetings. Silos, buildings, and lime dispensing units, Aqua Fix or “tipping buckets” may be scrapped or reserved for future use. This will be at the discretion of the WVDEP. Existing water collection systems will be removed and existing concrete foundations will be broken up into manageable pieces and buried on-site.

Design to extend and provide utility services, including electric lines, fiber/telephone lines and/or cellular based communications systems: Tetra Tech will work with all utility providers during the installation of required services, including water when appropriate.

Design replacement, fully automated in-stream, auger-feeding hydrated lime dosing active treatment systems and facilities: Based on the results of the exploratory drilling and comments received from WVDEP, the design will proceed to final design. Final detailed design of the lime dosers will include the selection of all equipment and related instruments (ie: level sensors, pH monitors, etc.). Tetra Tech will contract with Mon Valley Integration (MVI) or another vendor with Rockwell Integration Certification for the electronics and communications for these projects. Backup power for each site will be an emergency propane fueled generator. Foundation design will commence after evaluation of the results of test drilling and soil/rock testing. Site grading is expected to be minor at most sites. As site conditions dictate, proposed silo pads may be elevated. This will be discussed with the WVDEP during the on-site meeting.

Limits of Disturbance, Erosion and Sediment Control & Regrade and Revegetation: Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections and location of Erosion and Sedimentation Control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

The Erosion and Sedimentation Control Plans will be prepared in accordance with the *WVDEP Erosion and Sedimentation Control Best Management Practice Manual*. E & S control devices may include devices such as compost filter socks, silt fence, super silt fence and/or sumps.

The Erosion and Sediment Control Plans (E&SCP) will include:

- Narrative and description of Best Management Practices (BMPs)
- Construction Sequence
- Narrative and description of post-construction stormwater management
- E&SCP with detail drawings
 - A general vicinity location map
 - Erosion and Sediment Control plan sheets
 - Post Construction Stormwater Management plan sheets

Construction drawings and specifications will be developed based on the design concept approved by WVDEP and in conformance with the WVDEP Guidelines for Preparation of Design Plans & Specifications. Drawings will be 24" x 36" format and produced from base mapping files in AutoCAD 2019 format. Final drawings and specifications for each

project will be provided for use for review by WVDEP and for use by the selected contractor. The anticipated final drawings proposed for this project are as follows:

Drawing Schedule

1. Title Sheet (Quantities Included.)
2. Property Map
3. General Notes
4. Structural Notes
5. Sediment Control Notes & Details
6. Existing Conditions Overview
7. Existing Conditions Zoomed In.
8. Demolition Plan
9. Project Plan Overview
10. Project Plan Zoomed In.
11. Stream and Bank Cross Sections-Profiles Details (1)
12. Stream and Bank Cross Sections-Profiles Details (2)
13. Single Auger Lime Silo Fill Line Cross Section
14. Lime Silo System Elevations.
15. Lime Silo Interior Elevation.
16. Lime Silo System/Floor/Roof Plans
17. Lime Silo Anchor Bolt/Reinforcement Foundation Plan
18. Water Line Plan and Details.
19. Conduit Layout and Schedule
20. Project Details
21. Project Details
22. Piping and Instrumentation Diagram (1)
23. Piping and Instrumentation Diagram (2)
24. Single Line Electrical Diagram
25. Project Sign

Detailed specifications will be prepared in a manner compatible with the WVDEP contracting documents and consistent with base specifications available from the WVDEP website. Complete technical specifications in Microsoft Word will be provided with the final submission.

2.4. Obtain/maintain/release all required permits.

Tetra Tech will prepare and submit to obtain the required permits as determined at the Pre-Design Meeting. Required permit applications will be prepared for submittal for the

project. All required plans, specifications and required additional data will be included within the application. Required permits may include the following:

- 401/404 Stream and Wetland Permits
- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- Bat Survey/Clearance of Buffer Zones

2.5. Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WVDEP-AMLR
EOI – Richard (Shaver) Drainage project

1. **Background:** Tetra Tech has extensive experience in the remediation and resolution of Civil/Mining Engineering projects.

Upon receipt of the formal notice to proceed, Tetra Tech would attend an on-site project kick-off meeting at the site with WVDEP personnel to discuss the project issues and work plan to reach a consensus on the technical approach for the site. The kick-off meeting would also provide the opportunity for WVDEP personnel to express to Tetra Tech their concerns, objectives, and initial thoughts on the project for discussion. Upon completion of the on-site project kick-off meeting a *Document of Understanding* will be prepared by Tetra Tech for the Project Area for review and input by WVDEP to create a work plan and goal-oriented document for the project.

Base mapping will be required for the project. It is Tetra Tech's assumption the mapping will be provided for the project, in which case, some additional checks, spot locations, and potential additional feature items may be required to be located for design purposes. If the base mapping is to be developed by Tetra Tech, a sub-contract surveying company will be utilized for these services.

Based on the initial and available information, a preliminary conceptual plan will be prepared for review by WVDEP personnel. The preliminary conceptual plan will identify the general layout of the site, specific issues identified, proposed water routing, areas of additional concern and in the case of land stability issues, soil borehole locations associated with the proposed geotechnical investigation. A geotechnical sampling plan will be developed for the site in order to address issues identified by the WVDEP/Tetra Tech team members. The soil sampling will be conducted, and appropriate testing will be performed by Tetra Tech's in-house soils laboratory.

The requested responses to the project goals and objectives as stipulated within the EOI are listed below:

Location: The project is located southeast of City of Sabraton in Monongalia County, WV, along WV Route 7 (Earl Core Road), in the community of Richard, and near Dellslow, WV.

2. Projects and Goals: The project is for the mitigation and reclamation of collapsed and draining portals, installation of additional drainage controls and systems, subsurface drain systems, and an AMD pumping system to the existing AML Richard Treatment facility.

2.1. NEPA tasks and IJA compliance.

Tetra Tech will use OSMRE REG-1, Handbook on Procedures for Implementing the National Environmental Policy Act (NEPA Handbook) (Revised 2019). Depending on the significance of the actual and potential impacts of the proposed project, one of three potential analytical approaches under NEPA may apply: 1) Categorical Exclusion (CE); 2) Environmental Assessment (EA), which may result in a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS); 3) Environmental Impact Statement (EIS) and Record of Decision (ROD).

To determine IJA compliance Tetra Tech will follow the Guidance on the Bipartisan Infrastructure Law (BIL) (Pub. L. 117-58), Abandoned Mine Land Grant Implementation provided by OSMRE.

2.2. Determine legal ownership of properties and provide legal documentation to substantiate legal ownership findings (if required).

Tetra Tech will research legal ownership of properties by conducting a thorough search of deed records at the county courthouse and provide legal documentation to substantiate legal ownership findings (if required).

2.3. Develop construction plans and technical specifications for all aspects to reclaim mine portals, demolition of structures (silo, buildings, etc.), drainage controls and systems, slope stabilization, coal refuse reclamation, stream restoration, subsidence repair, limits of disturbance, storm water and erosion and sediment control, regrade and revegetation, and all other conditions encountered on the project sites.

Mitigation and reclamation of collapsed and draining portals: This site has collapsed and draining portals. A proper wet seal or conveyance pipe must be installed. This may be accomplished by excavation or a horizontal bore. The preferred strategy can be discussed with the WVDEP during the pre-design meeting. Prior to either of these activities, piezometers will be installed into the mine workings, above the openings to measure and monitor water elevations. Core Drilling, Inc. or another approved subcontracted drilling firm will be utilized for the drilling work that will be overseen by a Tetra Tech Field Geologist. Once clear access into the workings has been achieved, either by excavation or a horizontal bore, an appropriate seal and underdrain system will be designed to convey

the water to a manhole where a pump will pump the mine water to the existing treatment facility.

An alternative mitigation strategy would be to do a horizontal bore into the mine workings beginning at approximately 39° 36' 16.11", 79 ° 54' 40.11" in a southerly direction, thereby entering the mine workings near 920 ft coal elevation. This would essentially maintain a pool elevation below the level that impacts the homes and businesses in the area. This alternative approach would also eliminate approximately twenty-five hundred linear feet (2,500 LF) of underdrain. Although this length is a crude estimate without knowing the exact location of the portals.

These plans would consider the quantity, flow rate and chemical properties of the AMD drainage. Alternative solutions would be considered within the final design.

AMD pumping system and integration with the Richard Treatment facility systems: A pipeline and pumping system will be designed according to the anticipated flows. Due to the acidic characteristics of the AMD it is highly recommended that all pump parts be made of stainless steel. Tetra Tech will contract with Mon Valley Integration (MVI) or another vendor with Rockwell Integration Certification for the electronics and communications for this project.

Drainage Control: Drainage areas within the project area will be determined. If possible, diversion ditches will be located in the upstream area in order to control and divert the drainage around the project area. All drainage ditches, swales, underdrains and culverts will be sized and designed in accordance with standard engineering practices. Size, slope, and lining of the proposed ditches and culverts will be specified on the plans and be based on required storm events. Design of drainage conveyances, including drainage channels, underdrains and /or other controls to safely convey water off-site will be designed in accordance with standard engineering practices and will fully consider the safety of the existing public dwellings and structures near the project areas. Hydrologic and hydraulic analyses will be performed for the site and existing structures. HydroCAD Stormwater Modeling program will be utilized in analyzing and sizing drainage structures for the project.

Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

Limits of Disturbance, Erosion and Sediment Control & Regrade and Revegetation: Detailed grading plans will be provided showing existing contours, proposed final grading contours, cross sections, location of Erosion and Sedimentation Control devices such as silt fence, super silt fence, sumps, swales, erosion control blankets, compost filter socks and other erosion control devices. In addition, a proposed seeding and revegetation plan will be included on the plans and within the specifications.

The Erosion and Sediment Control Plans (E&SCP) will include:

- Narrative and description of Best Management Practices (BMPs)
- Construction Sequence
- Narrative and description of post-construction stormwater management
- E&SCP with detail drawings
 - A general vicinity location map
 - Erosion and Sediment Control plan sheets
 - Post Construction Stormwater Management plan sheets
 - E&SCP details will be per the WVDEP's E&S standards manual.

Detailed design plans and specification will be prepared for other conditions encountered on the project site. Other conditions may include the following:

- Design of portal seal and regrade. Tetra Tech has extensive experience in the development and design of the mine portal seals. Designs have included drilling from a location above and at an angle from the proposed seal and injecting designed grout to form the seal blockage. Designs have also utilized polyurethane foam as a portal seal. This technique of designing and developing the portal seal has proven to be more effective and safer than excavating at the portal entry location then constructing the concrete or concrete block portal seal. Mine portals will be sealed in accordance with WVDEP approved methods. If endangered species are present, such as various bat species, appropriate bat gates or other structures will be incorporated into the project design.
- Design of temporary and permanent access or accesses for construction and future maintenance. Temporary and permanent access will be designed utilizing AutoCad software. Plan view, designed profile, and roadway cross sections shown at an appropriate interval will be prepared and will be included within the final drawing package. Typical sections will be shown to indicate design features such as roadway cross slopes, pavement composition (gravel, asphalt, or concrete) and

thickness, side slopes of embankments/cut slopes and proposed ditching. The roadway will be design in accordance with WVDEP mining and reclamation standards or other standards as determined by WVDEP. Final design of the roadway will attempt to design the roadway to a balanced cut/fill situation, if possible. Cut and fill quantities will be listed on the plans.

Construction drawings and specifications will be developed based on the design concept approved by WVDEP and in conformance with the WVDEP Guidelines for Preparation of Design Plans & Specifications. Drawings will be 24" x 36" format and produced from base mapping files in AutoCAD 2019 format. Final drawings and specifications will be provided for use for review by WVDEP and for use by the selected contractor. Plans and specifications will be prepared

Detailed specifications will be prepared in a manner compatible with the WVDEP contracting documents and consistent with base specifications available from the WVDEP website. Complete technical specifications in Microsoft Word will be provided with the final submission.

2.4. Obtain/maintain/release all required permits.

Tetra Tech will prepare and submit to obtain the required permits as determined at the Pre-Design Meeting. Required permit applications will be prepared for submittal for the project. All required plans, specifications and required additional data will be included within the application. Required permits may include the following:

- 401/404 Stream and Wetland Permits
- Construction Stormwater General Permit
- WVDOH Occupancy Permit (Driveway Permit)
- NPDES Modification
- Any other local, state, or federal permit identified as being required for the project

2.5. Provide resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

Tetra Tech will provide a qualified resident project representative, QA/QC certification, and prepare daily field activity logs summarizing construction activities.

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

AML CONSULTANT QUALIFICATION QUESTIONNAIRE

Attachment "A"

PROJECT NAME EOI - 2022 AML Contract 5 Project North	DATE (DAY, MONTH, YEAR) 22, June 2022	FEIN 95-4148514
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1. FIRM NAME Tetra Tech, Inc	2. HOME OFFICE BUSINESS ADDRESS 947 Canyon Rd, Morgantown, WV 26508	3. FORMER FIRM NAME
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4. HOME OFFICE TELEPHONE 304-212-3600	5. ESTABLISHED (YEAR) 1966	6. TYPE OWNERSHIP Corporation	6a. WV REGISTERED DBE (Disadvantaged Business Enterprise) NO
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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/Mark Speranza, PE/ 10 People
Pittsburgh, 661 Andersen Dr, Pittsburgh, PA, 15220/412-921-7090/Mark Speranza, PE/116

8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM Mr. Mark Perry, PE - Unit President	8a. NAME, TITLE, & TELEPHONE NUMBER - OTHER PRINCIPALS Mr. Eric Cavazza, PE - Project Manger - 412-522-9764
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9. PERSONNEL BY DISCIPLINE

— ADMINISTRATIVE 2012	— ECOLOGISTS 152	— LANDSCAPE ARCHITECTS 19	— STRUCTURAL ENGINEERS 98
— ARCHITECTS 130	— ECONOMISTS <u>138</u>	— MECHANICAL ENGINEERS 70	— SURVEYORS 60
— BIOLOGIST 300	— ELECTRICAL ENGINEERS <u>60</u>	— MINING ENGINEERS 70	— TRAFFIC ENGINEERS
— CADD OPERATORS 170	— ENVIRONMENTALISTS <u>746</u>	— PHOTOGRAMMETRISTS <u>12</u>	— OTHER 13,714
— CHEMICAL ENGINEERS 304	— ESTIMATORS 271	— PLANNERS:	
— CIVIL ENGINEERS 588	— GEOLOGISTS 367	— URBAN/REGIONAL96	
— CONSTRUCTION INSPECTORS61	— HISTORIANS 3	— SANITARY ENGINEERS70	
— DESIGNERS	— HYDROLOGISTS <u>115</u>	— SOILS ENGINEERS 34	— TOTAL PERSONNELL 20,000
— DRAFTSMEN 200		— SPECIFICATION WRITERS <u>140</u>	Personnel Company Wide

TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 7

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

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

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

<p>NAME AND ADDRESS: Dieffenbauch & Hritz LLC 1095 Chaplin Road Suite 200 Morgantown, WV 26501</p>	<p>SPECIALTY: Surveying Services</p>	<p>WORKED WITH BEFORE <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS: Core Drilling, LLC 620 Lincoln Avenue Bentleyville, PA 15314</p>	<p>SPECIALTY: Geotechnical Drilling</p>	<p>WORKED WITH BEFORE <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS: Geotechnics 544 Braddock Avenue East Pittsburgh, PA 15112</p>	<p>SPECIALTY: Soil Testing</p>	<p>WORKED WITH BEFORE <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS: Mon Valley Integration, LLC 206 Distributor Dr Morgantown, WV 26501</p>	<p>SPECIALTY: Electrical</p>	<p>WORKED WITH BEFORE <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS:</p>	<p>SPECIALTY:</p>	<p>WORKED WITH BEFORE <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS:</p>	<p>SPECIALTY:</p>	<p>WORKED WITH BEFORE <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS:</p>	<p>SPECIALTY:</p>	<p>WORKED WITH BEFORE <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS:</p>	<p>SPECIALTY:</p>	<p>WORKED WITH BEFORE <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>NAME AND ADDRESS:</p>	<p>SPECIALTY:</p>	<p>WORKED WITH BEFORE <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

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

YES Description and Number of Projects: Tetra Tech has extensive experience with AML/Mine Reclamation Engineering. Tetra Tech is currently working on several AML projects in several states. Tetra Tech has also worked on AML related projects within the state of West Virginia. In the last 5 years Tetra Tech has performed 20+ of these types of projects.

B. Is your firm experienced in Soil Analysis?

YES Description and Number of Projects: Tetra Tech has a whole team dedicated to Geotechnical investigations including soil analysis. In the last 5 year this team has performed 20+ projects specifically associated with Soil Analysis.

C. Is your firm experienced in hydrology and hydraulics?

YES Description and Number of Projects: Tetra Tech has performed several project looking at hydrology and hydraulics, specifically Tetra Tech specializes in mine pool analysis and AMD treatment systems. In the last 5 years Tetra Tech has performed 20+ projects looking at hydrology and hydraulics.

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

YES 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 large size and extensive resources provides for skilled individuals in various disciplines, Tetra Tech does have experience in domestic waterline design in conjunction with other projects.

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

YES Description and Number of Projects: Tetra Tech has a whole team dedicated to Acid Mine Drainage projects, we are currently working on 5 projects specifically looking at AMD treatment with 10+ projects completed in the last 5 years.

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.) Cavazza, Eric E. P.E.	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 37	YEARS OF AML RELATED DESIGN EXPERIENCE:37	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
 Mr. Eric Cavazza has over thirty-seven (37) 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/ MS, 1995 Environmental Engineering

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS SME	REGISTRATION (Type, Year, State) PE in PA (1989)
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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.) Hynes, Gregory PE	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 31	YEARS OF AML RELATED DESIGN EXPERIENCE:31	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

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 SME	REGISTRATION (Type, Year, State) PE 1993 PA, PE 1998 OH, PE 1998 WV
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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.) Sheehan, Mike	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 25	YEARS OF AML RELATED DESIGN EXPERIENCE: 25	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:

Brief Explanation of Responsibilities
 Mr. Mike Sheehan has over twenty-five (25) years of extensive experience in mining reclamation, including thirteen (13) years administering state 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, forfeited mine lands and abandoned landfills.

EDUCATION (Degree, Year, Specialization)
 BS, 1993, Environmental Protection Science

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.) Yost, Gregory P.G.	YEARS OF EXPERIENCE		
	YEARS OF AML DESIGN EXPERIENCE: 12	YEARS OF AML RELATED DESIGN EXPERIENCE: 12	YEARS OF DOMESTIC

Brief Explanation of Responsibilities
 Mr. Yost has experience with subsurface geotechnical investigations, including utilizing the information obtained to implement in foundation design. Additionally, Mr. Yost has construction experience comprising of well pads and compressor 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. Mr. Yost has experience analyzing rock formations for depositional environment, strike, dip, and rock structure including joints, faults, and discontinuities. Mr. Yost has experience with identifying and flagging wetland areas and performing investigation in determining contamination of both water and soil.

EDUCATION (Degree, Year, Specialization)
 BS, 2009, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS	REGISTRATION (Type, Year, State)
	PG, 2015 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		
	YEARS OF AML DESIGN EXPERIENCE:	YEARS OF AML RELATED DESIGN EXPERIENCE:	YEARS OF DOMESTIC WATERLINE DESIGN EXPERIENCE:
Trexler, Heather, PG	18	18	

Brief Explanation of Responsibilities

Ms. Trexler has over 18 years of professional experience with responsibilities for proposal preparation, staff oversight, job and budget tracking, technical report preparation, and client development for coal mining, natural gas and environmental projects. She is the Department Manager of the Energy and Natural Resources Group in the Pittsburgh office and leads projects requiring a multi-disciplinary team of professionals including engineering, geology, hydrogeology, and ecology. Projects activities for coal mining development include mine abandonment designs and the preparation of permits to state agencies in Pennsylvania and West Virginia for mine expansions and associated surface activities. Additional technical projects include the evaluation of current and potential mine pools and reviewing current and potential impacts to water resources.

EDUCATION (Degree, Year, Specialization)
 BS, 2001, Geology MS, 2003, Geology

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS SME	REGISTRATION (Type, Year, State) PG, 2007, PA
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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:
Kearns, Michael PE,MS.	25	25	40

Brief Explanation of Responsibilities

Mr. Kearns has 40 years of professional engineering experience including diverse experience in the mining industry, utility pipelines, 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, site development for industrial and commercial facilities, slope remediation analyses and has developed E&S control plans for hundreds of facilities.

EDUCATION (Degree, Year, Specialization)
 BS Civil Engineering 1977, MS Civil Engineering 1982

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
ASCE(Life Member), NSPE

REGISTRATION (Type, Year, State)
PE - WV (1981), OH (1991), PA (1992), MD (2021)

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

Microsoft Office Professional and Microsoft Project

Bentley Pond Pack (Haestad methods)

Adobe Photoshop

Adobe Acrobat

AutoCAD Map 3D

AutoDesk Civil 3D

ESRI ArcGIS

ESRI ArcView

Bentley Flow Master (Haested Methods)

Bentley HEC-Pack

STBL5M

Groundwater Vistas

GMS

Autodesk Storm and Sanitary Analysis

Hydro CAD

SLIDE II STABILITY ANALYSIS PROGRAM

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
Pell Run Doser Upgrade Project, Preston County WV	WVDEP AML 101 Cambridge Place Bridgeport, WV 26330	Prime Contractor	\$750,000	10%
Jennings Run Doser, Design, Allegany County, MD	Maryland Department of the Environment 160 S Water Street Frostburg, MD 21532	Prime Contractor	\$59,000	80%
Gladden AMD Treatment Plant, South Fayette Township, Allegheny County PA	South Fayette Conservation Group 515 Millers Run Road Morgan, PA 15064	Prime Contractor	\$13.5 Million	90%
WVDEP OSR Royal Coal Bond Forfeiture Fayette County WV	WVDEP OSR 1159 Nick Rahall Greenway Fayetteville, WV 25840	Prime Contractor	\$250,000	95%
Glenn Springs Holdings Bird Mine Treatment, Tire Hill Pennsylvania	Glenn Springs Holdings 5 Greenway Plaza, Suite 10 Houston, TX 77046	Prime Contractor	Confidential	Ongoing
Quakake Treatment Plant Carbon County Pennsylvania	PADEP BAMR 2 Public Square 5 th Floor Wilkes-Barre, Pennsylvania 18701	Prime Contractor	\$1.2 Million	60%
Blacklick Creek Treatment Facility	PADEP BAMR 400 Market Street Harrisburg, PA 17106	Prime Contractor	\$1.9 Million	75%
TOTAL NUMBER OF PROJECTS: Tetra Tech is currently conducting thousands of projects nationwide for the purpose of the EOA only a sample is provided			TOTAL ESTIMATED CONSTRUCTION COSTS: \$+15 Million	

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)
WV Land Stewardship Larosa Fuels Marion County WV	WV Land Stewardship Corporation 709 Beechurst Ave Morgantown, WV 26505	\$136,000	2018	Yes
Dolph Underground Mine Fire, Lackawanna County, PA	PADEP BAMR 400 Market Street Harrisburg, PA 17106	\$15 Million	2018	Yes
Wingfield Pines Inflow Reconstruction Project, Upper St. Clair Township, Allegheny County PA	Allegheny Land Trust 416 Thorn Street Sewickley, PA 15143	\$1 Million	2019	Yes
Kempton Sludge Disposal Line Garrett County MD	Maryland Department of the Environment 160 S Water Street Frostburg, MD 21532	\$385,000	2019	Yes
Frush Enterprises Bond Forfeiture Harrison County WV	WVDEP OSR 1159 Nick Rahall Greenway Fayetteville, WV 25840	\$152,000	2017	Yes
Buffalo Coal Mt. Storm, WV	WV Land Stewardship Corporation 709 Beechurst Ave Morgantown, WV 26505	\$269,170	2018	Yes
Rasuch Creek Treatment Plant Upgrades Schuylkill County PA	PADEP BAMR 2 Public Square 5 th Floor Wilkes-Barre, Pennsylvania 18701	\$200,000	2018	Yes
Tetra Tech had conducted thousands of projects nationwide for the purpose of the EOA only a sample is provided				

18. 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

19. 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.
 Tetra Tech has extensive knowledge and vast resources to allow for a comprehensive approach to any problem. Tetra Tech works extensively with Abandoned Mine Lands and is well versed on solutions to any problem. Tetra tech has a strong presence in West Virginia in Fairmont and Charleston, with offices in Pittsburgh, PA and St. Clairsville, OH regularly performing work in the state. The Tetra Tech Pittsburgh office has worked with WVDEP on several Special Reclamation projects throughout the state.

20. The foregoing is a statement of facts.

Signature: 

Title: Project Manager

Printed Name: Eric E. Cavazza

Date: 06-21-22

AML and RELATED PROJECT EXPERIENCE MATRIX

PROJECT	Exp. Basis C=Corp. P=Personnel *	Additional Info Provided in Section (s) **	PROJECT EXPERIENCE REQUIREMENTS														PRIMARY STAFF PARTICIPATION/CAPACITY *** M=Management P=Professional						
			Abandoned Surface Mine Reclamation	Abandoned Deep Mine Reclamation	Portal/Shaft Closure	Hydrologic/Hydraulic Design/Eval.	Remining Evaluation	Mine/Refuse Fire Abatement	Subsidence Investigation Mitigation	Hazardous Waste Disposal	Project Specifications	Water Quality Evaluation/Nitigation/Replacement	Construction Inspection/Management	Water Treatment	Equipment/Structure Removal	Stream Restoration	Geotechnical/Stability	Eric Cavazza, PE	Gregory Hynes, PE	Gregory Yost, PG	Michael 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
Wingfield Pines Inflow Reconstruction	C&P	Yes				X					X	X	X	X						P	P	P	M
WVDEP OSR Royal Coal Bond Forfeiture	C&P	Yes	x			X					x						X				P	P	M
WVDEP Pell Run Doser	C&P	Yes				X					X			X		X	X			P	P	P	M
Jennings Run Doser	C&P	Yes				X					X	X	X	X			X			P		P	M
PADEP Black Lick Creek	C&P	Yes			X	X					X					X					M	P	M
PADEP Dolph Mine Fire	C&P	Yes				X		X														P	P
PADEP Rausch Creek	C&P	Yes											X	X								P	P
WVDEP OSR Frush Enterprises Bond Forfeiture	C&P	Yes	X														X					P	P
WVLSL Larosa Fuels	C&P	Yes	X			X						X		X					M			P	P
Glenn Springs Holdins Bird Mine Treatment	C&P	Yes				X			X		X	X	X				X	M	P	P		P	P
Quakake Treatment Plant	C&P	Yes				X							X				X	M				P	P
WVLSL Buffalo Coal	C&P	Yes	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.