



BID RECEIVED LATE

Expression of
Interest

BUYER Jessica Chambers

WITNESS Katrina Lufbery

DISQUALIFIED

**WV Department of
Environmental
Protection
Request for
Qualifications:
DEP 1700000003**

**Leachate Tank
Study,
Recommendations
and Construction
QA/QC
Monongalia/
Morgantown
Landfills**



**Tetra Tech
Rankings**

- 1 Water**
- 1 Environmental Management**
- 1 Environmental Science**
- 1 Solid Waste**
- 1 Treatment/Desalination**
- 2 Wind Power**
- 5 Hazardous Waste**
- 7 Design Firms**

BID RECEIVED LATE

BUYER

WITNESS

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Tetra Tech, Inc.

(Company)

Mark P. Speranza

(Authorized Signature)

Mark P. Speranza, Operations Manager

(Representative Name, Title)

412-921-8916

(Phone Number)

412-921-4040

(Fax Number)

6/9/17

(Date)

TABLE OF CONTENTS

SECTION A.....Cover Letter

SECTION B.....Completed CQQ

SECTION C.....Team Member Qualifications

SECTION D.....History of Projects

SECTION E.....Certificate of Insurance

SECTION F.....EOI Form

SECTION G.....Purchasing Affidavit

SECTION H.....Addendum Acknowledgement

SECTION I.....Designated Contact and Certification and
Signature

Section A: Cover Letter

June 15, 2017

Ms. Jessica S. Chambers
Department of Administration, Purchasing Division
2019 Washington Street East, Charleston, West Virginia 25305-0130

**Subject: Study, Recommendations, and Construction QA/QC for Monongalia County and City of Morgantown
RFQ # DEP 1700000003**

Dear Ms. Chambers:

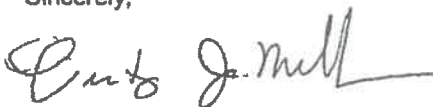
Tetra Tech is pleased to submit our qualifications to perform design services in reply to RFQ# DEP 1700000003 for the Leachate Tank Study, Recommendations, Construction QA/QC for the Monongalia County and the City of Morgantown Landfills in the State of West Virginia. As outlined in our proposal, Tetra Tech and its personnel have completed work on *many similar projects* and are actively work with DEP on a similar study in Jefferson County.

Based in Pasadena, CA, Tetra Tech is a full-service engineering and science firm with a substantial global presence. We help our clients conceptualize and execute innovative solutions to their most difficult problems. From front-end science and planning to design, construction management and operations, Tetra Tech's global service network, facilitated by our Initiatives program that coordinates resources for specific markets and provides best-in-class experts with worldwide project experience. They deliver a high level of integrated services for the full project life-cycle in five service areas: water, environment, infrastructure, resource management, and energy.

Our experienced team is led by Mr. Tim Miller, PE. Mr. Miller, has more than 30 years of experience and has managed or supported numerous landfill and tank-related projects. The proposed project team has significant landfill and leachate tank design and construction experience. [As a firm, Tetra Tech also has significant experience working for the State of West Virginia – for the WV DEP, WV DCH, and WV DOC.](#)

As requested by the RFP we have uploaded an electronic copy of our EOI onto the West Virginia Oasis website. We appreciate this opportunity to provide this proposal, and look forward to answering any questions you may have. If you should require any additional information, please contact Tim Miller at (717) 319-8034 or via email tim.miller1@tetrattech.com.

Sincerely,



Timothy J. Miller, PE

Project Manager - Tetra Tech Inc.

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

PROJECT NAME Leachate Tank Study, Recommendation and Construction QA/QC for Monongalia/Morgantown Landfills		DATE (DAY, MONTH, YEAR) 9, June, 2017		FEIN 954660169	
1. FIRM NAME Tetra Tech, Inc.		2. HOME OFFICE BUSINESS ADDRESS Foster Plaza 7, 661 Andersen Drive Pittsburgh, Pennsylvania 15220		3. FORMER FIRM NAME NUS Corporation NUS Environmental Corporation Brown & Root Environmental	
4. HOME OFFICE TELEPHONE (304)534-4021		5. ESTABLISHED (YEAR) 1960		6. TYPE OWNERSHIP INDIVIDUAL, CORPORATION, PARTNERSHIP, JOINT-VENTURE Corporation	
6A. WV REGISTERED DBE (DISAVANTAGED BUSINESS ENTERPRISE) NO					
7. PRIMARY OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. (name particular type) PERSONNEL EACH OFFICE Foster Plaza 7, 661 Andersen Drive, Pittsburgh, PA 15220 / (412) 921-7090 / Mr. Mark Speranza, PE					
8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM Mr. Mark Perry, PE -- President			8a. NAME, TITLE, & TELEPHONE NUMBER-OTHER PRINCIPALS Mr. Mark Speranza, PE -- Vice President		
9. NUMBER OF PERSONNEL BY DISPLINE (Bold Lettering Indicates Minimum Design Team Members) Detailed information On Team To Be Included					
1 ADMINSIRATIVE	1 ARCHITECTS	1 BIOLOGIST	1 CADD OPERATORS	1 CHEMICAL ENGINEERS	1 CIVIL ENGINEERS
2 CONSTRUCTION	2 INSPECTORS	2 DESIGNERS	1 DRAFTSMEN	1 ECOLOGISTS	1 ECONOMISTS
				1 ELECTRICAL ENGINEERS	1 ENVIRONMENTALISTS
				1 ESTIMATORS	1 GEOLOGIST
				1 HISTORIANS	1 HYDROLOGISTS
				1 LANDSCAPE ARCHITECTS	1 MECHANICAL ENGINEERS
				1 MINING ENGINEERS	1 PHOTOGRAMMETRISTS
				1 PLANNERS:	1 URBAN/REGIONAL
				1 SANITARY ENGINEERS	1 SIOLS ENGINEERS
				1 SPECIFICATION WRITERS	1 STRUCTURAL ENGINEERS
					1 SURVEYORS
					1 OTHER
					7 TOTAL PERSONNEL
TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: <u>8</u>					
*RPEs other than Civil must provide supporting documentation that qualifies them to supervise and perform this type of work.					
10. If submittal is by joint venture, list participating firms & outline specific areas of responsibility (including administrative, technical, & financial) for each firm. Each participating firm must complete a "Consultant Confidential Qualification Questionnaire".					
10a. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? YES NO					

11. OUTSIDE KEY CONSULTANTS/ SUB-CONSULTANTS ANTICIPATED TO BE USED.		
NAME AND ADDRESS: Triad Engineering 219 Hartman Run Rd Morgantown, WV 26505	SPECIALTY: Drilling/Surveying	WORKED WITH BEFORE YES
NAME AND ADDRESS: Geotechnics 544 Braddock Avenue Pittsburgh, PA 15112	SPECIALTY: Geotechnical Laboratory	WORKED WITH BEFORE Team members have in their work experience with other firms
NAME AND ADDRESS: Severn Trent Services 1746 Irwin Sportsman Rd. Manor, PA 15665	SPECIALTY: Analytical Laboratory	WORKED WITH BEFORE YES
NAME AND ADDRESS: Keddal Aerial Mapping 1121 Boyce Rd, Ste. 3100 Pittsburgh, PA 15241	SPECIALTY: Aerial Mapping	WORKED WITH BEFORE Team members have in their work experience with other firms
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE YES NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE YES NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE YES NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE YES NO
NAME AND ADDRESS:	SPECIALTY:	WORKED WITH BEFORE YES NO

<p>12. A. Is your firm experienced in solid waste landfill leachate storage design?</p> <p>YES Description and Number of Projects: Tim Miller, has managed the design, installation, modification and erection of 10 large collection tanks in excess of 250,000 gallons. In addition, managed the design of four landfill collection tank and aeration system redesigns. The tanks have all been either field erected steel tanks or steel bolted with glass liners. Mr. Miller also has extensive experience with pond liners and collection system</p> <hr/> <p>NO</p>
<p>B. Is your firm experienced in solid waste landfill leachate capacity assessment?</p> <p>YES Description and Number of Projects: Tim Miller, has managed the generation and management of leachate from a specific landfill daily for 10 years. Tetra Tech Inc has evaluated the generation of leachate from 8 different landfills to determine treatment efficiencies, storage capacities, collection system sizing and repairs.</p> <hr/> <p>NO</p>
<p>C. Is your firm experienced in solid waste landfill closure construction inspection?</p> <p>YES Description and Number of Projects: Jay Santa, Tetra Tech's Construction Manager, Larry Deutch, construction QA/QC, and Dan Forlastro, PE have experience with landfills and landfill closure construction inspection and will manage this aspect of the project. In addition, team members also routinely provide technical review of construction submittals and variance requests in conjunction with landfill closure projects. Tetra Tech has experience at <u>over 22 landfill</u> closures at which QA/QC following design approval was performed.</p> <p>NO</p>
<p>D. Is your firm experienced in aerial photography and the development of contour mapping?</p> <p>YES Description and Number of Projects: Tetra Tech routinely hires subcontractors for aerial photography to develop contour maps. In most cases the contour mapping was developed through aerial photography and ground truthing but on some projects land surveyors were used for mapping. Tetra Tech employs six GIS/CADD operators in the Pittsburgh office and has all necessary GIS/CADD software for map development, at <u>over 15 landfills</u>.</p> <p>NO</p>
<p>E. Is your firm familiar with the requirements of 33CSR1, the ground-water protection act, underground and above-ground storage tank rules?</p> <p>YES Description and Number of Projects: Tetra Tech has performed <u>hundreds</u> of environmental site investigations and has evaluated groundwater contamination at approximately <u>90% of these sites</u>. Tetra Tech employs chemists who routinely perform validation of groundwater data. Tetra Tech has also performed hydrogeologic modeling, as appropriate, for site evaluation and closure design. In addition, team member Jay Santa, WV LRS, has performed hydrogeologic evaluations of groundwater monitoring systems for a significant number of sites.</p> <p>NO</p>
<p>F. Is your firm experienced in solid waste landfill closure cost estimating?</p> <p>YES Description and Number of Projects: Tetra Tech has performed conceptual design cost estimates including capital costs, operation and maintenance costs, and present worth analyses, for <u>over 50 sites</u> to assist in determining the best-value solution. In addition, detailed cost estimates are prepared to serve as the owners engineer's estimate based on the final landfill closure design.</p> <p>NO</p>

13. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (describe project) (Furnish Complete data but keep to essentials)

NAME & TITLE (Last, first, Middle Int.) Miller, Timothy, J.	YEARS OR EXPERIENCE Mr. Miller has over 30 years of experience in environmental, engineering and operational experience in regards to leachate and wastewater generation.		
	YEARS OF (type) EXPEIRENCE: 30 years – Engineering/Environmental	YEARS OF (type) EXPEIRENCE: 12 Year leachate collection system design, operations and repair	YEARS OF (name type) EXPEIRENCE: 9 year of landfill operation and evaluation

Brief Explanation of Responsibilities:

- Responsible as the managing partner for the day to day operation of the closed landfill. Primary responsibility was the collection, treatment and disposal of leachate
- Responsible for the cleaning and modification of three 250,000 bbl waste collection tanks
- Responsible for the installation of multiple leachate and collection tanks for rail road operations
- Managed the installation of multiple API 650 tanks for the storage of products and waste
- Responsible for evaluation leachate generation, collection and disposal
- Coordinating with DEP representatives for landfill maintenance and leachate collection system corrections

EDUCATION (DEGREE, YEAR, SPECIALIZATION)
B.S., M.S. Chemical Engineering - University of Pittsburgh

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS:	REGISTRATION (Type, Year, State) Professional Engineer, 1996, PA
---	---

13a. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE DESIGN (name type of design or work) (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, Middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type):	YEARS OF EXPERIENCE (name type):	YEARS OF EXPERIENCE (name type):

Brief Explanation of Responsibilities:

EDUCATION (Degree, Year, Specialization)

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

13b. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES RESPONSIBLE FOR LANDFILL CLOSURE QA/QC (Furnish complete data but keep to essentials)

NAME & TITLE (last, first, middle Int.)	YEARS OF EXPEIRENCE		
	YEARS OF EXPERIENCE (name type):	YEARS OF EXPEIRENCE (name type)	YEARS OR EXPEIRENCE (name type):

Brief Explanation of Responsibilities:

EDUCATION (Degree, Year, Specialization)

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

13c. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES REPOSIBLE FOR HEAVY EARTH WORK CONSTRUCTION PROJECTS (Furnish complete data but keep to essentials)

NAME & TITLE (last, first, middle Int.)	YEARS OF EXPERIENCE		
	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)	YEARS OF EXPERIENCE (name type)

Brief Explanation of Responsibilities

EDUCATION (Degree, Year, Specialization)

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

14. PROVIDE A LIST OF SOFTWARE AND EQUIPMENT AVAILABLE IN THE PRIMARY OFFICE WHICH WILL BE USED TO COMPLETE THIS PROJECT (name project)
Microsoft Office Professional (includes Excel and Word)
Microsoft Project
Photoshop
Adobe Acrobat Version 8.0
AutoCAD Map 3D 2008 / AutoCAD 2008
AutoDesk Civil 3D 2007
ESRI ArcGIS 9.2
ESRI ArcView 3.3
Bentley PondPack (Haestad Methods) Version 9.0
Bentley Flow Master (Haestad Methods)
Bentley HEC-Pack
STABL5M
Hydrologic Evaluation of Landfill Performance (HELP)
Groundwater Vistas Version 3.5 (MODFLOW based 3D finite difference model, including MT3D, RT3D, MODPATH, MODFLOWT, and SWIFT components)
GMS (MODFLOW based 3D finite difference model, including MT3D, RT3D, MODPATH and 3-D spatial analysis components)
Visual MODFLOW (MODFLOW based 3D finite difference model, including MODPATH)
SWANFLOW (3D finite difference model specializing in 3-phase fluid flow in porous media -- water, NAPL, air)
Several analytical-based software packages including BIOCHLOR, BIOSCREEN, and SESOIL

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED ENGINEER OF RECORD ASSOCIATED WITH OR RELATING TO LANDFILL CLOSURE OR CONSTRUCTION.				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	NATURE OF YOUR FIRM'S RESPONSIBILITY	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETE
Leachate Collection Tank Study, Jefferson County Landfill, Jefferson County West Virginia	West Virginia DEP,	Evaluation of leachate collection tanks, generation of leachate and recommendation for correction	\$220,000	20%
Construction Quality Assurance and Special Inspection Services, Findlay Township, Allegheny County, PA	Republic Services, Imperial PA	Provided QA/QC for landfill operations and design for the new leachate collection treatment system	\$240,000	10%
Remediation and Closure Services, Tantalum Waste Disposal Site	IESI – Seneca Meadows, Inc. 1786 Salzman Road, Waterloo, New York	Focused RI/FS, Fractured Rock Aquifer/Tracer Test, Remedial Design, Remedial Construction, Natural Attenuation Demonstration, Operation, Maintenance, and Monitoring Services	Confidential	95%
Post Closure Monitoring Annual Engineer's Report and Cost Estimating, Eastern, Central, and C&D Landfills, New York	Montgomery-Otsego-Schoharie Solid Waste Management Authority (MOSA) South Route 7, Howes Cave, New York	Post closure monitoring and annual reporting. Post closure cost estimates for 30 year post closure term, Engineering evaluations landfill and leachate management systems	Confidential	95%

Landfill Closure/Brownfield Redevelopment and Post-Closure Monitoring, Stafford Township Landfills, New Jersey	Walter's Homes 246 Stafford Park Blvd, Manahawkin, New Jersey	Landfill closure Geomembrane final cover Development of yard waste compost facility Major waste disruption Excavation and beneficial reuse of waste materials Brownfield redevelopment Post-closure monitoring and maintenance	Confidential	90%
TOTAL NUMBER OF PROJECTS: #5		TOTAL ESTIMATED CONSTRUCTION COSTS: Confidential		

16. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS SERVING AS A SUB-CONSULTANT TO OTHERS RELATING TO LANDFILL CLOSURE AND CONSTRUCTION.					
PROJECT NAME, TYPE, AND LOCATION	NATURE OF FIRMS RESPONSIBILITY	NAME AND ADDRESS OF OWNER	ESTIMATED COMPLETION DATE	ESTIMATED CONSTRUCTION COST:	
				ENTIRE PROJECT	YOUR FIRMS RESPONSIBILITY
N/A					

17. COMPLETED WORK WITHIN LAST 5 YEARS ON WHICH YOUR FIRM WAS THE DESIGNATED ENGINEER OF RECORD (List 5 to 7)				
PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	YEAR	CONSTRUCTED (YES OR NO)
New Asset Facility Planning, Design, and Permitting, Confidential Project, Pennsylvania	Confidential Client	Confidential	Currently Ongoing Start: 2009	No
Pollution Control Financing, Pennsauken Sanitary Landfill	Authority of Camden County (PFCA) 9600 River Road Pennsauken,	Confidential	Currently Ongoing Start: 2010	N/A

	New Jersey			
Engineering Services and Environmental Services (Groundwater and Landfill Gas Migration, emissions permitting, and stormwater pollution prevention monitoring), MAC Landfill	MAC Sanitary Landfill Route 41 Deptford, New Jersey	Confidential	Currently Ongoing Start: 2006	N/A
Wetland Leachate Treatment for Haley Pike Solid Waste Landfill Closure, Fayette County, Kentucky	Lexington-Fayette Urban County Government 4216 Hedger Lane, Lexington, Kentucky	\$900,000	2006 - 2011	Yes
LFG System Development Plans, Keystone Sanitary Landfill Expansion, Scranton, Pennsylvania	Keystone Sanitary Landfill, Inc. 249 Dunham Drive, Scranton, Pennsylvania	Confidential	2001 - 2009	Yes

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

PROJECT NAME, TYPE AND LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST OF YOUR FIRM'S PORTION	YEAR	CONSTRUCTED (YES OR NO)	FIRM ASSOCIATED WITH
N/A					

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

Tetra Tech is a recognized engineering company with an extensive pool of resources. In addition to the approximately 200 people in our Pittsburgh office, our firm has the ability to utilize the skills of over 10,000 Tetra Tech employees across 275+ offices worldwide in the United States, France, Germany, India, South Korea, Philippines, Republic of Panama, and United Arab Emirates. Tetra Tech has over 750 registered Professional Engineers and Professional Geologists and in 2008, had sales totaling over \$2 billion. The firm's federal government clients have included the US Environmental Protection Agency, the Army, Navy, Air Force, US Department of Homeland Security, NASA, US Department of Energy, and the US Postal Service.

While this project would be managed out of our Pittsburgh office, Tetra Tech also has an office location in Charleston, West Virginia, which can support the project. Tetra Tech has been dedicated to the state of West Virginia and The WV Department of Environmental Protection is our Charleston office's largest client. In addition, our subconsultant, Triad Engineering, is located in Morgantown, West Virginia.

The skill of Tetra Tech is evidenced by the firm's 2008 Engineering News Record (ENR) rankings, which include **#1 rankings** in Solid Waste. The firm is also ranked in the **top ten companies** for site assessment and compliance, chemical and soil remediation, environmental science, environmental management, and consulting/studies. Tetra Tech is ranked as the **6th largest** environmental firm and the 8th largest design firm.



The U.S. Navy has noted Tetra Tech's quality work with landfills. On the White Oak Sites 1 & 2 Landfill projects, the Navy commented "*Tetra Tech exhibited knowledge, good experience and professionalism throughout the design stages*" while offering several 'Outstanding' ratings on various aspects of the project.

20. The foregoing is a statement of facts

Signature: _____

Mark P. Speranza

Date: June 15, 2017

Title: Operations Manager

Section C: Team Member Qualifications

Over the next several pages, we have included full-page resumes of our project team's key personnel to supplement our proposal. Our project team is led by Mr. Tim Miller, PE, a registered Professional Engineer. Mr. Miller has more than 30 years of experience and has supported a significant number of landfill cap closures and designs.

Tetra Tech possesses the resources and necessary expertise to self-perform all services for an environmental study of the Leachate Holding Tank Study for both the Monongalia and Morgantown Landfills. For this study our team is well versed in liner installations for landfills and collection ponds as well as the necessary corrections for prevent floating as well as tank installation and the evaluation of leachate generation and management. We provide the following range of services to our clients in support of their landfill projects. The ability to provide these services, coupled with our financial strength and corporate resources, qualifies us as a low risk/performance based contractor in the landfill services industry. Tetra Tech understands that construction is not a part of this scope of work, but we have provided a brief summary of our construction capabilities, to provide DEP with the depth and breadth of our landfill services. Tetra Tech is cognizant of ensuring that our landfill cap engineering and design is practical, implementable, and cost-effective during construction.

1. Initial Evaluation

- Site assessment
- Regulatory review
- Records search
- Risk assessment
- Feasibility studies
- Environmental impact assessment, including NEPA documentation

2. Design Services

- Alternatives analysis
- Regulatory negotiations
- Closure system permitting and design
- Gas collection system design
- Gas-to-energy/cogeneration system design
- Bid specification preparation

3. Permitting

- Air
- NPDES
- Construction
- Quarterly/monthly reporting

4. Construction Services

- Design/build
- Bid process management
- Construction management
- Excavation, grading, cell construction
- Waste management/relocation
- Soil conditioning/screening
- Gas probe and well installation
- Geosynthetic liner installation
- Leachate collection/treatment systems
- Active/passive gas collection systems
- Source containment, slurry walls, horizontal curtains
- Stormwater and erosion controls
- Wetland and ecological area restoration
- Closure report
- Commissioning

5. Operation and Maintenance

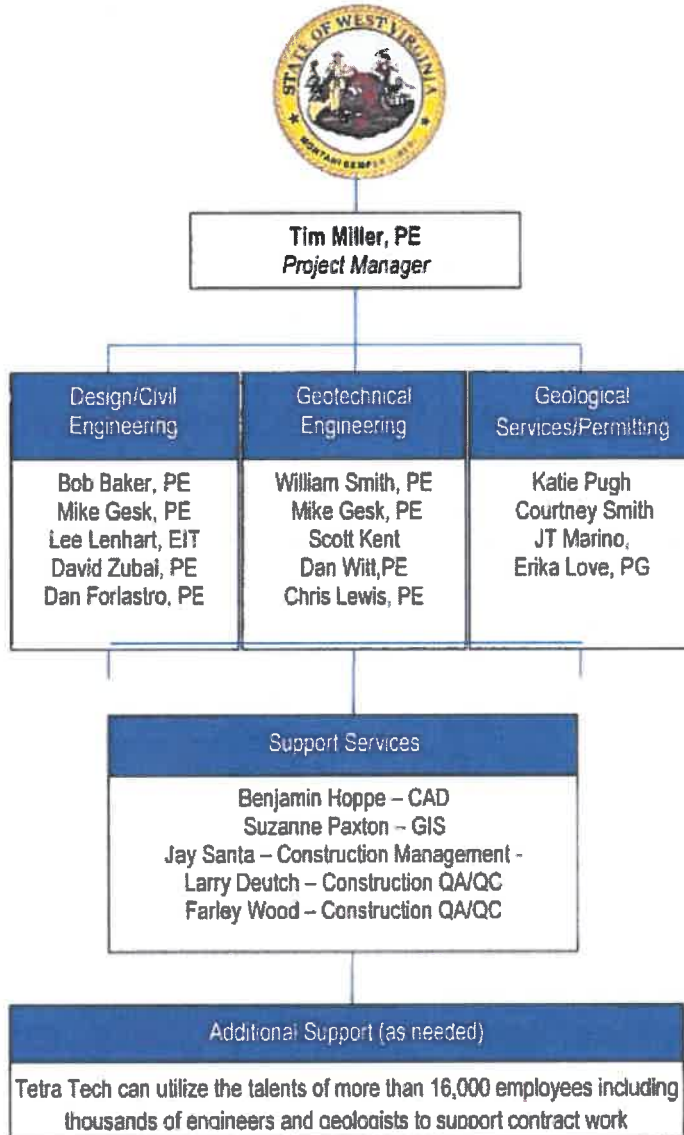
- Sampling and analysis
- Waste placement
- Cap maintenance
- Gas monitoring and statistical analysis

6. Environmental Services

Tetra Tech has a reputation for quickly responding to client requests for environmental services regardless of job size. We provide specialized discipline services as separate or integrated services. Tetra Tech has the ability to draw on staff in our offices and additional resources both nationally and internationally through our corporate affiliates. Our project experience includes preparation of numerous baseline environmental investigations, licensing studies, environmental reports, and NEPA EAs and EISs. Our services include:

- **Environmental / Engineering** – expertise in a broad spectrum of environmental engineering disciplines and experience at balancing environmental engineering requirements with other project objectives, such as satisfying the aesthetic design concerns of local planning authorities.
- **Regulatory Compliance and Permitting** – innovative and practical solutions to development and environmental management issues with focus on managing and preparing NEPA environmental assessments (EAs) and environmental impact statements (EISs), risk assessments, and permit applications.
- **Air Services** – comprehensive air quality and meteorological services including air pollution control, air permitting, ambient and emissions monitoring, dispersion modeling, air toxics sampling/reporting, special studies, sampling and monitoring.
- **Water and Wastewater Engineering** – complete conceptual and detailed design for various types of water and wastewater treatment scenario including support through the start-up phase to ensure smooth and efficient operation.
- **Water resource Studies** - watershed management, resource planning, surface water and groundwater services, water systems and climate change modeling.
- **Ecological Studies** – terrestrial, aquatic, wetland, and other ecological investigations for evaluating the effects of physical and chemical impacts on the environment.
- **Geoscience Studies** – geophysical and geological investigations, aquifer testing, groundwater modeling, and soil gas investigations.
- **Economic, Social, and Cultural Services** – socioeconomic analyses, land use/recreation planning, cultural resource management, visual/aesthetic impact assessment, and public participation/community relations.
- **Occupational Safety and Health** – evaluations and audits, environmental/health and safety program integration, customized training programs, exposure assessment, and lead and asbestos abatement.

In addition, an organization chart of our engineering team professionals has been provided below. All staff members are located in local West Virginia and Pennsylvania offices.



Timothy J Miller, PE

Director of Gas Field Operations and Development

Mr. Miller has over 30 years of experience managing and engineering over 50 wastewater treatment installations on both fixed locations and mobile locations. He has held positions of Director of Gas Field Operations for US Environmental, President Clean Streams LLC, General Manager of Rettew Flowback, Inc., President of Harrisburg Energy Alternatives, President of EPSYS Corporations. Mr. Miller holds technology licenses for flowback and production wastewater treatment and is a professional engineer. Mr. Miller provides hands on and direct application experience to his projects.

EDUCATION

- MS Chemical Engineering
- BS Chemical Engineering

YEARS EXPERIENCE - 30

REGISTRATIONS & TRAINING

- Professional Engineer PA

Relevant Landfill Experience:

- Jefferson County Landfill – Project Manager and Engineer for the leachate collection tank study for the correction of leachate generation and tank replacement.
- Dover Landfill – Owned by Waste Management. As the managing partner for EPSYS Corporation I was responsible for the day to day operation of the landfill. Major projects included the reworking of the leachate collection system and water remediation system.
- Bullet County Kentucky – Project Engineer for the leachate collection and treat system for the operating landfill.
- Harrisburg Landfill – Project Engineer for the closing of the landfill and the revitalization of the landfill under a brown field project for the placement of the PADEP Elmerton Avenue Office.

Relevant Tank Experience:

- Managed the design and installation of eight 250,000 gallon collection tanks for refining operation in Harrisburg Pennsylvania
- On-site manager for the removal of over 50 AST and UST ranging in size from 100 gallons to 50,000 gallons for a venture capitalist for the facility renovation operation in Harrisburg Pennsylvania.
- Design and installation of six 50,000 gallons API 650 tanks for a Chemical Manufacturing Company in Reading Pennsylvania.
- Coordination of tank refurbishment of 250,000 gallon AST for a refinery operation in Pennsylvania.
- As the President of EPSYS Corporation, we managed the removal and installation of over 2000 tanks from 1996 through 2006.

Relevant Oil & Gas Shale Play Project Experience:

- Operations Manager for a 2500 bbl per day WMGR 123 facility in Williamsport, Pennsylvania.
- Operations Manager for a solid dewatering facility in Williamsport, Pennsylvania.
- Project Manager/General Manager for the development of mobile treatment system for oil and gas producers in the Northern Tier of Pennsylvania and Southeastern Ohio.
- Project Manager/consultant for the design (including standards and specifications) and permitting of several flowback and produced water treatment and recycle facilities.

- Project Manager for developing deep well injection systems in the northeastern Pennsylvania.
- Produced water manager for various oil and gas companies in Pennsylvania Northern Tier.

ROBERT C. BAKER, P.E.

Senior Geoenvironmental Engineering Manager

EXPERIENCE SUMMARY

Mr. Baker specializes in geoenvironmental engineering and geosynthetic applications and design, with an emphasis in residual, industrial, and municipal solid waste (MSW) management facilities. During his 21 year career, he's served as the Design Engineer, Lead Engineer, and Project Manager for the planning, siting, design, and permitting of multiple coal combustion residual (CCR), MSW, and coal mine refuse landfills and disposal impoundments; *leachate and stormwater management impoundments*; and other associated geoenvironmental and civil engineering facilities. Mr. Baker also has extensive field construction experience and has served as the Resident Engineer, Project Manager, and Construction Quality Assurance (CQA) Certifying Engineer for over 20 CCR and MSW landfill cells and ancillary works including stormwater and erosion and sedimentation controls (channels, culverts, ponds, and other BMP's); *leachate storage impoundments and above-ground tanks*; pump stations; force mains; and haul roads.

Siting, Design, Permitting, and Construction Bid Package Preparation

Mr. Baker has served as the Lead Engineer and Project Manager for siting, design, permitting, and construction bid package preparation for several landfills, impoundments, and other geoenvironmental and civil engineering projects. His technical responsibilities have included planning, coordinating, and directing subsurface investigations, soil resource evaluations, and geotechnical testing programs; preparing facility layouts, grading plans and details; *performing liner and leachate collection system design*, slope stability and settlement analyses; preparing CQA Plans and technical specifications; developing stabilization plans for abandoned underground mine workings; and assisting with seismic stability and liquefaction susceptibility evaluations of coal refuse disposal impoundments. Representative projects include:

- Residual Solid Waste and Section 404/Chapter 105 Joint Permit Application for a new 64 acre CCB landfill (Confidential Client, PA).
- Siting Study and Residual Solid Waste Permit Application for a new 140 acre CCB landfill (Confidential Client, OH).
- Solid Waste/NPDES Permit Application for a 244 acre lateral expansion of an existing CCB landfill (Confidential Client, WV).
- Residual Solid Waste and Section 404/Chapter 105 Joint Permit Application for a 108 acre lateral expansion of an existing CCB landfill (Confidential Client, PA).

EDUCATION

M.S. Civil Engineering, 1993,
West Virginia University

B.S. Civil Engineering, 1991,
West Virginia University

REGISTRATIONS

Professional Engineer, PA,
2001, [REDACTED]

Professional Engineer, NC
(Inactive), 1998, [REDACTED]

TRAINING/CERTIFICATIONS

30-Hour OSHA Construction
Safety and Health Training,
2010

PSMJ Advanced Project
Management Training, 2009

Troxler Nuclear Gauge
Operator

YEARS OF EXPERIENCE

21

- Reclamation/stabilization of a highwall adjacent to a church and school building and installation of an acid mine drainage (AMD) collection system (PaDEP BAMR, Monongahela, PA) - Received the OSM's 2006 Eastern Region Abandoned Mine Reclamation Award.

Construction Monitoring/CQA/Certification

Mr. Baker has served as the Resident Engineer, Lead Engineer, Project Manager and CQA/Certifying Engineer for the construction of several CCB and MSW landfill cells and ancillary facilities such as *leachate/stormwater impoundments and tanks*, pump stations, forcemains, and haul roads, as well as other major civil engineering projects for the electric generation sector such as material handling and conveyance systems, stormwater management controls, and switchyard equipment foundations. As a Resident Engineer his responsibilities have included verifying contractor layouts and reviewing survey data; performing and directing soil, aggregate, and rock CQA activities; performing and directing geosynthetic CQA activities; monitoring and inspecting the installation of HDPE and PVC piping systems, manholes, valves, pumps, and I/C systems; monitoring placement and performing and directing testing for cast-in-place concrete structures; *monitoring erection of steel leachate storage tanks*; logging groundwater monitoring well decommissioning and new well installations; reviewing soil, aggregate, grout, concrete, and geosynthetic laboratory test data; and reviewing and approving contractor submittals, schedules and pay requests. Representative projects include:

- Disposal Site, Stages IIIA, IIIB, and IIIC - 54 acres of PA Class 1 liner system for a CCB landfill (Confidential Client, PA).
- YDSM Pond - 2 acres of modified PA Class 1 liner system and a pump station for a stormwater yard drain equalization pond (Confidential Client, PA).
- *Alamance County Landfill, Cell 2A - 8.5 acre MSW landfill cell and 375,000 gallon leachate storage tank (County of Alamance, NC).*
- Wilder's Grove Landfill – 68 acre final cover system for an MSW landfill (City of Raleigh Department of Solid Waste Services, NC).
- Randolph County Landfill – 21 acre final cover system for an MSW landfill (Randolph County Public Works Department, NC).

As a Lead Engineer, Project Manager, and CQA/Certifying Engineer, Mr. Baker's responsibilities have included developing project work scopes and budgets; assembling, coordinating, and directing multidisciplinary office and field teams; attending construction progress and problem resolution meetings; planning, coordinating, and directing contractor submittal review, RFI response, and laboratory sampling/testing programs; and issuing construction certification reports and supporting documentation for regulatory review and approval. Representative projects include:

- CCB Landfill, Phase 3, Step 1, 2, and 3 landfill cells, *Leachate Storage Impoundment*, and Haul Road – 63 acres of PA Class 1 liner system and approximately 1 mile of new concrete haul road for a CCB landfill (Confidential Client, PA).
- CCB Landfill, Haul Road Stormwater Management Improvements and Settling/Equalization Pond – 2 acre lined impoundment for settling/equalization of haul road runoff and resurfacing of approximately 2 miles of gravel haul road for a CCB landfill (Confidential Client, WV).
- New CCB Landfill Facility, Stage 1A and 1B landfill cells *and South Leachate Pond* – 18 acres of PA Class 1 liner system and approximately 0.5 miles of gravel haul road (Confidential Client, PA).

MICHAEL A. GESK, P.E.

Geoenvironmental Engineering Project Manager

EXPERIENCE SUMMARY

Mr. Gesk has extensive field construction experience and has served in technical support, field advisory, and Resident Engineer capacities for the construction of several CCR landfill cells and *ancillary facilities such as haul roads and leachate*, process water, and stormwater impoundments as well as other major civil engineering projects. His technical responsibilities have included planning, coordinating, and directing subsurface investigations, soil resource evaluations, and geosynthetic and geotechnical testing programs; facility layouts, grading plans and details; performing geosynthetic *liner and leachate collection and conveyance system design*; performing slope stability and settlement analyses; reviewing contractor submittals, RFIs, schedules and pay requests; and preparation of permit applications and supporting documentation for regulatory review and approval. Other responsibilities have included developing project work scopes and budgets; assembling, coordinating, and directing multidisciplinary office and field investigation teams; communicating and meeting with local, county, and state planning and regulatory agencies; and tracking and reporting project progress and budget status.

RELEVANT EXPERIENCE

Confidential Client Solid Waste Landfill Permit Application (2007-2008); Clinch River Power Station; Carbo, Virginia. Engineer responsible for providing slope stability analyses, *leachate collection system design*, hydrological evaluation using EPA HELP modeling software, geosynthetic liner system components (HDPE geomembrane, GCL, GDN, and woven and non-woven geotextiles), *leachate storage sump*, conveyance gravity pipeline, and material volume and site life analyses submitted with the permit application for construction of the new facility.

Confidential Client Residual Solid Waste Landfill Permit Application (2006-2007); Power Station; Conesville, Ohio. Engineer responsible for providing slope stability analyses, *leachate collection system design*, hydrological evaluation using EPA HELP modeling software, and material volume and site life analyses submitted with the permit application for construction of the new facility.

Confidential Client Residual Solid Waste Landfill Permit Application (2006); IGCC Plant; Meigs County, Ohio. Engineer responsible for providing *leachate collection system design*, hydrological evaluation using EPA HELP modeling software, and final closure cost estimate submitted with the permit application for construction of the new facility.

EDUCATION

B.S. Civil and Environmental Engineering, 2005, University of Pittsburgh

B.A. Physics, 2005, Duquesne University

REGISTRATIONS

Professional Engineer, PA,
[REDACTED]

GCI Certified CQA
Geosynthetic Materials and
Compacted Clay Liner
Inspector; 2009

TRAINING/CERTIFICATIONS

Advanced Project
Management Training, 2013

Risk Management Training;
2011

OSHA 30-Hour Construction
Health and Safety; 2010

OSHA 10-Hour Construction
Health and Safety; 2007

OSHA Fall Protection; 2007

Troxler Nuclear Gauge
Operator

YEARS OF EXPERIENCE

9

Confidential Client – Disposal Site Improvements and Cost Projections Evaluation (2010); Generating Station; Indiana County, Pennsylvania. Lead Engineer responsible for providing cost projections for the development of the West Valley disposal site, designing *improvements to the leak detection system and leachate collection conveyance and cleaning* structures, phase sequencing and ultimate pile development, and evaluation of existing facility permit modification impacts.

Confidential Client – CCB Disposal Site Improvements Evaluation (2009); Generating Station; Indiana County, Pennsylvania. Senior Engineer *responsible for evaluating the leachate collection system and leachate chemistry and providing design and operation improvement alternatives* for the existing East and West Valley CCB disposal sites. Also performed a site development/phasing analysis and pile grading layout.

Confidential Client – CCR Landfill Expansion and Haul Road, Leachate Storage Impoundment and Phase 3 Steps 1 and 2 (2009, 2010, and 2011); Power Station; Masontown, Pennsylvania. Lead Engineer responsible for performing and *supporting CQA monitoring of soil, aggregate and rock and 45 acres of PA Class 1 geosynthetic liner components installed for the Leachate Storage Impoundment (5 acres), Phase 3, Step 1* Expansion (17 Acres), and Phase 3, Step 2 Expansion (23 Acres). Other duties include providing office engineering support, contractor submittal review, laboratory conformance test setup and data review, and assisting with the preparation of the Construction Report submitted to the Pennsylvania Department of Environmental Protection.

Confidential Client – New CCR Landfill Facility, South Leachate Pond (2005); Power Station; Indiana County, Pennsylvania. *Engineer performing CQA monitoring of the installation of 5 acres of PA Class 1 geosynthetic liner components installed in the new leachate pond.* Other tasks included assisting with preparation of Construction Certification Report for the Pennsylvania Department of Environmental Protection.

LEE G. LENHART, E.I.T.

Civil Engineering Project Manager

EXPERIENCE SUMMARY

Mr. Lenhart specializes in design and construction of Coal Combustion Residual (CCR) landfills and ponds with focus on task management, construction quality assurance, investigations, analyses, and civil design for power generation facilities, mining sites, landfills, ponds, and haul roads.

RELEVANT EXPERIENCE

Project Coordinator; LG&E/KU; Ghent Phase 1A Landfill; Ghent, KY; 5/2012 to 3/2013. *New construction of a 50-acre landfill and 1-acre leachate pond with a single geomembrane liner system, leachate force-main and pump station*, perimeter channels, and new haul road. Mr. Lenhart represented the design engineer during construction by coordinating and assisting in the review of RFI's, submittals, and design modification addendums.

Lead Liner Technician; Confidential Client; CCB Landfill Expansion Leachate Storage Impoundment; Masontown, PA; 9/2009 to 12/2009. *New construction of a 5-acre leachate pond with a 6-inch soil subbase, a Class 1 liner system, and fabricform or flowable fill protective cover.* Mr. Lenhart was responsible for CQA of the liner system, supervising up to two field technicians, resolving design-construction conflicts.

Resident Engineer/Soils Technician; Confidential Client; New CCB Landfill South Pond and Stage 1A; Adrian, PA; 5/2005 to 12/2005 and 5/2006 to 12/2006. *New construction of a 1+ acre leachate pond and 10-acre landfill with a Class 1 liner system* over a 6-inch thick compacted clay liner, new discharge and conveyance pipelines, sampling chambers, access/haul roads, fabricform protective cover and channel lining, mining of soil subbase, and soft subgrade repair. Mr. Lenhart assisted with submittal review, and CQA sampling and testing of geosynthetic materials.

Lead Engineer; Confidential Client; Old Landfill Drainage Evaluation; Madsville, WV; 2012. This project *involved evaluation of existing leachate ponds and forcemain operations*, landfill regrading to control site drainage, elimination of an NPDES outfall by rerouting stormwater, consolidating various site drainage features onto one complete map, and designing a gravity discharge line for and existing pond.

Lead Engineer; Confidential Client; Stage 3 Disposal Site; Shelocta, PA; 2010. Responsible for monitoring inspection of piping cleanouts and redesign of cleanout orientation and access for a major permit modification *and installing leachate level indicators.*

Sr. Engineer; Confidential Client; Landfill Pipe Inspections; Harrison County, WV; 2008. Planned, coordinated, monitored and reported on pipe inspection and cleaning work, was responsible for coordinating the cleaning company, *monitoring inspection of leachate collection and detection / underdrain piping, and preparation of final* report and procedure manual.

EDUCATION

B.S. Civil Engineering
Technology, 1999, University
of Pittsburgh

REGISTRATIONS

Engineer-In-Training,
Pennsylvania, 1998

Certified ACI Concrete Field
Testing Technician, Grade I,
Renewed 2013

Troxler Certified Nuclear
Gauge Operator, Renewed
2013

TRAINING/CERTIFICATIONS

OSHA 30-Hour Construction
Safety Training, 2010

OSHA 10-Hour Construction
Safety Training, 2006

YEARS OF EXPERIENCE

16

DAVID P. ZUBAL, P.E. CPESC

Assistant Civil and Environmental Engineering Department Manager

EXPERIENCE SUMMARY

Mr. Zubal specializes in civil and environmental engineering project management, including overseeing development of environmental permits including erosion and sedimentation control and stormwater site development plans. He is a Professional Engineer in six states including Pennsylvania, Ohio, West Virginia, Connecticut, Iowa and Nebraska. He has experience with Federal Energy Regulatory Commission (FERC) projects, both large and small scale. He also has field experience including pipeline installation, meter station installation, landfill liner installation, earthwork development monitoring, roadway construction monitoring, material sampling and monitoring, erosion and sedimentation control monitoring and planning, and materials analysis. He is experienced using Global Positioning System (GPS) applications and other field surveying equipment.

RELEVANT EXPERIENCE

Engineer-In-Training; American Electric Power. Hydrology and Hydraulics (H&H) analysis for American Electric Power Glen Lyn and Amos landfill sites. Assisted with hydrologic and hydraulic engineering for site drainage design. Also assisted with lifecycle cost analysis of facility.

Engineer-In-Training; Allegheny Power. Allegheny Power Doubs-Aqueduct-Dickerson 203 kV Transmission Line Upgrade Project. Assisted with grading plan design and construction permitting associated with new towers and the stringing of new overhead power lines.

Senior Engineer-In-Training; Allegheny County. North Park Lake Aquatic Ecosystem Restoration Project in Pennsylvania's Allegheny County is a habitat restoration and mitigation design project. Involved with stormwater and erosion control permitting for a landfill area associated with lake dredging to remove sediment.

Senior Project Engineer-In-Training; Duquesne Light Company. Multiple on-site Erosion and Sedimentation Control Plan (E&SCP) for the Duquesne Light Company in the Pittsburgh area. The projects involved removal and replacement of underground electric conduits and lines. E&SCPs were prepared for on-site use to comply with local and state regulations.

Lead Engineer-In-Training; Ralph A. Falbo, Inc. Responsible for engineering support for site development associated with the new Kane Regional Center building. Foundation placement was of particular concern to have a uniform material that footers were placed on. Other duties included verification of testing reports from a third party testing firm.

EDUCATION

B.S. Civil and Environmental Engineering, 2006, University of Pittsburgh

REGISTRATIONS

Professional Engineer, Pennsylvania
2012-Present

Professional Engineer, West Virginia
Ohio, Connecticut, Iowa, and Nebraska
2014

Certified Professional in Erosion and
Sediment Control, 2011-Present

ACI Field Testing Technician, Grade I
2006-Present

Erosion and Sediment Control
Certification, Maryland, 2006-Present

TRAINING/CERTIFICATIONS

Risk Management Training, GAI
Consultants, Inc., May 2012

24-hour Mine Safety and Health
Administration Training, U.S. Department
of Labor, January 2012

FERC Environmental Review and
Compliance for Natural Gas Facilities
Training, Chicago, IL, August 2011.

Chapter 102 Update Training for the
Regulated Community, PaDEP, February
2011

PennDOT Basic Construction Inspection
Part 1, PennDOT, July 2009
Confined Space Awareness Training, GAI
Consultants, Inc., March 2009
High Performance Management Training, GAI
Consultants, Inc., October 2008

Geosynthetic Best Management
Practices for Stormwater Management
ACF Environmental, May 2008

OSHA 10-hour Safety Training, 2007

YEARS OF EXPERIENCE

9

Engineer-In-Training; Dominion Cove Point, LNG. Dominion Cove Point Expansion Project Field Monitoring. Conducted field monitoring of erosion and sedimentation control construction and maintenance of a Phase III archeological site located in Waldorf, Maryland.

Engineer-In-Training; Dominion Cove Point, LNG. Construction Quality Assurance Plan for Dominion Sedimentation Pond Construction. Performed soil sampling of materials used during construction of sedimentation pond and identified materials unsuitable for construction. Tested density and moisture content of compacted materials with the Troxler moisture/density gauge and observed pond construction to assure the quality of the final product.

Senior Engineer-In-Training; Allegheny Energy. Allegheny Energy Hatfield's Ferry Station. Construction monitoring of a landfill, sedimentation pond, and haul road to comply with environmental regulations for a new scrubber system that was installed at the power plant. Duties included Quality Assurance monitoring for all phases of the project.

Engineer-In-Training; Reliant Energy. Low Permeability Cementitious (LPC) Material Grouting for Reliant Energy at the Cheswick Power Station, Scrubber Project. Performed tests to determine content and consistency of mix and transported samples.

Senior Engineer-In-Training; Reliant Energy. Concrete Field Testing at Reliant Energy Keystone Power Station for the Flue Gas Desulphurization (FGD) Systems Project. Performed concrete testing on mass pours (1,000 to 2,700 cubic yards) for the project, and field testing on mass pours for Shaw, Stone, and Webster. Tests performed included slump, air-content, unit weight, and temperature in accordance with ASTM C94 and molding 6-inch by 12-inch cylindrical specimens in accordance with ASTM C31.

Senior Engineer-In-Training; Allegheny Power. Spill Prevention Control and Countermeasure Retrofit for Allegheny Power Substations in West Virginia, Pennsylvania and Maryland. Involved with design and construction from start to finish for 61 substation projects.

WILLIAM C. SMITH, P.E.

SENIOR PROJECT MANAGER

EDUCATION: Masters of Public Management (Concentration in Information System Management and Finance), Carnegie Mellon University, Heinz School of Public Policy and Management

B.S., Civil Engineering (Geotechnical Concentration), University of Pittsburgh, 1982

TRAINING: OSHA 29 CFR 1910.120 HAZWOPER Health and Safety Training
SafeLand Training

CERTIFICATIONS/ REGISTRATIONS: Professional Engineer, Pennsylvania, U.S. Virgin Islands

Mr. Smith has more than 30 years of engineering experience, including managing the design and construction of multi-million dollar construction projects. His remediation expertise includes engineering design and permitting of site construction and environmental remediation projects. He has served as a construction contractor and project manager for site development and environmental remediation projects. Mr. Smith's experience also includes various pipeline projects and other support for E&P clients operating in the Appalachian Basin Shale Plays. He has served as a construction contractor and project manager for site development and environmental remediation projects.

Project Manager; Fly Ash Impoundment Closure; AEP; West Virginia. Managed the investigation and design for the closure of an 80 acre fly ash impoundment and a 12 acre bottom ash impoundment. Project included identification and investigation of nearby borrow areas.

Project Manager; Sludge Impoundment Capping for RCRA Corrective Action; Confidential Client; Ashtabula, OH; \$6,000,000. Construction of 30-foot deep groundwater/DNAPL collection trenches using bio-polymer slurry trenching techniques, waste relocation, 70,000 CY of earthwork using onsite borrow area, wick drain installation and geogrids for ground stabilization, and geosynthetic capping of five areas (two sludge impoundments and three disposal areas) totaling 22 acres using GCL, smooth and textured LLDPE, and single- and double-sided geocomposite.

Project Manager; Seep Collection System Construction; Confidential Energy Client. Project included new access roads, multiple seep collection drains, fusion weld two-inch through ten-inch HDPE pipe, installation of eight pumps, three collection vaults, and one combined flow manhole. Mr. Smith prepared the budgetary construction estimate for an additional pipeline and collection system planned as a future capital project.

Project Manager; New Kensington Treatment Facility Excavation and Underground Piping; New Kensington Sanitary Authority; New Kensington, PA. Excavation and underground piping for a new pump station at the New Kensington Sanitary Authority treatment facility. Excavation included a 55-foot deep, 110-foot diameter cofferdam; installation of 48-inch ductile iron piping at a depth of 35 feet; 4,000 lf of intra-unit piping; and dewatering.

Senior Project Manager and Project Coordinator; Geosynthetic Landfill Cap Construction Management; B&E Landfill PRP Group; Circleville, OH. Design, contractor procurement, and

construction management of a 22-acre geosynthetic landfill cap, value engineering, borrow area identification and development, and phytoremediation of groundwater seeps. Negotiated technical issues with EPA and performed budget control and forecasting cost to completion.

Senior Project Manager; Design and Construction Management; CBS Corporation. Design and construction management for a 118-acre facility with two landfill caps, two groundwater treatment systems, a SCADA system, polychlorinated biphenyl (PCB)-impacted soil removal, and paving as an engineered barrier to create additional leasable property.

Senior Project Manager; Landfill Gas Pipeline Design; Confidential Client; Pine Grove, PA. Design of a one-mile low pressure landfill gas pipeline from a landfill gas collection system to a local manufacturing facility.

Senior Project Manager; Landfill Closure Design and Construction and Subaqueous Cap O&M; Indiana Steel & Wire, Muncie, IN. Designed the closure for two landfills in the flood plain of the White River, waste consolidation, XRF screening, and construction monitoring during capping. For the quarry pond sludge, performed bathymetric surveys and subbottom profiling to document the construction of a subaqueous cap over the soft sediment. Routine bathymetric surveys and sediment pore water sampling were performed as part of annual monitoring of the subaqueous cap condition and performance.

Senior Project Manager; Blosenski Landfill Superfund Site Design and Construction Support; Blosenski Landfill PRP Group. Design and construction support included value engineering of an existing EPA design; remedial design; capping an eight-acre hillside landfill; excavation, characterization, and disposal of over 500 buried drums; and field construction monitoring.

Project Engineer; Multi-Layer Synthetic Cap; New Castle, DE. 52-acre, multi-layer synthetic cap, associated E&S control structures, and approximately 350,000 cy of engineered fill.

Project Engineer; Superfund Site Cap and Slurry Wall; New Castle, DE. Design of geosynthetic cap and slurry wall at a top ten Superfund site.

Project Engineer; Sanitary Landfill Expansion Project; Confidential Client. Site characterization, design, and permitting for a proposed 300-acre sanitary landfill expansion project.

Project Engineer; Landfill Conceptual Design and Cost Estimating; Confidential Client; Puerto Rico. Performed conceptual design and construction cost estimating services for two landfills in Puerto Rico.

Larry N. Deutsch

Construction Superintendent

EXPERIENCE SUMMARY

Mr. Deutsch has spent more than 41 years working in the geotechnical, civil, environmental and steel industries. His areas of expertise include engineering, construction, mining and trades, energy/utilities, environmental services, project/program management, QA, and health and safety.

Construction Superintendent; RCRA Landfill Remediation, Bayer MaterialScience, New Martinsville, WV 2011-2012. Serving as the lead Construction Superintendent through design and implementation of an 8-acre RCRA Landfill Capping System, this project started design in 2011 with the construction of the approved remedy completed in April of 2012. The project consisted of approximately 14,000 cubic yards of waste excavation and consolidation, slurry stabilization using Calciment and the installation of a 40 mil textured HDPE liner system including geotextile and geocomposite layers; and a groundwater extraction and recovery well system. The 8-acre site closure was comprised of four (4) solid waste management units (SMWU's) including a 4-acre Landfill (SWMU 1), 2-acre Sludge Lagoon (SWMU 2), the 24 ft. by 36 ft. concrete Hydro Blasting Station (SWMU 3), and 1-acre Ash Lagoon (SWMU 4). During the design phase of the project, I assisted the Project Engineer with design and the Construction Manager with contract negotiations and subcontracting. Authored the Construction Completion Report for submittal to WVDEP, USDEP and the USACE.

Construction Manager; Washington's Landing, Herr's Island, Urban Redevelopment Authority, Pittsburgh, PA. Responsible for the management, oversight and coordination of ICF Kaiser's on-site staff and contractors. *Monitored and inspected the installation of a double-lined synthetic RCRA encapsulation cell with leachate collection and leak detection systems to meet requirements* as set forth by the Pennsylvania Department of Environmental Resources (PADER). This cell consisted of approximately 90,000 sq. ft. of high density polyethylene (HDPE), which was designed to hold an estimated 15,000 cubic yards of PCB-contaminated soils and building debris that was later modified to accept an additional 3,000 cy. Guided the contractor in the excavation and removal of 18,000 cy of these contaminated soils and debris that were then placed into the cell. Other responsibilities included assisting the client in conducting weekly progress meetings and the preparation of the contractor's monthly payment applications. This project was completed in the spring of 1990 and since its completion, the site has been developed with condominiums, tennis courts and equipment manufacturing, parks recreational boating wharfs and offices, which include the PADER.

EDUCATION

Coursework Advanced Mathematics,
University of Pittsburgh; 1980 – 1981

YEARS EXPERIENCE

41-Geotech & Environmental
Engineering Fields Combined

11-Geotech & Environmental Drilling

4-Steel Industry

REGISTRATIONS & TRAINING

- OSHA 30-Hr Construction Safety and Health Training
- OSHA 40-Hr HAZWOPER
- Excavation-Competent Person Certification
- SafeLand USA Certified
- 2015 Noble Energy Safety
- MSHA 24-hour
- 2015 CNX Safety-ENV & GAS

C Jay Santa

Director of Construction and Remediation

EXPERIENCE SUMMARY

Mr. Santa has 20+ years of construction experience working in the energy, oil & gas and site development markets. Mr. Santa has experience in the heavy & civil; remediation & environmental; and geotechnical sectors performing large and small projects both national and international. His experience has included large earth moving projects; Unconventional shale gas development projects; Superfund site remediation; landfill construction and closure, utility storage & installation and pipe work; soil remediation; water management; and groundwater barrier construction.

He currently serves as the director of construction and remediation for the Tetra Tech OGA business unit operating from the Pittsburgh office.

RELEVANT EXPERIENCE

Construction Manager; Appalachian Basin Shale Natural gas Storage facility; Confidential Client; Southwest PA. Design Build of natural gas liquids storage facility with 4 above ground sphere tanks 50,000 BBLS each. Project consisted of the civil design of access roads, tank pad earth work, tank foundations and fabrication of the steel spheres. 2016 Project Budget \$50 Million.

Construction Project Manager; Closed Loop HDPE Waterline System, Confidential client, WV, 2012-Present. installation of over 50 miles of waterline, servicing all Marcellus Gas Drill Pads. The waterline construction consists of 8", 12", 16" & 20" HDPE DR7 pipes including CL 300 series valves, vaults, air reliefs and ancillary equipment through rough terrain and steep grades.

Construction Manager; Appalachian Basin Shale Well Pad Design/Build Services; Confidential Client; West Central OH 2011-2012. Design and build of multiple well pad and impoundments for Utica Shale exploration. Projects included preliminary wetlands and environmental surveys, constructability reviews, complete construction drawings sets, earthwork, pipe installation, geomembrane liner installation, and roadway development.

Construction Manager; Marcellus Shale Well Pad Design and Construction Services; Confidential Client; Southwestern, PA. 2010-2011 Evaluated constructability of well pad plans and designs for four drill pad sites. As a result of this evaluation, contractor was able to make revisions to the design resulting in substantial cost reduction and reduce schedule through cut/fill balancing, material selection and other modifications. Interaction with PADEP staff on behalf of client regarding field adjustments and expedited approvals. Development of bid documents associated with drill pad construction and recommending contractors based on bid evaluation. Oversight of construction at four drill pad sites for E& S controls installation, mass earthwork and grading, installation of surface drainage, installation of utility infrastructure, onsite aggregate evaluation, and revegetation restoration to meet PaDEP standards.



EDUCATION

B.S., Earth & Mineral Science,
Pennsylvania State University,
1995

AREA OF EXPERTISE

Construction and Remediation

REGISTRATIONS/ AFFILIATIONS

**West Virginia Contractors Board
License
West Virginia Licensed
Remediation Specialist**

TRAINING/CERTIFICATIONS

Tetra Tech Project Management
Training Level 2

Safeland Onshore Drilling
Operations training

OSHA 29 CFR 1910.120 40-Hour
Health and Safety Training, 1996

OSHA 29 CFR 1926 30-Hour
Construction Safety & Health
Training, 2010

OSHA 29 CFR 1926 650
Excavation Safety & Health
Training, 2009

OSHA 29 CFR 1910 Shipping
Hazardous Materials Instruction
2009

OSHA 29 CFR 1910 120 8-Hour
Health and Safety Supervisor
Training, 1996

OSHA 29 CFR 1910 120 8-Hour
Annual Refresher Training, 2010

US Army Corp of Engineers
Construction Quality
Management Training 1998

OSHA 29 CFR 1910 146 g Permit
Required Confined Space
Training 1997

OFFICE

Pittsburgh Office

YEARS OF EXPERIENCE

20+

YEARS WITHIN FIRM

Construction Manager; Bayer New Martinsville Design Build Landfill Closure; New Martinsville WV 2011. Key member of the team to successfully and competitively bid the design build of an 8-acre soil cap to close a hazardous waste landfill and ash pond. Project consisted of mass earthwork, geomembrane cap, cover soil, dewatering, and miscellaneous groundwater management and collection system. Project cost \$3M.

Construction Manager; Building Demolition: Confidential Client, Boston Ma. May-July 2011. Demolition of a 5,800 Sf light industrial building and remediation of subsurface soils. Awarded several modifications to contract based on exemplary performance of field activities. Project Cost \$400K.

Construction Manager; Soil Removal Action; Confidential Client, Baltimore, Maryland. Nov 2010. Removal action included the excavation and off-site disposal of 2,200 tons of non-hazardous and solid waste from a parking area. Site work also included the protection and relocation of site utilities and collection and treatment of groundwater prior to discharge. Site restoration activities included the construction of asphalt parking areas and ball field restoration. Project Cost \$560K.

Superintendent; Burn Pit and Incinerator Site Remedial Action; U.S. Coast Guard Baltimore YARD, Baltimore, Maryland. 2009-2012. Served as Chief Construction Manager for the largest U.S. Coast Guard Superfund program in the nation. This on-going \$10M remedial action includes the excavation, treatment, and off-site disposal of 20,000 tons of hazardous and solid waste from multiple abandoned burn pits and incinerator sites. Treatment of lead and PAH contaminated soil at the sites includes the addition of MAECTITE® to reduce leachable lead concentrations to non-hazardous levels. This innovative approach has saved the client over \$3M in disposal fees to date. Site work also includes the protection and relocation of site utilities and collection and treatment of groundwater prior to discharge to Curtis Creek. Site restoration activities include the construction of asphalt parking areas, concrete sidewalks, and replacement of water lines, storm drains and sanitary sewers. Project Cost \$10M.

Site Manager; Charleston Air Force Base; Removal Action. Air Force Center for Environmental Excellence (AFCEE); Charleston, South Carolina; October/November 2008. Soil removal action and remediation of numerous solid waste management units. The sites include pesticide management units, dump sites, landfills, hardfills, and fire training areas. Directed the field work for the removal of 2,000 tons of soil excavated and hauled off-site for disposal. Project Cost \$300K.

Construction Manager; NASA, Kennedy Space Center; December 2008 to February 2009. On-site field supervision for the installation and construction of two air sparge systems. The systems were installed to address volatile organic compound plumes in two separate locations at the site. Each system consists of 50 sparge wells and thousands of feet of piping. Project Cost \$1M.

Project Manager; New South Wales Regional Land Management Corporation; Former BHP Steelworks Site; Mayfield, Australia; April 2006 to December 2006. On-site project manager for the construction of a 48,000 square-meter, soil-bentonite slurry cut off wall. The groundwater barrier consisted of 1500 meter long, 1 meter wide trench ranging from 35 to 48+ meters at the deepest point. The excavation was completed using a special extended reach attachment on a 125-ton excavator capable of digging 25 meters depth and clam shell mounted on an 85-ton crawler crane to complete the excavation to full depth. Project also included the successful installation of a 7-meter long panel section excavated 42-meter deep under an active overhead tar transfer pipeline backfilled with soil-cement bentonite. Project Cost \$20M.

Project Manager; City of Cleveland; Cleveland Hopkins International Airport- Cleveland, OH. 2005-2008. Project manager for the construction of a central deicing facility. Work consisted of lime subgrade stabilization, solidification and removal of 30,000 tons of ammonia contaminated soils, placement of 30 acres each of clay liner, geoweb/aggregate, and 18 inch runway concrete to form the basis of the deicing pad. Other project milestones consisted of the installation of 25,000 lf of large diameter HDPE collection piping, and construction of the 1.6 million gallon underground storage tank. Project Cost \$46M.

Project Manager; West Virginia Air National Guard, Air Lift Wing; C-5 Airport Expansion; Martinsburg, West Virginia. November 2004 to March 2005. Project manager for the expansion of the airport to receive C-5 Cargo planes. Project consisted of blasting 100,000 cubic yards of subsurface limestone

formation, removing, and regrading; installation of large diameter concrete pipe for storm drainage; 200,000 cubic yards of earth moving and placement; airport runway concrete construction; and subsurface duct bank for all runway communication and lighting. Project Cost \$16M.

Project Manager; North East Ohio Regional Sewer District, Southerly Landfill Closure, Cleveland, OH. October 2005 to April 2006. Project manager for the closure of 20 acre ash landfill. Project consisted of regrading of 80,000 cubic yards of ash, placement geo-composite drainage layer and 2 foot thick impervious clay cap.

Site Manager; Buckeye Landfill Closure, St. Clairsville, Ohio; April 2000 to October 2000. Site Manager responsible for management of all field aspects for the closure of a 37 acre landfill Superfund site. Project consisted of the placement of 1.7 million square feet of geocomposite drainage layer, excavation, transport and placement of 150,000 cubic yards of cover soil, and soil stabilization. Installation of fabric form surface channels, and other environmental construction activities rounded out the scope of work. Project Cost \$1.1M.

Project Engineer; Island Sports Complex; Pittsburgh, PA. June 1997 to April 1998. On-site manager for the closure of a Superfund site remediation and partial construction of the Neville Island Sports Complex. Project consisted of 30,000 sf cement-bentonite slurry cut off wall, the installation of a 12-acre geomembrane cap consisting of a two-foot clay layer, 60-mil liner, soil remediation, placement of 250,000 cubic yards of structural fill, and 10,000 tons riverbank riprap slope stabilization. Project Cost \$7.9M.

Project Manager; Kelly Air Force Base; San Antonio, TX; April 1998. On-site project manager for a soil bentonite slurry cut-off wall. Work consisted of the installation of 700 lf long slurry cut-off wall and 50 lf of jet grouting with high pressure injected slurry. Project Cost \$1.3M.

Project Engineer; USX Duluth Works- Duluth, MN. June 1996 to October 1996. Field supervisor for the shallow soil mixing of a coke settling basin. Work consisted of the shallow soil mixing of 117,000 cubic yards of coal tar contaminated soils in-place stabilized using a crane-mounted hollow stem 12' diameter auger drilling down to a depth of 27 feet. Project Cost \$4M.

PUBLICATIONS

Andromalos, K.B., Carey, M.J., and Santa, C.J., "*Closure of a Steel Facility Disposal Pond By In-situ Stabilization*" presented at Environmental Innovations in the Metals Industry for the 21st Century 1998, Pittsburgh, PA.



EXPERIENCE SUMMARY

Mr. Forlastro has 31 years of civil and environmental engineering and remediation experience in the areas of civil construction and hazardous, industrial, and solid waste management under RCRA, CERCLA, and state waste management programs. He has performed engineering investigative and design work for remedial designs and feasibility studies. He is knowledgeable of the design and closure of solid and hazardous waste management facilities and the implementation of waste treatment and recovery technologies. Mr. Forlastro has conducted hydrological and geotechnical investigations for site development and operation of municipal solid, industrial, and hazardous waste landfills. Mr. Forlastro has acted as project and construction manager for various civil construction and environmental remediation projects. He has conducted slope stability analyses; designed and installed erosion and sedimentation control systems; provided geosynthetic design and construction services; developed closure plans for hazardous waste sites; and implemented corrective action plans at RCRA and CERCLA sites.

Relevant Experience

- Project manager and supervising engineer for a former chemical facility in Buffalo, New York that was remediated through the New York State Brownfield Cleanup Program. The project location is separated into five sites. Responsibilities included remedial design preparation, oversight of remedy implementation, preparation of final engineering reports, and preparation of site management plans to implement operation, maintenance and monitoring activities. Remedies included groundwater extraction and treatment for VOCs, barrier wall installation, riverbank restoration, and cap installation.
- Project manager for cleanup of a former tar manufacturing facility on Presque Isle Bay in Erie, Pennsylvania. The project included removal of building foundations, tanks, pits, and waste materials, barrier wall installation, sheet pile sea wall installation, grading, and construction of a community park area. The project was conducted under the Pennsylvania voluntary cleanup program (Act 2).

EDUCATION

B.S., Civil Engineering,
University of Pittsburgh

AREA OF EXPERTISE

Civil Engineering and
Construction – Design &
Management, Investigations
and Remedial Action Plans

**REGISTRATIONS/
AFFILIATIONS**

Professional Engineer –
Illinois, New York,
Pennsylvania, West Virginia

Licensed Remediation
Specialist – West Virginia

Licensed Engineering
Contractor – West Virginia

TRAINING/CERTIFICATIONS

40 Hour OSHA HAZWOPER,
8-Hour HAZWOPER
Supervisor, First Aid & CPR

OFFICE

Pittsburgh PA

YEARS OF EXPERIENCE

31

- Preparation of work plans and engineering design for a 200-acre former bauxite residue Superfund site in East St. Louis, Illinois. The project included grading of the waste, capping of the bauxite residue, and storm water design. The project included performance of construction oversight during implementation of the remedy. The project was conducted under CERCLA with U.S. EPA as the lead regulatory agency.
- Project director for a 40-acre landfill cap project at Scott Air Force Base in Illinois. The project included assisting the consultant with engineering design and constructability issues for the landfill cap, site clearing and grading, surface water control of creeks adjacent to the site to allow sediment excavation and placement under the cap, and installation of a RCRA cap using textured flexible membrane liner and geosynthetic drainage to cover the former landfill.
- Preparation of proposals and cost estimates for the successful capture of remediation projects in South Carolina and Vermont that involved sediment and saturated material remediation. The South Carolina project involved the dredging of sediment from a river and marsh areas at a former phosphate chemical facility. The project was difficult due to the presence of an adjacent marina and the sensitive marsh ecosystem, which could not be adversely impacted by the work and required detailed restoration after remediation was completed. The Vermont project involved the excavation and capping of former talc mine tailings ponds. The ponds were excavated, stabilized, and covered with a soil cap. Project difficulties included working with the talc mine tailings due to the consistency of the talc and the need for a dewatering system around the work area to allow the excavation and grading of the tailings.
- Project manager for an engineering design and construction oversight project in St. Louis, Missouri requiring remediation of soil impacted by PCBs, pesticides, and dioxins. The project included removal and replacement of a railroad spur, soil excavation and offsite disposal, excavation and replacement of an 18-inch concrete storm sewer, and site restoration. The project was conducted under the guidance of the Missouri Risk-Based Corrective Action Program.
- Project manager for operation of a soil and groundwater remediation system at a facility in western Ohio. The dual phase remediation system used a high vacuum pump to recover soil vapor and groundwater impacted by chlorinated solvents. Oil recovery from the groundwater table using a pump and skimmer system was conducted as an ancillary activity to the soil and groundwater remediation for solvent impact. The project was conducted under the guidance of the Ohio Voluntary Action Program.
- Project manager for an engineering design and remediation project at an active tar and chemical plant in Chicago, Illinois. Soil and groundwater impacted by SVOCs and VOCs were encountered at the site. The project involved directing the site through the Illinois EPA's Site Remediation Program (voluntary action) to achieve no further action status. The project included all plan and submittal preparation for investigation, engineering design, and remediation activities in accordance with SRP requirements, implementation of the plans when approved by Illinois EPA, and preparation of reports documenting the work performed.

- Project coordinator for a Superfund Site in Michigan that included a 22-acre RCRA cap system and a monitored natural attenuation remedy for groundwater. Constituents of concern included solvents, PCBs, and metals.
- Project coordinator for a Superfund Site in Indiana that included a groundwater extraction and treatment system, soil vapor extraction system, air sparge system, slurry wall installation, and construction of a clay soil cap system. Constituents of concern included solvents and metals.
- Project coordinator for a former ball bearing manufacturing facility in Connecticut that included PCB-impacted soil removal and installation of an oil recovery system beneath site structures.
- Project coordinator for a lagoon closure site in Ohio that included oily sludge stabilization and placement in a TSCA cell, which was constructed on the site.
- Management of a soil remediation project at a Site in Worcester, Massachusetts. The project activities included dredging 1,500 feet of pond shoreline to remove impacted soil, dewatering and excavation of impacted soil from an on-site lagoon, and construction of a gravity drainage bed to dewater the removed soil and collect the water for conveyance to an on-site treatment system.
- Closure of former lagoons at a chemical manufacturing facility in McDonald, Pennsylvania. The closure included regrading of the lagoons, installation of ground water interceptor trenches around the lagoon perimeters, and placement of an asphalt cap over the regraded lagoons.
- Closure of a former lagoon at a glass manufacturing facility in Creighton, Pennsylvania. The closure included construction of a clay soil cap, regrading and reinforcement of the lagoon walls to prevent potential failure, and construction of a surface water management system to handle storm water run-on and run-off.
- Management of a hazardous soil removal and cap construction project at a former manufacturing facility in North Smithfield, Rhode Island. Approximately 20,000 cubic yards of hazardous soil was excavated and transported off-site for thermal destruction. The excavations were backfilled with imported soil. A low-permeability soil cap was constructed in an area adjacent to the excavations to prevent contact with waste materials.
- Management of a river bank stabilization project for a chemical facility in Barberton, Ohio. Impacted sediment was removed from the riverbed and placed on the riverbank. The riverbank was covered with well-graded gravel and riprap to prevent erosion of the impacted sediment into the river.
- Management of a PCB remediation project for a manufacturing facility in Cincinnati, Ohio. The remediation consisted of removing 20,000 tons of PCB-contaminated soil from an existing drainage ditch, while diverting 25 active discharge lines from the manufacturing facility. A concrete ditch was constructed upon removal of the PCB soil. Additional site work included installation and operation of an on-site waste water treatment plant, installing 60-inch diameter pipes beneath an active railroad using boring and jacking techniques, and construction of a new storm water drainage ditch lined with a clay geocomposite and rip rap.

- Management of an aeration basins closure for an active chemical facility in Follansbee, West Virginia. The concrete aeration basins were pressure-washed, backfilled with imported soil, and sealed with a concrete cap. The concrete cap was sealed with a durable epoxy coating and the aeration equipment was demolished and transported off-site for disposal.
- Construction of a hazardous waste landfill closure in North Haven, Connecticut, that included placement of a low-permeability cap system featuring a geomembrane liner. The closure also included a perimeter drainage system and ground water recovery system for conveyance to an on-site treatment facility.
- Engineering design and implementation of a buried drum removal effort for a Site in Chester County, Pennsylvania. Tasks included developing drawings and specifications for performing the buried drum removal and acting as the on-site engineer and client representative during the drum removal effort.
- Design of a site grading plan for a mine reclamation site in western Pennsylvania. The plan included regrading a 100-acre site, design of surface water drainage, and surface water retention ponds.
- Design of a lagoon closure in Ambridge, Pennsylvania, that included site regrading, a low-permeability cap system, and a perimeter soil-bentonite/cement-bentonite slurry wall. Acted as the site engineer during design implementation.
- Design of closure components for a hazardous waste landfill at a Superfund Site in Springfield, Vermont. Specific design responsibilities included seep collection trenches, upslope stabilization to allow cap construction, and design of the cap system.
- Engineering oversight for a landfill closure in Muncie, Indiana. The work included site regrading, installation of a clay soil cap, and construction of surface water drainage structures.
- Design of closure components for a hazardous site in Buffalo, New York. The design required isolating a contaminated peninsula from the Buffalo River for a site located adjacent to an active chemical facility. The design included slope stabilization of the riverbanks, perimeter slurry wall, low-permeability cap using a geomembrane liner, ground water collection and conveyance system, and an on-site ground water treatment system. Surface water controls were designed to remove storm water to the Buffalo River.
- Project engineer for construction of the Charles Town, West Virginia highway bypass.
- Project engineer for reconstruction of Pennsylvania State Route 48 between State Routes 30 and 130.
- Project engineer for the flood reconstruction work authorized by the Pennsylvania Department of Transportation for the western Pennsylvania region.

- Project engineer for the construction of State Route 65 and connections to the West End Bridge in Pittsburgh, Pennsylvania.
- Project engineer for the construction of the sanitary sewer system for Hedgesville and Martinsburg, West Virginia.

Section D: History of Projects

Our capacity encompasses more than 80 disciplines with sufficient engineers, scientists, and support staff to fulfill a contract in any of its five service areas: water, infrastructure, the environment, energy, and natural resources. For those disciplines outside of Tetra Tech's capacity, the firm maintains excellent relationships with an extensive network of sub-contractors. Tetra Tech has additional projects, but for the sake of brevity, we have included only a sampling of recent work. Our firm has completed thousands of landfill-related projects nationwide. Summaries of tetra Tech's recent acquisition, Cornerstone Environmental, are also included.

Landfill Consulting Services

West Virginia -- Jefferson County

CLIENT:

- West Virginia DEP – Jefferson County Landfill

PROJECT HIGHLIGHTS:

- Leachate collection system evaluation
- Leach system re-design
- Leachate collection tank replacements
- Flow management during storm events

West Virginia Department of Environmental Protection (WVDEP) maintains the Jefferson County Landfill in Keameyville, West Virginia under post closer status as a closed landfill. The landfill was closed in 1997. The closed cap area of the landfill is estimated at 21 acres. The closed landfill has a significant amount of leachate generated which has resulted in the excess amounts of leachate being hauled from the landfill. Tetra Tech Inc. was retained to:

- Evaluate the structural integrity of the leachate collection tanks.
- Evaluate the integrity for of the earthen cover and the potential for infiltration.
- Evaluate flow management occurs for the leachate during normal operations as well as storm events.
- Evaluate the leachate and collection system
- Determine the necessary improvements needed for the system
- Select Replacement containment tanks.





TETRA TECH

Landfill Closure Design Using Soil Cover with Phytoremediation

Naval Support Facility, Dahlgren, VA

Client Name
Naval Facilities Engineering
Command

Tetra Tech provided site investigation, feasibility study, pre-design investigation, remedial design, and consulting services during construction for the 1400 Area Landfill. This site was a sand and gravel borrow pit, bordered on two sides by wetlands, that was filled with municipal waste during the 1970s. This 5-acre landfill is underlain by a sand layer and a laterally persistent clay layer.

Project Highlights

- Soil cover coupled with phytoremediation was functionally equivalent to State closure standards at a lower cost
- Created 1 acre of additional wetland
- Consolidated the landfill footprint and made 1.5 acres available for future development

Project Cost
\$1.7 Million

The design addressed risks associated with semi-volatile organic compounds, PCBs, pesticides, and metals at concentrations that were generally below industrial screening levels. Contaminated wetland area sediments were excavated and disposed offsite due to unacceptable ecological risk. Based on client preference, landfill waste was consolidated into a smaller area, providing 1.5 acres for future development. The waste was capped with a 2-foot thick soil cover which was planted with hybrid poplar trees. The soil cover, coupled with phytoremediation, was designed to provide the functional equivalence of a Virginia sanitary landfill cap. The trees on and around the soil cover also serve to reduce off-site migration of mercury in groundwater by reducing the hydraulic gradient and associated discharge of groundwater to surface water.

Tetra Tech prepared calculations to: 1) demonstrate that the 2-foot soil cover with phytoremediation would be hydraulically equivalent to a Virginia sanitary landfill cap; 2) determine the number and spacing of trees to achieve hydraulic equivalence to a Virginia sanitary landfill cap; and 3) determine the number and spacing of trees required to reduce the hydraulic gradient beneath the site and associated groundwater-to-surface water flow.



Client Name
U.S. EPA Region 7

Project Highlights

- Oversight of closure activities of the landfill
- Project fulfilled all of the RCRA closure requirements
- Regular site visits to deal with complications caused by weather



complex world

CLEAR SOLUTIONS™



Black Hawk County Landfill Closure Oversight

Blackhawk County, IA

The Black Hawk County Landfill is a municipal landfill, which is managed by the Black Hawk County Solid Waste Management Commission. This landfill previously accepted RCRA hazardous waste among its municipal and industrial refuse.

Tetra Tech was assigned to oversee closure activities at this landfill. Those activities included:

- placing 2 feet of compacted clay over the graded landfill
- installation of a PVC liner, Geonet, and Geotextile fabric over the compacted clay
- placing 3 feet of select fill on the synthetic liner
- placing a 6-inch layer of topsoil over the select fill.

During the closure, Tetra Tech sent personnel to the site 11 times to oversee closure activities. Several complications occurred during installation of the landfill cap. Wind, rain, cold temperatures and difficulties with compaction of the clay resulted in delays in completion of the project and in the need for daily coordination between Tetra Tech personnel and the EPA work assignment manager.

Also, when the cap was nearly completed, several Shelby tube samples of the clay cap failed the permeability tests. The liner in those areas then had to be removed, and the clay in those portions of the landfill had to be recompacted.

Tetra Tech's inspections, which were documented with photographs and trip reports, ultimately determined that the cap met all of the RCRA closure requirements.



TETRA TECH

**Landfill Site Investigation, Evaluation, and
Soil Cover Design**

Naval Support Facility, Indian Head, MD

Client Name

Naval Facilities Engineering
Command

Project Highlights

- Negotiated variance to State landfill closure regulations
- Effective cap at a substantial cost savings
- Restored 0.4 acre wetland

Project Cost

\$938,600

Tetra Tech completed a site investigation, evaluation, and remedial design for the Town Gut Landfill. This 4-acre site was operated between 1968 and 1980 for the disposal of approximately 70,000 cubic yards of landscaping waste, fill material, and rubble. Unauthorized items reportedly dumped at the site included paints, varnishes, and other chemical wastes.

A pond bisects the northern and southern portions of the site, and a tidally-affected pond adjacent to the southern portion of the site governed the groundwater table at the landfill. The adjacent ponds were not affected by groundwater contamination from the landfill.

A variance to Maryland landfill closure regulations was successfully negotiated. The variance allowed the landfill to be closed with a 2-foot thick soil cover in lieu of an impervious cap. Construction of the soil cover greatly reduced the capital cost while conforming to State requirements. Contaminated soil and accumulated debris were removed from 0.4 acres of wetlands to allow the installation of the 2-foot thick soil cover. The original shoreline contours were maintained and the pre-existing habitat was restored.

Tetra Tech also provided general consulting services throughout construction, including reviewing contractor submittals and variance requests. Deed restrictions were prepared to prohibit residential development on the landfill and use of site groundwater as a source of drinking water.



complex world

CLEAR SOLUTIONS™

Atlantic County Utilities Authority

Pinelands Park Landfill
Egg Harbor Township, NJ

Cornerstone provided environmental review and due diligence services to the Atlantic County Utilities Authority (ACUA) for the acquisition of the Pinelands Park Landfill, a closed municipal solid waste (MSW) landfill located in Atlantic County, New Jersey. The landfill is now a public golf course. Cornerstone continues to perform post-closure monitoring and regulatory reporting, including certification of cost submittals for withdrawals from the site's escrow funds, and biennial updates to the post-closure care financial plan. The work also includes preparation of independent estimate of post-closure maintenance and monitoring activities, with recommendations for approaches to maintain environmental compliance while reducing post-closure operations and maintenance cost.

Cornerstone landfill gas technicians manage the active landfill gas collection and control systems, operating the system to control fugitive emissions; and, maintenance of the system.

Cornerstone field technicians periodically collect groundwater, leachate, and stormwater samples in accordance with permit conditions. Cornerstone environmental scientists review analytical results for compliance and report results to the ACUA and regulatory agency.

Cornerstone is performing repair and replacement work to maintain operation and functionality of all environmental systems. Cornerstone is reviewing and recommending modification of permit conditions, to more effectively match environmental monitoring requirements to the environmental conditions. The modifications result in a reduced monitoring frequency and cost to the client.

Key Project Activities

- Environmental review and due diligence
- Post-closure cost estimates
- Post-closure monitoring and reporting
- Post-closure care financial plan updates

Project Manager:

Eric P. Korman, PhD

Client Contact:

Brian Latta

Tel + 609 312 8800

Start/End Date:

2010 - Ongoing



IESI - Seneca Meadows, Inc.

Tantalo Waste Disposal Site
Seneca Falls, NY

Cornerstone personnel provided remediation services to IESI Seneca Meadows, Inc. (SMI) at the Tantalo Waste Disposal Site, in the Town of Seneca Falls, NY on a 600-acre site occupied by the Part 360-permitted Seneca Meadows Landfill. The work included site investigation, feasibility study, design, construction services, and operation and maintenance activities. The site had been classified as a Class 2 inactive hazardous waste site by the NYSDEC, but as a result of the remediation efforts is now a Class 4 site.

The work started with a focused remedial investigation and feasibility study along with an aquifer/tracer test for further characterization of bedrock hydrogeology. This work was successful in identifying two distinct water-bearing zones that others had mapped as a single unit, explaining the site plume configuration and also providing data that was used to demonstrate that the extent of the plume is being naturally attenuated.

Cornerstone then developed a remedial design for the site's two operable units. For Operable Unit No. 1, site closure included a geocomposite cap, drainage controls, gas controls, a leachate collection system, waste pullback, a cutoff wall along adjacent Black Brook, and relocation of the site access road and scale. For this aspect of construction, the project utilized a new grading material termed comparable structural fill, which helped defray the costs of remediation. For Operable Unit No. 2, Cornerstone prepared the engineering design and all required documents for enhanced monitored natural attenuation (electron donor injection for enhanced reductive dechlorination of VOCs), which avoided a more costly pump and treat alternative originally preferred by state regulators.

During implementation, Cornerstone personnel provided construction observation and certification services and currently Cornerstone is continuing its work with operation, maintenance and monitoring services. Both remedies are performing as designed.

Key Project Activities

- Focused RI/FS
- Fractured rock aquifer/tracer test
- Remedial design
- Remedial construction
- Natural attenuation demonstration (reductive dechlorination)
- Operation, maintenance and monitoring services

Project Manager:

PAUL J. HINES, PE
DAN DUFFALO, PE

Client Contact:

THOMAS K. BECK, III
Tel: 315-734-3600

Start/End Date:

1998 - Ongoing



MAC Landfill

MAC Landfill

Deptford Township, New Jersey

Cornerstone provides a variety of environmental engineering and compliance services to MAC Landfill, a closed municipal solid waste (MSW) landfill located in Deptford Township, New Jersey. Services include environmental compliance support for groundwater, landfill gas migration, landfill emissions permitting, and stormwater pollution prevention monitoring.

The landfill accepted MSW from Gloucester County, New Jersey, and other surrounding communities. It ceased waste acceptance in 1977, and was finally certified closed in the 1980s. Cornerstone employees had previously been providing services at the site for past 30 years.

Each year Cornerstone performs a site inspection to document both post-closure landfill maintenance and stormwater pollution prevention monitoring. The results of this annual inspection are published in a site inspection report that is kept on file at the offices of United Environmental Services (UES). In accordance with the state-approved closure plan for the site, landfill gas migration monitoring is performed quarterly by UES. Cornerstone staff reviews the landfill gas monitoring results and transmit the findings to NJDEP.

MAC landfill has a system of passive landfill gas vents. Because of the quantity of landfill gas that is emitted, the landfill has an Air Pollution Control Operating Permit issued by NJDEP. This permit requires regular monitoring and reporting of the air emissions produced by the landfill gas vents.

Key Project Activities

- Engineering services
- Environmental compliance services, including groundwater, landfill gas migration, emissions permitting, and stormwater pollution prevention monitoring
- Annual site inspection report

Project Manager:

Mark Light

Client Contact:

Sally De Franco

Start/End Date:

February 2006 - Ongoing



Montgomery-Otsego-Schoharie Solid Waste Management Authority

Eastern Landfill, Central Landfill, C&D Landfill
NY

Cornerstone Engineering and Land Surveying, PLLC is providing Montgomery-Otsego-Schoharie Solid Waste Management Authority (MOSA) with landfill engineering services, including post-closure site visits and monitoring, engineering evaluation of existing systems, and annual reporting for 3 MOSA landfills, Eastern Landfill, located in the Town of Amsterdam, Central Landfill, located in the Town of Root, and the C&D landfill, located in the Town of Otsego.

Cornerstone prepared an Annual Engineer's Report (AER) for each site to meet Post Closure Monitoring and Maintenance Agreement requirements between MOSA and its member counties. The AER reports, prepared in accordance with the requirements of 6NYCRR Part 360-2.15 and the Post Closure Monitoring and Maintenance Agreement, will include:

- A review and summary of Monthly Inspection forms.
- Summary of maintenance that has been performed at each site during the past year.
- Summary of the leachate, groundwater, and gas sampling and monitoring that has been performed in the last year.
- Visual condition survey of the monitoring point network, cap system, surface drainage system, leachate and gas collection system (where present) and site access.
- Identification of any current or impending conditions at the Landfills which may require additional expenditures

The data, inspection, and maintenance summaries and visual condition survey are compiled into a narrative report and presented as the AER.

Key Project Activities

- Post closure monitoring and annual reporting
- Post closure cost estimates for 30 year post closure term
- Engineering evaluations landfill and leachate management systems

Project Manager:

Robert J. Anderson, PE

Client Contact:

Debra A. Weston
Tel # 917 860 1334

Start/End Date:

2010 - Ongoing



Ocean County Landfill Corporation

Ocean County Landfill
Manchester, NJ

Cornerstone's principals have worked with Ocean County Landfill Corporation on the Ocean County Landfill (OCLF) in Manchester, NJ, since the 1980s, providing environmental engineering and consulting services, including landfill design and systems analysis, civil and site work, permitting, air compliance, environmental monitoring services and general engineering oversight. OCLF consists of approximately 300-acres of landfill area and annually processes roughly 500,000 tons of municipal solid waste (MSW). The facility uses a double composite baseliner and collected leachate is directed to an onsite pre-treatment plant. Thirty-six groundwater monitoring wells surround the OCLF.

To control landfill gas (LFG) emissions, Cornerstone has developed a horizontal gas collection system to capture the LFG, which is delivered to two independent LFG-to-energy facilities where it is treated and used to produce electricity. Combined, the two facilities have the capacity to generate approximately 13.9 MW of electricity.

Cornerstone developed the facility's Title V operating permit renewal applications and prepared NSPS/NESHAP/Title V semi-annual reporting and annual emission statements for the past five years. Cornerstone has also participated in negotiations with NJDEP and USEPA on Prevention of Significant Deterioration (PSD)/Nonattainment New Source Review (NNSR). Air compliance work also included assisting OCLF to develop legal arguments regarding common control issues with regard to combining regulatory and liability issues between OCLF and the on-site LFG-to-energy facility.

OCLF conducts interim operations using temporary cell capping, which allows for future permitted overfilling. Cornerstone has developed a program that allows OCLF to install a leachate recirculation system within the temporary cap system. OCLF has installed leachate recirculation lines on more than 130 acres of the landfill.

Cornerstone designed and permitted an on-site transfer station to be used to handle municipal solid waste and construction and demolition debris, which is currently under construction.

Key Project Activities

- Engineering, design, and permitting
- Leachate recirculation design and evaluation
- Title V operating permit renewal applications
- NSPS/NESHAP/Title V reporting
- Environmental monitoring, including facility emissions
- GHG reduction reports
- Soil gas sampling and reporting, gas collection system monitoring
- Groundwater monitoring, statistical analysis, and reporting
- Stormwater analysis and reporting

Project Manager:

Prakash Shaw, PE

Client Contact:

John J. Ryan, PE, VP
Title V/PSD

Start/End Date:

February 2006 - Ongoing



Pollution Control Financing Authority of Camden County (PCFA)

Pennsauken Sanitary Landfill
Pennsauken Township, New Jersey

Cornerstone is completing the facility Master Plan for the Pollution Control Financing Authority of Camden County (PCFA)'s Pennsauken Landfill. The work is focused on assisting PCFA to derive the maximum benefit from the landfill.

Located in the town of Pennsauken, New Jersey along the Delaware River, the Pennsauken Landfill has been providing for the disposal needs of the local community for more than 30 years. The landfill was developed in discrete phases constructed within the available land area to meet the requirements of the regulations in effect at the time.

Cornerstone evaluated the existing landfill footprint and conditions at the site to identify practical, cost effective landfill expansion opportunities. Although lateral footprint expansion alternatives are limited, Cornerstone experts determined that selective height increases, coupled with the use of overliners and perimeter berms, can achieve adequate additional air-space well beyond the facility's current planning horizon.

To demonstrate the effect of various development approaches, Cornerstone prepared multiple grading plans, each of which demonstrated an incremental approach to landfill air-space addition. Each plan was also accompanied by an air-space volume calculation. Viewing the plans comparatively allowed for a clear graphic depiction of how to best utilize the available resources at the project site. The final development sequence is currently being incorporated into the final Master Plan for the facility.

To assist in selection of the appropriate development strategy, Cornerstone prepared engineering cost estimates for each option, including capital cost, closure cost, and long-term operation, maintenance and monitoring. Costs were identified as total present worth as well as unit of capacity.

Key Project Activities

- Alternative landfill grading plans
- Comparative landfill air-space calculations
- Evaluation to enhance air-space volume
- Comprehensive cost estimation
- Unit of capacity cost value determinations

Project Manager:

Max A. Szejka PE
David DiFiore SE

Client Contact:

Tom LaRocca
856-603-2172

Start/End Date:

2010 - 2011

Town of Carmel, NY

Town of Carmel Landfill
Putnam County, NY

Cornerstone performed a variety of closure and post-closure services for the Town of Carmel Landfill, located in the Town of Carmel, Putnam County, New York. The work included a closure investigation, engineering design for closure, and construction quality assurance services in accordance with 6 NYCRR Part 360 regulations.

The site is a 14-acre inactive landfill facility co-located with the Town's recycling center. It began operation in 1946 as a site to dispose of ash waste from an on-site incinerator. In 1976, the Town ceased the regular placement of solid waste at the site and began accepting only land-clearing debris, yard waste, and construction and demolition debris. This continued until July 2001, when the Town ceased accepting waste at the landfill.

Per an Order on Consent issued by the New York State Department of Environmental Conservation (NYSDEC), present day Cornerstone staff prepared the following documents:

- *Closure Investigation Report*
- *Engineering Design Report*
- *Closure Plans for Town of Carmel Landfill*
- *Operations & Maintenance Manual*
- *Bid Documents and Technical Specifications*
- *Construction Quality Assurance and Construction Quality Control Plan*
- *Construction Contingency Plan*

Construction of the final closure began in 2005 and was completed in 2007. Cornerstone provided professional engineering services during construction, including contract administration, shop drawing review, construction observation, and engineering certification.

Key Project Activities

- Waste consolidation to reduce landfill footprint
- Design of final cover on 2H:1V landfill sideslopes
- Geogrid reinforced perimeter soil berm allowed waste placement within a reduced footprint
- Closure investigation services
- Engineering design services
- Construction quality assurance services
- Post-closure environmental monitoring and reporting

Project Manager:

Mark A. Skyrup, PE

Client Contact:

Daniel J. Downer

Start/End Date:

May 2005 - 2009



Walter's Homes

Stafford Township Landfills
Stafford Township, NJ

Current Cornerstone Environmental Group staff supported Walter's Homes on the closure of two inactive landfills in Stafford Township, New Jersey and subsequent redevelopment for commercial and residential uses. The work included waste and debris excavation and relocation, construction of final cover, and ongoing environmental monitoring.

The site, originally owned by Stafford Township, and located in the sensitive Pinelands region of New Jersey, included two separate areas where landfills had historically been operated. Closure included the complete excavation and relocation of the old, unlicensed landfill area and the regrading and capping of the newer, formerly licensed landfill area.

Cornerstone staff prepared the design plan and completed the permitting for the excavation, relocation, and beneficial reuse of 500,000 cubic yards of waste and debris from the unlicensed landfill, which was used to regrade and contour the formerly licensed landfill.

Closure of the licensed landfill included the construction of an impermeable final cover, which incorporated a polyethylene geomembrane, subsurface drainage layer, and a unique passive landfill gas venting system with provisions to simplify future conversion to active collection if desired. Post-closure use of the landfill includes open space, a Class B recycling center for yard and leaf compost, and a solar electric generating field.

Excavation of waste from the unlicensed landfill area paved the way for the commercial redevelopment of this portion of the site. The waste relocation was successful, and the site is performing as expected.

Cornerstone continues to provide environmental monitoring as a component of the post-closure care at the landfill facility.

Key Project Activities

- Landfill closure
- Geomembrane final cover
- Development of yard waste compost facility
- Major waste disruption
- Excavation and beneficial reuse of waste materials
- Brownfield redevelopment
- Post-closure monitoring and maintenance

Project Manager:

Mark Swartz, PE

Client Contact:

Joseph DeLorenzo
Tel: 856.265.2000

Start/End Date:

February 2008 - Ongoing



Section E: Certificate of Insurance

Section E: Certificate of Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE: MM/DD/YYYY
08/15/2017

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 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:	
INSURED Tetra Tech, Inc. 661 Andersen Drive Pittsburgh, PA 15220 USA	INSURER(S) AFFORDING COVERAGE	
	INSURER A: National Union Fire Ins Co of Pittsburgh	19445
	INSURER B: The Insurance Co of the State of PA	19429
	INSURER C: AIG Europe Limited	AA1120841
	INSURER D: Lexington Insurance Company	19437
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** **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. INSR. (INS)	ADGR. INSR. (W/O)	POLICY NUMBER	POLICY EFF. (MM/DD/YYYY)	POLICY EXP. (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Contractual Liability <input checked="" type="checkbox"/> X,C,U GEN'L AGGREGATE LIMIT APPLIES PER <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC OTHER:			GL6051604	10/01/2016	10/01/2017	EACH OCCURRENCE \$2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$2,000,000 GENERAL AGGREGATE \$4,000,000 PRODUCTS - COMP/OP AGG \$4,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS			CA3194511	10/01/2016	10/01/2017	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
C	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION			TH1600053	10/01/2016	10/01/2017	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WC014629374 WC014629378 WC014629379 WC014629380	10/01/2016 10/01/2016 10/01/2016 10/01/2016	10/01/2017 10/01/2017 10/01/2017 10/01/2017	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000
D	Professional Liability and Contractor's Pollution Liability			028182375	10/01/2015	10/01/2017	Each Claim \$5,000,000 Aggregate \$5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required) Includes Stop Gap OH ND WA WY

CERTIFICATE HOLDER Tetra Tech, Inc. 661 Andersen Drive Pittsburgh, PA 15220 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

ENDORSEMENT

This endorsement, effective 12:01 A.M. 10/01/2015 forms a part of

policy No. GL3372258

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTOR'S COMMERCIAL PRIME ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

Coverage afforded under this endorsement does not apply to any person or organization covered as an additional insured on any other endorsement now or hereafter attached to this Coverage Part.

I. ADDITIONAL INSUREDS

Section II - WHO IS AN INSURED, 1. is amended to include as an insured any person or organization described in paragraphs A through I below, whom you are required to add as an additional insured under a written contract or agreement. The written contract or agreement must be:

1. Currently in effect or becoming effective during the term of this policy; and
2. Executed prior to "bodily injury", "property damage," or "personal injury and advertising injury".

A. BY CONTRACT

Any person or organization to whom you become obligated to include as an additional insured under this policy, as a result of any contract or agreement you enter into which requires you to furnish insurance to that person or organization of the type provided by this policy, but only with respect to liability arising out of your operations or premises owned by or rented to you. However, the insurance provided will not exceed the lesser of:

1. The coverage and/or limits of this policy, or
2. The coverage and/or limits required by said contract or agreement.

B. CONTROLLING INTEREST

1. Any person or organization having a greater than a 50% interest in you, but only with respect to their liability arising out of:
 - a. Their financial control of you; or
 - b. Premises they own, maintain or control while you lease these premises.
2. The insurance afforded to these additional insureds under Paragraph I.B.1 does not apply to structural alterations, new construction or demolition operations performed by or for that person or organization.

C. CO-OWNER OR INSURED PREMISES

A Co-owner of insured premises co-owned by you and covered by this insurance but only with respect to their liability as co-owner of the premises.

D. LESSOR OF LEASED EQUIPMENT

1. Any person or organization from whom you lease equipment, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your maintenance, operation or use of such equipment leased to you by such person(s) or organization(s).
2. With respect to the insurance afforded to these additional insureds under Paragraph I.D.1, this insurance does not apply to any "occurrence" which takes place:
 - a) after the equipment lease expires, or
 - b) after the equipment is returned or no longer in your possession,whichever takes place later.

E. MANAGERS OR LESSORS OF PREMISES

Managers or Lessors of premises but only with respect to liability arising out of the ownership, maintenance or use of that part of the premises leased to you and subject to the following additional exclusions:

This insurance under this paragraph does not apply to:

1. Any "occurrence" which takes place after you cease to be a tenant in that premises.
2. Structural alterations, new construction or demolition operations performed by or on behalf of such Managers or Lessors.

F. MORTGAGEE, ASSIGNEE, OR RECEIVER

1. A mortgagee, assignee, or receiver but only with respect to their liability as mortgagee, assignee, or receiver and arising out of the ownership, maintenance, or use of the premises by you.
2. The insurance afforded to the additional insureds under Paragraph I.F.1 does not apply to structural alterations, new construction or demolition operations performed by or for that mortgagee, assignee, or receiver.

G. OWNERS, LESSEES, OR CONTRACTORS - COMPLETED OPERATIONS

- (1) Any Owner, Lessee or Contractor, but only with respect to liability arising out of "your work" performed for that additional insured and included in the "products-completed operations hazard".

H. OWNERS, LESSEES, OR CONTRACTORS - ONGOING OPERATIONS

Any Owners, Lessees, or Contractors, but only with respect to liability arising out of your ongoing operations performed for that additional insured.

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1) all work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) has been completed; or,
- (2) that portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

I. STATE OR POLITICAL SUBDIVISION - PERMITS

Any State or Political Subdivision, subject to the following provisions:

1. This insurance applies only with respect to operations performed by you or on your behalf for which the state or political subdivision has issued a permit.
2. This insurance does not apply to:
 - a. "Bodily injury," "property damage" or "personal and advertising injury" arising out of operations performed for the state or municipality; or
 - b. "Bodily injury" or "property damage" included within the "products-completed operations hazard".

II. PRIMARY INSURANCE - ADDITIONAL INSURED

Where persons or organizations have been added to your policy as additional insureds to comply with insurance requirements of written contracts mandating primary coverage for such additional insureds relative to:

- a) the performance of your ongoing operations for the additional insureds; or
- b) "your work" performed for the additional insureds and included in the "products-completed operations hazard,"

then with respect to these additional insureds as defined above in this Section only, SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, Paragraph 4. - Other Insurance, a. - Primary Insurance, is deleted in its entirety and replaced with the following:

This insurance is primary over any similar insurance available to any person or organization we have added to this policy as an additional insured to comply with insurance requirements of written contracts mandating primary coverage for such additional insureds relative to (a) the performance of your ongoing operations for the additional insureds, or (b) "your work" performed for the additional insureds and included in the "products-completed operations hazard. However, this insurance is primary over any other similar insurance only if the additional insured is designated as a named insured of the other similar insurance. We will not require contribution of limits from the other similar insurance if the insurance afforded is primary.

III. INCIDENTAL MEDICAL MALPRACTICE LIABILITY COVERAGE

SECTION II - WHO IS AN INSURED, 2. a. (1) (d) is deleted in its entirety and replaced with the following:

- (d) Arising out of his or her providing or failing to provide professional health care services, except for "bodily injury" arising out of "Incidental Medical Malpractice Injury" by any physician, dentist, nurse or other medical practitioner employed or retained by you unless such "bodily injury" is covered by another primary policy. However, the insurance provided hereunder to such persons will not apply to liability arising out of services performed outside of the scope of their duties as your "employees." Any series of continuous, repeated or related acts will be treated as the occurrence of a single negligent professional healthcare service, which will be assignable to the same policy and policy year in which the originating act occurred.

SECTION V - DEFINITIONS - is amended to add:

"Incidental Medical Malpractice Injury" means "Bodily Injury" arising out of the rendering of or failure to render the following services:

- a. medical, surgical, dental, x-ray or nursing service or treatment or the furnishing of food or beverages in connection therewith; or
- b. the furnishing or dispensing of drugs or medical, dental or surgical supplies or appliances.

The Coverage provided by this endorsement does not apply to you or any insured if you are engaged in the business or occupation of providing any of the services described in the definition of "Incidental Medical Malpractice Injury".

IV. JOINT VENTURES / PARTNERSHIPS / LIMITED LIABILITY COMPANIES

The paragraph under **SECTION II - WHO IS AN INSURED** which states:

No person or organization is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

is hereby deleted and replaced with the following:

No person or organization, other than you, is an insured with respect to the conduct of any current or past partnership, joint venture or limited liability company that is not shown as a Named Insured in the Declarations.

Coverage under this policy, however, will not apply:

- a. Prior to the termination date of any joint venture, partnership or limited liability company; or
- b. If there is valid and collectible insurance purchased specifically to insure the partnership, joint venture or limited liability company.

V. SUPPLEMENTARY PAYMENTS

Under **SECTION I - SUPPLEMENTARY PAYMENTS - COVERAGES A AND B**, Paragraph 1.b., is deleted in its entirety and replaced with the following:

- b. Up to \$2,500 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which the Bodily Injury Liability Coverage applies. We do not have to furnish these bonds.

VI. LIBERALIZATION CLAUSE

If we revise or replace our standard policy form to provide more coverage, your policy will automatically provide the additional coverage as of the day the revision is effective in your state.

VII. UNINTENTIONAL ERRORS AND OMISSIONS

SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 6. - Representations is amended by adding:

- d. The unintentional failure by you or any Insured to provide accurate and complete nonmaterial representations as of the inception of the policy will not prejudice the coverages afforded by this policy.

VIII. AMENDMENT OF DUTIES IN THE EVENT OF OCCURRENCE, OFFENSE, CLAIM OR SUIT

SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 2. - Duties in the Event of Occurrence, Offense, Claim or Suit, a. is hereby deleted and replaced with the following:

- a. You must see to it that we are notified as soon as practicable of any "occurrence" or an offense, which may result in a claim. Knowledge of an "occurrence" or an offense by your agent, your servant, or your employee will not in itself constitute knowledge to you unless the Director of Risk Management (or one with similar or equivalent title) or his/her designee will have received such notice. To the extent possible notice should include:

- (1) How, when and where the "occurrence" or offense took place;
- (2) The names and addresses of any injured persons and witnesses; and
- (3) The nature and location of any injury or damage arising out of the "occurrence" or offense.

IX. AMENDMENT OF EXPECTED OR INTENDED INJURY EXCLUSION

SECTION 1 - COVERAGES, COVERAGE A - BODILY INJURY AND PROPERTY DAMAGE LIABILITY, 2. - Exclusions, a. - Expected or Intended Injury, is deleted and replaced by the following:

- a. "Bodily injury" or "property damage" expected or intended from the standpoint of the insured. This exclusion does not apply to "bodily injury" or "property damage" resulting from the use of reasonable force to protect persons or property.

X. CONTRACTUAL LIABILITY - RAILROADS

Only with respect to (i) operations performed within 50 feet of railroad property and (ii) for which a Railroad Protective Liability Policy in the name of the railroad has been provided, then

A. SECTION V - DEFINITIONS, Paragraph 9, is deleted in its entirety and replaced with the following:

9. "Insured Contract" means:

- a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract";
- b. A sidetrack agreement;
- c. Any easement or license agreement;
- d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;
- e. An elevator maintenance agreement;
- f. That part of any other contract or agreement pertaining to your business (including an indemnification of a municipality in connection with work performed for a municipality) under which you assume the tort liability of another party to pay for "bodily injury" or "property damage" to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph f. does not include that part of any contract or agreement:

- (1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:
 - (a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage; or

(2) Under which the insured, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in Paragraph (1) above and supervisory, inspection, architectural or engineering activities; and

B. SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 4. - Other Insurance, b. Excess Insurance, (1) (a), is amended to include the following:

(v) That is a Railroad Protective Insurance Policy or similar coverage.

XI. COVERAGE FOR YOUR SUPERVISORY OR MANAGERIAL EMPLOYEES RELATING TO CO-EMPLOYEE INJURIES

SECTION II - WHO IS AN INSURED, 2.a. (1), (a) and (b) are clarified to hold that:

Your supervisory or managerial "employees" are insureds for "bodily injury" to "co-employees" while in the course of their employment or performing duties related to the conduct of your business if claims or suits arise out of liability assumed by an insured under an "insured contract" as provided by SECTION I - COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, 2. Exclusions, e. Employer's Liability.

XII. WAIVER OF TRANSFER OF RIGHTS OR RECOVERY AGAINST OTHERS TO US

SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 8. - Transfer of Rights of Recovery Against Others To Us, is amended by the addition of the following:

We waive any right of recovery we may have against any person or organization pursuant to applicable written contract or agreement you enter into because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard".

XIII. AMENDMENT OF OTHER INSURANCE

A. SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 4.- Other Insurance, b. - Excess Insurance, (1), is amended to include the following:

This insurance shall not be excess where (i) such other insurance is specifically purchased to apply as excess of this policy, or (ii) where you are obligated by contract to provide primary insurance to an additional insured, unless there is other additional insurance coverage available to that additional insured.

B. SECTION IV - COMMERCIAL GENERAL LIABILITY CONDITIONS, 4.- Other Insurance, b. - Excess Insurance, (2), is deleted in its entirety and replaced with the following:

When this insurance is excess, we will have no duty under Coverages A or B to defend any claim or "suit" that any other insurer has a duty to defend. If no other insurer defends, we will undertake to do so, but we will be entitled to the insured's rights against all those other insurers.

XIV. AMENDMENT AGGREGATE LIMITS PER PROJECT

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under COVERAGE A (SECTION I), offense under COVERAGE B (SECTION 1) and for all medical expenses caused by accidents under COVERAGE C (SECTION II), which can be attributed only to ongoing operations at a single designated construction project:

1. A separate Per Construction Project General Aggregate Limit applies to each construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.
 2. The Per Construction Project General Aggregate Limit is the most we will pay for the sum of (i) all damages under COVERAGE A, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", (ii) all damages under COVERAGE B and (iii) all medical expenses under COVERAGE C regardless of the number of:
 - a. Insureds;
 - b. Claims made or "suits" brought; or
 - c. Persons or organizations making claims or bringing "suits".
 3. Any payments made under COVERAGE A or B for damages or under COVERAGE C for medical expenses shall reduce the Per Construction Project General Aggregate Limit for that construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Per Construction Project General Aggregate Limit for any other construction project covered under this policy.
 4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expense continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Per Construction Project General Aggregate Limit.
- B. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under COVERAGE A (SECTION I), offenses under COVERAGE B (SECTION 1) and for all medical expenses caused by accidents under COVERAGE C (SECTION I), which cannot be attributed only to ongoing operations at a single construction project:
1. Any payments made under COVERAGE A or B for damages or under COVERAGE C for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and
 2. Such payments shall not reduce any Construction Project General Aggregate Limit.
- C. When coverage for liability arising out of the "products-completed operations hazard" is provided, any payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Construction Project General Aggregate Limit.
- D. If the applicable construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs, specifications or timetables, the project will still be deemed to be the same construction project.
- E. The provisions of Limits of Insurance (SECTION III) not otherwise modified by this endorsement shall continue to apply as stipulated.

Section F: EOI Form



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

State of West Virginia
 Centralized Expression of Interest
 02 — Architect/Engr

Proc Folder: 323504

Doc Description: Addendum 1- EOI: Leachate Tank Study - Monongalia/Morgantown

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2017-06-12	2017-06-15 13:30:00	CEOI 0313 DEP1700000003	2

BID RECEIVING LOCATION

BID CLERK

DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Tetra tech Inc.
 Foster Plaza 7, 661 Andersen Drive
 Pittsburgh, Pennsylvania 15220 412-321-7090 Contact: Tim Miller

FOR INFORMATION CONTACT THE BUYER

Jessica S Chambers
 (304) 558-0246
 jessica.s.chambers@wv.gov

Mark P. Speranza
 Signature X

954660169
 FEIN #

June 9, 2017
 DATE

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

ADDITIONAL INFORMATION:

Addendum

Addendum No.01 issued to publish and distribute the attached information to the vendor community

The addendum is available for download on the Vendor Self Service Portal. Here is the link to the site: www.wvoasis.gov You need to double click Vendor Self Service, which will take you to the VSS site. To view the solicitation you will need to click the Public Access button on the lower left hand side. If you need anything else, please let me know.

.....

The Acquisition and Contract Administration Section of the Purchasing Division (Purchasing Division) is soliciting Expression(s) of Interest for the Department of Environmental Protection (Agency), from qualified firms to provide architectural/engineering services (Vendors) as defined herein.

INVOICE TO	SHIP TO
ENVIRONMENTAL PROTECTION OFFICE OF ENVIRONMENTAL REMEDIATION 601 57TH ST SE CHARLESTON WV25304 US	ENVIRONMENTAL PROTECTION 601 57TH ST CHARLESTON WV 25304 US

Line	Comm Ln Desc	Qty	Unit Issue
1	Monongalia County and City of Morgantown Landfills	0.00000	

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :

Leachate Holding Tank Study, Recommendation, and Construction QA/QC for Monongalia County and City of Morgantown Landfills per the attached specifications, bid requirements, and terms and conditions, incorporated here by reference and made a part hereof.

Section G: Purchasing Affidavit

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

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

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

DEFINITIONS:

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

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

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

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: TETRA TECH, INC.

Authorized Signature: [Signature] Date: 5/24/17

State of _____

County of _____ to-wit: _____

Taken, subscribed, and sworn to before me this ____ day of _____, 20____.

My Commission expires _____, 20____.

AFFIX SEAL HERE

NOTARY PUBLIC

Please see attached certificate (CD)

CALIFORNIA JURAT WITH AFFIANT STATEMENT

GOVERNMENT CODE § 8202

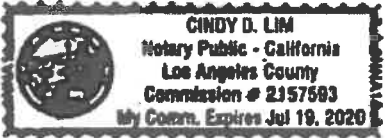
- See Attached Document (Notary to cross out lines 1-6 below)
- See Statement Below (Lines 1-6 to be completed only by document signer[s], not Notary)

Signature of Document Signer No. 1 *Signature of Document Signer No. 2 (if any)*

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
 County of Los Angeles

Subscribed and sworn to (or affirmed) before me
 on this 24th day of May, 2017
 by Date Month Year



(1) Brian N. Carter

 (and (2) _____)
 Name(s) of Signer(s)

proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Signature Cindy Lim

 Signature of Notary Public

Seal
 Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
 Title or Type of Document: State of VA/Purchasing Affidavit Document Date: May 24, 2017
 Number of Pages: 1 Signer(s) Other Than Named Above: No other signer

Section H: Addendum Acknowledgement

SOLICITATION NUMBER: CEOI 0313 DEP1700000003

Addendum Number: No.01

The purpose of this addendum is to modify the solicitation identified as ("Solicitation") to reflect the change(s) identified and described below.

Applicable Addendum Category:

- | Modify bid opening date and time
- | Modify specifications of product or service being sought
- | Attachment of vendor questions and responses
- | Attachment of pre-bid sign-in sheet
- | Correction of error
- | Other

Description of Modification to Solicitation:

Addendum issued to publish and distribute the attached documentation to the vendor community.

1. To address all technical questions received and extend the bid opening to 06/15/2017 at 1:30 PM (EST)

No other Changes.

Additional Documentation: Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

ATTACHMENT A

Technical Questions
CEOI DEP17*3

1. The questionnaire asks for a firm's experience with landfill closure construction inspection and cost estimating. Is experience with landfill closure required for consideration for this project?

A: No. The question should be answered with the appropriate experience.

1. For our submission, are we limited to the West Virginia Department of Environmental Protection Consultant Qualification Questionnaire, or are we allowed/ encouraged to also submit a Statement of Qualifications?

A: In addition to the questionnaire, it is encouraged that firms submit additional information as noted below in Section Four, Number 3 of the Expression of Interest.

3.1 Required Elements of EOI Response: The director of purchasing shall encourage such firms engaged in the lawful practice of the profession to submit an expression of interest, which shall include a statement of qualifications, and performance data and may include anticipated concepts and proposed methods of approach to the project.

2. For the purposes of the evaluation requested, are there electronic records of the leachate generation amounts for both sites? If so, at what frequency are these taken (i.e. daily, monthly, annually)?

A: The records are different for each site. The Morgantown site is connected to a sanitary sewer and metered. The Monongalia site is stored in a tank and hauled to POTW as needed. The information that is available will be provided to the awarded vendor.

3. Is there local rainfall data for both sites? If so, at what frequency is this data collected?

A: No

4. Is it correct to assume that there is existing survey control established at each site?

A: The only existing permanent structures for survey purposes is the monitoring wells.

5. As part of developing an accurate approach and methodology for this project, we would like to understand a bit better what the Agency's goals and objectives are for each site:

- a. Are there current issues with the existing systems?
A: To be determined by the study.
- b. Has it been identified that there are storage capacity or discharge limitation issues at either site?
A: Storage capacity for each site is listed in the individual permits
- c. Are there concerns from the local wastewater plants accepting the leachate for disposal?
A: No
- d. Have there been any operational challenges that have been experienced at either facility that are drivers for this project?
A: No. The purpose of the study is to determine if the existing structure meet all requirements of the applicable rules. If not, recommend changes and oversee any construction activities to bring the sites into compliance.

7. Although there is no mention of the CQQ in the Expression of Interest Instructions, it is attached as part of the project Solicitation posting.

a) Is the CQQ required?

A: Yes, the CQQ is required.

b) Is the CQQ in place of a Letter of Interest and Proposal?

A: In addition to the questionnaire, it is encouraged that firms submit additional information as noted below in Section Four, Number 3 of the Expression of Interest.

3.1 Required Elements of EOI Response: The director of purchasing shall encourage such firms engaged in the lawful practice of the profession to submit an expression of interest, which shall include a statement of qualifications, and performance data and may include anticipated concepts and proposed methods of approach to the project.

c) Is the CQQ in addition to our Letter of Interest and Proposal?

A: Yes.

8. How many copies of our submittal are required?

(Note: In Section 2: Instructions to Bidders, the number of "convenience copies" has been left blank)

A: One copy will be sufficient.

9. Are any drawings available depicting the extent of the landfill area?

A: Yes these will be available to the awarded vendor.

10. Provide a summary of the leachate quality (analytical lab data) and quantity (gallons per day/month/year) being produced at each landfill on a daily/monthly/yearly basis. Also, include any pertinent NPDES permit limits the leachate must meet prior to treatment at the PSDs.

A: A copy of this will be provided to the awarded vendor.

11: Provide a summary of the quantity of the leachate that is generated from surface water (Gallons/month or overall %) verses groundwater (gallons/month or overall %) at each landfill.

A: A copy of this will be provided to the awarded vendor.

12: Is the suspected infiltration problem due to surface water penetrating the landfill cap or from the groundwater infiltration into the leachate collection system?

A: Each site is different and this is to be determined by the study.

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: _____

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> 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

Mate P. Speranza

Authorized Signature

June 9, 2017

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.
Revised 6/8/2012

Section I: Designated Contact and Certification and Signature

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.

(Name, Title) Timothy Miller, Project Manager

(Printed Name and Title) Tetra Tech Inc.

(Address) Plaza 7, 661 Andersen Drive, Pittsburgh PA

(Phone Number) / (Fax Number) 412-321-7090 412-921-4040

(email address) tim.miller1@tetrattech.com

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

Tetra Tech Inc
(Company)

Mark P Speranza

(Authorized Signature) (Representative Name, Title)

Mark Speranza, Vice President

(Printed Name and Title of Authorized Representative)

June 9, 2017

(Date)

412-921-7090 421-924-4040

(Phone Number) (Fax Number)