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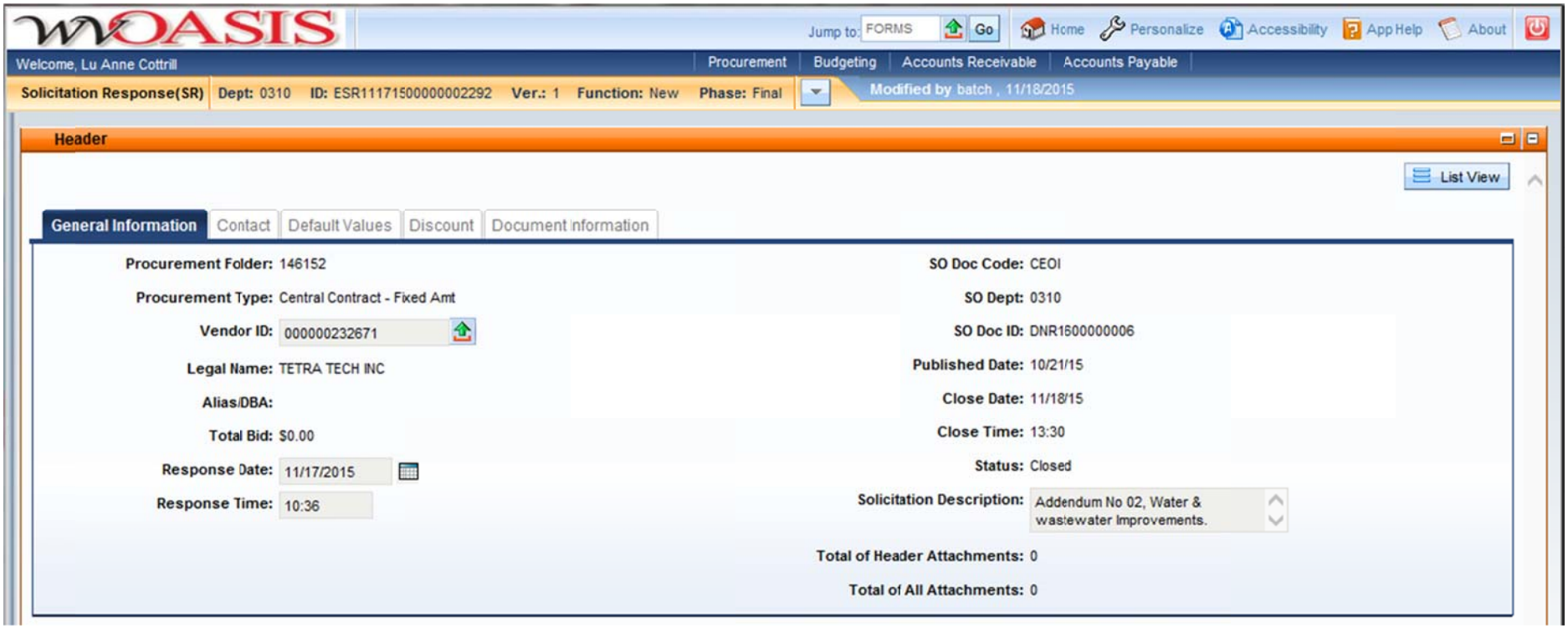
wvOASIS
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Solicitation Response(SR) Dept: 0310 ID: ESR11171500000002292 Ver.: 1 Function: New Phase: Final
Modified by batch , 11/18/2015
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General Information
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Procurement Type: Central Contract - Fixed Amt
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Alias/DBA:
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Solicitation Description: Addendum No 02, Water & wastewater Improvements.
Total of Header Attachments: 0
Total of All Attachments: 0

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

# State of West Virginia
# Solicitation Response

**Proc Folder :** 146152

**Solicitation Description :** Addendum No 02, Water & wastewater Improvements.

**Proc Type :** Central Contract - Fixed Amt

| Date issued | Solicitation Closes | Solicitation No | Version |
|---|---|---|---|
| | 2015-11-18 13:30:00 | SR 0310 ESR11171500000002292 | 1 |

**VENDOR**

000000232671

TETRA TECH INC

**FOR INFORMATION CONTACT THE BUYER**

Guy Nisbet

(304) 558-2596
guy.l.nisbet@wv.gov

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

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

| Line | Comm Ln Desc | Qty | Unit Issue | Unit Price | Ln Total Or Contract Amount |
|---|---|---|---|---|---|
| 1 | Architectural engineering | | | | $0.00 |

| Comm Code | Manufacturer | Specification | Model # |
|---|---|---|---|
| 81101508 | | | |

**Extended Description :** AE Services for Babcock wastewater treatment plant replacement and Droop Mountain water supply improvements.

Expression of Interest

# WV Division of Natural Resources

## Request for Qualifications: DNR1600000006 Water and Wastewater Improvements

## Babcock and Droop Mountain State Parks

## 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 412-921-4040
(Phone Number) (Fax Number)

11/18/2015
(Date)

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# Section A: Cover Letter

**November 18, 2015**

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

Dear Mr. Nisbet:

Tetra Tech is pleased to submit our qualifications to perform design services in reply to RFQ #DNR1600000006 for the State of West Virginia. As outlined in our proposal, Tetra Tech and its personnel have completed work on ***thousands of similar projects***.

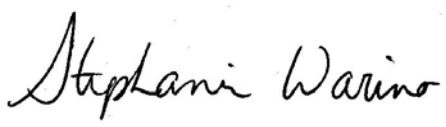
Based in Pasadena, CA, Tetra Tech is a full-service engineering and science firm with a substantial global presence. We help our clients conceptualize and execute innovative solutions to their most difficult problems. From front-end science and planning to design, construction management and operations, 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.

Tetra Tech has offices and operational infrastructure throughout the United States, Canada, and abroad. With 13,000 employees at 300 offices in more than 120 countries on six continents, Tetra Tech's technical knowledge and hands-on site work is broad and deep. Our staff is supported by a uniform administrative and management system that project teams can access immediately to ensure work is completed effectively.

Our experienced team is led by Mr. Thomas Gray, PE. Mr. Thomas Gray, PE has more than 40 years of experience and has managed or supported numerous projects for the State of West Virginia. Mr. Gray is a registered Professional Engineer in the State of West Virginia. He will be joined by Mr. Jonathan Shimko, a water and wastewater treatment plant expert, and Mr. Gregory Hynes, PE, also a West-Virginia registered Professional Engineer with significant water treatment and wastewater treatment design. **As a firm, Tetra Tech also has significant experience working for the State of West Virginia – for the WV DEP, WV DCH, WV DOC, and has worked cooperatively for our commercial clients with WV DNR.**

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 Ms. Warino at (304) 534-4021.

Sincerely,



Ms. Stephanie Warino, WV LRS, PG
Fairmont, WV Operations Manager

# Section B: Communication Procedure

Tetra Tech prides itself on its adherence to maintaining project budgets and completing projects on time. In order to accomplish these achievements, Tetra Tech has in place a rigorous project management system, which is uniform throughout the company.

Project Communication – Tetra Tech recognizes the need to maintain two-way communications with the clients. To achieve this, Tetra Tech will prepare and issue a monthly progress report which will highlight the month's activities, accomplishments, report on the status of the project schedule and budget. The monthly status report will also forecast the activities in the upcoming month. In addition to the monthly report, Tetra Tech will schedule a weekly conference call with WVDNR to bring WVDNR up to date on current activities and resolve any questions or issues before they become stumbling blocks.

In addition to issuance of reports and conference calls, Tetra Tech proposes a status meeting to be held either on site, if facilities are available, or at the WVDNR office on a monthly basis. Ideally these meetings would be held approximately one week after the monthly report is issued. Specific subject calls and meetings can be held as needed to keep the project progressing.

Budget Oversight – At the beginning of each project, a budget is established. The budget is established by tasks, in the instance of this project, it would be based on Phase. Each of the tasks would be further subdivided into such categories as labor, procurement, travel, and the like. Tetra Tech has a centralized accounting system that tracks and reports expenditures (as well as receivables). The project manager has access to various cost reports on a weekly and monthly basis. In addition to the project manager's review of the financial status of the project, a monthly review is held on a monthly basis with office management. As part of the project manager's review, the project manager is expected to identify and budget trending to exceed the budget. The project manager will then identify the cause and remedy the situation. The financial status with respect to the budget will also be reported on a monthly basis to WVDNR in the Monthly Report as noted above.

Schedule Maintenance – At the initiation of the project, a Baseline Schedule is developed. This schedule will include the major tasks, durations, and relationships. The schedule will also include any Milestones and associated dates, such as Phase 1 Completion, Engineering Drawing Submittal etc. The Milestones and their dates are agreed to by both WVDNR and Tetra Tech. This becomes the Baseline schedule.

During the course of the project, the schedule is updated for actual progress and possible changes. The updates can be done on a monthly or biweekly basis. These are reviewed on the same frequency as the budget. A copy of the updated schedule will be included in the Monthly Report. Internally, the schedule is reviewed in the project review meeting with management.

Note that, while the durations and progress is updated on the schedule, the agreed to milestones cannot be changed without agreement from both parties.

# Section C: History of Projects

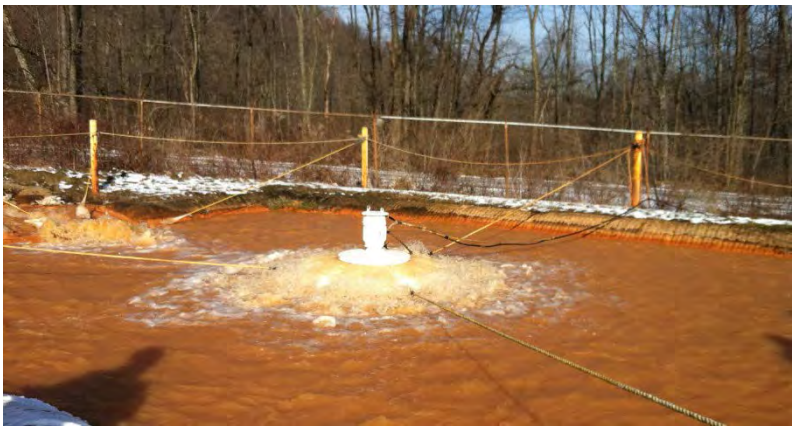
Our capacity encompasses more than 80 disciplines with sufficient engineers, scientists, and support staff to fulfill a contract in any of its five service areas: water, infrastructure, the environment, energy, and natural resources. For those disciplines outside of Tetra Tech's capacity, the firm maintains excellent relationships with an extensive network of sub-contractors, including six to 12 mentor-protégé firms.

***Current Number of Personnel in Selected Disciplines***: Tetra Tech's capacity is reflected in the number of personnel in the following selected disciplines.

| | |
|---|---|
| Administrative | 1,066 |
| Archaeologist | 40 |
| Biologist | 416 |
| CADD technician | 159 |
| Chemical engineer | 318 |
| Chemist | 97 |
| Civil engineer | 465 |
| Computer programmer | 174 |
| Construction manager | 528 |
| Cost engineer/estimator | 104 |
| Ecologist | 78 |
| Electrical engineer | 46 |
| Environmental engineer | 341 |
| Environmental scientist | 305 |
| Foundation/geotechnical eng. | 212 |
| GIS Specialist | 262 |
| Geologist | 293 |
| Industrial hygienist | 15 |
| Land surveyor | 56 |
| Mechanical engineer | 407 |
| Mining engineer | 260 |
| Project manager | 1,181 |
| Risk assessor | 252 |
| Safety/occupational health eng. | 39 |
| Technician/analyst | 499 |

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 water and wastewater-related projects nationwide.

# BIRD MINE AND STRAYER REFUSE PERMITTING AND WATER TREATMENT SYSTEM DESIGN



**CLIENT**

AMD Industries, Inc.

**LOCATION**

Tire Hill, Pennsylvania

**DURATION**

2012 – Ongoing

## FEATURES

- Water treatment design
- PADEP permitting
- Refuse pile quantification and quality analysis

## PROJECT DESCRIPTION

Tetra Tech was retained by AMD Industries to complete Pennsylvania Department of Environmental Protection (PADEP) permitting, water treatment design, and refuse pile quantification and quality analysis at the Bird Mine located in Tire Hill, PA. Tetra Tech was tasked with completing two different PADEP mining activity permit renewals – one for the Strayer Refuse Site and one for the Bird Mine Treatment Facility.

In addition, Tetra Tech planned for and conducted exploratory testing of the Strayer Refuse Site to determine the volume and quality of the refuse for possible removal. Our firm continues to provide mining-related support to this site.

# CRESSON MINE POOL PROJECT

## FEATURES

- Treatment of mine pool water discharge
- Design of water distribution system extension (1.7 miles)
- Modeling

## PROJECT DESCRIPTION

Tetra Tech was subcontracted by GAI to perform Abandoned Mine Land r emediation f or P ADEP's B ureau of A bandoned M ine Reclamation project located in Cresson, PA. T he project involves the t reatment of m ine po ol w ater and s ubsequent di scharge i nto Clearfield C reek f or use i n a gricultural purposes w ithin t he watershed. T he facility will provide 5.7 million gallons per day of water to users in this river basin to mitigate f or agr icultural c onsumptive use during l ow-flow c onditions and to r estore w ater quality i n Clearfield Creek.

Our ev aluation d etermined t hat t he c ombining and t reating t he w ater f rom t he Cresson 9, G allitzin Shaft, a nd Argyle/Stone Bridge m ines c ould produce s lightly l ess t han t he n eeded 5.7 m gd a nd t hat additional flow could be obtained by managing the pools. These pools can be treated at one location by collecting a nd r outing di scharges t o a s ingle t reatment plant f rom t he m ultiple mine p ools. S everal locations for sludge injection boreholes (expected to be successful and work for a long time period) were found by our engineers that had previous experience in in-mine sludge disposal. The necessary ingredients f or s uccessful sludge di sposal i nclude av ailable property r ights, op en m ining v oids t o accommodate the volume of sludge generated, and locating each borehole a sufficient distance from the withdrawal location to limit recycling. Tetra Tech reviewed mine maps and selected three boreholes for sludge disposal.

Tetra T ech is also developing a l oad d uration c urve approach c oupled w ith g eochemical s imulation using the MINTEQA2 model to evaluate the existing and expected water quality conditions of Clearfield Creek and Sugar R un. T he l oad dur ation c urve approach i s a s implified s tatistical appr oach f or determining pollutant l oading c apacity by an alyzing water qual ity c oncentrations and s tream f low regimes. I t w ill be us ed to es tablish t he i n-stream a nd e nd-of-pipe l oading c apacities of t he w ater quality components under various pollutant loading conditions. The project also included the extension of the public water distribution system. The extension is 1.7 miles long.

## CLIENT

PADEP, Bureau of Abandoned Mine Reclamation

## LOCATION

Cresson, Pennsylvania

## DURATION

2011 – Ongoing

## COST

$ 600,000.00

## REFERENCES

Mr. Eric Cavazza
PADEP BAMR
Cambria District Office
286 Industrial Park Road
Ebensburg, PA 15931
(814) 472-1900

## WESTERN AREA WASTEWATER TREATMENT PLANT EXPANSION, HUNTSVILLE, AL

Tetra Tech completed design of a 5.0 MGD expansion to the existing Tetra Tech–designed 10.0 MGD activated sludge facility. Initially, an engineering report was prepared evaluating various alternatives for expanding the existing facility.

Process improvements and additions included screening/grit facility modifications, 5.0 MGD oxidation ditch featuring anoxic zone for denitrification (nutrient limits anticipated), circular secondary clarification, RAS/WAS pump station, scum pump station, aerobic sludge digestion, and sludge drying beds. The oxidation ditch is an EIMCO Carrousel denitIR system with a 17-foot water depth, using EIMCO's aerator with extended shaft mixer for deep applications.

Upstream of the aerated (aerobic) portion of the ditch is an anoxic (absence of free oxygen) basin with mixing. The purpose of the anoxic zone is to denitrify (remove nitrate nitrogen). This has the added benefit of reducing oxygen demand with resultant power savings. A new 16.7 MGD UV disinfection system with effluent flow monitoring was installed.

Other improvements consisted of modifications to the existing administration building to comply with the American Disabilities Act (ADA) requirements and a new maintenance garage.

## WASTEWATER TREATMENT PLANT BIOSOLIDS HANDLING, YPSILANTI, MI

The Township and City of Ypsilanti, Michigan, sits outside the Detroit metropolitan area. In 2000, The Ypsilanti Community Utilities Authority (YCUA) needed to replace its 20-year-old multiple hearth biosolids incinerator. Tetra Tech's solution: a fluidized bed biosolids incinerator system with an activated carbon filter, the first of its kind in the nation. The result is the cleanest burning, most advanced municipal biosolids incinerator system in the United States.

Tetra Tech addressed several unique issues during the study and design phases, including expanding the service area and increasing capacity; the directive of the Board that the new facility should exemplify the community's environmental leadership; and that air quality requirements of the Michigan Department of Environmental Quality are more stringent than those of the U.S. Environmental Protection Agency (EPA).

Because of Tetra Tech's commitment to sustainability and our experience with regulatory consulting, we addressed these challenges through an innovative design using the newest technologies and processes.

Performance testing in July 2006 revealed that system emissions were cleaner than the air permit requirements dictated. Despite handling 60% more biosolids daily than the previous incinerator, this state-of-the-art system designed by Tetra Tech resulted in a net reduction of emissions, contributing to improved air quality in the community and setting a new nationwide standard.

The YCUA Biosolids Incinerator Project won an American Council of Engineering Companies (ACEC) National Honor award in 2007.

## HOWARD F. CURREN AWTP PROCESS AND ENERGY OPTIMIZATION STUDY, TAMPA, FL

The City of Tampa owns and operates the Howard F. Curren Advanced Wastewater Treatment Plant, which has a permitted design capacity of 96.0 MGD on an average annual daily flow basis. Many of the treatment technologies employed at the plant are modern; however, the City recognized that recent advances in biological nutrient removal processes might offer potential savings in operating costs and other process enhancements and supplementary technologies could offer economic benefits. Like nearly all public entities, the City is facing significant financial constraints; therefore, potential optimization programs must carefully control capital expenditures and the savings in operation costs must result in short payback periods. In 2009, the City retained Tetra Tech to develop four distinct alternative operating schemes that could lead to lower power costs and / or significant decreases in chemical costs.

## WASTEWATER REUSE TO WETLANDS SURVEY SERVICES, PANAMA CITY BEACH, FL

Tetra Tech was retained by the City of Panama City Beach to prepare preliminary information for the City's proposed wastewater effluent reuse to wetlands project. Tetra Tech's services consisted of preparing a topographic survey of the 3,000-acre site.

Tetra Tech established new black and white vertical aerial photography; a color spot shot for the entire site was obtained. Horizontal and vertical ground control points were paneled, and the information was certified to Florida's technical standards requirements.

Computed horizontal and vertical control point coordinates and elevation values were used as the control for the photogrammetric instruments to collect the breaklines and mass points used in the creation of all digital topographic maps. Visible planimetric features were plotted to include buildings, pavement edges, dirt roads, visible indications of utilities, wetland vegetation outlines, ditches, fences, culverts, bridges, and group trees. Tetra Tech plotted color check plots to verify layers and database performance. Contours were generated at 2-foot intervals; spot elevations were published on tops, saddles, flat areas, and depressions to accurately depict changes in relief.

A quality control review was performed by Tetra Tech's Florida Registered Surveyor and Mapper. Color digital raster imagery was produced from the new spot shot photography and rectified to analytical triangulation and mapping.

## POINCIANA WRF NO. 2, KISSIMMEE, FL

The Tohopekaliga Water Authority (TWA) purchased the Poinciana Water and Wastewater Utility Systems in 2007. Treated effluent from the various water reclamation facilities (WRFs) in the Poinciana System is transmitted to several "public access" areas such as residential subdivisions, parks, schools, and golf courses. TWA operates the Poinciana WRF No. 2, which is the largest treatment facility within the Poinciana System. Due to poor historic plant performance and long-term planning, TWA retained Tetra Tech to provide design, permitting, and construction phase assistance for an upgrade and expansion of the Poinciana WRF No. 2.

Tetra Tech provided a full range of engineering services including survey, permitting, preliminary design, final design, permitting and construction administration. Poinciana WRF No. 2 had an existing permitted capacity of 3.0 MGD on an annual average daily flow basis and utilized a sequencing batch reactor process to provide secondary treatment and a moderate degree of nitrogen control. This project involved increasing the WRF No. 2 permitted capacity to 6.0 MGD with provisions for future expansion to a capacity of 12.0 MGD. As part of the expansion, the existing SBR process was abandoned in favor of the Modified Ludzack Ettinger process. As a result of this project, the expanded and modified facility provides reliable treatment by combining biological nutrient removal technology with conventional settling, filtration, and disinfection processes. Improvements included modification of existing structure to incorporate two 3.0 mm mechanically cleaned screens and the addition of a Headcell grit removal system. A state of the art process monitoring and control system was also included which provides continuous measurement of numerous process variables at several locations and utilizes the measurements in conjunction with a sophisticated process algorithm to automatically adjust air delivery, return activated sludge flow, and internal recycle pumping.

## 6.0 MGD ADVANCED WASTEWATER TREATMENT PLANT RERATING AND EXPANSION NEW SMYRNA BEACH, FL

The Utilities Commission, City of New Smyrna Beach retained Tetra Tech, Inc. to provide design, bidding, permitting and construction services for a new advanced wastewater treatment plant with a design capacity of 6.0 MGD. The facility was constructed in 1999 and it employs the 5-stage Bardenpho biological nutrient removal process to consistently provide high levels of CBOD5, TSS, and nutrient removal. With development pressure and the potential construction of a new power generation facility near the plant, Tetra Tech was retained to examine flows, influent characteristics and plant performance to determine if the plant could be "rerated" to provide additional permitted capacity, or if improvements could be implemented to achieve an increased capacity.

Tetra Tech performed a detailed evaluation of flows, influent characteristics, and all unit operations and processes. Various computer simulations were used to predict plant performance under a variety of scenarios and evaluate several potential alternatives. The results of the analysis indicated that the treatment capacity of the plant could be increased from 6.0 MGD to 7.0 MGD by adding an external carbon source (methanol or MicroC). Also, the effluent transfer pumps required modification to support the increase in treatment capacity. Subsequently, Tetra Tech was retained to provide detailed design, permitting, bidding, and construction services for the recommended improvements.

## WASTEWATER SYSTEM EVALUATION AND IMPROVEMENT PROGRAM, HUNTSVILLE, AL

Tetra Tech was awarded a Program Management contract from the City of Huntsville to serve as the sewer Program Manager and assist the City as its representative. This program provides improvements to pump stations within the City to address operability, maintenance and regulatory compliance. Our services include:

**General Program Administration.** General on-going management, engineering, planning and consulting services; developing and maintaining a management plan, including communication protocols, master schedule, and capital budget plan for the program; managing the City's use of SRF program for approximately ½ of program funding; developing, maintaining, and implementing sewer design and construction standards for consultants, developers, and contractors; developing and submitting monthly progress reports; performing agency coordination and public involvement assistance, including attending workshops, city councils meetings, etc.

**Program Management.** Performing ongoing cost estimating, engineering reviews, value engineering, evaluation, bidding, contract award, and scheduling for the program; coordinating with City to evaluate alternative equipment, processes, layouts and configurations, and complete evaluations; managing other consultants and professionals developing design documents for City; reviewing work of other consultants and makes recommendations to City; reviewing development plans submitted to City to provide for future planning, ensuring continuity of long range sewer development plans and conformance to standards, as well as, providing a schedule for availability of services.

## JAMES B. MESSERLY WATER POLLUTION CONTROL PLANT, EXPANSION & UPGRADE, CITY OF AUGUSTA UTILITIES DEPARTMENT, AUGUSTA, GA

The City of Augusta is constructing capital improvements to the James B. Messerly Water Pollution Control Plant. The City's objective is to maximize the use of the existing wastewater treatment plant. The Messerly Plant receives domestic wastewater from the surrounding community and several major industrial contributors that had decreased the overall effective treatment reliability. With the past upgrades and the projected new improvements, the plant will be restored to its full treatable capacity.

Tetra Tech is the lead design firm for this $65 million Water Pollution Control Plant expansion project. The expansion involves converting a plant not designed for nitrification to a 46.1 MGD biological nutrient removal plant. The plant uses sodium hypochlorite disinfection as part of the treatment process. Tetra Tech designed improvements for the plant that include the following:

- Construction of new aeration basins, blower/ electrical building and equipment, flow splitting structures, hypochlorite generation system, hypochlorite storage and feed system, grit removal and dewatering system, odor control system, and three 13.8 kV 2250 kW standby generators.
- Modifications to existing aeration basins, clarifiers, splitter boxes, pumping station, and electrical systems.

Prior to this project, the facility consisted of two separate treatment trains. This separation limited the plant's capacity and flexibility, particularly when major unit processes required maintenance. Tetra Tech's innovative design integrated the former parallel trains and allowed for more flexible operation.

## LIFT STATION EVALUATION AND IMPROVEMENT PROGRAM, ORLANDO, FL

Tetra Tech has provided continuing miscellaneous professional engineering services to the City of Orlando since 2000 for lift station improvements. Projects have included numerous lift station refurbishments, utility infrastructure improvements and other miscellaneous engineering services. The City's wastewater system includes approximately 200 pump stations, and Tetra Tech has provided the following services for the upgrades to numerous lift stations: preliminary engineering; hydraulic modeling; odor control; final design; permitting and construction administration.

Specific lift station improvement projects include:

Lift Station No. 69 Upgrades. Replacement of a 3,000 gpm dry pit pump with an equally sized dry pit submersible pump, replacement of electrical systems including the addition of three variable frequency drives, replacement of existing standby generator and miscellaneous influent chamber improvements.

Lift Stations No. 29, 65 and 78 Upgrades. These improvements completed on an accelerated schedule to meet SRF funding deadlines, and were completed three months ahead of schedule.

Lift Stations No. 16, 17, 52 and 57 Upgrades. These improvements also need to be completed on an accelerated schedule to meet SRF funding deadlines.

Azalea Park Sanitary Sewer System, Lift Station No. 12 and 69 and Subareas. Tetra Tech was retained to prepare a sewer system study to ascertain the levels of I/I within the areas served by LS No. 12 and LS No. 69, as well as assess the condition of the various collection system components, prioritize and classify system components with respect to criticality and condition, evaluate conveyance capacities of major transmission facilities with respect to current and projected flows and compare costs.

## WASTEWATER R&R PROGRAM - PUMP STATIONS, ORANGE COUNTY, FL

Orange County Utilities' existing wastewater system contains a total of 704 pump stations, approximately 563 miles of force mains and an extensive gravity wastewater collection system consisting of approximately 1,207 miles of gravity mains. Many of these facilities have been in service for over 20 years and substantial improvements are necessary for several stations to correct existing deficiencies, ensure reliable service and meet regulatory requirements. OCU developed an aggressive wastewater R/R program to prioritize and rank pump stations and perform preliminary engineering to clearly define scopes and resolve issue that have historically delayed projects in final design. Under OCU's rehabilitation and replacement program, Tetra Tech has assessed, evaluated and performed preliminary design of 20 duplex pump stations to date, design capacity's ranged from 100 gpm to 610 gpm. Services have included:

**General Program Administration.** Performed general ongoing management, engineering, planning and consulting services, developed and maintained a management plan, which includes communication protocols, master schedule, and capital budget plan for the program, developed and submitted monthly progress reports, performed agency coordination and public involvement assistance including attendance at workshops, city councils meetings, etc.

**Program Management.** Capacity evaluation included verification of existing and future wastewater flows using pump runtimes, flow meter, drawdowns, in addition to land use, lot count and wastewater generation factors. Alternative analyses included evaluation of pump station elimination via re-routing of gravity flows to adjacent pump station tributary areas and evaluation of the adjacent pump stations to accommodate the additional flow. Each alternative site or site expansion included recommended improvements, required real estate acquisition and estimate costs for each alternative.

## BIRMINGHAM WWTP, PHASE I AND II EFFLUENT DISINFECTION, DESIGN, AND CONSTRUCTION MANAGEMENT, CITY OF KANSAS CITY, MO

Through a qualifications-based selection process, Tetra Tech was selected to perform Phase I and Phase II engineering services for a wastewater disinfection facility located at the Birmingham Wastewater Treatment Plant in Kansas City.

The Birmingham WWTP is a 20 MGD average daily flow complete mixed activated sludge biological treatment that includes two parallel treatment trains with aerated grit removal, primary clarifier basins, aeration basins, secondary clarifier basins, chlorine contact chambers, effluent pump station, and solids pumping stations. The project developed micropile foundation systems to support new circular basin inside the existing square structure. Stipulated dewatering requirements for taking buried structures out of commission given the proximity of the Missouri River and threat of rising groundwater.

**Phase I Services.** Tetra Tech was selected to provide preliminary design and engineering reports for effluent disinfection. The project converted a portion of an administrative building to sodium hypochlorite storage and feed. Also included are pumping station rehabilitation, clarifier modification, and instrumentation control (SCADA). Tetra Tech oversees project scheduling, project costs, regulatory coordination, and subconsultant management.

**Phase II Services.** Ongoing during the construction phase, Tetra Tech will oversee final design, technical specifications, construction plans, and the bidding process. Tetra Tech will provide engineering and plant operational support through the construction phase of the project with post construction operations. Tetra Tech's construction management services have included onsite construction observation, progress and staff reporting, providing opinion of probable cost, O&M manual development, operator training, and plant start-up services. Tetra Tech will monitor groundwater elevations to prevent damage to empty structures. Design deliverables were submitted ahead of schedule providing the construction Contractor as additional month to meet aggressive consent decree completion dates.

## COMPREHENSIVE WASTEWATER TREATMENT PLANT PERFORMANCE EVALUATION; COORS BREWING COMPANY, GOLDEN, CO


The Coors Brewing Company Process Waste Treatment Plant treats water from the Company's brewery located in Golden, Colorado. Tetra Tech performed an evaluation of the facilities and operations to determine the capabilities of the industrial treatment system and how to reduce the occurrence of poor sludge settleability and high polymer costs. Tetra Tech performed a Comprehensive Performance Evaluation on the 6.0-MGD pure oxygen activated sludge system that handles wastewater CBOD5 concentrations that are three to four times those of normal domestic waste. Performance-limiting factors were identified and prioritized followed by recommendations for solutions to eliminate those factors. Recommendations included additional testing, improved process control program, less polymer use, and internal piping changes to reroute wastewater.

Additionally, Tetra Tech assisted in developing improved process control and data collection techniques. As the lead engineer for an extensive O&M manual, required by the state, to document good process control strategies, troubleshooting charts, and data analysis, Tetra Tech analyzed the treatment processes and evaluated how they should be operated. Specifically, Tetra Tech was tasked with developing operational strategies to deal with "slug" discharges and overloaded operating conditions.

## PUBLIX FOOD PROCESSING WASTEWATER TREATMENT FEASIBILITY STUDY; CITY OF LAKELAND, FL

The City of Lakeland owns and operates the Glendale Wastewater Treatment Plant and a Publix food processing center is a major industrial contributor of wastewater flow and CBOD5 to the city facility. This industrial contribution amounted to less than 10 percent of the total plant flow; however, the discharge comprised about 40 percent of the CBOD5 mass loading. This situation resulted in various capacity and operation issues, therefore, the city retained Tetra Tech to examine options for reducing the CBOD5 contribution to the Glendale Wastewater Treatment Plant.

Under this assignment, Tetra Tech developed alternatives involving sequencing batch reactors, packed towers, and conventional trickling filters to address varying levels of treatment. Subsequently, capital and operating costs were developed for each treatment alternative at 25 and 50 percent CBOD5 removal rates. This effort allowed the city to examine the economic impacts of the pretreatment concepts and make decisions regarding capital improvements, expenditures and cost recovery.

## SNOQUALMIE WINERY WASTEWATER TREATMENT EVALUATION STE MICHELLE WINE ESTATES; WOODINVILLE, WA

In 2007, the management of the Snoqualmie Winery decided to increase wine production from 310,000 cases/year to over 600,000 cases/year. The wastewater flow for the winery averaged approximately 100,000 GPD and the CBOD5 and TSS concentrations of the untreated wastewater were in the range of 5,800 and 1,300 mg/L, respectively. Aerated lagoons provided treatment of the winery wastewater prior to discharge to the City of Woodinville sewer system; however, the strength of the wastewater resulted in anaerobic conditions and odors, particularly in the late summer.

Recognizing the need for increased treatment capacity and improved performance, the winery retained Tetra Tech to develop and evaluate options that would cost effectively facilitate the desired expansion. Under this assignment, Tetra Tech performed a field inspection and a detailed evaluation of flows and influent characteristics that were used to project future conditions, which would be used for development of alternatives. Subsequently, three alternative treatment concepts were fully developed and evaluated with respect to capital cost, operating costs, and non-monetary factors. The results of the analysis showed that sequencing batch reactors were the most advisable option due to the low cost, performance, and reliability.

## CLEAN TECH, INC. WASTEWATER TREATMENT PLANT, DUNDEE, MI


Tetra Tech was retained by Clean Tech, Inc. to operate a wastewater pretreatment facility at its plastic bottle recycling facility in the Village of Dundee with a design flow of 90,000 GPD. The system discharge needed to meet the industrial pretreatment requirements for the village.

Operations consists of pretreatment of a high-strength waste resulting from a process that ground and washed plastic bottles and produced a recycled product to sell back to the bottle manufacturers. The wastewater from the process was high in BOD and suspended solids.

The operations team operates a sequencing batch reactor treatment process.

Tetra Tech continues to operate the new sequencing batch reactor process and is able to demonstrate a consistent discharge level that meets Village requirements at a reduced cost to the owner. The treatment facility is normally staffed 12 hours per day, seven days per week.

## TROPICANA WASTEWATER TREATMENT FACILITY EVALUATION; BRADENTON, FL

The Tropicana wastewater treatment facility in Bradenton, Florida treats high-strength wastewater from a citrus processing operation. Tetra Tech was retained to evaluate the treatment process to determine the cause of excessive foam generation, poor sludge settleability, and related poor effluent quality. A detailed process evaluation revealed several performance-limiting factors, such as an improper return activated sludge location which caused overloading of the biomass at the aeration tank influent and poor sludge settleability.

Further, manual addition of nitrogen and phosphorus nutrients at the incorrect point in the treatment process caused formation of a polysaccharide slime, which caused the foam and much of the poor settleability. Subsequently, a minor piping change and conversion of the nutrient addition process to a drip-system from an existing tank allowed the process to be controlled as intended. These minor improvements resulted in significantly improved operation and effluent quality with only a minimal capital expenditure.

## DEAN FOODS DESIGN/BUILD WASTEWATER TREATMENT PLANT IMPROVEMENTS; WAYLAND, MI


Dean Foods, also known as Bay Valley Foods since 2005, is a producer of dairy and non-dairy creamers and margarines. Tetra Tech was retained to perform design-build services for the 100,000-gallon-per-day wastewater treatment plant's two-phase expansion.

In Phase I, the facility received updates to the clarifier building, installation of a new sequencing batch reactor and a solids dewatering facility. The new system successfully demonstrated its capability of meeting the city's pretreatment requirements; however, the facility was experiencing occasional upsets attributed to an oil-based product being discharged from the production facility.

In Phase II, Tetra Tech designed a packaged dissolved air flotation (DAF) system and oil water coalescer to improve the system's capability to handle upsets. The installation met the $CBOD_5$, COD, nitrogen, phosphorous, and oil and grease limits set by the City.

Major facilities provided included rotary screen, aeration tank expansion, sequencing batch reactor, filter press, DAF, and oil water coalescer.

This design-build project had a single-source delivery method to meet the client's aggressive delivery schedule. At project completion, the plant successfully met target final effluent limitations.

## PROCESS EVALUATION AND DESIGN ENGINEERING SERVICES, BROOMFIELD WASTEWATER TREATMENT PLANT, BROOMFIELD, CO

Since 2011, Tetra Tech has provided process evaluation and design engineering services to minimize off-site odor complaints, enhance biological nutrient removal performance, augment centrifuge dewatering capacity, and upgrade the control system of the Broomfield, Colorado Wastewater Reclamation Facility. This 12 MGD facility utilizes a three-stage BNR process, incorporates mixed liquor recycle pumping, and integrates fixed film activated sludge treatment in the oxic reactors.

Tetra Tech recently completed an evaluation of soluble carbon, dissolved oxygen, and centrate management options to enhance total inorganic nitrogen removal at the Broomfield Wastewater Reclamation Facility. The study concluded that denitrification performance could be improved by increase carbon availability to the anoxic zone and limiting DO recycle in the mixed liquor recycle. This study included a pilot test that involved temporarily converting an existing primary clarifier to a gravity thickener and piping the overflow to the anoxic zone of the three-stage activated sludge BNR train. Results showed denitrification performance improved by more than 20 percent.

Tetra Tech's odor control work included on-site odor source testing of the durable media biofilter, which provides 99 percent H2S and 95 percent total odor removal of the foul air being treated. The prioritized list of odor control improvements includes air ionization for the Screenings Building and replacement of the covers over the primary clarifiers and sludge holding tanks.

Along with the odor control and BNR enhancement improvements, Tetra Tech is providing process and design engineering support for replacement of the existing centrifuges, which dewater anaerobically digested biosolids prior to contract hauling and composting. This work includes upgrading centrifuge controls, so they will interface with the plant SCADA system, installation of new polymer feed systems, and relocation of the operator work station. Next year, Tetra Tech is slated to prepare a control system review and upgrade for the entire facility.

## PLUM CREEK WASTEWATER TREATMENT PLANT EXPANSION AND UPGRADES, CASTLE ROCK, CO

Tetra Tech was retained by the Plum Creek Wastewater Authority (PCWA) to be their design engineer for the expansion and upgrades of its wastewater treatment plant. The project was constructed to accommodate rapid growth in the region and to comply with stringent new effluent requirements and reuse limits for ammonia and phosphorous. PCWA retained Tetra Tech to upgrade and expand their wastewater treatment plant. As with any growing community, excess capacity must be managed. As part of the project, a third oxidation ditch was constructed which only needs to be equipped with mixers and diffusers to increase the capacity of the plant to 9.7 MGD.

The major objectives for this expansion included designing a state-of-the-art and operator-friendly facility in limited space; using energy-efficient equipment with lower power, labor, chemical, and maintenance requirements; and meeting or exceeding strict water quality standards. Phase 1 included the following:

- New headworks equipment with mechanical step screens, vortex grit removal, grit pumping, and grit dewatering
- Air ionization odor control
- New plant-wide SCADA system
- New BNR oxidation ditch for nitrogen and phosphorus removal
- Secondary clarifiers
- New building with Turblex style blower, return sludge pumping, and waste sludge pumping
- Conversion of existing aeration basins to aerobic digesters
- New bi-level centrifuge dewatering building
- Centrate and filtrate storage and treatment
- New tertiary rotating cloth filters

## 2013 FACILITY PLAN UPDATE, METRO WASTEWATER RECLAMATION DISTRICT, CO

Tetra Tech is part of the HDR team responsible for preparing the 2013 Facility Plan for the Metro Wastewater Reclamation District (District). The 2013 Facility Plan updates flow and load projections, develops a site-specific regulatory outlook, evaluates existing plant capacities, updates the plant wide hydraulic and process models, analyzes future improvement projects, and develops a capital expenditures program for the District's Robert W. Hite Treatment Facility (220 MGD) and the Northern Treatment Plant (25 MGD) for the 25-year planning period.

Tetra Tech led the development of a facility specific regulatory outlook which will require construction of new facilities to meet the increasingly stringent regulatory environment. The regulatory outlook included both liquid and solids treatment process. The liquid treatment regulatory outlook includes future TN limits of 2.0 mg-N/L and total phosphorus limits of 0.1 mg-P/L (to comply with the Barr-Milton TMDL). The facility plan focused on evaluating treatment alternatives to meet these stringent limits using various BNR processes, post nitrification and denitrification reactors, sidestream treatment, and phosphorus recovery. The solids stream regulatory outlook included analyzing new land application regulations for phosphorus and nitrogen indexing.

The Facility Plan focuses on evaluating facilities on a comprehensive basis to account for interactions between liquid and solids treatment processes. Tetra Tech helped identify two complete treatment processes that were capable of meeting the future discharge limits developed as part of the regulatory outlook. One treatment process included a five-stage BNR process with supplemental carbon addition for denitrification; tertiary flocculation sedimentation and filtration for phosphorus removal; deammonification for centrate treatment; and phosphorus recovery for future biosolids phosphorus regulations. The second process involved a three-stage BNR process followed by a moving bed biofilm reactor for secondary nitrification and denitrification and the same phosphorus and sidestream processes as noted in the other option. The capital expenditures identified include over $1.8 billion dollars of improvements over the 25-year planning period.

## WASTEWATER RECLAMATION FACILITY, CITY OF FRUITA, CO

The City of Fruita contracted with Tetra Tech to provide design and construction administration services for a new 2.33 MGD (Max Month) Wastewater Reclamation Facility (WWRF) and offsite sanitary sewer infrastructure to convey raw wastewater to the new facility. The WWRF will provide preliminary and advanced secondary treatment including biological nitrogen and phosphorus removal. The plant will be constructed on an undeveloped site near the Colorado River, west of downtown. The liquid process is designed with a single headworks facility, a two compartment anaerobic selector, two oxidation ditches with aerobic and anoxic zones, two 55-foot diameter clarifiers and ultraviolet (UV) disinfection. The solids treatment process incorporates rotary drum thickeners, a second generation ATAD process in a four-tank arrangement followed by a centrifuge for dewatering prior to beneficial use of the biosolids. Elements of the project include but are limited to the following:

- Energy efficient masonry operations building with concrete foundation, standing seam metal roofing, hollow metal doors, windows, monorail and hoist. The structure houses the WWRF plant control center, equipment maintenance and spare parts storage area, process control laboratory, restrooms and locker rooms, conference training and cafeteria facilities for staff. Building systems include domestic plumbing, lighting and high efficiency HVAC system incorporating geothermal heat recovery. This is a single story building consisting of approximately 2300 SF.
- Backup power generators and transfer switches, new electrical service, telephone service, motor control center, local PLC-based control system with four separate Human-Machine Interface (HMI) stations located throughout the plant site

## WASTEWATER TREATMENT PLANT, CLIFTON SANITATION DISTRICT, CO

Due to regional growth and stringent effluent requirements, Clifton Sanitation District (CSD) retained Tetra Tech to upgrade their facility from a lagoon to a mechanical treatment system. Tetra Tech provided planning, design and construction administration services for the new plant, which was completed at the end of 2008. The new regional wastewater treatment plant has an initial capacity of 2.50 MGD, expandable to 5.0 MGD. This facility serves the Town of Clifton and outlying communities.

The preliminary design effort included consultation with the US Fish and Wildlife Service and Colorado Department of Public Health and Environment (CDPHE) to confirm effluent limits, select treatment processes, and begin the CDPHE site approval process. The new regional Wastewater Treatment Plant (WWTP) includes influent pumping, headworks, oxidation ditches, 55-foot secondary clarifiers, ultraviolet disinfection, aerobic digestion, centrifuge dewatering, odor control and a SCADA system. The major objectives for this upgrade included designing a state-of-the-art and operator-friendly facility using energy-efficient equipment with lower power, labor, chemical, and maintenance requirements; and meeting or exceeding strict water quality standards with average ammonia concentrations less than 1.0 mg/L.

As part of the construction of CSD's new regional WWTP, Tetra Tech included air ionization for odor control in the headworks and solids handling building. Ionized air is distributed into the headspace under the channel covers in the headworks to oxidize odorous hydrogen sulfide gas. The treated air is separately vented to minimize the entry of foul air into the occupied space in the headworks area. For the solids handling building, ionized air is vented into the centrifuge and truck loading bay to oxidize any hydrogen sulfide in the air. The headworks and solids handling air ionization systems have a capacity of 2,000 and 8,000 SCFM respectively.

## REGIONAL WASTEWATER TREATMENT PLANT, CITY OF GLENWOOD SPRINGS, CO

Tetra Tech performed wastewater process design and implementation as a subconsultant to Schmueser Gordon Meyer (SGM) for preliminary and final design of a new 2.3 MGD Regional Wastewater Treatment Facility (WWTF). The project includes a central lift station for the City of Glenwood Springs and 3-mile force main from the existing Glenwood Springs WWTP to the new Regional WWTF site.

Overall, the new regional WWTF and support facilities will include a central lift station with air ionization odor control, parallel forcemains, headworks building with air ionization odor control, oxidation ditches, secondary clarifiers, ultraviolet disinfection, aerobic digesters, centrifuge building with biofilter odor control and a combination administration/maintenance building connected to the main process building.

Tetra Tech prepared detailed process and cost evaluation memoranda that recommended a biological nitrogen and phosphorus removal process using oxidation ditches with vertical drum mixers and a two-zone fine bubble aeration system. The recommendations included using low maintenance, energy efficient, high-speed centrifugal blowers to provide aeration for the oxidation ditches and aerobic digester. An anaerobic selector basin with mechanical mixing will be located upstream of each oxidation ditch to allow biological phosphorus removal and to help mitigate growth of filamentous microorganisms. Tetra Tech's design will incorporate other energy saving and energy recovery options such as: energy efficient lighting, roof-mounted photovoltaic cells, and thermal exchange and ventilation systems for heat recovery.

Tetra Tech incorporated three separate odor control treatment systems for the headworks, aerobic digesters, and the solids handling building. The headworks odor control system employed the use of aluminum channel covers with ionized air injected into the headspace under the covers to oxidize the hydrogen sulfide and other reduced sulfur compounds in the air. The aerobic digester and solids handling buildings incorporate the air ionization equipment into the HVAC design for each building.

## WASTEWATER TREATMENT PLANT, TOWN OF LAUREL, MT

Tetra Tech is assisting Great West Engineering with upgrade and expansion of the Laurel, Montana WWTP. This includes preparation of a WWTP evaluation, preliminary design report, and drawings and specifications for (1) expansion to 1.69 MGD and (2) conversion from rotating biological contactors to a three-stage activated sludge biological nutrient removal (BNR) system. Other project components include addition of new secondary sludge pumping facilities in an existing structure, addition of a rotary drum thickener for concentrating waste activated sludge, new high speed turbine blowers, replacement of gaseous chlorination and dechlorination with low pressure UV, and chemical feed for ferric chloride, polymer, and hypochlorite (filament control). The renovated facility will meet non-degradation limits for nitrogen and phosphorous and position the City to meet tight future limits for ammonia and nutrients. Project features include:

- Expand Plant Capacity
- Decommission RBCs
- Three-Stage Activated Sludge BNR
- Reuse RBC Tanks for Anaerobic/Anoxic Zones
- New Oxic Basins & Sec. Sludge Pumping
- Renovate Existing Sec. Clarifiers
- Meet Non-Degradation for BOD, TSS, TP, & TN
- Pre-position for Nutrient Rule and TMDLs
- UV Disinfection
- RDT Thickening of WAS
- Hypochlorite Feed for Filament Control
- Ferric Chloride and Polymer Feed
- New SCADA System

# Section D: Project Approach and Team Qualifications

Tetra Tech's approach is to develop action plans for the Babcock State Park swimming pool wastewater treatment system (WWTS) replacement and renovations to the water system at the Droop Mountain State Park, located in Clifftop and Hillsboro, respectively, that will:

1) Comply with the requirements of the applicable rules and regulations
2) Be easily constructed and economical
3) Use the best available technology
4) Allow the WWTS and the water system renovations to be construction with the least amount of disruption to the park patrons.

**Babcock State Park**

It is our understanding that the WWTS at Babcock State Park swimming pool is in need of replacement and was designed to treat 4,000 gallons per day (GPD) via the extended aeration process. It will be of paramount importance to determine whether the flow rate of the existing plant is still applicable. As part of our effort we, with the DNR, will make that determination. We will also evaluate whether the extended aeration process is still the best process for the application.

Our initial effort will be a site visit with the appropriate representatives of the WVDNR. One of on-site visit objectives will be to collect data. Data expected to be collected includes the number of visitors and treatment plant statistics such as influent and effluent flows and water quality measurements, e.g., BOD, suspended solids, pH. The next objective would be to evaluate the existing plant infrastructure for possible reuse. The initial visit will also consider siting issues as well as continued access to utilities. Tetra Tech will also query the DNR and Park representatives as to whether mapping, seasonal usage, geotechnical information, mapping, existing drawings of the plant exist and whether they can be made available during the project.

The replacement WWTS will be designed to meet the NPDES permit requirements, which Tetra Tech understands may be re-evaluated during the design process.

**Droop Mountain State Park**

It is our understanding that the water system at Droop Mountain State park is in need of renovations to the point of replacement including development of a new water supply. The system is served by a number of wells and storage tanks. It is also our understanding that the system has been installed some time ago. Due to its age, the design basis for the original system may have become exceeded. As a result, one of the main concerns will be to establish what the current needs of the system are. The other main concern will be to assess the components of the existing system to determine their condition and whether they can be reused.

Our initial effort will be a reconnaissance site visit with the appropriate representatives of the WVDNR and Park representatives. One of on-site visit objectives will be to collect data. Data expected to be collected

includes the number of visitors that the park serves and where physically the water demands are. Water quality data if available will be collected to determine if the water supplied meets all drinking water standards. The next site visit objective would be to perform a cursory evaluation of the existing system infrastructure (e.g., wells, tanks, chemical systems, distribution system) for possible reuse. The initial visit will also consider siting issues as well as continued access to utilities. Tetra Tech will also query the DNR and Park representatives as to whether mapping, seasonal usage, geotechnical information, groundwater quality and availability, mapping, existing drawings of the wells and distribution system exist and whether they can be made available during the project.

The replacement water system will be designed to meet the all local State and Federal drinking water requirements.

Since the general project approaches are similar at Babcock and Droop Mountain, the project discussion below will cover both projects. In areas where the approach differs, this is specified. The first step will be a site visit. The primary results of these visits will be a detailed scope of work and engineering cost estimate. Together these two documents will be referred to as the Action Plan. The Action Plan would include the logical phases of a project. These phases include:

- Investigation Phase,
- Planning Phase,
- Design Phase, and
- Construction Contract Administration Services Phase

Following site reconnaissance, Tetra Tech will meet internally with in-house water treatment experts and solicit additional input from DNR, where appropriate, to develop the detailed scope of work and engineering cost estimate for WWTS design and water system renovations. Tetra Tech has experience with many alternative treatment techniques which could be considered for the Babcock State Park, depending on the requirements established by the investigations, such as process type, package plant vs. custom design, level of automation, and level of staffing. Tetra Tech also has experience with groundwater wells and water distributions systems which could be considered for the Droop Mountain State Park, depending on the requirements established by the investigations, such as, demand, number of wells, number, location, and capacity of storage tanks, level of automation, and level of staffing.

The Investigation Phase will be largely satisfied with the initial visit, although some items may not be uncovered during the on-site visit. As a result the Action Plan will include any open investigation requirements, such as survey or mapping work, if none exist, flow monitoring and water quality data generation if insufficient data exist.

The Action Plan will include the Planning Phase wherein the basis of design will be design will be developed. The basis of design will consider the normal influent as well as the peak expected loads. It will also specify the various features that are desired for the treatment plant. The basis of design will be mutually agreed to by Tetra Tech and DNR. Once the basis of design is approved, Tetra Tech begin the Design Phase. This will include the development of design drawings and specifications (and other engineering documents, e.g., instrument lists, control lists, etc. The Design Phase can also include a project cost estimate and construction schedule.

After the design is generated and approved, and the construction contractor is selected, Tetra Tech will provide Construction Contract Administration Services. They exact services to be provided will be discussed by TT and DNR and will be included in the Action Plan. Typically they will involve assistance

during the Bid, construction inspection, drawing/design clarification, construction schedule maintenance, verification of construction payment applications, and assistance during startup. Other services can be included as well.

The Action Plan, which will form a scope of work for next phases, as well as a cost estimate for the plan implementation will be documented and submitted to WVDEP DNR for approval.

After acceptance of the Action Plan, the project will begin. We have prepared a simplified example scope of work for a plan requiring wastewater treatment system. Note that the example plan follows the phase approach. Tetra Tech would complete the following items of work for this type of plan:

**INVESTIGATION PHASE**

1. For Babcock, conduct supplemental wastewater characterization studies to determine the flow and water quality parameters, if such information is not available from DNR or other sources. This information will also include information on the service population (visitors/workers) and seasonal impacts. For Droop Mountain, conduct supplemental water demand studies to determine the flow and water quality parameters, if such information is not available from DNR or other sources. This information will also include information on the service population (visitors/workers) and seasonal impacts.
2. Perform supplemental survey work, if required, to provide elevations and coordinates of key locations such as tie-in points to the discharge and collection points, property boundary information, and additional construction baselines as necessary to facilitate the successful prosecution of the treatment plant. Identify alternate plant locations.
3. Identify infrastructure that will remain (and need refurbishment).
4. Utility and Regulatory Research: Contact West Virginia utility location service (WV 811) and local utilities in the contract area to locate underground and overhead facilities that may be affected by the construction. Tetra Tech will meet with involved utility companies in the Investigation and Planning Phases to determine temporary or permanent relocations and construction costs. Review the site and perform a delineation of on-site wetlands, if necessary. Contact local jurisdictional agencies regarding anticipated permit requirements. Prepare the appropriate permit applications for submittal to regulatory agencies. Applicable BMPs and storm water and other permit requirements will be fully integrated into the construction design plans and specifications.
5. Provide geotechnical and environmental site investigation services as required. For Babcock, geotechnical investigations would be provided to potentially determine foundation design parameters, such as, soil bearing pressures. For Droop Mountain, provide geotechnical and environmental site investigation services as required. Depending on the data received, it may be necessary to do aquifer testing. Geotechnical investigations would be provided to potentially determine foundation design parameters, such as, soil bearing pressures.

**PLANNING PHASE**

6. Prepare and submit a Basis of Design to the WVDNR for review and approval. For Babcock, the Basis of Design will show the process flow diagrams and preliminary treatment plant arrangement proposed for the site to insure that all parties are in agreement with the design approach prior to detailed design. For Droop Mountain, the Basis of Design will show the process flow diagrams and locations of facilities such as wells and tanks (new and existing) proposed for the site to insure that all parties are in agreement with the design approach prior to detailed design.

**DESIGN PHASE**

7. Prepare detailed construction drawings including water handling, balanced grading plans, and erosion and sediment controls in AutoCAD format. Anticipated drawings include: title sheet, existing conditions plan, process drawings (process flow diagrams, piping & instrumentation drawings)

general arrangements, structural, civil mechanical, piping, electrical, instrumentation drawings, grading plans (including E&S and post construction stormwater management), profiles, cross sections, and construction details.

8. Prepare process sequence of operation.
9. Prepare technical equipment and construction specifications and details for materials and installation of site improvements in conformance with the applicable current standard details and specifications available from the WVDNR.
10. For Babcock, prepare supporting design calculations including structural, hydrologic and hydraulic calculations as required for water conveyances and structure design. For Droop Mountain, prepare supporting design calculations including structural, hydrologic and hydraulic calculations as required for water distribution design.
11. Detailed construction drawings, specifications, and design calculations will be submitted to WVDNR for review and comment.
12. Drawings incorporating WVDNR comments will be submitted as required to obtain applicable site permits, if any.
13. Prepare a bid tabulation sheet and unit estimate of probable construction cost for the proposed plant.
14. Submit a Requisition for Quote package with supporting final deliverables to WVDNR including:

    a. Complete set of reclamation construction drawings.
    b. Construction specifications in Word format
    c. Process sequence of operation
    d. Estimate of probable cost and bid tabulation sheet
    e. Copies of survey data and field logs
    f. Permit approvals as applicable

**CONSTRUCTION CONTRACT ADMINISTRATION SERVICES**

15. Provide assistance during the Bid including conducting Pre-Bid Meetings for the bidders.
16. Provide construction inspection personnel. The construction inspection will be documented on a daily basis (every day that the inspector is on site).
17. Provide drawing/specification/design clarification to the contractor.
18. Maintain the project schedule and provide monthly updates.
19. Verify Contractor's payment applications.
20. Provide assistance during plant start-up.

**Addressing the Scope of Work**

Below is a brief outline of some of Tetra Tech's experience with the scope of work activities under this contract. Tetra Tech has a strong technical knowledge of the services required to complete treatment and water distribution projects including:

Prepare work areas by clearing and grubbing – Tetra Tech's engineering and support personnel have prepared hundreds of plans, drawings and specifications to be used for construction bids and for on-site support during construction activity. We have prepared many similar plans for the WVDEP AML section and these will be the general template for the site reclamation drawings. Construction sequence and E&S narratives included with these plans describe the sequence from initial clearing and grubbing and installing erosion and sediment controls to the final site clean-up and vegetation and mulching.

Locate, protect and/or avoid existing utility lines, poles, gas lines, etc. – Tetra Tech has in-house West Virginia certified land surveyors to complete base mapping of project sites. Topography, utility lines, poles, noted gas lines and other surface features can be surveyed for each project. If needed, Tetra

Tech would subcontract aerial photography for the development of more detailed contour maps of larger sites.

Design efficient wastewater treatment systems which minimize maintenance and meet NPDES water quality standards – Tetra Tech has experience in the design of both passive and active treatment plants which include processing water coal facilities as well other minerals. Tetra Tech is also experienced with plant automation which reduces the need for operation and maintenance personnel. Tetra Tech offers the full suite of design capabilities – process, civil, electrical, structural, mechanical, and piping.

Design water well and distribution systems – Tetra Tech has experience in designing piping and pumping systems for many purposes including water conveyance and water distribution. As part of its normal operation, Tetra Tech has been involved in numerous groundwater wells.

Design appropriate sludge handling facilities on site – Tetra Tech has included sludge handling in its active water treatment plants. These facilities have included sludge dewatering as well as sludge injection wells, depending on the individual site's requirements

Construction oversight and inspection – Tetra Tech has a department dedicated to construction inspection. The inspections have experience in inspecting all types of constructed facilities.

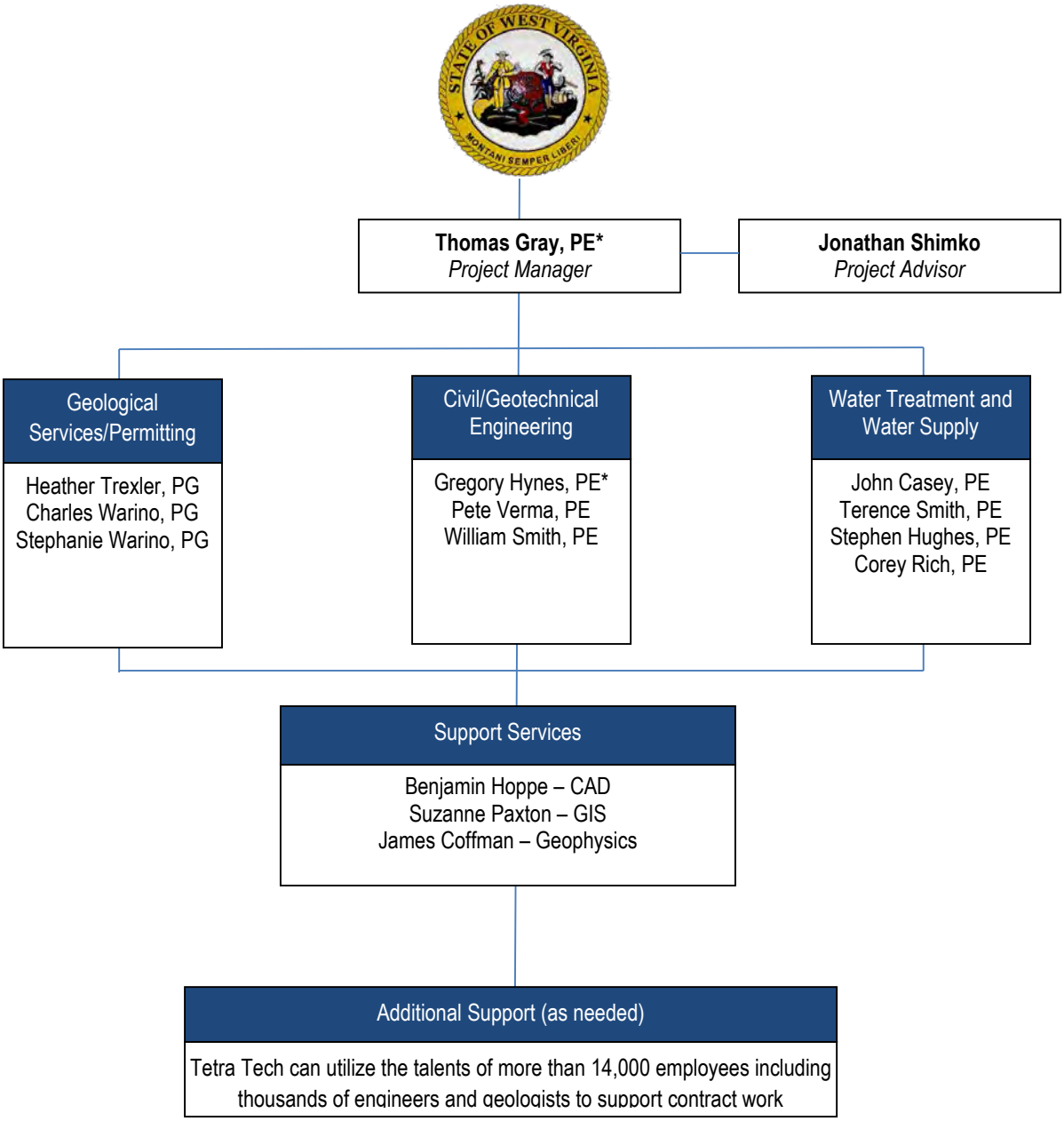
Final site cleanup – Tetra Tech will work with contractors for the final cleanup and restoration of sites, including the removal and hauling of all debris, and restoration of sites to prior conditions.

Project Communication – Tetra Tech recognizes the need to maintain two-way communications with the clients. To achieve this, Tetra Tech will prepare and issue a monthly progress report which will highlight the month's activities, accomplishments, report on the status of the project schedule and budget. The monthly status report will also forecast the activities in the upcoming month. In addition to the monthly report, Tetra Tech will schedule a weekly conference call with WVDNR to bring WVDNR up to date on current activities and resolve any questions or issues before they become stumbling blocks.

## Project Team Resumes

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. Thomas Gray, PE, a West Virginia-registered Professional Engineer. Mr. Gray has more than 40 years of experience and has supported or led many projects for the State of West Virginia.

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



# THOMAS GRAY, PE
## PROJECT MANAGER

## EXPERIENCE SUMMARY

Mr. Gray has more than 40 years of professional experience. He is a technical expert in mining engineering, mine reclamation, coal ash disposal and utilization, watershed and ecosystem restoration, mine subsidence, acid mine drainage remediation, mine stabilization via grouting and abandoned mine fire mitigation. Mr. Gray specializes in active and abandoned mining projects and with infrastructure projects that have mining related concerns. His project management responsibility has included construction, engineering, regulatory compliance, and research and development. He has been responsible for the successful completion of many unique projects.

## RELEVANT EXPERIENCE

***Project Advisor; Water Supply Extension Project; WVDEP; Logan County, WV.*** *Prepared construction documents for a water supply extension project.*

***Project Advisor; Mill Creek-Isom Water Supply System Design; WVDEP; Chapmanville, Logan County, WV.*** *Designed a water supply system to service approximately 800 residents of the Mill Creek-Isom Community along Godby Branch watershed.*

**Project Manager; Geotechnical and Hydrologic Investigation to Provide Municipal Water Supply; Confidential Client; Colver, PA.** Conducted a geotechnical and hydrologic investigation for a 53'-high embankment dam to provide a municipal water supply and cooling water for a cogeneration power plant. Completed an environmental assessment, including wetland delineation, wetland mitigation design and cultural resources investigations. Provided design, cost estimating, permitting and construction monitoring services for the Dam and Reservoir.

**Project Manager; Pump and Overland Pipeline System; Confidential Client; Greene County, PA.** Designed approximately two miles of a pump and overland pipeline system and provided designs and specifications for a half mile overland pipeline, including a bridge crossing.

***Project Advisor; Gauley River and Heizer/Manilla Creek Water Line Extensions; WVDEP; Nicholas County, WV.*** *Evaluated construction documents for the Gauley River and Heizer/Manila Creek water line extension projects.*

**Project Manager; Water Pipeline and Pump Station; Cambria Township Water Authority in conjunction with Inter-Power/AICon Partners; Colver, PA.** Designed and provided construction inspection for a 2.5-mile water pipeline and pump station project. The system provides up to 1600 gpm of

## EDUCATION

BS, Mining Engineering, Pennsylvania State University, 1973

MBA, University of Pittsburgh, 1977

## AREA OF EXPERTISE

Mining Engineering

## REGISTRATIONS/ AFFILIATIONS

Professional Engineer, WV, 1988, 10523

Professional Engineer, PA, 1978, 26978-E

Professional Engineer, MD, 1989, 17048

Professional Engineer, VA, 1980, 11628

Professional Engineer, OH, 2009, 73686

## TRAINING/CERTIFICATIONS

N/A

## YEARS OF EXPERIENCE

40

water for the Municipality of Cambria Township and for the Colver Power Plant. The Colver Plant is a 110 mw water-cooled facility.

**Project Engineer; AMD Treatment; PADEP; Cresson, PA.** Supporting this preliminary design evaluation associated with the proposed Cresson AMD Treatment Plant. BAMR has entered into an agreement with the Susquehanna River Basin Commission to provide treated AMD to supplement flow during low flow periods. Project is currently in the field investigation phase to identify the location of the proposed facility and mine water extraction wells.

**Project Manager: Bear Run Acid Mine Drainage Passive Treatment System; Indiana County Conservation District in Conjunction with PADEP; Indiana County, PA.** Project Manager for the design of a passive AMD mine treatment system, site grading and PADEP / Indiana County Erosion and Sediment Control permit, stream restoration and preparation of a PADEP Government Financed Construction Contract for a third party contractor to remove coal refuse from the site. Prepared construction grading plans, permits and hydraulic analysis of the Bear Run stream for a stream culvert crossing.

**Project Manager: Group Gladden Mine Acid Mine Drainage Treatment System; South Fayette Conservation; South Fayette Township, PA.** Preparation of a site grading plan and passive AMD treatment system to treat a maximum flow rate of 1,500 gpm of AMD flow from the abandoned Gladden Mine into Millers Run and Chartiers Creek. Preparation of a grading plan, specifications and design calculations to create 3 acres of passive treatment ponds and design of a spray pumping system to deliver 1,000 gpm of AMD through a nozzle system for aeration and evaluation of stream flow losses in areas affected by past mining.

# JONATHAN D. SHIMKO

**Water/Wastewater Manager**

## EXPERIENCE SUMMARY

Jonathan Shimko manages Tetra Tech's Water and Wastewater Management Department in the Pittsburgh Area from the Monroeville, Pennsylvania Office. Mr. Shimko specializes in water and wastewater treatment process, design, implementation and operation. He is experienced in environmental permitting including NPDES, Water Quality Management, Waste Management, and Erosion and Sedimentation Control. Mr. Shimko has considerable experience in flow monitoring including sanitary and storm drainage, and streams. He also specializes in water and wastewater sampling and testing.

Mr. Shimko is a Pennsylvania Department of Environmental Protection (PaDEP) Licensed Wastewater Treatment Plant Operator. He has been responsible for operation, maintenance, quality control, collection of wastewater and discharge of wastewaters; preparation and submittal of reports for PaDEP monitoring and approval; responsible for project management of wastewater treatment contracts; and has worked in plant design and construction activities on numerous wastewater treatment systems and technologies. Mr. Shimko is also a PaDEP Licensed Water Treatment Plant Operator, responsible for the operation, maintenance, quality control of potable water treatment facilities and distribution systems. Mr. Shimko has provided project management of water treatment contracts.

## RELEVANT EXPERIENCE

***Senior Project Environmental Specialist; Confidential Client; Wastewater Feasibility Study; Monongalia County, West Virginia.*** *Conducted a feasibility study and conceptual design of a Containerized Filtration System to remove suspended solids from the Haul Road Stormwater Management Pond at the Fort Martin Power Station. Provided system review of conceptual design documents prepared by TIGG Corporation, Oakdale, Pennsylvania for the system.*

***Senior Project Environmental Specialist; Confidential Client; Site Development; Pittsburgh, Pennsylvania.*** *Assisted in the design and replacement of an anoxic limestone drain treatment system to remediate AMD waters associated with the development of the commercial site. Preformed sampling and agency compliance documentation.*

***Task Manager; West Virginia Division of Corrections (WVDOC); Wastewater Treatment Plant Improvement Projects; $125,000; Huttonsville and Anthony, West Virginia.*** *Assisted with design and*

## EDUCATION

B.S. Environmental Science, 2003, Slippery Rock University

## REGISTRATIONS

Pennsylvania Certified Wastewater Systems Operator, Class C, E, 1, 2, 3, 4; No. 221238, Obtained 2005, Expires 2016

Pennsylvania Certified Water System Operator, Class A, E, 1, 12, 13; No. 221238, Obtained 2006. Expires 2015

## TRAINING/CERTIFICATIONS

OSHA Permit Required Confined Space Entry Training

OSHA 40-hour Hazardous Waste Operations and Emergency Response FEMA Incident Command System, ICS-100, ICS-200

MSHA 24-hour New Surface Miner Training

## OFFICE

Monroeville, PA

## YEARS OF EXPERIENCE

10

## YEARS WITH TETRA TECH

2

*development of construction documents for the implementation of improvements to the Huttonsville and Anthony Correctional Centers. Provided wastewater treatment plant operator guidance to improve wastewater treatment at the facilities.*

***Project Manager; Confidential Client; Environmental Services and Flow Monitoring Assistance; $50,000; Wheeling, West Virginia.*** *Investigated the discrepancies between its monthly metered potable water quantity and the apparent water discharges from the facility. Evaluated site conditions and Facility; conducted flow monitoring and evaluated flow monitoring data; and summarized the findings of the conducted studies along with recommendations on how to mitigate issues identified during the studies.*

**Environmental Scientist/Team Leader; Allegheny County Sanitary Authority (ALCOSAN); Combined Sewer Overflow Study Projects; Pittsburgh, Pennsylvania.** Provided sanitary sewer flow monitoring services. Performed field investigations to find suitable monitoring sites, installed and maintained monitoring equipment, conduct on-site data quality reviews, and provided data analysis and graphs. Conducted storm flow monitoring on combined sewer overflows.

**Senior Environmental Specialist; University of Pittsburgh and Pennsylvania Department of Transportation; Jonathan Run Acid Water Treatment Plant Design; Centre County, Pennsylvania.** Assisted with the design of an active treatment system for the project, including design recommendations, calculations, and writing of the specification package.

**Senior Environmental Specialist; Confidential Client; Stormwater Quality Remedial Evaluation; $50,000; Florence, South Carolina.** Evaluated methods for managing stormwater quality from plant yard areas. Developed an alternatives analysis of remediation options. Prepared and implemented a sampling plan and designed a pilot remediation system to treat stormwater runoff.

**Senior Environmental Specialist; Confidential Client; Power Station Sewage Treatment Study; Greene County, Pennsylvania.** Evaluation of on-site and off-site sewage treatment alternatives. Completed sewage treatment investigation including the feasibility of alternative sewage treatment methods and associated construction costs. This included consulting local publically owned treatment works and venders.

**Senior Environmental Specialist; Pennsylvania Turnpike Commission (PTC); Allegheny Tunnel Wastewater Improvements; Somerset County, Pennsylvania.** Assisted with the design of a sanitary sewer system for the maintenance facility at the Allegheny Tunnel.

**Senior Environmental Specialist; Pennsylvania Turnpike Commission (PTC); Lawn Service Plaza WWTP Closure Plan; Lawn, Pennsylvania.** Developed a closure plan for the wastewater treatment plant at the Lawn Service Plaza for approval by The PaDEP. The plan included sequence of the shut-down operation and a waste management plan.

**Senior Project Environmental Specialist; Pennsylvania Turnpike Commission (PTC); Rainwater Use Systems; New Castle, Pennsylvania.** Assisted in the design of a non-potable water system to collect and store rainwater for use in PTC multiple maintenance facilities.

**Senior Project Environmental Specialist; Confidential Client; Power Station Wastewater Discharge Pipeline; Armstrong County, Pennsylvania.** Performed permitting, design, construction monitoring, and construction management of a 15-mile pipeline project. Assisted in the design for a filtration system used in the pipeline pigging process. Design work included calculations, cost estimates, and design drawings.

**Senior Project Environmental Specialist; Allegheny County Sanitary Authority (ALCOSAN); Dooker Hollow Stream Mitigation Project; $150,000; Pittsburgh, Pennsylvania**. Assisting Sci-Tek, Inc. (Sci-Tek) to develop a design plan for removing the Acid Mine Drainage (AMD) from ALCOSAN's combined sewer system and remediating the AMD for reuse as irrigation water for the golf course. Assisting with

development of feasible treatment alternatives, construction specifications, and opinion of probable construction costs, and permit documents.

**Task Manager; Confidential Client; Chem-Mod Pilot Study; Power Station, Indiana County, Pennsylvania.** Assisted GenOn with a pilot study to determine the feasibility of applying a coal amendment prior to combustion in order to reduce mercury emissions in the flue gas. Study included the development of mass balance calculations and predictive models to determine air quality impacts and resulting effects on the wastewater effluent from the Flue Gas Desulfurization (FGD) system. Study considered application rates of the amendment, coal feed rates, FGD blowdown scenarios, NPDES effluent limits and air emissions.

**Project Manager; Confidential Client; Cumberland and Emerald Mines Advanced Wastewater Treatment Project; $350,000; Greene County, Pennsylvania.** Performed an evaluation of existing water resources in order to improve efficiency and reduce wastewater that would require expensive treatment to meet NPDES discharge limits. Evaluated wastewater treatment technologies proposed by multiple vendors in order to assist Alpha with selection of proper technologies to achieve proper treatment efficiently. Performed water sampling and water quality characterization study to develop a design basis for an advanced wastewater treatment system.

**Project Manager; Confidential Client; Pumped Storage Power Station Penstock Drain Tunnels Assessment; $ 50,000; Bath County, Virginia.** Conducted an alternative evaluation to improve the capacity of the existing Penstock Drain Tunnel (PDT) water system. Assessed system modifications to reduce operations and maintenance costs, maintain regulatory compliance, and increase safety. Developed alternative solutions, prepared engineering, capital and operating costs, and provided a matrix that compared these alternatives and provided recommendations to allow Dominion to make an informed decision on the appropriate course of action.

**Project Manager; Confidential Client; Pumped Storage Power Station Wastewater Treatment Plant; $25,000; Bath County, Virginia.** Conducted a feasibility study to assess potential modifications to the existing sanitary wastewater treatment plant and full replacement of the system. Assessed facility modifications and/or replacements in an effort to reduce operations and maintenance costs, maintain regulatory compliance, and increase safety. Developed alternative solutions, prepared engineering, capital and operating costs, and provided a matrix that compares these alternatives and provided recommendations to allow Dominion to make an informed decision on the appropriate course of action.

**Project Manager; Confidential Client; Treatment Sustainability Project; $30, 000; Buckingham County, Virginia.** Addressed operational and maintenance problems resulting in unsatisfactory finished water and additional operating expenses. Developed an alternatives analysis that provided feasible alternatives to address the water woes of the facility, comparative costs and anticipated project schedules.

**Project Manager – Confidential Client Wastewater Treatment System – Columbiana County, Ohio**. Tetra Tech designed a Small Flow On-Site Sewage Treatment System (SFOSTS) for Confidential Client. The design included the sizing and layout for a grease trap, septic tanks, a combined equalization and dosing tank and leech field. The system was designed to treat an average daily flow of 850 gallons per day while providing features to limit flow to less than 1,000 gallons per day. The design was developed based upon guidance form the Ohio Department of Health and the Columbiana County Health Department.

# GREGORY P. HYNES, PE

**PROJECT MANAGER/CIVIL ENGINEER**

**CANFIELD, OHIO**

**EDUCATION:** M.S., Civil Engineering (Water Resources/Environmental), Youngstown State University, 1997

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

**CERTIFICATIONS/**

**REGISTRATIONS:** Professional Engineer, PA, 1993, PE044310E

Professional Engineer, OH, 1998, 62948

Professional Engineer, WV, 1998, 013850

Mr. Hynes has more than 26 years of professional experience in environmental/water resources engineering, abandoned mine land reclamation, land restoration, and mining permits. His environmental experience includes many water distribution and wastewater collection related projects including planning, conceptual design, final plans and specifications, and bidding and construction phase services. As a lead engineer and project manager, he has prepared reports, permits, plans and specifications, scopes of work, contract documents, budget estimates, and schedules. He has led pre-bid and pre-construction meetings and participated in numerous public and project related meetings for a wide variety of environmental projects.

***Project Engineer; McDowell County Public Water Supply System (1998); WVDEP; WV.*** *Performed distribution system hydraulic analysis and pipeline design, storage tank sizing, drilling inspection, well pump design, and booster station design, and assisted in preparing plans, specifications, and cost estimates. The project included complete design of a new water treatment plant, two water storage tanks and foundations, and distribution system consisting of 29 miles of pipe to serve over 900 proposed residential users at an estimated cost of $5,300,000.*

***Project Engineer; County Routes Water Line Extensions (1996); WVDEP; WV.*** *Performed distribution system hydraulic analysis and pump station design, renovation of an existing pump station, and preparation of plans, specifications, and cost estimates. The project included installation of over 90,000 feet of PVC and Ductile Iron pipe to serve 170 residential and commercial connections.*

***Project Engineer; Kanes Creek Water Line (1997); WVDEP; WV.*** *Performed water distribution system hydraulic analysis and pipeline design, and pump selection, and prepared plans, specifications, and cost estimates. The project included installation of 6,000 feet of 6-inch PVC pipe, and 2,000 feet of 2-inch PVC pipe to serve 26 residential connections.*

***Project Engineer; Moundsville Water Line (1995); WVDEP; WV.*** *Provided pipeline layout, and prepared plans, specifications, and cost estimates. The project included replacement of 6,000 feet of 10-inch PVC transmission line, and replacement of deteriorated pipelines at several locations within the distribution system.*

**Municipal Engineer; 300,000 Gallon Willowbrook Standpipe and 100,000 Gallon Barclay Hill Standpipe Painting (2004); Industry Borough Municipal Authority; Industry Borough, PA.** Duties included development of plans, bid packages, specifications, and construction management for rehabilitation of paint coatings of two existing welded steel standpipes.

**Project Manager and Lead Investigator; Highland Avenue Wellhead Protection Study (2007); Industry Borough Municipal Authority; Industry Borough.** Prepared a detailed report on the municipal water source wells for the Borough of Industry including groundwater including computer modeling with WhAEM V.3.1.0. to delineate a wellhead protection area, research into potential sources of contamination, and a comprehensive report documenting conditions and contingency plans.

***Project Manager; Route 59 Waterline Extension (1999); Preston County PSD#2; Preston County, WV.*** *Designed and managed the project including preparation of plans and specifications for extension of water distribution lines along Route 59.*

***Project Engineer; Page-Kincaid Water Line (1998); WVDEP; WV.*** *Performed water distribution system hydraulic analysis and pipeline design, storage tank sizing, and drilling inspection, and prepared plans, specifications, and cost estimates. The project included installation of over 73,000 feet of 6-, 4- and 2-inch PVC and Ductile Iron pipe, three water storage tanks, two booster stations, and modifications to an existing booster station to serve 100 new residential connections.*

***Project Engineer; Dogtown Road Water Line (1993); WVDEP; WV.*** *Performed water distribution system hydraulic analysis and pipeline design, storage tank sizing, and drilling inspection, and assisted in preparing plans, specifications, and cost estimates. The project included installation of 25,000 feet of 6-inch PVC, 4,400 feet of 2' PVC, and a 195,000-gallon storage tank to serve 70 new residential connections.*

***Project Engineer; Turkey Run Water Line (1993); WVDEP; WV.*** *Performed water distribution system hydraulic analysis and pipeline design, and assisted in preparing plans, specifications, and cost estimates. The project included installation of 15,300 feet of 8-inch PVC, 4,700 feet of 4-inch PVC, and 6,500 feet of 2-inch PVC pipe to serve 31 new residential connections.*

***Project Engineer; Berwind, Canebrake and Vallscreek Feasibility Study (1995); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities on groundwater within the study area, and evaluated existing water distribution systems. Project included performing field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and providing preliminary construction cost estimates for recommended alternatives.*

**Project Engineer; Cucumber, Newhall, Squire, Johnstown, and Jacob's Fork Feasibility Study (1995); WVDEP; WV.** Performed research of geological data and mining maps, evaluated impacts of past mining activities on groundwater within the study area, and evaluated existing water distribution systems. Project included performing field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and providing preliminary construction cost estimates for recommended alternatives.

***Project Engineer; Kane's Creek Feasibility Study (1994); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities on groundwater within the study area, and evaluated existing water distribution systems. Project included performing field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and providing preliminary construction cost estimates for recommended alternatives.*

***Project Engineer; County Routes Feasibility Study (1992); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities on groundwater within the study area, and evaluated existing water distribution systems. Project included performing field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams,*

*identifying possible solutions to water quality problems, and providing preliminary construction cost estimates for recommended alternatives.*

***Project Engineer; Marion Township Water Line (1990); Marion Township Board of Supervisors; Marion County, WV.*** *Performed design of a new water distribution system, including hydraulic analysis and pipeline design, master meter and pressure reducing pit, and field flow tests, and prepared plans, specifications, and cost estimates. The project included installation of 22,000 feet of 8-inch PVC to serve 50 residential and 2 industrial connections.*

***Project Engineer; National Church Hollow Road Waterline Feasibility Study (1998); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities and AMD on groundwater within the study area, and evaluated existing water distribution systems. Project included field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and preparing a detailed written report including preliminary construction cost estimates for recommended water supply alternatives. The National Church Hollow Road Waterline Extension Feasibility Study was completed for the West Virginia Division of Environmental Protection (WVDEP) and included detailed research of the local hydrology, hydrogeology, geology, and past mining activities, as well as collection and analysis of representative water samples and interviewing residents. Conclusions regarding the impact of that past mining activities have had upon local hydrogeology conditions as well as on water quality and quantity were formulated based upon information collected as part of the investigation. Finally, the report presented recommendations regarding remedial actions including extension of the National Church Hollow Road water distribution system and upgrades to the existing treatment facility.*

***Project Engineer; Miller Mountain Waterline Feasibility Study (2004); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities and AMD on groundwater within the study area, and evaluated existing water distribution systems. Project included field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and preparing a detailed written report including preliminary construction cost estimates for recommended water supply alternatives*

***Project Engineer; Terra Alta Water Supply Feasibility Study (2001); WVDEP; Terra Alta, WV.*** *The Town of Terra Alta Waterline Extension Feasibility Study was completed for the West Virginia Division of Environmental Protection (WVDEP) and included detailed research of the local hydrology, hydrogeology, geology, and past mining activities, as well as collection and analysis of representative water samples and interviewing residents.*

***Project Engineer; County Routes Feasibility Study (1992); WVDEP; WV.*** *Performed research of geological data and mining maps, evaluated impacts of past mining activities on groundwater within the study area, and evaluated existing water distribution systems. Project included performing field research and sampling of surface and groundwater, plotting laboratory test results on Piper Trilinear Diagrams, identifying possible solutions to water quality problems, and providing preliminary construct cost estimates for recommended alternatives.*

**Task Manager/Lead Utility Engineer; Confidential Client, Intermodal Facility (2012); Harrisburg, PA.** Lead utility engineer provided design services for water distribution and wastewater collection facilities including water main extensions for potable domestic water supply and fire protection, a grinder pump and small diameter force main for a proposed maintenance building and wash down pad, and relocation of an existing 6” diameter force main.

**Task Manager/Utility Engineer; Confidential Client, Intermodal Facility (2010); Bellevue, OH.** Provided design services for wastewater collection facilities including three grinder pumps for three

proposed building services and a common force main discharging to an existing manhole. Also provided plans and specifications and prepared and obtained the required Permit to Install (PTI) from the Ohio Environmental Protection Agency.

**Project Engineer; Water System Improvement (2011); Ohioville Borough Municipal Authority; Ohioville Borough, PA.** Duties included design plans and specifications for water system improvements including 4500 LF ductile iron pipe extension, altitude valve and by pass vault, master meter pit, and pressure reducing valve vault.

**Lead Utility Engineer; Confidential Client, Intermodal Facility (2010); Greencastle, PA.** Lead utility engineer provided design services for water distribution and wastewater collection facilities including a master meter pit and separate private water main extensions for potable domestic water supply and fire protection. Also provided plans and specifications for expansion of the waste collection system to provide conveyance of wastewater from the proposed buildings to the existing municipal collection system

**Project Engineer; Afghanistan National Civil Order Police (ANCOP) Projects (2009); USACE, TAC; Winchester, VA.** Responsible for preparation of civil plans and specifications, design calculations, and narratives for the subject facilities. Supervised and prepared the Ready-to-Advertise complete civil designs, specifications, and construction cost estimates for three standard Afghanistan National Civil Order Police (ANCOP) projects. Each design was intended to function as a proto-typical design for use by AED, in Afghanistan, and included well water development and supply, wastewater collection and disposal, stormwater, roadways, site layout, and force protection requirements

**Lead Civil Engineer; Bagram Airfield Site Design (2010); United States Army Corps of Engineers, Middle East District.** Lead civil engineer and task manager for site design services for design of a proposed fire station, fighter hangar, and rigging facility at separate locations on the base. Civil site design included permanent connection to base-wide water and sewer utility systems (under construction at time of design). Contingency systems for water and sewage were also required should the facilities be commissioned prior to completion of the base-wide water and wastewater systems. Temporary systems included PE water storage tanks, skid mounted water pumps, sanitary grinder pumps, and wastewater holding tanks. Permanent systems included water main extensions, water service lines, sanitary force and gravity lines, and bolted steel tanks for fire protection systems.

**Project Engineer; Reach Back Design Assistance (2009); CETAC-EC-TF and EC-TS Afghanistan Engineering District; Winchester, VA.** Responsible for providing design plans and specifications for water and wastewater facilities at Bagram Air Field Base. Water treatment included a membrane nano-filtration system, and wastewater treatment was a modular train of prefabricated package plants. The work was performed in CETAC's Winchester, VA office and included preparation of drawings, specifications, and design analyses for civil, and environmental engineering systems including wastewater treatment and collection system, water treatment and collection system, structures.

**Project Engineer; Operational Readiness Training Complex (2008); USACE New York District; Fort Drum, NY.** Acted as lead design engineer during a field design charrette. Prepared conceptual layouts and designs including water and sewer utility supply and site grading for the ORTC facility. Presented results to the client with an oral presentation at the conclusion of the charrette.

**Project Engineer; Afghanistan National Border Police (BP) Zone Command Projects (2008); USACE TAC; Various Locations in Afghanistan.** Responsible for preparation of civil plans and specifications, design calculations, and narratives for the subject facilities. Prepared the Ready-to-Advertise complete designs, specifications, and construction cost estimates for two standard Afghanistan National Border Police Zone Command (BP Zone) projects. Each design was intended to function as a

proto-typical design for use by AED, in Afghanistan, and included structures/buildings, infrastructure, and force protection requirements.

**Project Engineer; Wetlands Design for Peebles Site 7 (2008); Confidential Client; Peebles, OH.** Responsible for design, preparation of construction plans and specifications for the proposed wetland and associated surface drainage structures. The detailed design included wetland layout planting and inlet/outlet structures including design of a pipeline for conveyance of water from an existing septic system based on required capacity and ODNR permit requirements.

**Municipal Engineer; Engle Road Water Main Relocation (2008); Industry Borough Municipal Authority; Industry Borough, PA.** Duties included design drawings and specifications and construction sequencing for abandonment and replacement of existing cast iron waterline with new ductile iron pipe due to PennDOT Roadway realignments. The project involved temporary measures to maintain water supply during installation and testing, also preparation of estimates and PennDOT forms for partial reimbursement of relocation expenses.

**Engineering Representative; Retainer and Engineering Services; PA; 1994 – 2012.** Pennsylvania. Engineering representative to the Industry Borough Municipal Authority (1994-2012). Provided engineering representation and services as needed to address permitting and operational issues associated with the authority's water distribution and sanitary collection systems.

**Senior Engineer; Bear Creek Chemical Sites - Potable Water System Feasibility Report (2006); PADEP; Butler County, PA.** The project required the preparation of a feasibility report to review potential sources of drinking water to supply water users of the project area within the Bear Creek watershed. The study included review of water resources, estimates of water consumption, conceptual designs and cost estimates of viable alternative sources of water supply, and recommendation of a preferred source of supply.

**Project Engineer; Schiller Street Water Line, Storm Sewer, and Repaving (1989); Borough of Baden; Baden, PA.** Performed design and construction inspection of proposed pipelines and pavement, and prepared plans, specifications, and cost estimates. The project included installation of 2,000 feet of 6-inch Ductile Iron pipe to serve 15 residential connections, 1,500 feet of CMP and inlets, and 5,000 SY of asphalt pavement.

**Project Engineer; Railroad Street Water Line (1989); Midland Municipal Authority; Midland, PA.** Performed design for replacement of deteriorated water lines, including plans and specifications preparation, construction management, and inspection. The project included installation of 8,000 feet of 8-inch Ductile Iron pipe to maintain service to 30 residential, one industrial, and five commercial connections.

**Project Engineer; Beaver Falls Infiltration and Inflow Study (1989); Beaver Falls Municipal Authority; PA.** Performed field and office data collection, including flow measurements and facilities inspection, in order to identify sources of infiltration and inflow for the existing sanitary collection system and provide a report, including recommended system assessment and abatement measures.

**Project Engineer; Poland Township Water Line Study (1988); Ohio Water Service Company.** Performed distribution system layout and water tank siting, hydraulic pipeline design, and construction cost estimate for the proposed project which included high service pumps, a one-million gallon storage tank, and seven miles of 8-inch-, 12-inch-, and 16-inch-diameter Ductile Iron pipe and related fittings.

**Project Engineer; North Side Fire Flow Study (1988); Ohio Water Service Company.** Performed field and flow testing and hydraulic modeling of the distribution system in the project area. Prepared a report

and recommended system improvements for increasing fire flow capabilities within the system, including computer simulation of anticipated results due to recommended improvements.

**Project Engineer; Evans Lake Raw Water Line Cleaning (1988); Ohio Water Service Company.** Assisted in the design of launch and retrieval sites for a "poly-pig" line cleaning device to be inserted into the 16-inch raw water line. Performed field flow testing and hydraulic analysis in order to document the improvements in pipeline hydraulics realized after completion of the project.

**District Engineer; Ohio Water Distribution System Extensions (1987-89); Ohio Water Service Company.** Acted as developer liaison and provided construction management, cost estimates, pipeline sizing, and layout of numerous developments requiring new service lines/ and Ductile Iron water line extensions to provide water service. This work included multiple projects requiring Ductile Iron mainline extensions totaling over 60,000 linear feet. Individual developments/water line projects included: Sturbridge Place, The Vineyards of Poland, Candywoods, Fonderlac Country Club, California Avenue, Timberbrooke Development, Boardman Park, Pharmore Plaza, Sami-Quick Stop Plaza, The Wholesale Club, Brookstone Place, Raintree Run, Dobbins, South Avenue Warehouses, McClurg Road Industrial Park, Eisenhower Drive, Quail Hollow, and others

**Project Engineer; Hopewell Business and Industrial Park Phase II (2003); Beaver County Corporation for Economic Development; Beaver County, PA.** Duties included evaluation of an existing force main and lift station and subsequent design of a sanitary collection system, pump station, and force main, including plans and specifications. Also estimated sanitary requirements and prepared sanitary planning modules and part II lift station permit documents as required by the Pennsylvania Department of Environmental Protection. Assisted in preparation of the project plans and prepared specifications.

**Project Engineer; Woodlawn Road Sanitary System (2002); Beaver County Corporation for Economic Development; Aliquippa, PA.** Duties included design and layout of the sanitary collection system, pump station, and force main, including plans and specifications. Also estimated sanitary requirements and prepared sanitary planning modules and part II lift station permit documents as required by the Pennsylvania Department of Environmental Protection. Assisted in preparation of the project plans and prepared specifications.

**Project Engineer; Beaver Falls Sanitary Trunk Line Replacement (1989); Beaver Falls Municipal Authority; Beaver Falls, PA.** Provided preliminary design for the replacement of several miles of deteriorated sanitary sewer lines, including performing route location/relocation and preparing plans and cost estimates.

**Project Engineer; Aliquippa Infiltration and Inflow Study (1987); Aliquippa Municipal Authority; PA.** Performed field and office data collection, including flow measurements and facilities inspection, in order to identify sources of infiltration and inflow for the existing sanitary collection system and provide a report, including recommended abatement measures.

**Project Engineer; Morgan/Lewis/Bockius – Ocean Landings (2000); Morgan, Lewis & Bockius; PA.** Responsibilities included background investigation and report for locations and elevation of submerged cable landing sites on Long Island, New York.

**Project Engineer; Harvey Run Road Sanitary Sewerage System Expansion, Harvey Run Road / 9th Street Service Areas (1996); New Sewickley Township Municipal Authority; New Sewickley Township, PA.** Responsible for providing engineering design and completing Penn Vest Application for the sanitary system. The Harvey Run Road Area Sewer Project provided for the collection, conveyance and pumping of sanitary sewage from approximately 150 previously unsewered residences in New

Sewickley Township. This project eliminated the occurrence of malfunctioning on-lot septic disposal systems.

**Project Engineer; Moon High School and Middle School Campus (2009); Eckles Architecture; Moon Township, PA.** Performed field flow testing of fire hydrants. Baker was retained by Eckles Architecture and Engineering, in conjunction with the Moon Township School District, to prepare the design drawings for a renovated High School and Middle School combined campus. The site is located between University Boulevard and Beaver Grade Road in Moon Township, Allegheny County, Pennsylvania.

**Project Engineer; Iraq Relief and Reconstruction Program Construction Management Services (2009); USACE, TAC; Baghdad, Iraq.** Provided review of submittals for civil infrastructure on an as-needed basis. Baker, as part of the Stanley-Baker-Hill, LLC joint venture, provided diverse program and construction management services to the USCOE under a $20 billion contract to develop and implement a construction management program for the rebuilding of Iraq.

**Project Engineer; Fort Bliss Training Area Infrastructure Gap Analysis (2006); USACE Fort Worth District; Fort Bliss, TX.** Evaluated needs and adequacy of existing water infrastructure. Baker prepared a Training Area Infrastructure Gap Analysis in support of Army stationing initiatives and associated planned Military Construction at Fort Bliss, Texas.

**Project Engineer; Franklin County Regional Intermodal Facility (2010); Confidential Client; Greencastle, PA.** Responsible for design and permitting of water and sanitary sewer connections required for the proposed intermodal facility. Baker is providing engineering and design services, permitting, and coordinating with another environmental consultant who is preparing the environmental clearance document for a new intermodal freight facility to serve the mid-Atlantic region, as part of an initiative to establish a high-speed intermodal freight rail route between the Gulf of Mexico and the Northeast. Baker's responsibilities include site investigation, geotechnical and civil engineering, design of five facilities and an overpass, drainage design, erosion and sediment control, and utility coordination.

# PRABHA S. (PETE) VERMA, P.E.
## DIRECTOR – GEOTECHNICAL STRUCTURES AND ENGINEERING
## PITTSBURGH, PENNSYLVANIA

**EDUCATION:**
M.S., Civil Engineering, University of Pittsburgh, 1994
M.S., Mining Engineering, Pennsylvania State University, 1980
B.S. Honors, Integrated Engineering and Mining Engineering, Indian Institute of Technology (IIT-BHU), 1976

**CERTIFICATIONS/ REGISTRATIONS:**
Professional Engineer, Pennsylvania, PE038712E, 1989
Professional Engineer, Maryland, 0402039260, 2003
Professional Engineer, Virginia, 28735, 2003

Mr. Verma has over 30 years of diversified experience in geotechnical and civil design for infrastructure, environmental and power plant projects. He has extensive experience in the areas of geotechnical engineering, municipal, hazardous and residual waste landfill designs, materials handling, surface water hydrology, hydrogeological analysis, general civil and concrete design, subsurface investigation, foundations design, retaining walls, sheet pile design, cellular structures and cofferdam design, slurry walls, MSE walls, groundwater analysis and dewatering, materials processing, site work, pipeline/gas industry related grading plans and E&S plans, and construction support.

Mr. Verma is uniquely qualified with a blend of experience in design, construction as well as research projects. He developed a process for extracting magnetite from fly ash which became the basis of the first magnetite extraction plant by TVA. He also developed a technical procedure to analyze multiple pumps feeding into a common force main. Mr. Verma has worked on engineering designs and supported construction for diversified array of projects, ranging from commercial projects as small as $4,000 to large projects up to $26 million dollars in value. His commercial clients include Exxon-Mobil Corporation, International Paper Corporation, Ashland Oil Corporation, Arco Chemicals, and International Fuel Harvester, while the government clients include the Department of Energy, Department of the Navy, U. S. Army Corps of Engineers, and Department of the Interior.

He has prepared design packages for general civil (hydrology, grading plans, site work, pumps/piping and others) and geotechnical structures projects, permit application, erosion and sediment control plans, storm water management plans, specifications, bid packages and proposals.

He has offered short courses on the Design of Levees, and on Pennsylvania Erosion & Sediment Control manual, 2012. He was an adjunct professor at the University of Pittsburgh for one year teaching a graduate level course.

**Certifying/Lead Design Engineer; 2011-2014.** Various projects that included gas drilling pad design, gas pipeline alignment, road/rail road crossings, E&S plans and permits, centralized impoundment dam design in Pennsylvania and Ohio. This included embankment design, grading plans and development of constructions standards. Provided critical evaluation (confidential) to PADEP's design criteria in regard to exposed liners in ponds.

Subsurface investigations and slope stability analysis for a 50-ft high slope that was designed for constructing a gas drilling pad in Ohio.

Performed concrete pavement design for a loading facility at a packaging plant in Pittsburgh which included concrete layout details for pavement and associated concrete retaining structure.

Performed evaluation and load rating certification for six overhead cranes supported on steel structures in a molybdenum plant in Pennsylvania.

Designed concrete foundations for buildings, high capacity tanks, slug catchers, and silo redesign project (at a glass and materials plant in Pennsylvania.)

Designed Reinforced Soil Slopes (RSS), and Mechanically Stabilized Earth (MSE) walls for drilling pad and pump stations. .

Developed design standards and design drawings for a remediation project at Portsmouth Naval Shipyard in Maine. This included excavation of soils and removal of shoreline revetments, backfilling and site restoration, and pavement design. The challenges included the large amount of active utilities that existed in the project area, and potential excavation next to the building.

**Lead Design Engineer, Confidential Client, Wellsville, OH, Project Design Cost: $ 250,000, 2012.** Developed multiple foundation concepts and related costs, and designed foundation for the gas drilling fluids manufacturing facility consisting of 22, 35-ft high tanks in 85 ft x 110 ft. area. The design challenge at the site included the presence of 15 ft. of fill over very soft clay (W.O.H. consistency) which was overlying the bedrock at 28 ft. depth. Provided innovative and very uncommon foundation design to a *surprised* client that saved $3 million in construction and delay costs.

**Technical Lead; Vogtle Nuclear Power Plant - The Southern Company; River Water Intake Structure, Nuclear Island Excavation design; Project subtask Value: $26 million; Burke County, Georgia; 2007-2010.** As a part of the nuclear power plant design and construction, designed a cellular cofferdam structure supporting 35 feet of hydraulic head in order to facilitate the construction of River Water Intake Structure. This included subsurface investigations, geotechnical and structural designs, and seepage analysis to fully assure the cofferdam performance. Designed foundations for the building housing three 72-inch piping/pump systems, and developed grading plans. The challenges included poor soil conditions, excavating 10 feet below the bottom of the Savannah River protected by the cofferdam, uplift pressures during construction and preserving the navigation channel. Designed ground improvement measures to address liquefaction. Developed design criteria for pipe crossings under heavy design loads. Developed construction drawings, specifications and bid package.

Analyzed and designed a 90 feet deep sloped excavation involving 0.7 million cubic yard of soil removal, and associated drainage/dewatering system in order to stabilize slopes in the nuclear island area. Designed a 40 feet high mechanically stabilized earth (MSE) wall using metallic strips in order to support heavy equipment and expedite construction schedule. The challenges included minimal or no deflection of the wall and the installation of impermeable liner at the wall face.

**Technical Lead; Vogtle Nuclear Power Plant - The Southern Company; Barge Slip Structure Design; Project Subtask Value: $8 million; Burke County, Georgia; 2008-2010.** Led a team of civil, structural and geotechnical designers for developing design concepts, calculations, drawings and specifications for Barge Slip structure to handle unloading of the heavy nuclear equipment from Savannah River. Design features included 30,000 sq. ft. of sheet piles and King piles, 40 deadman anchorages, 180 ft. long concrete retaining structure, crane pad structure including foundation piles, fender and mooring dolphins, and scour/erosion protection. The challenges to design included high water table, close vicinity to existing structures, poor soil conditions and heavy loadings due to equipment as heavy as 2000 kips.

**Senior Consultant; U. S. Army Corps of Engineers, Kansas City District; Formerly Utilized Sites Remedial Action Program; Project Value: $600 million; St. Louis, Missouri; 1999-2011.** The project, located within the still active Mallinckrodt Chemical Company facility and also near the airport, included the engineering and construction necessary for the remediation of more than 500,000 cubic yards of low-level radioactive soil at fourteen different site locations. The project highlights included:

As a design consultant to the project, Mr. Verma performed several design analyses for excavations, retaining walls, sheet pile walls, foundations, soil nails, grouted soil anchors, helical soil anchors and MSE walls. More than 200,000 sq. ft. of sheet piles and more than 165 helical anchors were designed and installed including those for supporting a 28 feet tall 300 ft x 300 ft building while excavating next to it. He also closely coordinated construction to make necessary changes during the course of the project. Each remedial action site presented an engineering challenge due to the proximity of building foundations,

utilities, active paved roadways, rolling soils and live rail traffic. Utilities were a special concern in this more than 100-year-old facility because many as-builts were not available, and required the design team to consider a wide variety of contingencies to handle unexpected site conditions during construction.

Developed a mathematical model and a corresponding computer program was written for the design of MSE walls. The program was used for the design of MSE walls including a 12-foot high MSE wall supporting an active railroad spur.

**Senior Project Engineer/Consultant; U. S. Department of the Navy, NAVFAC Washington; LANTDIV REC – Several P rojects; P roject V alue: >$1000 m illion; S everal Sites in Maryland, V irginia, New England States, N. Carolina and Canada; 1994-2011.** Reviewed and **c**oordinated design for construction of more than 80 environmental projects that included landfill caps, grading plans, drainage and hydrological designs, geotechnical designs, erosion control structures, and permitting over a period of 15 years. Provided alternate designs to improve technical effectiveness, constructability and costs. Conducted forensic analysis of seven failed landfills and dams, and proposed unique and workable remedial solutions. The some of the scope of work is highlighted in the following. Lead engineer for more than 12 design-build contracts that included landfills, deep excavations and redesigned repairs.

Lead engineer (1994-95) for the preparation of erosion and sediment control plan to secure MDE permit for a landfill at Naval Training Center, Bainbridge, Maryland. The scope included seven sediment basins and traps, several channel designs, and diversions. The cap that was designed by others in 1995 which failed in 1998 in despite of 5H:1V slopes and apparently credible cap design. Mr. Verma performed forensic analysis (with a well known national expert and USACE-Omaha) and developed design criteria for new construction (Redesign and reconstruction cost: $9 million).

Resident Technical Consultant (1998) for the construction of ocean-front McAllister Landfill, Rhode Island. The project involved cap construction, armor wall construction, and portable dam in order to provide a clean dry work area against the tidal height of up to 10 feet. Mr Verma worked directly with the Navy in order to work out design simplifications and task eliminations to expedite the project. Designed and supervised the construction of a 600-foot long gabion wall retaining structure that supported a slope and adjacent roadway above.

Senior engineer (1997) for geotechnical investigations and testing for deep and shallow foundation designs for the treatment facility and other structures at Camp Allan, Virginia. The deep foundation included the design of 96 tapered driven piles and associated pile cap with a tolerable settlement potential to support the loadings inside the building under conditions of high water table and poor soil conditions. The shallow foundations in the post design phase during construction encountered difficulties in compaction due to rolling soils. Developed protocol for handling construction on rolling soils.

Designed a 1800-foot long sheet pile wall, breakwater structure, and a leachate collection system for the remediation of an ocean-front landfill at Argentia Naval Base, Newfoundland, Canada (1996). Developed grading plans and cap design for the 12-acre landfill. Monitored construction at site during critical phases. The challenges included up to 15 ft high waves and high winds. Prepared construction drawings, specification, work plans and developed quantity estimates.

Senior engineer (1998) for the complete redesign of a cap system, grading plans, surface and infiltration water system design, deep leachate collection trenches, and gas collection and flare system. The cap redesign was to accommodate the availability of the materials locally and also limited available work space. The redesign effort and subsequent construction saved the client $1.5 million. The landfill slopes, cap and water handling systems performed impeccably during a 500-year storm event two years after the construction.

Senior consultant (2003) for the redesign of a cap that was built in 2001 and had failed in one portion of the 10-acre MCB-2 landfill at Marine Corps Base, Quantico, Virginia. The portions of the landfill (designed and built by others) failed at three other locations in years 2004 through 2010, which were rebuilt using the initial

(2001) design concepts and procedures. The challenges included 2.6H:1V slopes and limited availability of the suitable construction materials.

**Geotechnical Lead; Pennsylvania Power and Light Corp.; Brunner Island Power Plant Rail Yard Renovations; Project Value: $16 Million; Central Pennsylvania; 2006 to 2007.** As a part of a $300 million flue gas desulfurization project, performed design of retaining structures and foundations to support construction 35 to 40 feet below ground surface in an ash basin. The project included the design of 15-acre geosynthetics cap removal and reconstruction, conveyor tunnels, 5-acre new landfill cap, excavation dewatering and underground infiltration system design, E&SC, and site support facilities for limestone rail car unloading, limestone and gypsum stockpiles, and gypsum truck & rail loadout. The design challenges included poor soil conditions, high water table, boiling potential at the bottom of excavation in fly ash environment and relatively deep location of bedrock.

**Senior Consultant; US Army Corps of Engineers, Baltimore District, FUSRAP Program; Linde Remedial Site; Total Project Value: $200 million; Buffalo, New York; 2001 to 2010.** As a part of the long term USACE project for the excavation of low level radioactive waste, served as a senior consultant for various design and construction tasks such as relocation of utilities, excavations up to 15 feet deep next to tall buildings, excavations underneath and next to tunnels, excavations under the existing footings, sheet piles retaining structures and piping systems. Designed the excavation inside a warehouse and underneath the footings. Provided technical support for the design and installation of 400 feet long modular concrete tunnel which also involved the development of specifications for flowable fill for the project.

**Design Manager; Bechtel Jacobs LLC – US Department of Energy; Gaseous Diffusion Plant Remediation Design; Project Value: $3.2 million; Portsmouth, Ohio; Jan 2002 to Dec 2002.** Managed the design and coordinated construction for two hazardous waste landfill closures, groundwater extraction and conveyance system, and a 1250 feet long and 40 feet deep slurry wall. The design effort included subsurface investigation and sampling, laboratory testing, and determination of final design parameters to achieve desired project objectives for the slurry wall. Developed slurry wall performance criteria and monitoring plan.

**Senior Consultant; Confidential Client, Mine Reclamation; Project Value: $ 24 million; Southern Illinois; Sept 2003 to Dec 2004.** Performed design analysis for the installation of 2 ft soil cover over an area of 80 acres of fine coal refuse. The fine coal refuse had very low undrained shear strength of 100 psf (or less) and was not able to sustain the equipment loading designated for the construction. The water table was high and within a few feet of the existing ground surface. Performed design for the reinforcing material, and performed equipment selection such that they can operate on the low strength soil to install the cap. Established procedures for the reinforcing material installation and soil cover. Developed design criteria and specifications for the high strength reinforcing element and quality control documents.

**Forensic Consultant; Client – Confidential; Dam Construction Review and Failure Analysis; Abilene, Texas; Estimated Total Project Value: $50+ million; 2004.** A 60-foot high and 0.6 miles long earth dam was constructed to store the dredged material transported via a 72-inch pipe line from the river a few miles away. The dam was constructed with clay “CL” soil. About two years after construction, several inches wide and several feet deep desiccation cracks developed prominently in the embankment and there was severe erosion on the upstream side resulting in up to 6 feet high cuts. These two observations jeopardized the integrity of dam and threatened the multi-million dollar housing plan downstream. Analyzed construction data, reviewed construction methods, and analyzed soil for useful parameters. The issues identified with the problems were low shrinkage limits and highly dispersive clay. These issues were not addressed in the design documents and applied during construction. Recommended remedial measures to overcome serious design issues to abate the problems.

**Senior Consultant; Client: Confidential; Harbor-at-Hastings Remediation Design & Analysis; Project Value: Confidential; New York; 01/2003 to 12/2003.** For a large chemical/oil company, as part of a billion dollar law suit, performed a design review and critique of a design provided by a large consulting firm, developed alternate designs with cellular cofferdam structure and sheet pile walls for two locations on the

project. Analyzed various scenarios for uplift and piping in order to determine the stability of structures. The design involved sheet pile penetration through loose sand and silt in order to support up to 25 feet of soil behind sheeting. The use of sheeting/structures with large section modulus was contemplated to materialize the design. The design challenges included very high water table, poor soil conditions and proximity to the river. Assisted lawyers with the development of technical argument.

**Senior Consultant; US Army Corps of Engineers; Pine Bluff Arsenal, Project Value: $1.5 million; Pine Bluff, Arkansas; 01/2002 to 6/2003.** Designed a multilayer capping system for the hazardous waste facility that was existing under roof (canopy) and a part of it was under fire. Developed design drawings and specifications, prepared bid packages for subcontract work and coordinated construction.

**Senior Consultant; US Army Corps of Engineers; Landfill Nos. 1 and 6; Project Value: $6.5 million; Fort Chaffee, Arkansas; 06/2000 to 12/2002.** Lead designer for two projects at an old U.S. Army base facility. The project included the closure of a 6-acre landfill with multilayer cap and the closure of a 36-acre landfill with clay cap. An extensive borrow area investigation and characterization was necessary prior to the construction. Operational performance parameters were established for the clay cap installation using Daniel's window and test pad construction, so that the desired permeability criteria of the clay cap construction could be assured with a minimum field testing during the actual clay cap installation. Designed drainage system, and infiltration gallery for the disposal of on-site contaminated water.

**Senior Consultant; Pennsylvania Department of Environmental Protection; Landfill Slope Repair & Landfill Cap Design and Construction – American Fuel Harvester; Project Value: $0.75 million; East Bangor, Pennsylvania; 05/2002 to 10/2003.** Signs of cracking in the utility road threatened the stability of the road and the landfill located above. Analyzed the stability of 80-foot high slope that supported the utility road. Provided design recommendations and specifications. Coordinated with construction to successfully achieve project objectives and site stability.

Developed grading plans, drainage plans including channels, diversions and sediment traps, and HDPE cap configuration for the containment of the 7-acre landfill that had a significant amount of woody material buried in it and was undergoing spontaneous combustion. The other concern in addition to spontaneous combustion included long term settlements. The remedy involving excavation, quenching and replacement was prohibitively expensive. A unique simple solution was implemented so that the air supply to the spontaneous combustion would be cut off, and at the same time would not allow gas pressure to build up. The system appeared to have worked successfully and the spontaneous combustion issue was controlled.

**Senior Consultant; Confidential Client; Masonite Wood Fiber Facility Capping; Project Value: $0.40 million; Central Pennsylvania; 2/1998 to 8/1998.** The project involved capping a 13-acre above ground wood fiber pile with an exposed geosynthetics liner. The design incorporated many innovative aspects, including features against uplift due to high winds, surface water management and underground disposal, and liner selection to withstand weather extremes and environmental stress. The surface water runoff handling faced the situation of low time of concentration and resulting high peak runoffs, topography surrounded by high hills, high groundwater and the requirement of no visible features on the ground for surface water storage. The completed project design was awarded a top performance rating by the client that led to subsequent project construction award to the design company.

**Senior Consultant; Special Request by the Office of the Governor of Virgin Islands; St. Thomas Hospital Incinerator; Project Value: Unknown; St. Thomas, Virgin Islands; 1996.** Performed analysis, provided construction recommendations, and field directed the construction of an extension of the 60-foot incinerator stack in the U.S. Virgin Islands. The complications included design for 200 mph wind loadings, 15,000 pounds of additional weight of the extension stack, and the existing condition where the entire stack was seated on a cylinder chamber. This quick response and high risk project (which the original designer and contractor refused to work on) successfully withstood the wind loadings in the subsequent hurricane seasons.

**Consultant; Confidential - Nuclear Research Facility; Project Value: Confidential; Pennsylvania; 2000.** As a part of the internal audit, collected data, reviewed and analyzed hydraulic flow computations methodology for the tank and siphon system at the facility. It was determined that the affluent has been grossly underreported over the past 30 years since the flow measurement system was built.

**Technical Manager; Confidential Client; Martha landfill; Project Value: $ 0.6 million; Ashland, Kentucky; 2/2002 – 11/2002.** Managed the design and construction for the remediation of a failing slope located immediately below the low level radioactive waste landfill cell. The scope included site investigation, design, and preparation of construction documents for the remediation measures in order to prevent the progress of the slope failure. Supervised quality control and provided technical support during construction on this design-build project. Installed inclinometers and monitored the movement over a period of 6 months.

**Lead Engineer/Project Manager; Waste Management of Ohio, Inc.; Countywide Landfill; Project Value (design only): $1.5 million; East Sparta, Stark County, Ohio; 1991-1992.** Project manager and lead design engineer for the design of a 90-acre municipal waste landfill in Ohio. The project involved geotechnical and hydrogeological testing and analysis, development of grading plans, leachate management systems design, phase development plans, liner system design, surface water management design, and gas extraction systems design. Led a team of nine professionals to prepare construction level permit drawings and systems design for this 15-million cubic yard landfill. Developed plans, specifications and bid documents for the first 12-acre cell construction of the landfill, and coordinated construction.

As a part of the leachate management systems design for the above project, Mr. Verma developed a pump network analysis system to analyze the performance of pumps where two or more pumps feed into a common force main.

**Design Manager; Mostoller Landfill; Project Value (design only): $0.4 million; Somerset County, Pennsylvania; 1993-94.** Managed major modifications in the design of a 100-acre landfill in western Pennsylvania to accept both residual and municipal wastes. The design modifications pertained to regulatory compliance of both residual and municipal landfill regulations, constructability issues and increasing the capacity of the landfill.

**Principal Engineer; Waste Management of Ohio, Inc.; Landfill Siting and Borrow Source Characterization, and Gas Extraction Systems Design; Project Value (design only): $1.8 million; Southeastern Ohio; 1992-1994.** A 250-acre landfill was proposed at a location that had been mined. Landfill siting included an extensive and sophisticated array of geotechnical instrumentation, methods and analysis, including settlement pad/tubes, in-situ shear testing and in-situ unit weight. The borrow source evaluation included soil borings, test pits and vertical/horizontal delineation of the clay source that was very tightly specified in the State regulations. During design phase, designed an active gas management system which included 140 extraction wells, 18 horizontal wells and 9 header loops.

**Engineering Consultant; Client: Confidential; Dam Failure Analysis; Project Value: Confidential; West Virginia; 1994.** Provided consulting design services for a 23-ft. high dam in West Virginia that had failed three times immediately after construction (while the reservoir was being filled in), under previous Engineer's supervision. The previous failures' observations included about 12-inch wide and several feet deep cracks in the embankments leading to failure and blocking a creek downstream and flooding the area and the farmland. The issue identified with failure was the use of expansive clay in embankment that was swelling when exposed to moisture/water.

**Senior Engineer/Project Manager; Municipal Authority of Westmoreland County; Westmoreland County, Pennsylvania; 3/1991 – 9/1991.** Designed a 30-cfs active gas management system as a part of the 12-acre cell closure. Developed bid documents and administered the bid process. Monitored construction of the gas collection system. Managed the preparation of a liner system design and QA/QC documents for this landfill in Pennsylvania.

**Senior E ngineer/Project Manager; L andfill Design; P uerto R ico; 3/ 1991 - 9/1991.** Coordinated geotechnical testing program, performed liner design calculations, settlement analysis and developed grading plans for the landfill.

**Section Manager; Federal Emergency Management Agency (FEMA)**; **Total Project Value – $10 million/year; 1 986 - 1991;** Section Manager in charge of geotechnical evaluations of design calculations, construction plans and specifications of all flood control projects including dams, levees, flood/retaining walls etc in the Western USA for a period of five years.

**Asst. Engineer to Project E ngineer; Average D esign R evenue - $0.15 m illion / year; 1 979 - 1991;** Design Engineer for geotechnical designs and analyses including subsurface investigations, deep and shallow foundation design, stability analysis, and settlement analysis for various structures including buildings, impoundments, roadways, bridge abutments, retaining structures, tunnels, river cells, and earth dams. This included the design of a river front unloading facility involving grading plans, sheet piling, and stabilization of slopes for APS-Mitchell Power Station in Pennsylvania.

Design engineer for the pavement design of Rte 60 bypass (now I-376) leading to new Pittsburgh International airport terminal. This included subsurface investigations, soil testing, traffic projection analysis, alternate pavement designs, report preparation and presentations to Pennsylvania DOT. Developed a process for the resource recovery of magnetite from fly ash as a part of an Electric Power Research Institute (EPRI) project. Mr. Verma was informed that the publication of this process became the basis for the first magnetite recovery plant of TVA.

Performed coal reserve analysis, developed pit dimensioning computer program to facilitate mine planning and equipment selection, and developed critical path method schedules for open pit mining operation optimization at Hobet Mine of Ashland Coal Company, Kentucky. Developed computer software based on National Coal Board's model for the prediction of subsidence as a part of several mine permitting projects. Designed plant modifications to add fine coal processing circuits in an existing coal preparation plant for Westmoreland Coal. Performed feasibility study and preliminary operations design for a surface coal mining project in Indiana for the purpose of securing financing.

Field/design engineer for several subsidence remediation, coal refuse and spoil pile remediation, bridge abutments, and up to 180 ft. high dam design projects in Ohio and West Virginia. These projects involved subsurface investigations, field testing, grading plans, hydrogeological analysis, construction drawings and specifications.

Design engineer for the feasibility study of transportation alternatives of construction-demolition waste for Waste Management of Ohio. The alternates that were considered were rail, several truck routes and aerial. The railroad was designed with a maximum of 3 percent slope and still had a reasonable breaking distance. All truck routes were designed for the anticipated truck load. The conclusion included different options for different levels of waste handling.

# WILLIAM C. SMITH, P.E.
## SENIOR PROJECT MANAGER
## PITTSBURGH, PENNSYLVANIA

**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, Pennsylvanial, 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.

***Civil Engineer/Project Manager; Freshwater and Flowback Water Pipeline Design and Construction Management; Confidential Client; West Virginia.*** *Managing the design and construction management of water transfer piping system. System design includes two pump stations, piping and associated equipment between pump stations, impoundments/storage tanks, and well pads. Prepared permits and design for surface water intake structure. Other key aspects of the project include:*

- *Developed as-built documents for legacy pump stations.*
- *Evaluated two existing pump stations and designed equipment and controls system upgrades.*
- *Evaluated the existing water distribution system and identified weak points in the system that would be exceeding their maximum allowable working pressure as the system was expanded.*
- *Performed an analysis of future water demands versus their available water supplies and storage capability, identifying a need to secure additional sources of water.*
- *Performed hydraulic analysis of 40 miles of water supply piping.*
- *Detailed design of water supply piping, including stream and road crossings.*
- *Construction of temporary water line to tank farm.*
- *Completed freshwater mussel relocation in advance of surface water intake construction.*
- *Provided supplemental staff to Noble to develop Water Management Plans for well pads in West Virginia.*

- *Provided on-site construction supervision during construction of four pipelines.*
- *Hydraulic modeling for the entire future water distribution system in the northern West Virginia lease area.*

**Project Manager; Freshwater and Flowback Water Pipeline Design; Confidential Client; Pennsylvania.** Managing the modeling and evaluation of an existing water transfer piping network and desing of upgraded pipelines. Project included modeling 260 miles of exisiting and interconnected pipeline, recommendations for upgrades and new pipeline, pump station recommendations, and design of new pipelines.

**Project Manager; Permitting Nine Pump Stations; Confidential Client; Western and Central Pennsylvania**. Managed the township land development and subdivision permitting for nine NGL pump stations across Pennsylvania.

# JOHN D.CASEY, P.E., PMP
## SENIOR ENGINEER/PROJECT MANAGER

### EXPERIENCE SUMMARY

Mr. Casey has over 35 years of professional experience in technical and project management, primarily in the area of industrial water/wastewater treatment and recycle systems. Primary industries include metals and acid mine drainage Specifically, Mr. Casey has been involved in the design, procurement, installation, operation and maintenance, and project management of a wide variety of treatment systems that have included, chemical addition, clarification, filtration, cooling, solids dewatering, and softening among other processes.

Mr. Casey has managed projects have included feasibility studies, design, design and equipment procurement, design-build and design-build-own-operate utilizing multi-discipline teams.

### RELEVANT EXPERIENCE

**Process Engineer, Confidential Client, Acid Mine Treatment Design, Tire Hill, Pennsylvania (2014)** Development of an active AMD treatment process design including installation cost estimate.

**Process Engineer, Confidential Client, TPCO Pipe Mill Water System, Gregory, Texas (2014 - 2015).** Analysis of noncontact cooling, contact cooling, and make-up water systems as part of a value engineering project.

**Project Manager; Acid Mine Drainage Treatment Plant Lancashire Mine; Cambria County. (2007)** PA DEP via Michael Baker Project Manager Responsibilities included the coordination of the water treatment engineering and specification. Project involved the treatment of acid mine drainage from the Lancashire Coal Mine. (2006 to 2007)

***Process Engineer; Confidential Client, Northern WV; AMD Treatment Facility**, (2006-2007) Responsible for the development of the acid mine drainage treat process to accommodate both conventional and high density sludge processes. Developed the P&I drawings, process equipment specifications, and mass balances.*

***Engineer; Confidential Client, Northern WV. (2013-2014) Responsible for developing and modifying hydraulic models for cross country pipelines for AMD treatment plant influent and effluent.***

**Project Manager; Confidential Client. Greene County, PA, Acid Mine Drainage Treatment Plant,(2013 – 2014)** Managed a multi-discipline engineering team to develop the treatment process, construction design, specify and procure process equipment as well as the multi-mile discharge pipeline.

### EDUCATION

BS; Civil Engineering; 1974; University of Pittsburgh

MS; Civil Engineering; 1977; University of Pittsburgh

### AREA OF EXPERTISE

Water/waste water treatment

### REGISTRATIONS/ AFFILIATIONS

Professional Engineer – Pennsylvania ( ; Ohio ( ); Illinois ); Maryland

Project Management Professional

### TRAINING/CERTIFICATIONS

10 hr OSHA Training Course for Construction Projects

### OFFICE

Pittsburgh, PA

### YEARS OF EXPERIENCE

35

### YEARS WITH TETRA TECH

1

**Project Manager/Technical Lead; Mini-Mill Cooling Water Recycle System, Axis, Alabama. Confidential Client (Alabama) Inc. (2000 – 2002)** Responsibilities included collaboration on the proposal, execution of the design engineering, equipment procurement, construction procurement, construction and startup. Project included the design, furnishing and installation of a complete cooling water system of a mini-mill (contact and noncontact cooling water, mold and laminar cooling as well as blowdown treatment, sludge dewatering).

**Project Manager; Humphrey's Creek Wastewater Treatment Plant Upgrade, Sparrows Point, Maryland. Confidential Client**. (2002 – 2005) Responsibilities included development of the proposal, execution of the design engineering, equipment procurement, construction procurement and civil and mechanical. Project included the upgrade of an integrated steel mill terminal treatment plant to reduce suspended solids, oil & grease and heavy metals discharging into the Chesapeake Bay with a flow rate varying between 17,000 to 150,000 gpm.

**Project Manager/Technical Lead; Mini-mill Cooling Water Recycle System - Engineering, Cofield, North Carolina, Confidential Client - Hertford County**.(1998) Responsibilities included the process design and specification, construction engineering, equipment evaluation and recommendations. Project included all water recycle treatment systems for mini-mill including mold cooling, contact cooling and noncontact cooling, blowdown treatment including sludge dewatering.

**Project Manager; Coal Yard Runoff Treatment Plant, Clairton, Pennsylvania. Confidential Client**.(2005-2007) Responsible for design and installation of pilot/temporary treatment plant, process and construction engineering of permanent WWTP, procurement of process equipment, construction oversight, and startup. project involved the piloting and operation of temporary WWTP as well as the design and installation of a physical/chemical WWTP involving ballasted clarification to treat runoff of coal storage pile at coke plant.

**Project Manager/Process Engineer; Steel Mill Environmental Feasibility Study, Venezuela. Confidential Client, Venezuela. (1996-1998)** Responsibilities included the coordination of field teams, site investigation, sample plans, treatment alternative development, cost development, and feasibility report preparation. Project involved an integrated DRI steel mill located in Venezuela with multiple wastewater discharge sources.

**Project Manager/Wastewater/Water Process Engineer; Integrated Steel Mill Environmental Feasibility Study, Karabuk, Turkey. Confidential Client, Turkey**. ( 1993-1995) Responsibilities included the coordination of field teams, site investigation, sample plans and collection, treatment alternative development, cost development, and feasibility report preparation. Project involved an integrated steel mill located in Turkey with multiple wastewater discharge sources

**Project Manager/Lead Investigator; Water System Evaluation Fontana, CA, Confidential Client, (2006)** Responsibilities included the coordination of field teams, site investigation, sample plans and collection, treatment alternative development, cost development, and feasibility report preparation. (2005)

**Project Engineer; Blast Furnace Scrubber Recycle System, Sharon, PA Confidential Client.** (1980 to 1981) Responsibilities included design, specification, operation manual, and start up of blast furnace recycle water system.

**Project/Process Engineer, BOF Scrubber Recycle System, Sharon, PA Confidential Client.** (1980 to 1981) Responsibilities included design, specification, operation manual, and startup of basic oxygen furnace recycle water system.

**Project Manager/ Technical Lead; Gary Works - PM-10 Continuous Compliance Plan, Gary, IN Confidential Client.** (1994 to 1995) Project involved the identification of plant PM 10 sources and the development of monitoring procedures for them

**Process Engineer; Continuous Bloom Caster Water Systems, Confidential Client. (1981 – 1984)** Design and specification of contact and noncontact cooling water systems

**Project Manager/Technical Mentor; Confidential Client, ( 2013-2014)** Responsible for developing wastewater mass balance and action plan to reduce overall sulfates.

**Project Manager; Cheswick Power Station Scrubber Wastewater Treatment Plant, Cheswick Pennsylvania - Confidential Client (2007 – 2010)** - Responsibilities included consortium collaboration on the proposal, execution of the design engineering, equipment procurement, and startup. Project involved the treatment of scrubber blowdown.

**Project Manager; Confidential Client - Water Pretreatment Plant. ( 2008 – 2010)** Managed the process design, equipment procurement and deliver, and plant startup

**Project Manager; Paper Mill WWTP Upgrade, Oakfield NY, U.S. Gypsum (USG) (2005 to 2006) -** Responsible for coordinating the process design, construction design, process equipment procurement, construction procurement, construction oversight, and startup. The project consisted of the upgrade of a paper mill biological wastewater treatment including the addition of a bio-tower**.**

**Project/Process Engineer; Plant Water Treatment System, Hannibal, Confidential Client. (1981)** Responsibilities included the design, specification and equipment evaluation. Project involved the treatment of Ohio River water

**Project Manager; Confidential Client, Petrolia, PA (2013-2014)** Responsible for managing project and providing technical guidance to evaluate existing chemical waste incinerator scrubber and developing a recirculating scrubber liquor system to decrease odor and particulate.

**Process Engineer; Confidential Client, Detroit Refinery (2011-2012)** Responsible for process design, including PFD, P&I Diagrams, functional descriptions, cost development to modify sludge dewatering facility.

**Project Manager; Confidential Client, Haverhill, Ohio ( 2012-2013)** Responsible for developing feasibility study of repairing/replacing three million gallon bio reactor while keeping plant in operations. Project included the development of both temporary and permanent treatment facilities as well as a structural analysis of the existing vessel.

# Terence John Smith, P.E.

**Project Manager/ Mining and Wastewater Engineer**

## EXPERIENCE SUMMARY

Terence Smith has 38 years of professional experience in mining engineering, water and wastewater design engineering, wastewater management and project management. Mining experience includes design of mine drainage pumping and treatment facilities, maintenance management in underground and surface coal mining operations, longwall mining, coal preparation plant and coal refuse disposal supervision, surface mine permitting, mine operations evaluations, compliance evaluations, economic feasibility analysis, cost estimating and project management in the coal mining industry. Water and wastewater experience includes design, project engineering and project management for industrial and municipal water and wastewater transport systems, wastewater treatment process design, pump station design, NPDES and Water Quality Management permitting, PADEP Part II Permitting, Erosion and Sedimentation Control Plans, Emergency Response Plans, Pennvest Grant Applications and Chapter 94 Wasteload Management Reports. Responsibilities included detailed process design for design-build wastewater treatment projects, development of process flow diagrams, process instrumentation diagrams and preliminary equipment layout drawings for industrial wastewater treatment projects. Experience includes compliance evaluation, economic feasibility analysis, cost estimating and project management in the coal mining, automobile, steel, aluminum, television and computer manufacturing industries.

***Project Manager/Process Engineer; Secondary Wastewater Treatment System; $4.7 million; St. Mary's, WV; March 2010 – November 2010;*** *Project manager responsible for process design, equipment design and manufacturing for a 0.10 mgd sequence batch reactor biological treatment system. Supervised AutoCAD design and procurement and managed subcontractor fabricators. Prepared sales proposal, equipment submittal packages and design calculations.*

**Project Manager/Project Engineer; JM Waller Associates, Inc.; Eastern Kentucky Pilot Project; Emlyn KY; April 2012 – January 2013;** Completed an economic feasibility study to evaluate wastewater treatment alternatives for a rural residential development in Emlyn, Kentucky. The objective was to design a treatment system and develop an easy-to-understand approach for similar small, rural communities to use in selecting an appropriate wastewater collection and treatment solutions.

**Project Manager/Process Engineer; Secondary Wastewater Treatment System; $8.0 Million; Peach Lake, NY; August 2009 – November 2010;** Project manager responsible for process design, equipment design and manufacturing for a 0.17 mgd sequence batch reactor biological treatment

## EDUCATION

B.S. Mining Engineering, University of Pittsburgh, 1978

Graduate Studies, Civil Engineering, West Virginia University, 1989 - 1991

## REGISTRATIONS

Professional Engineer, Pennsylvania, [redacted] 1992

## TRAINING/CERTIFICATIONS

Tetra Tech Project Management Training;

Tetra Tech Writers Workshop,

PADEP Erosion and Sediment Control Training – Oil and Gas;

Dale Carnegie Course

## OFFICE

Pittsburgh, PA

## YEARS OF EXPERIENCE

38

## YEARS WITH TETRA TECH

4

system. Supervised AutoCAD design and parts procurement and managed subcontractor fabricators. Prepared sales proposal, equipment shop drawings and design calculations for client approval.

**Project Manager/Process Engineer; Secondary Wastewater Treatment System; $4.0 million; Gratz Boro, PA; March 2009 – June 2010;** Project manager responsible for process design, equipment design and manufacturing for a sequence batch reactor biological treatment system. Supervised AutoCAD design, procurement and managed subcontractor fabricators. Prepared sales proposal, equipment shop drawings and design calculations for client approval.

**Project Manager/Process Engineer; Secondary Wastewater Treatment System; Onarga, IL; March 2009 – July 2010;** Project manager responsible for equipment design and manufacturing for a 0.25 mgd sequence batch reactor biological treatment system. Supervised AutoCAD design, procurement and managed subcontractor fabricators. Prepared equipment submittal packages and O&M Manuals.

**Project Engineer; Wastewater Treatment Collection and Treatment System; $9.5 Million; Cochranton Borough, PA; November 1997 – June 1998;** Provided design engineering and bid phase services for wastewater collection and treatment system including a secondary wastewater treatment plant, four sewage lift stations and gravity sewer system.

**Project Engineer; Wastewater Treatment Collection and Treatment System; $8.5 Million; Shippingport Borough, PA; March 2005 – July 2006;** Provided construction phase services for wastewater collection and treatment system including a secondary wastewater treatment plant, one sewage lift stations and gravity sewer system.

**Project Engineer; Water System Improvements Brighton Township, PA; January 2006 – June 2006;** Provided design engineering, permitting and bid phase services for a potable water system upgrades for Brighton Township. Prepared design drawings and technical specifications for booster pump station modifications and provided construction phase engineering services.

**Project Engineer; Water System Improvements; $10.5 Million; Coraopolis, PA; June 2006 – June 2008;** Performed design engineering and bid phase services for water distribution system upgrades. Project included replacement of 2.5 miles of water transmission and distribution lines, upgrades to two booster stations and replacement of water storage tanks at two locations. Prepared design drawings and technical specifications and provided construction phase engineering services. Provided administrative assistance in securing Pennvest Loans to finance project.

**Project Engineer; Sanitary System Improvements; $1.3 Million; Coraopolis, PA; June 2005 – June 2007;** Provided design engineering and bid phase services for sewer system upgrades. Project included replacement and repair sewer lines and upgrades to an existing sewage lift station. Prepared design drawings and technical specifications and provided construction phase engineering and permitting services. Pump station upgrades included modification of sewer lines to eliminate overflow bypasses, installation of an emergency generator and installing a new flow monitoring system.

**Project Engineer; Wastewater Treatment Collection System Upgrades; Wilmington Township; $1.85 million; Wilmington PA; May 2006 – July 2007;** Provided construction phase services, for sewage collection system expansion, including two sewage lift stations and five miles of gravity sewers.

**Project Engineer; Phase II Sewage Facilities Collection System North Sewickley Township, PA; $18.5 million; June 2005 – June 2007;** Provided engineering services for design and construction of 27 miles of sanitary collection sewers, 7 new lift stations, upgrades and modifications to two existing lift stations and 14 miles of low pressure service with 236 grinder pumps. Prepared design drawings and technical specifications and provided construction and bid phase engineering services. Prepared erosion and sedimentation control plans and highway occupancy permits.

**Project Engineer; Administrative Consent Order Sewer Rehabilitation Project; Castle Shannon Borough, PA; June 2005 – October 2008;** Provided design engineering services and preparation of Highway Occupancy Permits, Erosion and Sedimentation Control Plans, Chapter 105 General Permit applications for sewer improvement project.

**Project Engineer; Administrative Consent Order Sewer Rehabilitation Project; Scott Township, PA; June 2005 – October 2006;** Provided design engineering services and preparation of Highway Occupancy Permits, Erosion and Sedimentation Control Plans, Chapter 105 General Permit applications for sewer improvement project.

**Project Engineer; Wastewater Treatment Collection and Treatment System; Pulaski Township PA; February 2005 – June 2006;** Provided construction phase engineering services for New Bedford and Pulaski Township wastewater treatment plants and sewage lift stations. The scope included design and construction of one mile of interceptor sewer, 21 miles of collector sewers, two secondary sewage treatment plants (0.280 mgd and 0.045 mgd), 2 sewage lift stations and 150 grinder pumps.

**Project Engineer; Coraopolis Borough Street Lighting; Coraopolis, PA; January 2006 – August 2006;** Provided design engineering, bid phase and construction phase services to install street lighting in business district. Prepared Highway Occupancy Permits.

**Project Engineer; Site Development Projects; Scott Township, PA; February 2005 – June 2007;** Provided engineering services to review plans for sewage collection and lift stations for site development projects. Performed sewer capacity planning module evaluations approval of sewer expansions.

**STEPHEN W. HUGHES, P.E.**

**DESIGN ENGINEERING MANAGER/PROJECT MANAGER**

**PITTSBURGH, PENNSYLVANIA**

**EDUCATION:** M.S., Industrial Engineering (Engineering Management Program), University of Pittsburgh, 1983

M.S., Civil (Environmental) Engineering, University of Pittsburgh, 1974

B.S., Civil Engineering, University of Detroit, 1970

**REGISTRATION:** Professional Engineer, No. [redacted]E, Pennsylvania, 1974

**TRAINING:** OSHA 1910.120 40-hour HAZWOPER Training, 1989

OSHA 1910.120 8-hour Supervisor Training, 1989

OSHA 1910.120 8-hour Refresher and Supervisory Training, annually

Mr. Hughes is a design engineer and project manager with over 39 years of experience in the development of water, wastewater and hazardous waste treatment and remediation projects in North America, South America, and Europe. As manager of the Design Engineering Department, Mr. Hughes is responsible for detailed design development of treatment and remediation projects generated at the Pittsburgh Office. Industries served include: oil and gas production and refining, chemical and petrochemical processing, steel manufacturing, food processing, electronics manufacturing, fossil fuel power generation, pulp and paper processing, building materials manufacturing, pharmaceuticals, and dockyard facilities. Government clients include the U.S. Departments of Energy and Defense and the U.S. Environmental Protection Agency.

**Deputy Project Manager; Confidential Client; Combined Sewer Overflow Facilities Plan; $2 million; Pittsburgh, PA; December 2007 to Present.** Responsible for supporting the project administration of a major combined sewer overflow (CSO) facilities planning project for the Allegheny County Sanitary Authority that serves 83 communities and approximately one million customers in the Pittsburgh area. ALCOSAN is under an U.S. EPA consent decree that requires the authority to address CSO non-compliance issues in the next 10 to 15 years at the estimated cost of up to $3 billion. Specific project management responsibilities include: scheduling, reporting, subconsultant management and budgetary controls. Technical support responsibilities include: existing data collection and assessment, alternatives generation and evaluation and the development of the facilities plan.

**Technical Manager; U.S. Army Corps of Engineers - Tulsa District; Industrial Wastewater Study; $900,000; Tinker Air Force Base, Oklahoma City, Oklahoma; March to December 2005.** Responsible for the planning, coordination, and execution of a Plant Investigation, Feasibility Study, and Best Practices Survey conducted at Navy, Air Force, and commercial aircraft maintenance facilities in CA and GA. The results of the project, which was concluded on a fast-track basis within eight months at the cost of approximately $900,000, are being used to modernize industrial wastewater operations at the base. After reviewing the Feasibility Study Report, the client wrote that “This deliverable was very well put together, comprehensive and complete. Of the reports and studies I have reviewed over the past several decades, this one has to be the best”.

**Project Manager; U.S. Navy; Groundwater Pretreatment System Design and Industrial Wastewater Treatment Plant Upgrade; $350,000; Marine Corps Air Station Cherry Point, North Carolina; 1997 to 1999.** Served as Project Manager and Lead Design Engineer in the development of upgrade design specifications and cost estimates for improving pressure filtration, air stripping, and activated carbon

adsorption units at the air station's existing Industrial Wastewater Treatment Plant (IWTP). Also responsible for a groundwater pretreatment system design that included performance specifications for the pretreatment system processes and ancillary equipment, 100% electrical design package, and cost estimates. Project responsibilities also included the oversight of the installation and construction of the IWTP upgrades, and the groundwater extraction system and pretreatment system. An IWTP evaluation study, which was conducted before the design phase of the project, concluded that the contaminated groundwater could be treated at the IWTP at a considerable cost savings (>$1 million) when compared to a stand-alone groundwater treatment plant.

**Project Manager; U.S. Army Corps of Engineers and United Nations; Environmental Audits and Wastewater Treatment System Design; Operation Uphold Democracy; $2.5 million; Haiti; 1995.** Conducted environmental audits at over a dozen U.S. and U.N. military base camps in Haiti. Operations evaluated included sanitary waste and gray water disposal, solid waste disposal, potable water supply, vehicle redeployment wash, bulk and retail fuel storage, vehicle maintenance, hazardous materials storage, and hazardous waste disposal. Designed two sanitary wastewater treatment (facultative pond) systems, one of which was constructed at the Cap Haitian Airport and used by both military personnel and the local inhabitants. At the time this treatment facility went into service, it was believed to be the only working sanitary wastewater treatment system in Haiti.

**Project Manager; Confidential Client; Electronics Complex Wastewater Treatment Plant Project; $1.7 million; Essex, United Kingdom; 1992 to 1993.** Responsible for the design, construction, installation, commissioning and process performance warranting of a wastewater treatment plant at a major electronics manufacturing complex. The wastewater treated varied in flowrate from 50 to 500 gpm and contained a wide variety of heavy metals including chromium, cadmium, and lead. Responsibilities included conducting the initial feasibility study, the preparation of the process design package and bid specifications, and bid evaluation and selection. Treatment plant processes include chromium reduction, neutralization, clarification, deep-bed filtration and sludge dewatering by filter press. The process performance warranty, which extended for one year of operation after the plant was commissioned, was successfully satisfied.

**Commissioning Supervisor; Confidential Client; Chemical Facility Industrial Wastewater Treatment Plant; $4.9 million; Monaca, Pennsylvania; 1989 to 1990.** Responsible for the commissioning of an industrial wastewater treatment plant designed to treat a 70 gpm wastewater stream generated at a latex rubber production facility. The plant included equalization tanks, extended aeration activated sludge tanks, a clarifier and a deep-bed sand filtration system. As specified in the contract, the commissioning and process warranting period extended 3 months, during which time all effluent discharge requirements were satisfied.

**Project Manager; Confidential Client; Power Plant Wastewater Treatment System Feasibility Studies and Designs; $950,000; Two Fossil-Fuel Electricity Generation Stations, Western Pennsylvania; 1988 to 1989.** Responsible for the supervision of station-wide wastewater system feasibility studies and the design of major improvements to wastewater treatment systems at two electric power generating stations. The studies included evaluation of existing treatment system operations, development of station-wide water and contaminant balances, and improvement alternative cost/benefit analyses. The improvements selected for implementation at the existing wastewater treatment systems were designed to significantly improve treated effluent quality on a consistent basis while minimizing project capital costs.

**Project Manager; Confidential Client; Paper Mill Water and Wastewater Treatment Study; $220,000; Chillicothe, Ohio; 1988.** Responsible for a comprehensive site-wide study to identify areas where a pulp and paper mill's existing water and wastewater treatment facilities could be improved, and wastewater generation could be minimized. Wastewater treatment systems, including sludge dewatering and solid waste disposal facilities, and cooling water and boiler water treatment units, were investigated and

evaluated. Specific recommendations were made that led to significant improvements in treatment system operations, which resulted in improved treated water and wastewater quality, increased solid waste handling efficiencies, and reduced operating costs.

**Commissioning Supervisor; Confidential Client; Power Plant Wastewater Treatment Plant Project; $6.4 million; Center, North Dakota; 1987.** Responsible for developing startup operating procedures and supervising the commissioning of a 1,200 gpm facility designed to treat cooling and boiler water blowdowns, and spent regenerant wastes. The treatment processes included pH adjustment, primary clarification, final filtration and sludge dewatering. The plant was started up on schedule and within budget, and operating personnel were extensively trained using a comprehensive operating and maintenance manual.

**Commissioning Supervisor; Confidential Client; Steel Mill Wastewater Treatment Plant Project; $3.6 million; Sparrows Point, Maryland; 1987.** Responsible for the commissioning of a 500 gpm plant to treat spent rinses contaminated with hexavalent chromium. The treatment system included chemical reduction/precipitation, clarification, final filtration and sludge dewatering. The plant was commissioned on schedule and within budget and operating personnel were trained using a detailed operation and maintenance manual.

**Process Design Leader; U.S. DOE/Electric Power Consortium; Coal Gasification Demonstration Plant Water and Wastewater Treatment Plant Design (Zero Liquid Discharge); $5 million; Southern Illinois; 1980 to 1982.** Responsible for the process design of the water and wastewater treatment systems for a coal gasification demonstration plant. The wastewater treatment plant was designed for zero liquid discharge, with the treated effluent used as cooling water and process water makeup. Treatment processes used in the water and wastewater treatment design include: primary clarification, ozonation, high purity oxygen bio-oxidation, multi-media deep bed filtration, vapor recompression multi-stage evaporation, and belt filter press sludge dewatering. The design included segregated onsite landfills for the various sludges generated by the water and wastewater treatment processes.

**Design Engineer; Confidential Client; Paper Board Plant Industrial Wastewater Treatment System; $5.5 million; Jacksonville, Florida; 1975 to 1976.** Responsible for the hydraulic, structural, and geotechnical design of several pipes, structures, tanks, and foundations for a 3,500 gpm high purity oxygen activated sludge treatment system. The system was completed on time, within budget and consistently operated to the client's satisfaction.

# COREY A. RICH, P.E.

**WATER MANAGEMENT DEPARMENT MANAGER/TECHNICAL LEAD AND**

**SENIOR PROJECT MANAGER**

**PITTSBURGH, PENNSYLVANIA**

**EDUCATION:** B.A.; Physics; Lock Haven University; 1991

B.S.; Civil Engineering; University of Pittsburgh; 1989

Graduate Courses toward M.S.; Civil Engineering; University of Pittsburgh; Water Resources; 1990-1991

**CERTIFICATIONS/ REGISTRATIONS:** Professional Engineer; Pennsylvania [redacted] 1996

Troxler Nuclear Testing Equipment; Certification; 1990

Mr. Rich is a civil engineer with 25 years of environmental and civil engineering experience. He is currently the Water Management Department Manager/Technical Lead for the Appalachian Basin Oil and Gas (O&G) Services Group and a Senior Project Manager. As the Water Management Technical Lead, he has significant project experience with hydrology/hydraulic studies, flood-stage modeling, low-flow studies, stream flow measurement studies, and reservoir regulation system analyses. He has prepared numerous water management plans and surface water withdrawal permit applications for various O&G Companies in the Marcellus Play in Pennsylvania and West Virginia and Utica Play in Ohio. He has managed and coordinated the projects and permitting with federal, state, and local government agencies. As a Senior Project Manager/Project Engineer, he has significant project experience in the areas of site characterization and remedial alternative development under CERCLA and RCRA, underground storage tanks (USTs), waste management, remedial design, remedial actions, water management permitting, and flood stage modeling. He has provided management and engineering support for projects conducted under both CERCLA, RCRA, and NEPA which have had budgets up to $5 million dollars. His other roles have included fate and transport modeling specialist and Modeling Group Manager. A brief description of each of his roles is provided below.

**Technical L ead/Project Engineer; Confidential C lient, Aluminum R efinery C ooling Pond Analysis and Hydrology and Hydraulics Study; St. Croix, Virgin Islands; June 2012 – present.** Developed work plan to investigate hydrology and hydraulics aspects of the former cooling ponds. Technical Lead for the development of a spreadsheet model to evaluate the effectiveness of two existing cooling ponds at the facility. Utilized collected site data, water temperature data, and reported soil and meteorological data along with simplifying assumptions to determine cooling capacity of the ponds for various seasons and plant effluent flows. Calibrated the model against existing data and performed sensitivity analysis to quantify model accuracy. Oversaw evaluation and selection of site conditions such as soil type, cover type, and drainage areas used to develop a hydrologic model for the site. The model was used to determine peak flow rates associated with various storm events and evaluate the impacts of those flow rates on existing hydraulic structures.

**Project E ngineer/Surface W ater S pecialist; U tility C ompany; S helocta, PA; P ADEP; W ater U se Study ($15,000); November 2007 to December 2007.** Conducted study of water use in Crooked Creek watershed under low-flow conditions to determine potential impacts on the Utility Company's water usage

permit for its power plant. Project involved field reconnaissance, review and evaluation of design and operational information from the power plant and Keystone Lake, contacting federal, State, and local agencies and conducting internet searches to determine water users in the watershed, and evaluation of design and operational data from a USGS gage. Results of the study helped the Utility Company determine impacts from upgradient water users on surface water flow during low-flow conditions and identify issues related to newly implemented operations at the Company's power plant that were impacting surface water flow during low-flow conditions.

**Surface Water Modeling Specialist; U.S. Army Corps of Engineers; Pittsburgh District; September 1999 to July 2000.** Completed streamflow synthesis and reservoir regulation systems analyses in order to optimize the flood control, hydroelectric power, low water regulation, water quality control, fish and wildlife enhancement, whitewater rafting, and recreational aspects at the 16 projects within the Pittsburgh District of the U.S. Army Corps of Engineers. Assignments included background investigations, data collection and screening, derivation of mathematical hydrologic forecasting and water control techniques, hydrologic simulation, numerical analysis, and hydrologic engineering calculations. Attended training seminar on HEC-HMS at HEC research center in Davis, California.

**Surface Water Modeling Specialist; Fortune 100 Chemical Manufacturer; Calcasieu River Estuary; Lake Charles, LA; U.S. EPA Region VI & LADEQ; RCRA/HSWA/CWA; Fate and Transport Assessment; February 1992 to December 1992.** Applied WASP4 model to a large estuary system. Conducted fate and transport simulations of chlorinated hydrophobic pollutants (HCB and HCBD) released from a chemical plant and contaminated sediment layer in a discharge canal. Provided technical assistance on data base manipulation and statistical analysis of biota samples collected for the project. Site-specific bioconcentration factors were developed based on the statistical analysis and the modeling results. The modeling results and bioconcentration factors were utilized for human health and aquatic species risk assessments.

**Surface Water Modeling Specialist; North Carolina Department of Transportation; NC; Bridge Replacement Project; December 1989 to January 1990.** Performed calculations, based on North Carolina DOT guidelines and HEC-2 model results, to determine scour potential for a bridge replacement project in North Carolina. Estimated quantity of rock protection required for the bridge piers based on the scour calculations.

**Surface Water Modeling Specialist; Pennsylvania Department of Transportation; PA; Bridge Replacement Projects; February 1990 to March 1990.** Completed hydrologic and hydraulic studies for bridge replacement projects in Pennsylvania using SCS TR-55 Methods and PSU- IV Model. Followed Pennsylvania DOT guidelines.

**Surface Water Modeling Specialist; Developer, PA; Stormwater Management Systems**; **April 1990 to August 1990.** Completed engineering calculations for stormwater management system for large strip mall complex in southwestern Pennsylvania. System was developed using SCS TR-55 and the Rational Equation techniques. The system included large underground storage tanks for storm water detention. Also prepared a conceptual design of a stormwater management system for another large mall complex.

# Section E: Certificate of Insurance

# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY) 11/03/2015

**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:**

| INSURER(S) AFFORDING COVERAGE | | NAIC # |
|---|---|---|
| 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: | | |

**INSURED**
Tetra Tech, Inc.
661 Andersen Drive
Pittsburgh, PA 15220 USA

**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 INSD | SUBR WVD | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS | |
|---|---|---|---|---|---|---|---|---|
| A | X **COMMERCIAL GENERAL LIABILITY**<br>CLAIMS-MADE / X OCCUR<br>X Contractural Liability<br>X X,C,U<br>GEN'L AGGREGATE LIMIT APPLIES PER:<br>POLICY / X PRO-JECT / X LOC<br>OTHER: | | | GL3372258 | 10/01/2015 | 10/01/2016 | 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**<br>X ANY AUTO<br>ALL OWNED AUTOS / SCHEDULED AUTOS<br>X HIRED AUTOS / X NON-OWNED AUTOS | | | CA3194397 | 10/01/2015 | 10/01/2016 | COMBINED SINGLE LIMIT (Ea accident) | $2,000,000 |
| | | | | | | | BODILY INJURY ( Per person) | |
| | | | | | | | BODILY INJURY (Per accident) | |
| | | | | | | | PROPERTY DAMAGE (Per accident) | |
| C | X **UMBRELLA LIAB** / X OCCUR<br>**EXCESS LIAB** / CLAIMS-MADE<br>DED / RETENTION | | | TH1500079 | 10/01/2015 | 10/01/2016 | EACH OCCURRENCE | $5,000,000 |
| | | | | | | | AGGREGATE | $5,000,000 |
| B | **WORKERS COMPENSATION AND EMPLOYERS' LIABILITY**<br>ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N<br>**(Mandatory in NH)**<br>If yes, describe under DESCRIPTION OF OPERATIONS below | N / A | | WC014267906<br>WC014267907<br>WC014267908<br>WC014267912 | 10/01/2015<br>10/01/2015<br>10/01/2015<br>10/01/2015 | 10/01/2016<br>10/01/2016<br>10/01/2016<br>10/01/2016 | X PER STATUTE / OTH-ER | |
| | | | | | | | 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 | 10/01/2016 | Each Claim<br>Aggregate | $5,000,000<br>$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
Pittburgh, 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**

Aon Risk Insurance Services West, Inc.

**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 INSUREDS

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 I - 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 **I**), 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 Divison**
**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:** 146152

**Doc Description:** Addendum No 02, Water & wastewater Improvements.

**Proc Type:** Central Contract - Fixed Amt

| Date Issued | Solicitation Closes | Solicitation No | Version |
|---|---|---|---|
| 2015-10-21 | 2015-11-18 13:30:00 | CEOI 0310 DNR1600000006 | 3 |

**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.
1000 Green River Drive
Fairmont, WV 26554
(304)534-4021

**FOR INFORMATION CONTACT THE BUYER**

Guy Nisbet
(304) 558-2596
guy.l.nisbet@wv.gov

Mark P. Speranza

**Signature X** **FEIN #** 954660169 **DATE** 11/18/2015

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

**ADDITIONAL INFORMATION:**

Addendum

Addendum No.02 issued to publish and distribute the attached information to the vendor community.

**********

Expression of Interest

The West Virginia Purchasing Division for the Agency, The West Virginia Division of Natural Resources, Parks and recreation Division is soliciting CEOI responses from qualified firms to provide necessary engineering services for a small wastewater treatment plant at Babcock State Park Pool, Clifftop, WV. and improvements to the water supply at Droop Mountain State Park, Hillsboro, WV.. per the attached CEOI specifications, and terms & conditions

| INVOICE TO | SHIP TO |
|---|---|
| DIVISION OF NATURAL RESOURCES<br>PARKS & RECREATION-PEM SECTION<br>324 4TH AVE<br>SOUTH CHARLESTON WV 25305<br>US | STATE OF WEST VIRGINIA<br>JOBSITE - SEE SPECIFICATIONS<br><br>No City WV 99999<br>US |

| Line | Comm Ln Desc | Qty | Unit Issue |
|---|---|---|---|
| 1 | Architectural engineering | NA | NA |

| Comm Code | Manufacturer | Specification | Model # |
|---|---|---|---|
| 81101508 | NA | NA | NA |

**Extended Description :**

AE Services for Babcock wastewater treatment plant replacement and Droop Mountain water supply improvements.

**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions

# 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 exceed five percent of the total contract amount.

**AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that 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: MKP Spen Jr Date: 11/18/2015

Commonwealth
~~State~~ of Pennsylvania

County of Allegheny, to-wit:

Taken, subscribed, and sworn to before me this 16 day of November, 2015.

My Commission expires August 8, 2017.

**AFFIX SEAL HERE**

**NOTARY PUBLIC** Cynthia K. Haluszczak

*Purchasing Affidavit (Revised 08/01/2015)*

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Cynthia K. Haluszczak, Notary Public
Green Tree Boro, Allegheny County
My Commission Expires Aug. 8, 2017
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

# Section H: Addendum Acknowledgement

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

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

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

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

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

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

Tetra Tech, Inc.
Company

Mark P. Speranza
Authorized Signature

11/18/2015
Date

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