



**GWIN
DOBSON &
FOREMAN**
ENGINEERS



**GWIN
DOBSON &
FOREMAN**
ENGINEERS

Mark Glenn, P.E.
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February 1, 2018

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Department of Administration,
Purchasing Division
Attn: Guy Nisbet
2019 Washington Street East
Charleston, WV 25305-0130

02/01/18 10:04:40
WV Purchasing Division

**RE: Expression of Interest
A&E Services for Cedar Lakes Dam Restoration/Warehouse Stabilization Project
Solicitation No. 1800000001**

Dear Mr. Nisbet:

Please find enclosed our Expression of Interest for the above referenced project.

Gwin, Dobson & Foreman, Inc. is one of the region's outstanding dam engineers with over 64 years experience in the field. GD&F has designed many dam rehabilitation and slope stability projects.

We call your attention to the following clients and projects that show our relevant experience and expertise.

- GD&F has an open-end contract with the PA Department of Conservation and Natural Resources (DCNR) for design of improvements to state-wide State Park and Forestry Bureau dams.
- GD&F designed and permitted a new water supply dam for the Morgantown Utility Board, the largest public water supplier in the state. This \$35 million project involves the construction of a 74-foot high earth dam and 375 million gallon reservoir. Construction will start in mid-2018. This project involved extensive slope stability and seepage analysis.

GD&F maintains a close working relationship with personnel of the WV Division of Dam Safety and are completely familiar with all Dam Safety Rule (47 CSR 34) requirements and the Certificate of Approval process. Together with our geotechnical consultant, CTL Engineering of WV, Inc., GD&F has the relevant experience and familiarity with other state agencies to meet the goals and expectations of Department of Agriculture.

We appreciate the opportunity to submit this proposal for your review and consideration. If you have any questions or require additional information, please contact our office at your convenience.

Respectfully submitted,
GWIN, DOBSON & FOREMAN, INC.

Mark Glenn, P.E.
President

MG/amk
Prop/2018/WVDAg Cedar Lakes/EOI.doc
cc: Central File



EXPRESSION OF INTEREST

SOLICITATION No. AGR 1800000001

**A&E SERVICES
CEDAR LAKES DAM RESTORATION/
WAREHOUSE STABILIZATION PROJECT**

SUBMITTED TO:

**DEPARTMENT OF ADMINISTRATION,
PURCHASING DIVISION
2019 WASHINGTON STREET EAST
CHARLESTON, WV 25305-0130**

**EOI OPENING DATE:
FEBRUARY 1, 2018 1:30 PM**

SUBMITTED BY:

**GWIN, DOBSON & FOREMAN, INC.
3121 FAIRWAY DRIVE
ALTOONA, PA 16602**

GD&F

**GWIN
DOBSON &
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ENGINEERS

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3121 FAIRWAY DRIVE
ALTOONA, PA 16602**



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

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

Proc Folder: 405455

Doc Description: Expression of Interest for WV Department of Agriculture

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2018-01-02	2018-02-01 13:30:00	CEOI 1400 AGR1800000001	1

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:

FOR INFORMATION CONTACT THE BUYER

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

Signature X

FEIN #

25-1209285

DATE

January 31, 2018

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

President

ADDITIONAL INFORMATION:

Expression of Interest
 (Cedar Lakes Dam Restoration/Food Warehouse Slope Stabilization Project)

The West Virginia Purchasing Division is soliciting Expression(s) of Interest for the Agency, West Virginia Department of Agriculture from qualified firms to provide architectural/engineering services for the "Cedar Lakes Dam Restoration and Food Warehouse Slope Stabilization Project" per the Expression of Interest, and the Terms and Conditions as attached hereto.

INVOICE TO	SHIP TO
PROCUREMENT OFFICER 304-558-2221 AGRICULTURE DEPARTMENT OF ADMINISTRATIVE SERVICES 1900 KANAWHA BLVD E CHARLESTON WV25305-0173 US	AUTHORIZED RECEIVER 304-558-3200 AGRICULTURE DEPARTMENT OF EXECUTIVE DIVISION 217 GUS R DOUGLAS LN, BLDG 1 RM 100 CHARLESTON WV 25312 US

Line	Comm Ln Desc	Qty	Unit Issue
1	Engineering Services		

Comm Code	Manufacturer	Specification	Model #
81000000			

Extended Description :
 Engineering Services

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: _____

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

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

Gwin, Dobson & Foreman, Inc.

Company



Authorized Signature

January 31, 2018

Date

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

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FEBRUARY 1, 2018

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Section 1

PROJECT PLANNING AND DESIGN PROCESS

1.1 Specific Project Work Elements

General - WV Department of Agriculture requires an engineering firm to design and specify modifications and repairs of Dam No. 1 and Dam No. 2 and a slope stability condition adjacent to the Food Warehouse located on Cedar Lakes Camp and Conference Center near Ripley, WV for compliance with the WV Dam Control and Safety Act, WV Dam Safety Rule requirements, and the WV DEP Compliance Order.

Project Parameters - The following procedures are set forth by GD&F to meet the communication, budgetary controls and schedule goals of the Department of Agriculture. The services will generally be civil and structural design efforts associated with the possibility of several different projects being designed under short completion schedules. The anticipated types of projects may include, but are not limited to evaluation of current dam site, including inspection history, hydrologic analysis of the potential failure, and geotechnical analysis in order to identify and recommend solutions for channel restoration, principle spillways design and replacement, riser repairs, auxiliary spillway repair, outlet repair and other dam maintenance and repair needs. Gathering this information will enable GD&F to develop alternative strategies for dam repair, modification, or decommissioning, including assessment on the impact of alternatives on adjacent structures. GD&F will conduct an evaluation of the Food Distribution Warehouse site and complete the appropriate soil analysis to determine the cause of the slip to ensure a permanent solution can be designed. We will then develop a solution and assist with implementation for the repair to reduce potential hazards to the warehouse facility. We will ensure that both Project A (No. 1 Dam and No. 2 Dam) and Project B (Food Distribution Warehouse) will be consistent with the Division of Natural Resources' needs, objectives, codes and budget that will complement the design and layout of the associated areas.

Work Product - GD&F will furnish a complete set of contract documents (cost estimates, plans, site drawings, and specifications), suitable for public bid and in accordance with the prescribed Department of Agriculture format and in accordance with applicable State and Federal codes and requirements. We will assist in the application and permitting processes. GD&F will adhere to our in-house quality assurance program to ensure that all documents are acceptable and of the highest quality prior to submission of said documents to the Department of Agriculture. We will prepare the bidding packages in accordance with the procedures of the West Virginia Purchasing Division of the Administration guidelines. GD&F will provide construction contract administration services which will ensure that each task is constructed and functions as designed.

Environmental Evaluation - Areas of related environmental study associated with these design projects may include, but are not limited to, wetlands, soil, geology, dam safety and waterway management, Corps of Engineers 404 permits, and WV Department of Environmental Protection water quality management requirements. The environmental studies shall be conducted in accordance with accepted analysis techniques and methodologies and include any or all of the following to ensure a complete environmental investigation has been performed; provide all necessary environmental services, material and equipment necessary to collect, analyze and organize data, assess impacts, prepare reports and design mitigation plans. The reports and other graphic material to be prepared include, but are not limited to, plans of study, meeting minutes, preparation of permit application documents, mitigation plans and reports, and wetland and floodplain findings.

Engineering Design Elements - GD&F will perform the following duties: attend site visits; prepare minutes; perform necessary field surveys; plot topography and cross sections; develop erosion control plans; prepare type, size and location reports; prepare construction drawings, specifications and estimates; procure core borings; provide soil and foundation engineering reports; investigate utility involvement; evaluate alternatives using benefit/cost analysis; develop other details and narratives; inspect major structures; develop rehabilitation strategies; and also, review shop drawings, catalog cuts and attend construction job conferences.

1.2 Dam Project and Slope Stability Analysis Capabilities

General - For the past 64 years, Gwin, Dobson & Foreman, Inc., (GD&F) and its predecessor firms have provided comprehensive engineering services to clients in government, business, and industry throughout the mid-Atlantic region. Our extensive experience includes water resources development, dam and reservoirs, water resource management; water supply, treatment, and distribution; wastewater collection and treatment; mining, geology and geotechnical engineering studies; environmental engineering studies; site planning and development; source water protection planning and watershed management studies; and construction management and inspection.

Dam Expertise - GD&F is one of the leading dam design consultants in Pennsylvania. GD&F has been continuously involved in this field, having designed and supervised the construction of 30 major dam projects. This experience includes full spectrum of design elements and disciplines including geotechnical engineering, embankment stability analysis, embankment materials, foundation drilling and grouting, waterproofing, hydrology, hydraulics, intake/ outlet mechanical systems, structural engineering, seepage and flow net analysis, computer simulations, construction engineering, geometric layout and control and monitoring and instrumentation devices. The current capital cost value of GD&F dam projects exceeds \$300 million.

Dam and Slope Stability Experience - GD&F has complete familiarity and working knowledge of the following dam design and modeling software for hydrology, hydraulics and stability analysis including HEC-HMS, GEO HEC-RAS, RES-SIM, GSTABL, SLIDE (7.0) and ENERCALC, among others.

GD&F has designed the following types of dam and slope stability components:

- a. Rock Fill Dams
- b. Zoned Earth-Rock Fill Dams
- c. Concrete Slab and Buttress Dam Rehabilitation
- d. Timber Crib Dam Modifications
- e. Ambursen Dam - Earth Fill Dam Conversion
- f. Ogee Weir Spillways
- g. Labyrinth Weir Spillways
- h. Asphaltic Concrete Decks
- i. Side Channel Spillways
- j. Gabion Mattress (Grouted) Overtopping Protection
- k. Multi-Port Intake Towers and Access Bridges
- l. Gravity Masonry Dam Rehabilitation
- m. Weirs and Outlet Control Structures
- n. Waterproofing Systems (PVC liners, soil bentonite, clay liner systems)

- o. Inflatable Rubber Dams
- p. Terminal Structures (deflector (flip) buckets, hydraulic-jump basins)
- q. Intake Pipes and Dam Drain Conduits
- r. Concrete Rehabilitation and Joint Repair Systems
- s. Toe Drains, Filter Drains and Internal Drainage Systems
- t. Embankment Monitoring and Phreatic Surface Instrumentation
- u. Foundation Treatments and Drilling and Grouting
- v. Embankment Stability Enhancement Techniques

Computer Modelling - GD&F is completely familiar with WV DEP Division of Dam Safety and U.S. Army Corps of Engineers procedures relative to dam safety regulations and design techniques. GD&F has specific experience with spillway hydraulic and embankment stability/seepage analyses including extensive utilization of computer programs for flood routing, dam break analysis, spillway design, water surface profiles, spillway discharge and approach channels, stability analysis and hydrologic computations.

Design Team - For the Department of Agriculture projects, GD&F has assembled a highly qualified and experienced team of engineers and support staff, all experienced in dam design and engineering, to perform the various tasks required under contract. CTL Engineering is part of our design team to assist with geotechnical engineering and subsurface exploration services. Please see a summary of CTL Engineering qualifications and dam-related projects attached to this section.

Accessibility - The GD&F office in Altoona, PA is located four (4) hours (285 miles) from the proposed Cedar Lakes Camp and Conference Center via I-99, I-68, I-79 and Rt. 50.

Summary - GD&F has the experience, technical expertise and personnel to perform the dam improvements and meet all cost and schedule goals and expectations of the Department of Agriculture.

West Virginia Experience - GD&F has significant statewide experience in West Virginia over the last 20 years including a variety of infrastructure improvement projects for the following clients:

Morgantown Utility Board, Monongalia Co., WV - \$40 million water supply dam and reservoir.

City of Moundsville, Marshall Co., WV - \$20 million water treatment facility.

Berkeley County Public Sewer Water District - \$50 million water system improvements (tanks, mains, pump stations, water treatment facility).

Town of Harpers Ferry Water Department - \$8 million water treatment plant upgrade and distribution system replacement.

ATK-Alliant Tech Corp., Rocket Center, WV - \$15 million water treatment facilities.

Central Hampshire Public Service District - Design of \$6 million BNR treatment facility upgrade.

Hampshire County Commissioners - County-wide water supply study.

Jefferson County Public Service District - \$2.5 million water system improvement project.

CTL Engineering of West Virginia, Inc.

Client

Our clients are our livelihood and therefore, we make it our personal objective to achieve 100% client satisfaction on every project regardless of size or scope.

Teamwork

Teamwork is a necessity. Not only from an interdepartmental perspective but also from an external perspective. It is imperative that we work together with architects, owners, and any other stakeholders when taking on a project.

Listen

In order to provide our clients with the most appropriate solutions to meet their needs, we LISTEN. By listening to our clients needs and asking the right questions we are able to clearly identify what is needed to take on a given project in the most efficient manner possible.

For more information on any of our products or services go to www.ctleng.com



Gateway Development Site: I-79 Exit 155

As part of CTL Engineering, Inc., CTL Engineering of West Virginia, Inc. was founded in 1981 giving us more than 35 years in the state. Our office location in Morgantown enables CTL to easily provide our services for projects throughout the state as a whole. CTL has over 200 employees including 25 professional engineers and 2 professional surveyors throughout our regional offices. The ability to pull knowledge and experience from outside offices enables us to perform at a high level on projects of all sizes.

CTL Engineering of West Virginia, Inc. provides total civil engineering services for projects throughout West Virginia. CTL provides full investigative, design, permitting, construction specifications and project management services to their clients. These services include geotechnical engineering, civil site design, environmental engineering, construction services including construction observation, site and laboratory materials testing, Quality Control and Quality Assurance. CTL will work with the project architects, owners, and all involved parties to play our part in bringing your project to fruition.

QUALIFIED TEAM

- 25 Professional Engineers with diverse backgrounds including geotechnical engineering, civil engineering, and environmental engineering
- Geotechnical Drilling with a fleet of 10 Drill Rigs
- Skilled surveying staff equipped with the most up-to-date equipment and GPS units and Drones
- Extensive experience working with Federal, State, and private entities
- 35 Years of working in West Virginia
- Working knowledge/understanding of the states geology & geography allowing us to provide custom solutions—we don't just pull plans from a book

SERVICES AVAILABLE

- Civil Site Design
- Surveying/Mapping
- Geotechnical Engineering and Drilling
- Construction Observation
- Materials Testing
- Site Layout
- Project Management & Compliance



PROJECT EXPERIENCE

Geotechnical Services

- City of Indianapolis DPW: Southport WWTP Levee Evaluation - Indianapolis, Indiana
- Ohio Department of Natural Resources: Mt. Gilead State Park Dam Improvements - Mt. Gilead, Ohio
- Clear Fork Reservoir Dam: Seepage Investigations - Mansfield, Ohio
- Ohio Department of Natural Resources: Buckeye Lake Dam Improvements - Buckeye Lake, Ohio
- Point Marion Lock & Dam: USACE – Pt. Marion, Pennsylvania
- Grays Landing Dam and Spillway: USACE – Grays Landing, Pennsylvania
- City of Fairmont WWTP Reservoir – Fairmont, West Virginia
- CONSOL Impoundments
- MEPCO Impoundments

Construction Monitoring / Materials Testing

- Ohio Department of Natural Resources: Acton Lake Dam Improvements - Oxford, Ohio
- Ohio Department of Natural Resources: Mt. Gilead State Park Dam Improvements - Mt. Gilead, Ohio
- Ohio Department of Natural Resources: Lake White Dam Improvements - Waverly, Ohio
- Lake Loramie State Park: Lake Loramie Dam Spillway Improvements - Minster, Ohio
- Point Marion Lock & Dam: USACE – Pt. Marion, Pennsylvania
- Grays Landing Dam and Spillway: USACE – Grays Landing, Pennsylvania
- Marmet Lock and Dam: Kokosing / Fru-Con, LLC – Marmet, West Virginia
- Tygart Lake Dam: Joseph B. Fay Co. – Grafton, West Virginia
- Harrison Power Settlement Pond A – Harrison County, West Virginia

Civil Site Design / Surveying / Mapping / Environmental

- Mine Impoundment Annual Inspections - Northern WV & Southwestern PA
- Upper Deckers Creek Impoundment - Preston County WV
- Point Marion Lock & Dam: USACE – Pt. Marion, Pennsylvania

Section 2

TECHNICAL QUALIFICATIONS

2.1 History of the Firm

Established in 1954, Gwin, Dobson & Foreman, Inc. (GD&F) is one of the region's most respected civil-environmental engineering firms and also one of its largest with 50 professional and support personnel. GD&F has a long and distinguished history of technological and functional innovation. Through the 1930's and 1960's, our founder, Lewis L. Gwin, P.E., was a pioneering sanitary engineer and the tradition continued with Richard T. Dobson, P.E., and John W. Foreman, P.E. in the 1970's.

Under the leadership and direction of Mark Glenn, P.E., President, GD&F has successfully completed \$2 billion of public works projects. These projects include advanced biological nutrient removal (BNR), water and wastewater treatment facilities, interceptor sewers and pumping stations, wastewater collection systems, water distribution and storage facilities, combined sewer overflow control systems, dam and spillway improvements, highways and bridges, land surveying, construction stakeout and engineering, civil/site improvements, public works, utility infrastructure, public and institutional buildings, railroad facilities, heavy civil structures, among others.

Recently, GD&F has also done groundbreaking design work in biological nutrient removal (BNR) systems, combined sewer overflow control, UV disinfection and trenchless technology techniques. GD&F is at the forefront of advanced water treatment design including microfiltration, ozonation/oxidation, submerged membranes, enhanced coagulation systems, UV disinfection, high pressure nanofiltration and microfiltration systems.

GD&F has been recognized by professional associations and industry groups for its design excellence including the following awards:

- Superior Achievement Award - American Academy of Environmental Engineers (2013)
- American Council of Engineering Companies (PA) - Diamond Awards (2001, 2003, 2013)
- American Society of Civil Engineers (Pittsburgh) - Award of Merit (2014)
- Blair County Chamber of Commerce - 2014 Technology Award
- Engineering News-Record - Mid-Atlantic Region Best Project (Environment) - 2014
- Blair County (PA) Business Hall of Fame (2000) - 1st Engineering Firm Inducted
- Pennsylvania Governor's Award for Environmental Excellence (1999)
- American Association of Dam Safety Officials - Mid-Atlantic Region Award of Merit (1996)

2.2 Specific Technical Capabilities

- **Water Resources Engineering.** Urban and flood hydrology; flood control structures; pump station analysis; reservoir operation studies; watershed modeling; hydraulic control design (dams, channels, culverts, diversions, etc.); pollution control; regional water resources development and management; valuation and appraisal reports; acid mine drainage abatement; and mine reclamation.

- **Water Supply, Treatment, and Distribution.** Water storage dams and reservoirs; treatment and filtration facility design; intake structures; transmission, distribution, storage and pumping systems; municipal water management services; and pilot testing of alternative treatment technologies.
- **Environmental Assessments.** Identification, delineation, and mitigation of wetlands in accordance with PADEP regulations; lead paint identification; asbestos analysis and abatement; and environmental site assessments as per CERCLA and ASTM standards.
- **Site Planning and Development.** Site planning and analysis for commercial, industrial, and residential sites including grading; site graphics; landscaping; roadway design; traffic studies; PennDOT permitting; parking lots; stormwater analysis; drainage; erosion and sedimentation control; and streetscape design.
- **Structural and Architectural Engineering.** Structural design and analysis; steel piles and caissons; pier and abutment design; deck and parapet design; soils and foundation engineering; structural inspections and reports; field inspection of construction sites; and site testing and reconnaissance. ADA and code compliance design. Warehouse, industrial and commercial building design.
- **Geotechnical Engineering.** Geotechnical engineering; foundation analysis; structural geology stratigraphy; mineral evaluation and development; surface and subsurface mining engineering; mine drainage control and treatment; abandoned mine reclamation; plant and property appraisal; surface water and groundwater hydrology; geological reconnaissance studies; mineral exploration; hydrogeology; and soil-water sampling/analysis.
- **Surveying.** Mine, land, geodetic, cartographic, highway, bridge and railroad construction stakeout, hydrographic, photogrammetric, property, and engineering surveys via three (3) fully equipped survey crews.
- **Construction Monitoring.** Observation of roadway, bridge, drainage, paving, water and wastewater facilities construction, materials/compaction testing, concrete/aggregate testing, computer documentation and building construction work.
- **Electrical Engineering.** Power distribution system design and analysis; lighting system design; sound and communication system design; fire alarm/security system design; and automatic control system design.

2.3 Facilities

GD&F maintains one of the most modern and technologically-advanced engineering offices in central Pennsylvania with a 13,000 SF facility at 3121 Fairway Drive, Altoona, PA.

2.4 Computer Office/Survey Software

- Server - Microsoft Windows Dell Server PE1800 Intel(R) Xeon(TM) CPU 3.00 GHz 2.99 GHz, 4.00 GB of RAM
- Backup Disaster Recovery (BDR) - HP BDR, 2TB, Raid 5 server
- Base CAD System - AutoCAD Architectural 2018, AutoCAD AEC 2018, AutoCAD Infrastructure Design Suite Premium, AutoCAD Map, Microstation Version V8, Microstation Inroads, ArcView GIS 10.3.1, ArcGIS Explorer, Bentley SewerCAD V8i, WaterCAD, HydroCAD, SewerGems Sanitary V8i, FlowMaster, Water Hammer
- Raster Imaging Software - AutoCad Raster Design 2018
- Scanner - Kip 3000 and Kip 3100 Full Size (42" Wide Flatbed Type) Document Scanner
- Three Dimensional (3D) Modeling Platform - AutoCAD Architectural 2018, AutoCAD AEC 2018, AutoCAD Civil 3D 2018, AutoCAD Infrastructure Design Suite Premium, Inventor Fusion, Autodesk Recap, 3D Studio Viz8
- Electrostatic Plotters - KIP 3000, KIP 3100 Color Ploter - Canon IPF 825 full size color
- E-Mail System - Microsoft Outlook 365
- E-Mail Address/Website Address - mail@gdfengineers.com/www.gdfengineers.com
- Data Collector Conversion Software - Carlson SurvCE, SMI ver. 8, Trimble 6000 series
- CADD Conversion Software - AutoCAD Civil 3D 2018, Carlson 2018
- Accounting - Deltek
- Scheduling - Suretrak 3.0 Primavera, Welcom Open Plan; MSPProject
- Engineering - Enercalc 5.8, ACI Code Viewer, ComCheck, Win TR 55, EBAA Restraint Joint Calculator, EPA NET, BioWin, Alpha 19.0, GSTAB7, MathCAD, Google Earth Pro, McTrans HCS200, Flow Link 5.1, Delorme Topo USA 6.0, EPA SSOAP Toolbox, Hydrant Flow Test, HAC Insight, Calcuflow, Visual Basic, Visual Professional Lighting, AirValve 8.0, and Insight.
- PennDOT - ABLRFD, BAR7, BPLRFD, BXLRFD, EngAsst, PS3, PSLRFD, STLRFD, BOX 5, Engineering Assistant
- Hydrologic and Modeling - HEC-RAS, Watershed Modeling System (WMS), HY 8.7.3, HEC-ResSim 3.0, HEC-HMS 3.5, Hydraulic Toolbox, TR-20, WinTR-20, WinTR-55, EPACAD, GeoHEC-RAS, HEC-DSSVue 2.0.1, Sewer CAD (Sewer GEMS); Water CAD (Water GEMS)
- Miscellaneous Office Software
 - a. Spreadsheets Programs - Microsoft Excel
 - b. Word Processing - Microsoft Word
 - c. Operating Platform - Windows 10
 - d. Virus Protection - Kaspersky, Dual Barracuda Firewall (Email, Web)
 - e. Internet Connections - Wireless High Speed Throughout and Dial-out Backup System, Microsoft Edge, Firefox, Google Chrome and Internet Explorer
 - f. Data Base Programs - Microsoft Access and Rediscovery
 - g. Adobe: Adobe, Adobe Acrobat Standard, and Adobe InDesign CS6
 - h. Microsoft Visio Professional

2.5 Laboratory, Sampling and Testing Equipment

- In-House, Fully Equipped Analytical Laboratory
- V-Notch Weirs, Bubbler Flow Monitors, Pipe Velocity Meters, Stevens® Stream Gaging Equipment, Marsh-McBirney® Current Velocity Meter, Pitot Tubes, Pressure Recorders, Rotometers, Venturi Meters, Streaming Current Meters, Particle Counters
- Field Analytical Testing for Conductivity, pH, Secondary Contaminants (Fe, Mn, Mg, Na, Al, etc.)
- Water Well Sampling and Water Level Measuring Equipment, Bailers/Pumps
- Rain Gauges (WeatherMeasure®), Fluorimeter Dye Dilution Testing, Zeta Potential Meter, Residual Chlorine/Turbidity Monitors, Sewer Smoke Blowers (Liquid Type), Hand held and Lab Spectrophotometers, Dissolved Oxygen Meters, Soil and Sludge Probes/Samplers (Sludge Judge®)
- Pilot Testing Equipment - Ozone and Oxygen Generators, Sand Filter (w/backwash), LMI Chemical Feed Systems, Lead/Copper Corrosion Testing, Computer Monitoring/Control, Trailers
- Delam Concrete Ultrasound Device
- Electrical Test Devices - Amp/Ohm/Volt Meters, Calibration Equipment, Motor Vibration Meters, Handheld Temperature Sensors, Telemetry Radio Locator (UHF/VHF), Hand held GPS Locators (with Topo Software)
- Digital Sound Level Meter
- PosiTector Ultrasonic Thickness Gage

2.6 Survey Field Equipment

- Sokkia SRX Robotic Total Station
- Topcon GPT 3002 Total Stations - 3 Each
- Sokkia Radian RTK Global Positioning System (GPS) Equipment
 - a. Radian GPS Receivers - 2 Each
- Carlson Explorer 600+ Data Collector & RTK Controller - 1 Each
- Carlson Surveyor + Data Collector
- Allegro Data Collectors with SMI and Carlson Software - 3 Each
- Zeiss Automatic Levels -1 Each
- Topcon Automatic Levels - 2 Each
- Sokkia Automatic Level - 1 Each
- Vehicles - 1 Each
- Miscellaneous Equipment
 - a. DJI Phantom 4 Drone
 - b. Fathometer
 - c. Motor Boat
 - d. Ultrasonic Depth Finder
 - e. Schonstedt Magnetic Locator - 3 Each
 - f. Hewlett Packard Handheld Calculators
 - g. Cell Phones and Motorola Walkie-Talkies
 - h. Tripods - 9 Each
 - i. Tribrachs, Adapter & Prism Setups - 9 Each
 - j. Quick Stick, Adjustable Rod with Prism - 3 Each

2.7 Dam Experience and Slope Stability Analysis

City of Lock Haven, Water Supply Dams Improvements, Clinton County, PA

- **Modifications to Warren H. Ohi Dam** - Planning and design for improvements to Warren H. Ohi Dam (circa 1964), an earth embankment dam, 1,010 feet in length with a height of 59 feet and a capacity of 781 million gallons. Work includes the installation of a crest parapet wall, reinforced concrete spillway rehabilitation, mechanical piping intake tower modifications, new intake tower bridge, downstream valve vault and related dam modifications. Construction Cost: \$3,500,000.
- **Modifications to Boyd R. Keller Dam** - Planning and design for improvements to Boyd R. Keller Dam (circa 1956), an earth embankment dam, 590 feet in length with a height of 53 feet and a capacity of 82 million gallons. Work includes the installation of a five (5) cycle labyrinth overflow weir or FuseGate type spillway, concrete spillway chute, terminal structure and energy dissipater, channel modifications, crest parapet wall, reinforced concrete spillway rehabilitation, intake tower modifications, new intake ports, downstream valve vault and related modifications. Construction Cost: \$10,000,000.

Morgantown Utility Board, New Water Supply Dam and Existing Dam Modifications, Monongalia County, WV

- **Construction of Cobun Creek Dam No. 2** - Planning, design and plans and specifications for a new 75-ft. high, 1000-ft long zoned earth embankment dam and 375 million gallon water supply reservoir. Work includes placement of 500,000 cubic yards of various grades of earth fill; 15,000 CY chimney drain; 9,100 CY horizontal drainage blanket and 2,270 feet of 8-in. and 12-in. perforated seepage collection pipe and toe drain system; 400 rock anchors for reinforced concrete walls, slabs and ogee weir; 8,300 CY of reinforced concrete for hydraulic structures; drilling and pressure grouting of a 36,000 SF grout curtain; two-span, 250-foot long, structural steel, plate girder bridge including pier and abutment; 550 LF of 48" and 66" diameter pre-stressed cylinder concrete pipe (PCCP) with concrete cradle; 720 feet of 36-inch diameter ductile iron pipe, 80-ft. high by 12-ft. square intake tower with intake valves and sluice gates and relocation of 1-mile state highway. Construction Cost: \$35,000,000.
- **Modifications to Cobun Creek Dam No. 1** - Planning, design and plans and specifications for new reinforced concrete, 132-ft. broad crested overflow weir, intake structure access bridge, rock spillway channel improvements, concrete infill and rock anchor system, embankment crest material, rock armor slope protection and replacement of intake gates.

PA Department of Conservation and Natural Resources, Statewide Dam Improvements for State Park and Forestry Bureau Dams, Harrisburg, PA

- **Modifications to Hopewell Dam, Union Township, Berks County, PA** - Hopewell Dam is a zoned earth fill dam 29 feet high and 1,000 feet long constructed in 1937. Work includes spillway weir concrete and masonry repair, tree and brush removal, 30" sluice gate and intake valve replacement, staff gage replacement, wooden access stairs and stone walking paths, stone masonry dam repairs and repointing and concrete rehabilitation and epoxy injection work. Construction Cost - \$425,000.

- **Modifications to Scotts Run Dam, Union Township, Berks County, PA** - Scotts Run Dam is a zoned earth fill dam 35 feet high and 670 feet long constructed in the early 1950's. Work includes new 12-inch diameter perforated toe drain and filter drain system, tree and brush removal, staff gage replacement, layout and design of wooden stairs and stone walking paths, layout and design of stone access road, removal and replacement of an existing stone retaining wall at a boat dock, removal and replacement of the top portion of the existing concrete valve vault, and concrete and stone repair on the face of dam. Construction Cost - \$400,000.
- **Pine Run Dam No. 1 Breach Analysis and Emergency Action Plan, Hanover Township, Luzerne County, PA** - Hydraulic analysis, dam breach and downstream inundation mapping for a 39 foot high, 275 foot long, masonry/concrete gravity dam, maintaining a normal pool capacity of 30 acre-feet (9.8 MG) and a drainage area of 4.70 square miles located near Wilkes-Barre, PA. A detailed scope of work and independent cost analysis was performed to breach the dam for Department of Agriculture budget purposes at a cost of \$475,000.
- **Laurel Run Dam No. 2 Breach Analysis and Emergency Action Plan, Plains Township, Luzerne County, PA** - Hydraulic analysis, dam breach and downstream inundation mapping for a 37 foot high, 298 foot long, masonry dam, maintaining a normal pool capacity of 107 acre-feet (35 MG) located at the intersection of I-81 and SR 115 near Wilkes-Barre. The watershed area for the reservoir is 8.73 square miles. A detailed scope of work and independent cost analysis was performed to breach the dam for DNR budget purposes at a cost of \$1,300,000. The scope of work involved construction of a 1-mile access road and specialty demolition procedures for the existing masonry dam.
- **Olyphant Dam No. 3 Breach Analysis and Emergency Action Plan, Luzerne County, PA** - Dam breach analysis and related construction demolition evaluation for a 37 foot high, 760 foot long, earth embankment, maintaining a normal pool capacity of 151 acre-feet (49.4 MG) and a drainage area of 0.6 square miles located near Scranton, PA. A detailed scope of work and independent cost analysis was performed to breach the dam for DNR budget purposes at a cost of \$2,100,000. The dam was constructed in 1898 by the Pennsylvania Gas & Water Company and later conveyed to the State of Pennsylvania for recreational purposes.

Reed's Gap Dam Modifications, Petersburg Borough Water Authority, Huntingdon County, PA. Design of \$1.1 million modifications to a 15-foot high composite earthen and timber crib dam originally constructed in 1934. Project included a new concrete cutoff wall along the entire axis of the dam, extending from the crest to the foundation; a new concrete spillway and crest cap to provide overtopping protection during the probable maximum flood; and new stilling basin and downstream erosion protection. The existing timber and earth structure was replaced with a compacted, engineered fill embankment and the upstream face was resurfaced with a pressure mortar surfacing. A cast-in-place concrete intake tower with multi-port valve system was installed, which also included an operating platform, aluminum access bridge and valve operators and an intake line was placed through the embankment with concrete encasement.

Bakerton Dam Modifications, West Carroll Township Water and Sewer Authority, Cambria County, PA. Design and construction observation of \$1.5 million, 30-foot high, extreme high hazard composite earthen/Amberson concrete slab and buttress dam with new overflow section, embankment, intake structure, downstream erosion protection and dredging. The existing concrete slabs/butresses were incorporated in the new compacted earth dam, thus combining structural and waterproofing elements with a more stable and durable earth embankment. A low cost alternative was devised to provide upstream intake control. Precast concrete culvert boxes were inverted and stacked for a multi-port intake tower.

Lake Mokoma Dam Modifications, Lake Mokoma Association, Laporte Borough, Sullivan County, PA. The dam (with timber crib core) consists of an earth embankment, 500-feet long and 19-feet high with a storage capacity of 260 million gallons. The existing spillway could only pass 39% of the probable maximum flood. In addition, there were questions about the stability of the existing embankment and possibly excessive seepage. The \$2.5 million project consisted of the following design components: a) embankment overtopping protection used an articulated, precast concrete block (Armor Flex®) revetment system. This slope protection is designed to pass the Standard Project Flood without significant embankment erosion, b) lowering of the embankment phreatic surface groundwater level was accomplished by a downstream toe drain, c) spillway was effectively rebuilt including the approach channel, overflow weir and spillway chute with new reinforced concrete slabs, foundations and walls were installed; a decorative wooden walkway bridge spans the spillway and d) new precast concrete intake tower and outlet works including intake structure, bridge access walkway, control valve and new 36-inch, concrete encased, dam-drain line extending through the dam.

Bellwood Run Dam Modifications Design, Altoona Water Authority, Antis Township, Blair County, PA - Design of plans and specifications for modifications to Bellwood dam for compliance with PA Division of Dam Safety for 60-foot high earth fill dam. Project Cost - \$12,000,000.

- Labyrinth spillway upgrade (seven cycle) to accommodate probable maximum precipitation (PMP) as the spillway design flood (SDF)
- Hydrologic analysis using HEC-HMS
- Hydraulic analysis using HEC-RAS and other computational techniques.
- Staged labyrinth spillway with spillway chute and flip bucket energy dissipation
- Intake tower and piping modifications
- Geotechnical Engineering consisting of exploratory drilling, stability evaluation and seepage analysis.

Mill Run Dam Modifications Design, Altoona Water Authority, Logan Township, Blair County, PA - Engineering design and evaluation of Mill Run dam for compliance with PA Division of Dam Safety for 100-foot high zoned earth and rock fill dam. Estimated Construction Cost: \$12,000,000.

- Spillway upgrade to accommodate probable maximum precipitation (PMP) as the spillway design flood (SDF)
- Hydrologic analysis using HEC-HMS

- Hydraulic analysis using HEC-RAS and other computational techniques.
- Staged labyrinth spillway with spillway chute and flip bucket energy dissipation
- Stability Analysis using GSTABL7 software to model rapid drawdown and other possible failure scenarios
- East abutment stability analysis of existing slope failure
- Intake tower and piping modifications
- Development of preliminary plans and cost estimates

US Silica, Proposed Sausman Tailings Dam, Mapleton Keystone Works, Brady Township, Huntingdon County, PA - GD&F performed preliminary engineering and design for a proposed 45-foot high tailings dam including structural and geotechnical analysis, geological reconnaissance, hydrologic and hydraulic design, spillway design, construction methodology, cost estimation and related work. Estimated Project Cost - \$3.5 million.

Altoona City Authority, Blair Gap Masonry Dam Rehabilitation, Blair County, PA - Rehabilitation work for 40-foot high masonry gravity structure originally constructed by the Pennsylvania Railroad. Repair elements included joint repair; placement of pressure mortar surfacing on the upstream masonry face of the dam to seal all joints; scour repairs and replacement of staff gauge mounted on vertical upstream face. Project Cost - \$300,000.

Montgomery Dam Modifications Design, Clearfield Municipal Authority, Pike Township, Clearfield County, PA - Engineering design and evaluation of Montgomery dam for compliance with PA Division of Dam Safety requirements for 100-foot high zoned earth and rock fill dam. Project Cost - \$12,000,000.

- Spillway upgrade to accommodate probable maximum precipitation (PMP) as the spillway design flood (SDF)
- Hydrologic analysis using HEC-1/HEC-HMS
- Hydraulic analysis using HEC-RAS and other computational techniques
- Roller Compacted Concrete (RCC) downstream slope protection
- Primary spillway consisting of a reinforced concrete ogee weir, chute spillway
- Stability Analysis using GSTABL7 software to model rapid drawdown and other possible failure scenarios
- New intake tower and intake piping modifications
- Development of preliminary plans and cost estimates

Laurel Creek Dam Spillway Evaluation, Lewistown Municipal Authority, Armagh Township, Mifflin Co., PA - Hydraulic evaluation of existing ogee-weir spillway for 145 ft. high rock-fill water supply dam including spillway weir, side-channel spillway, spillway chute and terminal structure. Project report included recommendations for spillway enlargement to pass the probable maximum flood (PMF), hydraulic computations and project cost estimates.

Piffer Dam Breaching and Lake Saguin Replacement, Polk State Hospital, Polk Borough, Venango County, PA - The project involved the breaching of Piffer dam. The former impoundment (Lake Saguin) was replaced with a 1.9 million gallon pond to provide institutional fire protection. Piffer dam was an earthen dam, 377-feet long and 26 feet high. Classified as a "high hazard" dam by DEP Division of Dam Safety, the 8-acre impoundment had a capacity of 19

million gallons. The breaching of the 110-year old Piffer Dam (Phase I) included excavation, channel stabilization, storm sewer extension, rock lining of the breach area, spillway demolition and water management. The breach opening was hydraulically sized for the "probable maximum flood" condition. The sanitary sewer relocations included a 12-inch sewer along the south dam abutment and a 110-foot long, 36-inch deep wide-flange beam over the breach opening to support the existing gravity sewer. The new pond construction included a geosynthetic clay liner and riprap slope protection at the stream side of pond. The Sandy Lick Creek pond intake included a reinforced concrete intake, screens, outlet works, 12-inch pond fill line, channel modification, stream diversion and appurtenances. Project Cost - \$1,200,000.

Singer's Gap Dam Rehabilitation, Mt. Union Area Water Authority, Huntingdon County, PA, 1998 - Design and construction administration of renovations to Singer's Gap dam consisting of a 35-foot high, 700-foot long Amberson-type reinforced concrete buttress dam. Renovations included concrete rehabilitation, spillway overflow section, downstream erosion protection and other miscellaneous items. Project Cost, \$350,000.

Impounding Dam Modifications, Altoona City Authority, Logan Township, Blair County PA - Design of modifications to fifty-five (55)-foot high earthfill/rockfill dam for potable water supply. Project involved modifications to existing dam including a 65-foot high reinforced concrete intake tower and outlet works (17-foot diameter) with two 36" diameter sluice gate intake ports with knife gate valves; 36" diameter dam drain/supply line with concrete encasement; 25-foot long stainless steel principal spillway weir assembly to control the water surface in reservoir including 25'x15' stainless steel weir channel and 1,200 ft. long tunnel lined with vitrified clay liner plates; 116-foot long uncontrolled reinforced concrete emergency spillway with 4-foot high spillway mounted inflatable rubber dam; 15-foot high rock fill heel installed with 50 mil impervious PVC membrane waterproofing liner with geotextile fabric; and replacement of emergency downstream 36" dam drain valve and mechanical piping.

Lake Altoona Dam Modifications, Altoona City Authority, Logan Township, Blair County, PA - Modifications to 80-foot high, earth fill, water supply dam; 1000 MG reservoir storage capacity intake tower modification; bypass channel renovations and pressure mortar surfacing; new reinforced concrete, side channel emergency spillway (ogee weir); 130-foot long inflatable rubber dam with automatic deflation control (mounted on ogee weir); rock armor energy dissipation; toe drain; 1000 L.F. 1,200 foot long reinforced concrete floodwall and observation wells and piezometer installation. Project Cost - \$8 million.

Treaster Valley Dam Evaluation, Lewistown Municipal Authority, Armagh Township, Mifflin County, PA - Evaluation of proposed 95-foot high earth fill water supply dam with a capacity of 1.0 billion gallons. Evaluation consisted of the design of an uncontrolled emergency spillway; outlet tower control works; and foundation grouting and preparation. Project included geological reconnaissance and geotechnical engineering assessment. Estimated Project Cost - \$25 million.

Kettle Dam Modifications, Altoona City Authority, Tyrone Township, Blair County, PA - Design of modifications to fifty-five (55)-foot high earth fill dam with asphaltic concrete/ cement concrete upstream deck; drilling and grouting of dam foundation and abutments, cofferdam and stream diversion system, 60-foot high reinforced concrete intake tower and outlet works (17-

feet in diameter); 100-foot long uncontrolled emergency spillway consisting of reinforced concrete ogee, chute and deflector bucket; riprap/rock armor channel, subsurface deck drain system on upstream side of dam; impervious asphaltic concrete upstream deck and downstream outlet valve control pit. Project Cost - \$3.5 million

Plane Nine Dam Modifications, Altoona City Authority, Juniata Township, Blair County, PA - Design of modifications to Plane Nine Dam including installation of new spillway, intake tower, toe drain, floodwall, access road and embankment modifications for 55-foot high earth fill dam. The project included reinforced concrete intake tower and pre-stressed concrete access bridge, mechanical intake tower piping and hardware, embankment modifications, floodwall, reinforced concrete emergency spillway, riprap discharge channel, toe drain, paved dam crest, upstream drainage system and reservoir basin silt removal. Project Cost - \$3.5 million.

Kittanning Point Reservoir Modifications, Altoona City Authority, Logan Township, Blair County, PA - Design and construction supervision of three (3) reinforced concrete, uncontrolled ogee, overflow spillways designed for PMF with 1800 L.F. concrete floodwall. This project represented the first phase of spillway renovations at the Horseshoe Curve reservoir system. The project was an exceedingly complex hydraulic design problem involving standing wave analysis, spatially varied flow, rapidly varied, unsteady flow and channel hydraulics. Project Cost - \$2.6 million.

Homer Gap No. 2 Modifications, Altoona City Authority, Logan Township, Blair County, PA - Design and construction supervision of 75-foot wide reinforced concrete, uncontrolled ogee, overflow spillway designed for ½ probable maximum flood (PMF) utilizing HEC-1 flood routing techniques with reservoir storage. The project included an 800 L.F. reinforced concrete floodwall to increase effective spillway head along entire length of dam crest. Project Cost - \$800,000.

Moose Creek Dam Modifications, Clearfield Municipal Authority, Lawrence Township, Clearfield County, PA - Design and construction observation for grouted gabion mattress slope protection installed on downstream slope of 35-foot high earthen dam (800 feet crest length) to comply with dam safety requirements. Project included concrete rehabilitation of existing reinforced concrete spillway using pressure mortar surfacing. Project Cost - \$500,000.

Montgomery Run Dam Intake Tower Concrete Rehabilitation, Clearfield Municipal Authority, Pike Township, Clearfield County, PA - Design and construction observation for renovations to the spillway and intake tower using pressure mortar surfacing repair methods. Project Cost - \$250,000.

Slope Stability Analysis

Coal Refuse Pile Design and Analysis, Tanoma Coal Company, Rayne Township, Indiana County, PA. Slope stability analysis and design for a 100-ft. high coal refuse pile for deep mine complex including slope stability software analysis, seepage estimates, pile design, drainage and slope stabilization.

Cobun Creek No. 2 Dam Slope Stability Analysis, Morgantown Utility Board, Monongalia County, WV. Slope stability analysis for a new 70-high high, zoned-earth embankment dam using slope stability software analysis, seepage estimates and slope protection design and stabilization.

Industrial Site Repurposing of Mine Reclamation Fill Site, Jefferson County Development Council, Pine Creek Township, Jefferson County, PA. Slope stability analysis and design for a 100-ft. high surface mine reclamation site including slope stability software analysis, seepage estimates, pile design, drainage and slope stabilization

Lake Mokoma Dam Slope Stability Analysis, LaPorte Borough, Sullivan County, PA. Slope stability analysis for modifications of a 30-ft. high earth embankment dam with timber crib core using slope stability software analysis, seepage estimates and slope protection design and stabilization

Kettle Dam Slope Stability Analysis, Altoona City Authority, Tyrone Twp., Blair County, PA. Slope stability analysis for modifications of a 55-ft. high earth embankment dam using slope stability software analysis, seepage estimates, asphaltic concrete deck design and drilling and foundation grouting.

Plane Nine Dam Slope Stability Analysis, Altoona City Authority, Juniata Twp., Blair County, PA. Slope stability analysis for modifications of a 55-ft. high earth embankment dam using slope stability software analysis, seepage estimates and slope protection design and stabilization.

Lake Altoona Dam Slope Stability Analysis, Altoona City Authority, Logan Twp., Blair County, PA. Slope stability analysis for modifications of a 90-ft. high earth embankment dam using slope stability software analysis, seepage estimates and slope protection design and stabilization.

Bellwood Dam Slope Stability Analysis, Altoona City Authority, Antis Twp., Blair County, PA. Slope stability analysis for modifications of a 60-ft. high earth embankment dam using slope stability software analysis, seepage estimates and slope protection design and stabilization.

Impounding Dam Slope Stability Analysis, Altoona City Authority, Logan Twp., Blair County, PA. Slope stability analysis for modifications of a 5-ft. high earth embankment dam using slope stability software analysis, seepage estimates and slope protection design and stabilization. Modifications included addition of an upstream rockfill embankment buttress and drilling and foundation grouting work to address an upstream slope failure.

Section 3

KEY PERSONNEL

Listed below are the key members of GD&F for the Department of Agriculture Dam Projects team. Resumes are also provided at the end of this section.

- **Mark Glenn, P.E.,** President, will serve as Principal-in-Charge. Mr. Glenn has over 42 years experience in dam design and engineering and is the Engineer-of-Record for 25 major dam projects. As Principal-in-Charge, Mr. Glenn will serve as the administrative liaison between Department of Agriculture and GD&F. He will ensure that key milestone dates are met and that GD&F provides a quality, cost-effective design. Mr. Glenn holds a BSCET degree from the University of Pittsburgh and a MSCE degree from the New Jersey Institute of Technology. He is a registered professional engineer in West Virginia and 7 other states.
- **W. Andrew Arnold, P.E.,** Design Operations Director, will serve as the team's overall Project Engineering Manager will be responsible for all aspects of engineering quality control and deliverables. Mr. Arnold has more than 17 years of experience in dam rehabilitation/structural modifications, architectural engineering and project management. He has extensive experience with development of contract documents, specifications and other design and construction-related documents. Mr. Arnold possesses a bachelor's of science degree in architectural engineering, structural emphasis, from Penn State University and is a registered professional engineer in Pennsylvania and West Virginia and 5 other states.
- **Garret Hargenrader, P.E.,** will serve as Project Senior Hydraulic Engineer and has over 8 years of experience in civil and dam engineering. He holds a Bachelor's Degree in Civil Engineering from the University of Pittsburgh. Mr. Hargenrader was the lead hydraulic design engineer for the \$35 million Cobun Creek dam, \$12 million Bellwood Dam and PA DCNR dam projects. He is a registered professional engineer in West Virginia and Pennsylvania.
- **Christopher M. Eckenrode, P.E.,** will serve as Senior Project Engineer. Mr. Eckenrode has eleven (11) years experience in dam engineering projects, general civil engineering design, treatment plant layout and design, stability analysis of dams, piping layout and drainage control, contract documents and specifications, coordination of design tasks, cost estimating and construction management. Mr. Eckenrode served as project engineer for the Lake Mokoma dam and Reed's Gap dam rehabilitation projects. Mr. Eckenrode is a BSCE graduate from Penn State University and is a registered professional engineer in West Virginia, Pennsylvania, and Maryland.
- **Kenneth Beldin, P.E., LEED AP BD+C** will serve as Project Civil Engineer and will be the principal design engineer for the site and civil engineering components. Experience (11 years) includes land development, subdivision planning and design, stormwater management systems, erosion and sediment control plans, hydraulic and hydrologic analysis and hydraulic structure design. Mr. Beldin is a graduate of Penn State University with a B.S. Degree in Civil Engineering. He is a registered professional engineer in West Virginia, Virginia, and Pennsylvania.

- **James F. Potopa, P.E.**, will serve as the Project Mechanical Engineer specializing in system hydraulics and unit operation design. Mr. Potopa has over 32 years experience in mechanical engineering design, mechanical systems applications and facilities layout. Mr. Potopa has an Associate's Degree in Mechanical Engineering Technology from Penn State University and is a registered professional engineer.
- **Matthew R. Orner**, Senior Project Manager, has 14 years experience in water system design, sitework and site drainage design, stormwater design, surface water hydrology, project inspection and project management. His experience involves familiarity with HEC-RAS, DAMBRK, HEC-HMS and VTPSUHM hydrological modeling programs. He holds a Bachelor's Degree in Civil Engineering Technology from the University of Pittsburgh.
- **Steven J. Gibson, P.E., Project Engineer**, will be a key member of the GD&F design team as Project Civil Engineer with 8 years of experience in engineering design. He has seven years of design experience in stormwater management design, storm sewer system modeling and monitoring, mechanical piping layout, water system design, preparation of contract documents, permitting and cost estimating. Mr. has a Bachelor of Science Degree in Civil and Environmental Engineering from Pennsylvania State University. He is a registered professional engineer in West Virginia and Pennsylvania.
- **Travis J. Long, CEP**, is the Senior Project Environmental Scientist responsible for performing the Phase I Environmental Assessment, project wetlands permitting; submerged lands license agreement applications and water supply permit applications. He also has broad experience with watershed assessments and source water protection plans, statistical low-flow stream evaluations, reservoir yield evaluations, groundwater quality analysis, stream water quality and biological evaluations, aquatic biology surveys, stream flow field measurements and related work. Mr. Long has a Bachelor's Degree in Environmental Science and Ecology from Juniata College and is a Board-Certified Environmental Professional. He has 18 years of extensive experience in environmental science, technology applications and environmental permitting and is a licensed water system operator.
- **Maggie K. Weitzel**, is the Project Environmental Scientist and holds a BS degree in Environmental Science from Juniata College with over 10 years of experience in environmental science and performing advanced technical tasks in wetlands delineation and mitigation, environmental and ecological investigations and the preparation of environmental permit applications. Experience includes permit applications, NEPA-level environmental assessments, findings of no significant impact-type environmental reviews and PNDI searches and mitigation measures. Ms. Weitzel is a certified Environmental Professional-In-Training.
- **Gabriel Pelligrini, P. E., P.L.S.**, Survey Coordinator/ Project Civil Engineer will provide the control and construction surveying. He has over 45 years of surveying experience with both field and office capacities. His experience includes construction stakeouts, property utilities, and topographic surveys, as well as cadastral, engineering, geodetic, and photogrammetric engineering surveys involving subdivisions and rights-of-way, drainage, water and sanitary lines, storm sewers, and aerial controls for topographic mapping.

- **Douglas Batt, P.E., Project Geotechnical Engineering Consultant (CTL),** Mr. Batt is Project Manager, Geotechnical Engineer and Manager of the CTL Cincinnati Branch Office of CTL with over 28 years of engineering experience. He will provide geotechnical consultation as part of the design team. Mr. Batt possesses BSCE and MSCE degrees from the University of Cincinnati.

His technical and project management experience includes geotechnical investigations, foundation design and evaluations, and construction materials testing and inspections for the following types of projects: roadways and bridges; reinforced earth embankments, earth dams, and earth retaining systems; slope stability analyses and landslide remediation; above and below ground fuel and water storage tanks; wastewater treatment facilities; manufacturing and parking facilities; and multistory office, hotel and school buildings.

- **Carl Selfridge, Project Exploratory Drilling and Soil Testing Consultant (CTL),** Mr. Selfridge is responsible for directing all aspects of the Geotechnical Engineering Department for CTL Engineering of West Virginia, Inc. This includes the management of field drilling activities, field classification of soil and rock, field and laboratory safety procedures, the assignment of a laboratory testing program, and performing geotechnical evaluations. Engineering evaluations include foundation recommendations, settlement analysis, slope stability analysis, earth pressure coefficients and report preparation. Mr. Selfridge possesses a 1996 BSCE degree (along with post-graduate geotechnical engineering work) from Rensselaer Polytechnic Institute.

Mark Glenn, P.E.

PRESIDENT AND PRINCIPAL-IN-CHARGE

President and principal-in-charge of a full-service consulting engineering firm. Experience includes advanced water/wastewater treatment facilities; water transmission, distribution, storage and pumping systems; wastewater collection, conveyance and pumping systems; combined sewer overflow (CSO) analysis and modeling; CSO storage and pumping systems; dams and reservoirs; spillways and intake structures; groundwater hydrology and well field development; and stormwater management. Expertise includes bridges and transportation design; buildings and structures; valuation and rate studies; infrastructure systems and facilities planning; capital project financing; and municipal operations consultation. Engineer-of-Record for hundreds of projects with a current value of \$1.7 billion.

Key Projects

Cobun Creek Dam No. 2, Morgantown Utility Board, Monongalia County, WV. Engineer-of-Record for the design of a new \$40 million water supply dam and 375 million gallon reservoir for the Morgantown regional water system. Project elements included 75 ft. high zoned earth embankment (500,000 CY), internal drainage system, ogee-weir overflow spillway, intake tower, and 66 inch PCCP outlet conduit.

Dam Improvements, Altoona Water Authority, Blair County, PA. Engineer-of-Record for \$40 million dam improvement projects including Kittanning Point, Cochran-Impounding, Lake Altoona, Mill Run, Bellwood, Kettle, Homer Gap and Plane 9 dams featuring embankment improvements, new spillways, intake towers, drilling and grouting, floodwalls and levees, tunnels and channels.

Clearfield Municipal Authority, Moose Creek Dam Modifications, Clearfield County, PA Project engineer for flood proofing the Moose Creek dam embankment including installation of 1,700 CY of gabions for overtopping protection, concrete slurry treatment, reinforced concrete and shotcreting the existing spillway at a cost of \$500,000.

Lake Mokoma Dam Modifications, Lake Mokoma Association, Sullivan Co., PA Project principal for flood proofing the Lake Mokoma dam including new 36" outlet pipe, valve vault, downstream perforated toe drain system, interlocking articulated, concrete block overtopping protection system for dam embankment, new spillway retaining walls, floor slabs, bridge abutments and underdrains. Total project cost: \$2 million.

Montgomery Dam Spillway Evaluation, Clearfield Municipal Authority, Clearfield County, PA Project engineer for hydrologic and hydraulic evaluation of Montgomery Run spillway with an alternatives evaluation for increasing spillway capacity. Recommended improvements included dam overtopping protection using roller compacted concrete and new intake tower at a cost of \$10 million. *Continued* ▶

Education

MS - Civil Engineering, New Jersey Institute of Technology

BS - Civil Engineering Technology, University of Pittsburgh

Environmental Engineering, Graduate Work, Worcester Polytechnic Institute

IWPC Biological Treatment Certificate, Manhattan College

Registration

Pennsylvania [REDACTED]

West Virginia [REDACTED]

Maryland [REDACTED]

Virginia [REDACTED]

New York [REDACTED]

Delaware [REDACTED]

Ohio [REDACTED]

New Jersey [REDACTED]

Honors & Awards

American Academy of Environmental Engineers - 2013 Superior Achievement Award

American Society of Civil Engineers (Pittsburgh Chapter) Award of Merit

Engineering News Record (ENR) 2014 Mid-Atlantic Region Honor Award (Water/Wastewater)

ACEC/PA Diamond Award - Water Resources, 2001, 2006, 2013

Altoona Blair County (PA) Chamber of Commerce - 2014 Technology Award

PA Governor's Award for Environmental Excellence - 1999

Association of State Dam Safety Officials - 1996 Regional Award of Merit

Affiliations

American Academy of Environmental Engineers, Diplomat

American Academy of Water Resources Engineers, Diplomat

American Society of Civil Engineers

American Water Works Association

Association of State Dam Safety Officials

Water Environment Federation

United States Society of Dams

Publications & Presentations

AWWA-PA - "Clearfield Water System Improvements," 2014

ASDSO - "Bakerton Dam Rehabilitation," 2006

ASDSO - "Tipton/Blair Gap Dam Rehabilitation," 2005 (Co-Author)

ASDSO - "Lake Altoona Dam Rehabilitation," 2001

ASDSO - "Rehabilitation of Singer's Gap Dam," 1999 (Co-Author)

ASCE Water Resources - "State College Water Distribution System Modeling," 1998 (Co-Author)

ASCE Geotechnical Division - "Rehabilitation of Plane Nine Dam," 1993 (Co-Author)

Instruction

St. Francis University, Adjunct Instructor
- Environmental Engineering

Mill Run Dam Evaluation, Altoona Water Authority, Blair County, PA

Project engineer for hydraulic and hydrologic evaluation of Mill Run dam using USACE/USBR criteria for the probable maximum flood. Subsurface investigation, rock slope geological evaluation and seepage and stability analysis were included. Abutment rock slope, geotechnical analysis performed using subsurface investigation and geological engineering methods. Derivation of standard project flood using HEC-HMS modeling software. Alternatives evaluation included staged ogee and labyrinth well spillways, floodwalls, RCC overtopping protection and new intake tower. Proposed dam modifications total \$12 million.

Bellwood Dam Modifications, Altoona Water Authority, Blair County, PA

Project principal for design of \$12 million Bellwood dam modifications. Hydrologic and hydraulic evaluation of Bellwood dam using HEC-HMS evaluation techniques and criteria for spillway adequacy. Project includes staged labyrinth weir spillway and new intake tower.

Modifications to the Impounding Dam, Altoona Water Authority, Blair County, PA

Project engineer for new emergency and side channel spillways, drilling and grouting, rockfill embankment, PVC/geotextile liner on upstream face, intake tower, tunnel relining, toe drain, water transmission main relocations and spillway mounted rubber dam to comply with PA DER Division of Dam Safety/ USCOE hydraulic criteria. The \$4 million project addressed seepage, slope stability and spillway capacity problems.

Modifications to Kettle Dam, Altoona Water Authority, Blair County, PA

Project engineer of new \$3.5 million reinforced concrete spillway/floodwall system, intake tower and access bridge, asphaltic concrete deck, drilling and grouting, toe drain, access road and 1,000 L.F. - 12" water transmission main to comply with DER Division of Dam Safety/USCOE hydraulic criteria.

Modifications to Homer Gap No. 2 Dam, Altoona Water Authority, Blair County, PA

Project engineer for the design of \$0.75 million floodwall and spillway to accommodate the Probable Maximum Flood in accordance with DER Division of Dam Safety/USCOE hydraulic criteria.

Modifications to Kittanning Point Dam, Altoona Water Authority, Blair County, PA

Project engineer for the design of \$2.5 million floodwall, three (3) spillways, access bridges, roads, earthwork and erosion control/protection to accommodate the Probable Maximum Flood in accordance with DER Division of Dam Safety/USCOE hydraulic criteria.

Modifications to Plane Nine Dam, Altoona Water Authority, Blair County, PA

Project principal and design director for \$4 million Plane Nine Dam modifications including emergency uncontrolled spillway, intake tower, drilling and grouting, floodwall, access road and embankment modifications to comply with DER Division of Dam Safety/USCOE hydraulic criteria.

W. Andrew Arnold, P.E.

DESIGN OPERATIONS DIRECTOR

Design Operations Director for management of design engineering staff and overall technical support services coordination, including coordination of projects with the facilities planning director, construction management director and office services coordinator. Provides technical quality control review and advisement to project design teams. Over 17 years of comprehensive experience in structural analysis, structural and architectural design, and maintaining client contact duties for commercial and institutional buildings, water and wastewater treatment facilities, dams and structural rehabilitation projects. Extensive capabilities in preparation of contract documents, specifications, construction management, cost estimating and coordination of all design disciplines from conceptual design through completion of construction.

Key Projects

Cobun Creek No. 2 Dam and Reservoir, Morgantown Utility Board, Monongalia County, WV Structural engineer for new \$27 million dam and reservoir, including 500-foot long concrete spillway, 80-foot high intake tower and 205-foot two-span access bridge.

Bakerton Dam, West Carroll Township Authority, Cambria County, PA Structural designer for the rehabilitation of a deteriorating dam. Project consisted of the design of replacing deteriorated concrete members, the design of a new spillway and retaining walls, new concrete cap, new intake structure and 30' long aluminum access bridge.

Administrative Office Building and Courthouse, Bedford County, Bedford County, PA Architectural/structural designer and project manager for the 100,000 square foot \$18 million courthouse addition, renovations of three existing buildings, historic restoration of 175 year old courthouse, and 144 space precast parking garage. Conducted structural inspection of eight nineteenth century office buildings and compiled report identifying the feasibility of construction of a single office building.

Altoona Water Authority, Administrative Office Building, Altoona, PA Architectural/Structural Engineer for the 21,000 square foot, \$5 million office building. Project included hazardous material abatement and demolition of existing structures.

PA State Police Troop G Headquarters Building Addition, Department of General Services, Blair County, PA Structural and Architectural Designer for \$2 million addition to headquarters building.

Education

BS - Architectural Engineering
The Pennsylvania State University

Registration

Pennsylvania [REDACTED]

West Virginia [REDACTED]

Maryland [REDACTED]

Delaware [REDACTED]

Virginia [REDACTED]

Ohio [REDACTED]

New York [REDACTED]

Certified Bridge Safety Inspector

Affiliations

National Society of Professional Engineers

American Society of Civil Engineers

Construction Specification Institute

American Concrete Institute

Association of State Dam Safety Officials

Deep Foundations Institute

American Society for Highway Engineers

American Institute of Steel Construction

Wastewater Treatment Facility Improvements, Clearfield Municipal Authority, Clearfield County, PA Project Engineer for \$30 million treatment improvements including new Bionutrient Removal process treatment units, new final clarification tanks, control building, headworks, pretreatment and related improvements for increased plant capacity and biological nutrient removal upgrade.

Westerly Wastewater Treatment Facility Bionutrient Removal (BNR) Upgrade and Expansion, Altoona Water Authority, Blair County, PA Project Engineer and structural designer for \$30 million wastewater treatment facility upgrade.

Altoona Water Authority, Easterly Wastewater Treatment Facility, BNR Upgrades and Expansion, Blair County, PA Project engineer and structural designer for \$35 million wastewater treatment facility upgrade.

East Providence Municipal Authority, Wastewater Treatment Facility Upgrades, Bedford County, PA Structural Engineer for \$3 million upgrade of treatment plant, which included the design of new Intermittent Cycle Extended Aeration System (ICEAS) tanks, new process and chemical storage buildings.

Wastewater Treatment Facility BNR Improvements, Alexandria Borough - Porter Township Joint Sewer Authority, Huntingdon County, PA Architectural/structural Designer for a new 1 MGD \$5.5 million wastewater treatment facility.

Behavioral Health Building Project, Altoona (Van Zandt) VA Medical Center, Blair County, PA Project Engineer for site design of 18,000 sq. ft. Behavioral Health Building.

Women's Community Living Center (CLC), Martinsburg VA Medical Center, Martinsburg, WV Project Manager for site design of the 15,000 sq. ft. Women's CLC.

Hollidaysburg Veterans Home Water Main Extension, Altoona Water Authority, Blair County, PA Project Engineer for construction of 800 L.F. of transmission line, meter and vault, site modifications and landscaping.

L.B. Morris Elementary and Jr./Sr. High School Renovations/Additions, Jim Thorpe Area School District, Carbon County, PA Project Manager for \$25 million elementary school renovations and additions.

Grace Milliman Pollock Performing Arts Center, Camp Hill School District, Camp Hill, PA Project Manager for the \$20 million Grace Milliman Pollock Performing Arts Center on the Eisenhower Elementary School Campus.

Membrane Filtration Water Treatment Facility, Town of Moorefield, New Hardy County, WV Architectural/Structural Engineer of new \$23 million 8.0 MGD membrane filtration water treatment facility.

Garret J. Hargenrader, P.E.

PROJECT ENGINEER

Comprehensive civil/site/transportation experience including wastewater collection and conveyance system design, water distribution system design, hydraulic analysis of rivers and flood plains, watershed hydraulic modeling, Erosion & Sediment control, DEP permitting, stormwater design, pump design, mechanical piping layout design, Inflow & Infiltration analysis of sewer systems and hydraulic modeling of reservoirs. Construction management experience gained through infrastructure projects including cost estimation, quantity take offs, development of contract documents and specifications, bid phase management, project meetings and coordination and construction supervision. Funding experience with PennVEST, RUS/USDA and CDBG.

Key Projects

Cobun Creek No. 2 Dam and Reservoir, Morgantown Utility Board, Monongalia County, WV Project Engineer for new \$30 million dam and reservoir. Project included 60-foot zoned earth embankment dam, ogee weir spillway, 65-foot high intake tower, 66" dam intake line, and stream channel improvements.

Bellwood Dam and Reservoir, Altoona Water Authority, Blair County, PA Project Engineer for design of \$12 million Bellwood dam modifications including staged labyrinth weir spillway and new intake tower.

Wastewater Corrective Action Plan, Altoona Water Authority, Blair County, PA Project Engineer for wastewater collection system corrective action plan according to DEP standards for removal of excess inflow/infiltration.

Wastewater Treatment Facility Bionutrient Removal Upgrade, Clearfield Municipal Authority, Clearfield County, PA Project Engineer for construction of \$30 million, 6 MGD advanced wastewater treatment facility improvements.

Breezewood Wastewater Treatment Facility Upgrades, East Providence Municipal Authority, Bedford County, PA Assisted the project engineer in the design of \$4 million 0.4 MGD wastewater facility upgrade.

Wastewater Treatment System, Belfast Township, Fulton County, PA Project Engineer for new 30,000 gpd wastewater treatment facility and 15,000 L.F. of sanitary sewer line.

Tapping Fee Evaluation, State College Borough, Centre County, PA Project Engineer for calculations and recommendations for sewer tapping fees based on Act 57 (House Bill No. 51) of 2003. Duties included writing report and calculating the updated tapping fee for capacity and collection components.

Education

BS - Civil and Environmental Engineering, University of Pittsburgh

Registration

Pennsylvania [REDACTED]
West Virginia [REDACTED]

Continuing Education

More Than Just a Pipe Through a Dam, Spillway Conduits, ASDSO, 2016

Inspection and Assessment of Dams, ASDSO, 2015

Infiltrating Stormwater Workshop, 2015

Membrane Filtration-Process, Products & Materials, Red Vector, 2012

Wastewater Treatment-Nutrient Removal, Red Vector, 2012

Fundamentals of Reinforced Concrete Design of Hydraulic Structures, ASDSO 2011

Geosynthetics BMP's for Stormwater Management by ACF Environmental, 2010

Masonry Structures Direct Design by National Concrete Masonry Association, 2010

Affiliations

Association of State Dam Safety Officials

Sanitary Sewer Cleaning-Televising and Repair, Clearfield Municipal Authority, Clearfield County, PA Project Engineer for 5,000 L.F. of sewer cleaning and televising/repair of 250 L.F. by Cured-In-Place Pipe Method.

Easterly Outfall Sewers, Altoona Water Authority, Blair County, PA Project Engineer for the monitoring of outfall sewers according to DEP standards.

Sewer Inflow & Infiltration Analysis, Mount Aloysius College, Cambria County, PA Project Manager for Inflow and Infiltration analysis and report of the Mount Aloysius sewer system.

Easterly Wastewater Treatment Plant, Altoona Water Authority, Altoona, Blair County, PA Project Manager for completion of NPDES storm water permit, land development, and estimate for concrete take off.

Waste Water Treatment Facility Bionutrient Removal Upgrade, Levine Engineering, LLC, Moshannon Valley Joint Sewer Authority, Centre County, PA Assisted project engineer with storm water design, NPDES permit application, and cost estimations for the new facility.

Water Supply Dams Hydrologic/ Hydraulic Evaluation, City of Lock Haven, Clinton County, PA Project Engineer for the evaluation of three water supply dams to comply with the United States Army Corps of Engineers (USACE) and PA DEP Division of Dam Safety spillway capacity criteria.

Waterline Replacement Projects, Pennsylvania American Water, Statewide, PA Project Engineer for \$10 million waterline replacement and relocation projects totaling 80,000 L.F. of waterline.

Site Design, C&R Equipment Leasing Trailer Transfer Station, Jefferson County, PA Project Engineer for site design, stormwater design, and NPDES permit.

Municipal Engineer, Belfast Township, Fulton County, PA Municipal Engineer for site/land development, stormwater ordinances, and Liquid Fuels Program.

Butler Veterans Affairs Medical Center, Butler County, PA Assisted project engineer with site layout and design for the project including quantity take off and estimates, assisting with stormwater and retaining wall designs.

Parking Lot Development, Evangelical Lutheran Church, Blair County, PA Assisted project engineer with parking lot design including layout, stormwater management, permit applications and shop drawing review.

Water System Improvements, Clearfield Municipal Authority, Clearfield County, PA Project Manager for design and construction of two 1.5 MG water storage tanks, one (0.5 MG water storage tank, 10,000 L.F. transmission main and pump station facilities at a cost of \$6 million.

Waterline Replacement Projects, Pennsylvania American Water, Central Region, PA Project Engineer for design of 24,000 L.F. of waterline.

Christopher M. Eckenrode, P.E.

SENIOR PROJECT ENGINEER

Eleven (11) years of comprehensive design experience including general civil/site design, soil mechanics, Erosion & Sediment (E&S) control, architectural layout and detailing, structural concrete design and reinforcement detailing, pump design, mechanical piping layout, liquid, powder and gas chemical feed and UV system design and operation, membrane filtration systems design and operation, GAC system design, water storage tank and river intake design, dam improvements, preparation of contract documents, permitting, scheduling, coordination of design tasks and personnel, cost estimating and value engineering. Extensive experience in all aspects of construction administration of multi-million dollar construction projects.

Key Projects

Lake Mokoma Dam Upgrade, Lake Mokoma Association, Sullivan County, PA, Senior Project Engineer for \$2.5 million dam upgrade. Determined the existing condition of dam outlet structure and embankment. Performed stability and hydraulic analysis of dam. Designed new outlet system featuring a new pipe, valve, valve vault and a downstream perforated toe drain system to meet current PA-DEP standards. Prepared a feasibility study for dam sediment removal. Designed an interlocking articulated concrete block overtopping protection system for the entire dam width. Designed new spillway retaining walls, floor slabs, bridge abutments and underdrains.

Reed's Gap Dam Modifications, Petersburg Borough Water Authority, Huntingdon County, PA Project Construction Manager \$1 million rehabilitation of deteriorated existing stone filled wood cribbing and earthen dam. Project consisted of the design of a new concrete spillway, cut-off and retaining walls, new intake structure with aluminum access bridge, new rock stilling basin, earthwork and piping.

New Membrane Filtration Water Treatment Facility, Bear Valley Joint Authority, Franklin County, PA Senior Project Engineer for design and construction of new \$9.3 million, 2.25 MGD membrane filtration water treatment facility. Design engineer for all process mechanical, hydrologic, pumping and control system features of the facility. Responsible for overall facility layout and functionality. Prepared design engineers report, drawings, specification and all required permits. Prepared land subdivision plans and coordinated geotechnical and archaeological investigations. Responsible for assigning tasks, scheduling, cost estimating and oversight of junior engineers.

Education

BS - Civil Engineering
Penn State University

Registration

Pennsylvania [REDACTED]

West Virginia [REDACTED]

Maryland [REDACTED]

Ohio [REDACTED]

Pennsylvania State Board
of Certification of Waterworks
Operators License:
Water Class A (1,2,6,7,8,10,12,13)
Certificate No. [REDACTED]

Affiliations

American Concrete Institute

Association of State Dam Safety
Officials

Deep Foundations Institute

Portland Cement Association

Nixon/Kocher Water Treatment Facility, State College Borough Water Authority, Centre County, PA, Senior Project Engineer for implementation of a 5-month membrane filtration and granular activated carbon adsorption pilot study. Project Design Engineer for a new 5.0 MGD advanced \$20 million water treatment facility including new well pumps, raw water feed pumps, 0.1 micron membrane filtration system with automatic chemical cleaning system, granular activated carbon pressure vessels, UV disinfection, clearwell with chlorine gas injection, liquid and powder chemical feed systems, finish water pumps, emergency generator, waste tank, drying beds.

Altoona Water Authority, Bellwood Water Treatment Facility Improvements, Blair County, PA Senior Project Engineer for implementation of a 5-month membrane filtration pilot study featuring four different membrane manufacturers. Project Design Engineer for the \$8 million upgrade of an existing 5.0 MGD water treatment facility featuring raw water ozonation and traveling bridge sand filters, to a 0.1 micron membrane filtration system with automatic chemical cleaning system, new ozone generator system, upgraded chemical feed systems, piping modifications, instrumentation and SCADA upgrades, pump replacements.

Two Lick Creek Water Treatment Plant Chemical Facilities and Intake Improvements, Pennsylvania American Water Company, Indiana County, PA Senior Project Engineer for \$2.7 million upgrade of an existing 6.0 MGD water treatment facility. Project featured updating to a bulk sodium hypochlorite, bulk caustic soda and bulk liquid lime chemical feed systems including building expansion, delivery and tank secondary containment, new half-screen automatic backwashing raw water intake system, miscellaneous chemical feed system and piping upgrades, SCADA upgrades.

Water Treatment Facility Improvements, Harpers Ferry Water Works, Jefferson County, WV Senior Project Engineer for the design of a \$6.25 million water system improvement including new intake structure, pre-treatment system with chemical oxidation, flocculation and sedimentation followed by membrane filtration and UV disinfection. Responsible for preparing a feasibility study and preliminary engineering report on the existing water distribution, storage and treatment system. Coordinated and managed a 6-week membrane filtration system pilot study. Analyzed providing a new above ground clearwell, high service pumps, emergency generator, SCADA and telemetry system and various treatment facility piping and instrumentation upgrades. Performed hydraulic modeling to replace 20,000 feet of distribution system piping and install a duplex packaged booster pumping station.

Membrane Filtration Water Treatment Facility Upgrade, Town of Moorefield, Hardy County, WV Senior Project Engineer for design of new \$23 million, 8.0 MGD membrane filtration water treatment facility. Design engineer for all process mechanical, hydrologic, pumping and control system. Responsible for facility layout, site layout, process design and functionality. Prepared preliminary engineering report, coordinated membrane system overall pilot study activities, prepared design engineer's report, drawings, specifications and all required permits. Responsible for assigning tasks, scheduling, cost estimating and oversight of junior engineers.

Kenneth W. Beldin, Jr., PE,

LEED AP BD+C

PROJECT ENGINEER

Comprehensive experience in municipal engineering, land planning, and roadway design. Expertise in stormwater management and civil/site engineering design services for residential, commercial and institutional projects. Experience includes erosion and sediment (E&S) design, site grading/layout, ADA accessibility design, Leadership Engineering Environmental Design (LEED) project design, hydrologic and hydraulic analyses, culvert and precast bridge design/analysis, floodplain analysis, stormwater management (SWM) design and implementation, storm drain design, roadway and utility layout and design, project cost estimating and project permitting.

Key Projects

Business Park Access Road and Infrastructure, Nine Star Capital LLC, Jefferson County, PA Project Engineer for roadway system and infrastructure for the Nine Star Capital LLC 100-acre site of I-80 Exit 81 (Rt. 28) including roadway geometry, drainage design, traffic analysis, Type Size & Location (TS&L) submission, Erosion & Sediment (E&S) plan, stormwater best management practices (BMPs), permitting, design roadway plans development, quantities, and cost estimates.

Land Development, Belfast Township, Fulton County, PA Project Engineer for township site/land development, roadways, and subdivision ordinances. Responsibilities include plan review for compliance with applicable township ordinances and standard engineering practices, providing recommendations to the Board of Supervisors and land development plan approval.

Engineering Services Retainer, Mountaintop Regional Water Authority, Centre County, PA Engineer for Mountaintop Regional Water Authority.

Wastewater Collection System, Gallitzin Township, Cambria County, PA Project Engineer for design and retainer services for the township.

New Water Treatment Facility and 1.5 MG Water Storage Tank, Town of Moorefield, Hardy County, WV Project Engineer for raw water intake facility, intake pumps/screens, site design for 1.5 MG finished water storage tank and 1.5 MGD water treatment facility, channel/culvert analyses, E&S plan and ADA compliance design.

Fort Loudon Water Treatment Facility, Bear Valley Franklin County Joint Municipal Authority, Franklin County, PA Project Engineer for \$8 million 4 MGD membrane filtration water treatment facility and distribution system upgrades.

Education

BS - Civil Engineering
Pennsylvania State University

Registration

Pennsylvania [REDACTED]

Maryland [REDACTED]

West Virginia [REDACTED]

LEED Accredited Professional, Building Design and Construction
Credential ID: [REDACTED]

Affiliations

American Society of Civil Engineers

National Society of Professional Engineers

Chi Epsilon - The Civil Engineering Honor Society

Breezewood Wastewater Treatment Facility Upgrade, East Providence Township Municipal Authority, Bedford County, PA Project Engineer for E&S plan, floodplain analysis, bioretention BMPs design, site grading and streambank restoration for 0.40 MGD Breezewood wastewater treatment facility upgrade.

Steam Plant River Intake, Alliant Techsystems (ATK) for US Naval Command Atlantic, Mineral County, WV Project Engineer for site layout design, E&S plan and specifications for new river intake site.

Wastewater Treatment Facility Upgrade, Brookville Municipal Authority, Jefferson County, PA Project Engineer for wastewater treatment facility upgrade. Site design included stormwater BMPs, E&S design, segmental retaining wall design, NPDES, and Chapter 106 permitting through PADEP.

Church Expansion, Christian Missionary Alliance, Williamsburg, Blair County, PA Project Engineer for design of 8-acre worship fellowship hall expansion, including additional parking area and underground stormwater management BMPs.

JC-16 Bridge Replacement, Jefferson County Commissioners, Jefferson County, PA Project Engineer for hydrologic and hydraulic design for replacement of existing timber bridge with structural plate arch bridge.

Building Expansion, East Nittany Joint Municipal Authority, Clinton County, PA Project Engineer for site grading, parking layout for maintenance building expansion analysis and retrofit design of existing stormwater management facility.

Weems Creek Baptist Church, City Of Annapolis, Anne Arundel County, MD Project Engineer for multiphase redevelopment of a 5-acre institutional site.

Church Expansion and Land Development, Mid-Atlantic Community Church, Prince George's County, MD Project Engineer designer of 44,400 square foot worship center, parking lot and athletic fields on approximately 50-acre property.

Lighthouse Shelter, City of Annapolis, Anne Arundel County, MD Project Engineer for LEED Silver Certified homeless prevention and job training center including site layout/design, non-structural BMPs design for stormwater management, E&S design, coordination of geothermal well location, ADA accessibility design and utility connection design.

Technical Stormwater Management Review, The Cottages at State College, State College Borough Water Authority, Centre County, PA Project Engineer for the planned residential 25-acre development located in a Zone 2 well head protection area.

Childcare Center Design, Goddard School, Anne Arundel County, MD Project Engineer for student childcare center including site layout, ADA compliance, stormwater BMPs, and storm drain layout/design.

James F. Potopa, P.E.

SENIOR PROJECT ENGINEER

Extensive design experience in water/wastewater treatment and conveyance systems, civil, highway, bridge, structural and architectural engineering. Experience includes design, layout, drafting, specifications, coordination of drawings, field work and project supervision. Responsible for process mechanical design and layout for numerous process equipment and mechanical system applications. Supervision of design, drafters and CADD operators for specific projects.

Key Projects

Altoona Water Authority, Modifications to the Impounding Dam, Blair County, PA
Senior Project Engineer for new emergency and side channel spillways, drilling and grouting, rockfill embankment, PVC/geotextile liner on upstream face, intake tower, tunnel relining, toe drain, water transmission main relocations and spillway mounted rubber dam to comply with PA DER Division of Dam Safety/USCOE hydraulic criteria. The \$4 million project addressed seepage, slope stability and spillway capacity problems.

Altoona Water Authority, Modifications to Kettle Dam, Blair County, PA
Senior Project Engineer for new \$3.5 million reinforced concrete spillway/floodwall system, intake tower and access bridge, asphaltic concrete deck, drilling and grouting, toe drain, access road and 1,000 L.F. water transmission main to comply with DER Division of Dam Safety/USCOE hydraulic criteria.

Altoona Water Authority, Bellwood Water Treatment Facility Improvements, Blair County, PA
Senior Project Engineer for the upgrade of an existing 5.0 MGD water treatment facility employing membrane filtration system with automatic chemical cleaning system, new ozone generation and feed system, upgraded chemical feed systems, piping modifications, instrumentation and SCADA upgrades, pump replacements.

Mt. Joy Water Pumping Station Improvements, Clearfield Municipal Authority, Clearfield County, PA
Senior Project Engineer for the design of the water booster pump replacement, piping, electrical, controls, building improvements, chemical feed system.

Northeast Bradford School District, Water System Improvement Project, Bradford County, PA
Senior Project Engineer for upgrade of the water storage facilities and distribution pumping system.

Clearfield Creek Waterline Crossing, Clearfield Municipal Authority, Clearfield County, PA
Senior Project Engineer for the planning, design and permitting to install 400 L.F. of waterline crossing Clearfield Creek for servicing the wastewater treatment facility.

Education

Drafting and Design Technology,
Altoona Area Vocational Technical
School

Computer Aided Design,
Adult Continuing Education
Altoona Vo-Tech

A.D. - Mechanical Engineering
Technology, Pennsylvania State
University

Advanced AutoCAD
Pennsylvania State University

CADD Advanced AutoCAD,
Computersmith, Inc.

Registration

Pennsylvania [REDACTED]

Continuing Education

ASCE - Pumping System Design for
Civil Engineers

AWWA - Risk Assessment
Methodology for Water (RAM-WSM)

PWEA - Technical Conference
NRT Training, PennTec

ITT Water & Wastewater
SBR Process Design & Control

PSPE - Water, Wastewater and Other
Engineering Challenges

TEC - Pump Engineering Seminar

Affiliations

American Society of Civil Engineers

Pennsylvania Society of Professional
Engineers

National Society of Professional
Engineers

Pennsylvania Water Environment
Association

Water Environment Federation

Montgomery Run Water Treatment Plant Improvements, Clearfield Municipal Authority, Clearfield County, PA Senior Project Engineer for the design, permit, bidding processes. Oversaw construction work for the replacement of filter control valves and flow meters.

Woodside Water Treatment Plant Evaluation, State College Borough Water Authority, PA Mechanical Engineer for 3.5 MG water treatment facility including capacity expansion, chemical feed systems, finish water storage, stand-by power and instrumentation.

Wastewater Treatment Facility and Phase 2 Wastewater Conveyance System Replacement, Brookville Municipal Authority, Jefferson County, PA Senior Project Engineer for completion of the Phase 2 Wastewater Treatment Facility Improvements, surveying, permitting, design, bidding, construction inspection and cost administration.

Clearfield Municipal Authority, Wastewater Treatment Plant, Primary Clarifiers Replacement, Clearfield County, PA Project Engineer for design, engineering, preparation of plans and specifications, bid phase for primary clarifiers equipment replacement, sludge digester covers, digester off-gas burners and mixers.

Altoona Water Authority, Easterly and Westerly Wastewater Treatment Facilities, Biological Treatment Nutrient Removal (BNR) Upgrades, Blair County, PA Project Engineer for \$70 million biological removal (BNR) nutrient improvements. The BNR process capabilities include Virginia Initiative Process (VIP), Modified Lutzack Ettinger (MLE) and Stage 5 Bardenpho processes. Facilities include new clarifiers, BNR reactors, aeration and mixing systems, fine screens, vortex grit separators, UV disinfection effluent, Archimedian screw lift pumps and new sludge handling systems. Winner of 2013 American Academy of Environmental Engineers "Superior Achievement Award."

Altoona City Authority, Easterly and Westerly Wastewater Treatment Facilities, Biological Treatment Nutrient Removal (BNR) Upgrades and Additions, Blair County, PA Senior Project Engineer for nutrient treatment improvements. Facilities include new clarifiers, BNR reactors, aeration and mixing systems, fine screens, vortex grit separators, UV disinfection, Archimedian screw lift pumps, effluent filtration and denitrifying filters.

Bookville Municipal Authority, Wastewater System Improvements, Jefferson County, PA Senior Project Engineer for a \$20 million upgrades and additions to the Brookville wastewater conveyance system and treatment facilities including biological nutrient removal, headworks, final clarification, ultraviolet disinfection, aerobic digestion conversion and control building and replacement of 20,000 L.F. of interceptor sewer, new White Street and Industrial pump stations.

Otto Township, Wastewater Treatment and Collection System, McKean County PA Senior Project Engineer for new \$7 million, 100,000 L.F. wastewater collection and 0.25 MGD advanced secondary SBR wastewater treatment facility for villages of Rixford, Duke Center and Prentisville.

Matthew R. Orner

SENIOR PROJECT MANAGER

Comprehensive experience in water and wastewater system design, sitework/site drainage design, stormwater design, surface water hydrology, project inspection and project management.

Key Projects

Bakerton Dam Rehabilitation, West Carroll Township Water and Sewer Authority, Cambria County, PA Civil Engineer for hydraulic calculations of reinforced concrete spillway and riprap lined stilling basin.

Blair Gap and Tipton Dam Repairs, Altoona City Authority, Blair County, PA Civil Project Manager responsible for preparing plans and technical specifications for concrete repairs on two masonry gravity type dams.

Waddle Road Waterline Relocation, State College Borough Water Authority, Centre County, PA Senior Project Manager for design and construction phase for the installation of 1,000 L.F. waterline.

Slab Run Waterline Installation, Sandy Township Municipal Authority, Clearfield County, PA Senior Project Manager for design and construction phase for installation of 5,000 L.F. of waterline.

Franklin/Malone Water Storage Tank and Rechloramination Station, Pennsylvania American Water - Washington District, Washington County, PA Senior Project Manager for installation of .75 MG elevated water storage tank, active water mixing system, rechloramination chemical feed station, meter/control valve vault, pressure reducing vault and 2,600 L.F. of waterline.

Ridgmont Waterline Installation, State College Borough Water Authority, Centre County, PA Senior Project Manager for 10,000 L.F. waterline.

Water Distribution System Upgrades, Town of Moorefield, Hardy County, WV Senior Project Manager for 10,000 L.F. waterline.

Oakton and Prospect Water Storage Tanks, Altoona City Authority, Blair County, PA Civil Project Manager for three water storage tanks, pumping station and telemetry control building. Completed preparation of construction plans, permits, specifications, bidding documents, PennVEST funding application, PennVEST Loan Closing, and request for proposals for core borings.

Worth Street Sanitary Sewerline Replacement, Jefferson County Commissioners, Reynoldsville, Jefferson Co., PA Senior Project Manager for design of 600 L.F. of sewerline, service laterals, precast concrete manholes and new concrete sidewalk with ADA ramps.

Education

BS - Civil Engineering Technology,
University of Pittsburgh

Continuing Education

Cambria County Conservation District -
NPDES Phase II Stormwater Workshop

Blair County Conservation District and
PADEP - NPDES Phase II Stormwater
Workshop

American Water Works Association
Case Study for Water Utilities Risk
Assessment Methodology

American Water Works Association
Steel Tank Inspection and Maintenance

Association of State Dam Safety
Officials - Evaluation of Concrete Dam
Stability

Publications/Presentations

Association of State Dam Safety
Officials, "Tipton/Blair Gap Dam
Rehabilitation"

Affiliations

American Society of Civil Engineers

Association of State Dam Safety
Officials

American Water Works Association

Sanitary Sewer System Evaluation and Remediation Report, McVeytown Borough Authority, Mifflin County, PA Senior Project Manager for system diagnostic work including smoke testing, closed-circuit televised internal camera inspections and hydraulic analysis of 55,000 L.F. of sewerline, sewer overflow, two sewage pump stations and 205 sewer laterals.

Sanitary Sewer System Evaluation, Sandy Township Municipal Authority, Clearfield County, PA Senior Project Manager for sewer system diagnostic work including smoke testing, closed-circuit televised internal camera inspections, manhole inspections, subsystem flow monitoring, home inspections and dye testing of 150,000 L.F. sewerline and 1,300 sewer laterals.

Platt Road Act 537 Sewage Planning Study, Sandy Township, Clearfield County, PA Senior Project Manager for Act 537 Sewage Planning Study.

Wastewater Treatment System Upgrades, Saxton Borough Municipal Authority, Bedford County, PA Senior Project Manager for 200,000 GPD wastewater treatment facility upgrade.

Sanitary Sewer Replacement, Sandy Township Municipal Authority, Clearfield County, PA Civil Project Engineer for 61,000 L.F. of sewerline, 3,000 L.F. of sewer pipe relining, and two metering manhole stations.

Blair Gap and Tipton Dam Repairs, Altoona City Authority, Blair County, PA Project Engineer for preparing plans and technical specifications for concrete repairs on two masonry gravity type dams.

West Liberty Street Storm Sewer Improvements, Jefferson County Commissioners, Jefferson County, PA Senior Project Manager for 800 L.F. of storm sewerline, seven type 4 precast concrete inlets and termination outfall.

Engineering Services Retainer, Saxton Borough Municipal Authority, Bedford County, PA Project Engineer for wastewater treatment facilities and sewer system.

Hastings Street Sidewalk Improvements, Brookville Municipal Authority, Jefferson County, PA Senior Project Manager responsible for replacement of 2,000 L.F. of concrete sidewalk and ADA ramps.

14th Street Bridge Improvements, Jefferson County Commissioners, Jefferson County, PA Project Engineer for bridge improvements in Reynoldsville Borough including deck re-surfacing, parapet wall improvements and abutment/retaining wall improvements.

SR 3015 Bridge Replacement over Coxes Creek, PennDOT District 9-0, Somerset County, PA Bridge Inspector for single-span, prestressed concrete adjacent box beam bridge with reinforced concrete abutments.

Pisgah Presbyterian Church Site Development, Pisgah Presbyterian Church Corporation, Jefferson County, PA Civil Engineer for new 12,500 square foot church.

Steven J. Gibson, P.E.

PROJECT ENGINEER

Project Engineer with seven years of design experience including civil engineering and site design, erosion and sediment (E&S) control design, stormwater management design, pump design, membrane filtration systems design, mechanical piping layout, water and wastewater design, wastewater collection and conveyance systems, preparation of contract documents, permitting, cost estimating, and construction administration. Experience also in alternatives analysis, water distribution system modeling and design, wastewater collection and conveyance system modeling and design, sewer system flow monitoring and sewage facilities planning. Education emphasis in water resources, hydrology and hydraulics, soil mechanics, transportation, concrete design and engineering economics.

Key Projects

Wastewater Treatment Facility Evaluation, City of Cumberland, Cumberland, MD Assisted Project Engineer with comprehensive evaluation and assessment of the existing wastewater treatment facility with report preparation.

System Evaluation and Remediation Plan, Sandy Township, Jefferson County, PA Assisted in the development and implementation of sanitary sewer system inflow/infiltration diagnostic work program. Coordinated field smoke testing efforts of 135,000 L.F. of sewerline/laterals and evaluated system for target problem areas. Conducted manhole inspections for sources of inflow and infiltration. Coordinated 50,000 L.F. of closed-circuit television (CCTV) sewer inspections. Reviewed results and ranked areas for targeted replacement based on field work. Compiled all inflow/infiltration diagnostic work together to develop a work-plan for proposed collection and conveyance system improvements projects.

Pickering Street Sanitary Sewer Replacement, Brookville Municipal Authority, Jefferson County, PA Project Engineer for design layout, plans, specifications, environmental and PennDOT HOP permits, E&S Control Plan and construction administration for the sanitary sewer/storm sewer replacement project. The \$250,000 project consisted of 1,000 L.F. gravity sewer, 1,000 L.F. storm sewer and all required appurtenances.

Sanitary Sewer Flow Monitoring and System Evaluation, Shirley Township General Authority, Huntingdon County, PA Project Engineer for development of a sanitary sewer system flow monitoring program. Installed portable flow metering instrumentation equipment at various locations throughout the system, assisted client with retrieval of the flow data information and performed analysis of baseline flow and peak rainfall events data.

Education

BS - Civil and Environmental Engineering
Pennsylvania State University

Registration

Maryland [REDACTED]
Pennsylvania [REDACTED]
West Virginia [REDACTED]

Certification

Pennsylvania State Board of Certification of Waterworks Operators License Wastewater Class A, E Subclass 1-4

Continuing Education

Risk Management Webinar, Victor O. Schinnerer & Company, Inc.

FEMA-ASDSO Fundamentals of Reinforced Concrete Design for Hydraulic Structures

PADEP PAG-02 Update Training

PA Rural Water Association Inflow & Infiltration Toolbox Course

Pennsylvania Highlands Community College Fundamentals of Technical Writing

Red Vector Design of Small Water Systems

Affiliations

American Society of Civil Engineers

American Society of Highway Engineers

Association of State Dam Safety Officials

Phase 1B Wastewater Collection System Improvements and Phase 2 Wastewater Treatment Facility Improvements, Brookville Municipal Authority, Jefferson County, PA Project Engineer performing hydraulic calculations, survey coordination/design layout, design of inverted siphons to rehabilitate and replace hydraulically overloaded/deteriorated collection lines and interceptor sewers. Completed project cost estimate and evaluated alternative improvements. Assisted project engineer with wastewater treatment facility improvements design and alternatives analysis. Designed the 12.0 MGD influent suction lift pump station, among other aspects to the treatment facility improvements. Assisted with hydraulic calculations and preliminary sizing of pumps and additional process equipment for the proposed \$12.5 million wastewater treatment facility improvements project.

Phase 1A Wastewater Conveyance System Improvements, Brookville Municipal Authority, Jefferson County, PA Project Engineer for performing hydraulic calculations, force mains, and lift station wet wells. Determined headloss for pumps to replace hydraulically overloaded existing 8-inch to 18-inch interceptors. Completed preliminary project cost estimate and evaluated alternative improvements and scope of project.

Wastewater Treatment Facility Upgrade and Logan Township Sewer Extension, Petersburg Borough Sewer Authority, Huntingdon County, PA Assisted project manager with engineering design of the wastewater treatment facility upgrade project. Assisted with preparation of the application, specifications, hydraulic calculations and design engineer's report for the Water Quality Management Permit. Completed project cost estimate and evaluated alternative improvements and scope of project.

Wastewater Treatment Facility Improvements, East Providence Township Municipal Authority, Bedford County, PA Assisted project engineer with installation and maintenance operations of a flow metering study to analyze the impacts of wet weather flows at the plant. Flow meter data was reviewed for accuracy and recalibrated as needed. Assisted project engineer with development of bid documents and specifications, design layout of process equipment and project funding settlement. Conducted bidding/negotiation phase of project and construction administration including conformed documents preparation, progress meetings, submittal reviews, change orders, RFIs, field orders, supervision of project resident representative inspector and payment requisitions.

Wastewater Collection System Flow Monitoring Study, Brookville Municipal Authority, Jefferson County, PA Project Engineer for development of a sanitary sewer system flow monitoring program per the PADEP Consent Order & Agreement. Installed portable flow metering instrumentation equipment at various locations through the system, assisted the client with retrieval of the flow data information from the units and performed analysis of baseline flow and peak rainfall events data. Performed occasional maintenance and troubleshooting of flow metering equipment. Optimized the flow monitoring program by identifying additional areas to monitor throughout the system. Prepared a comprehensive infiltration and inflow study and flow monitoring report.

Travis J. Long, CEP

SENIOR PROJECT MANAGER/ SENIOR ENVIRONMENTAL SCIENTIST

Comprehensive environmental and engineering expertise in drinking water and wastewater treatment systems, stormwater management, hazardous waste, oil and gas, and environmental planning and assessments. Extensive experience in environmental assessments, stormwater best management practices, water and wastewater facilities planning, process design and operational assistance. Comprehensive experience includes planning, design, funding, construction administration/management and facility start-up and operations, in addition to asset management, project financing and facilities management.

Key Projects

Polk Center Dam Breach Project, PA Department of General Services, Venango Co., PA Project Manager for wetland delineation and environmental assessment of impoundment and adjacent area as part of the dam breaching and stream channel reconstruction project.

Wastewater Act 537 Plan Development, Timblin Borough, Jefferson County, PA Senior Project Manager for assessment, evaluation and composition of a sewage facilities.

Wastewater System Improvements, Brookville Municipal Authority, Jefferson County, PA Senior Project Manager for replacement of 12,000 L.F. of sewer lines and pump stations for proposed 10 MGD facility.

Wastewater Collection/Conveyance and Treatment, Gallitzin Township Supervisors, Cambria County, PA Senior Project Manager for new sanitary sewer collection and conveyance system and 0.030 MGD treatment facility.

Wastewater System Improvements, Harmony Area School District, Clearfield County, PA Senior Project Manager for evaluation of school wastewater conveyance and treatment system.

Interceptor Sewer System Monitoring and Modeling, Clearfield Municipal Authority, Clearfield County, PA Senior Project Manager responsible for system-wide inflow/infiltration evaluation for the sanitary sewer system.

Wastewater Treatment Plant Improvements, Brookville Municipal Authority, Jefferson County, PA Senior Project Manager for Act 537 update and inflow/infiltration evaluation for the sanitary sewer system.

Wastewater Treatment Facility, Petersburg Sewer Authority, Logan Township, Huntingdon County, PA Senior Project Manager for review of proposed sewage facilities plans and corresponding modifications to sewage system extensions.

continued ▶

Education

BS - Environmental Science and Ecology,
Juniata College

Registration

Certified Environmental Professional
CEP - [REDACTED]

Pennsylvania State Board of Certification of
Waterworks Operators License -
Class A, E SubClass 1-15
[REDACTED]

Pennsylvania State Board of Certification
of Wastewaterworks Operators License -
Class A, E SubClass 1-5
[REDACTED]

Continuing Education

Mine Safety and Health Administration
(MSHA) Surface Mine Training

Conservation Planning Modules 1-5,
U.S. Department of Agriculture, Natural
Resources Conservation Service

Natural Stream Channel Restoration
Concepts Levels I-IV, Greene County (NY)
Conservation District

OSHA 40-hour Hazardous Waste
Operations and Emergency Response
No. [REDACTED]

Wetland Hydrology and Soils Training,
U.S. EPA

Watershed Academy, Principles of
Watershed Management, PA DEP

Publications/Presentations

"The Purpose and Benefits of Tracer Studies for Public Water Supply Systems" 2010 PRWA Annual Conference
2008 American Water Works Association
2008 PADEP Engineers Training Seminar

Long, Travis J., and Balliet, James L.,
"Membrane Filtration for Water and Wastewater Systems" 2008, 2012-14, Pro Operator Training Series, PA Rural Water Association

"Green Sand Filtration", 2012 PA Rural Water Association

Professional Affiliations

Academy of Board Certified Environmental Professionals

American Water Works Association

National Association of Environmental Professionals

Pennsylvania Association of Environmental Professionals

Pennsylvania Rural Water Association

Water Environment Federation

Wastewater Gallitzin Township Supervisors, Gallitzin Township, Cambria County, PA Senior Project Manager for planning assistance with proposed sewer system development within the Village of Coupon.

Wastewater Treatment Facility, Copper Township Municipal Authority, Cooper Township, Montour County, PA
Senior Project Manager responsible for funding acquisition assistance, and project management associated with the planning and development of new sanitary sewer collection system and appurtenances.

Waterline Extension, Winslow Township Supervisors, Jefferson County, Clearfield County, PA
Senior Project Manager for planning and design of waterline extension from Sykesville Borough to the 80 EDU's in adjacent Winslow Township. Completed environmental investigations of the proposed water and sewer extension project.

Wastewater Treatment Plant, Muddy Run Regional Authority, Clearfield County, PA Senior Project Manager for environmental site investigation of wastewater treatment plant and collection system location. Performed geotechnical investigations for structural fill material, wetland investigation, and environmental assessment of the project area.

Wetland Delineation, Osceola Rush Decatur Sewer Authority, Clearfield/Centre County, PA
Senior Project Manager for environmental planning and site investigation. Completed wetland delineation of treatment plant site in conjunction with the development of a 450,000 gpd treatment facility.

Act 537 Plan, Gallitzin Township, Cambria County, PA
Conducted door-to-door survey, site investigations and water sampling for Act 537 Plan, evaluation of practical alternatives and project management oversight.

Flood Protection Restoration Project, Sykesville and Big Run Boroughs, Jefferson County Conservation District, Jefferson County, PA
Senior Project Manager for restoration of flood protection channels including dredging and debris removal to restore hydraulic capacity and achieve compliance with United States Army Corps of Engineers.

Alliance Petroleum Corporation, Act II Remedial Activities, Indiana County, PA
Senior Environmental Scientist responsible for the site assessment, sampling, remediation and Act 2 Compliance reporting associated with production fluid releases at gas well sites.

Commercial Site Development, Jefferson County Development Council, Jefferson County, PA Senior Project Manager for site planning and preparation of demolition plans for 12.5 acre commercial development.

Slab Run Wastewater Treatment Plant Dechlorination System, Sandy Township, Clearfield County, PA
Senior Project Manager for the design and permitting of a tablet dechlorination facility for compliance with the facilities NPDES discharge permit.

Maggie K. Weitzel, CEP-IT

ENVIRONMENTAL SCIENTIST

Environmental Scientist experience performing advanced technical tasks in natural environmental and ecological investigations. Extensive experience in document preparation for environmental and ecological studies, water and wastewater projects, environmental assessments, wetland delineation, and permitting. Comprehensive experience developing environmental management plans for water and wastewater best management practices.

Key Projects

Wastewater Collection and Conveyance System, Cooper Township Municipal Authority, Montour County, PA

Environmental Scientist for permitting and design assistance of 53,000 L.F. of waterline and 250,000 gallon water storage tank.

St. Benedict Wastewater Treatment Facility, West Carroll Township Sewer Authority, Cambria County, PA Environmental National Pollution Discharge Elimination System (NPDES) permit renewal for the continued discharge of treated wastewater.

Annual DEP Chapter 94 Wasteload Management Reports, Various Boroughs and Authorities, Bedford, Clarion, Clearfield, Clinton, Huntingdon and Jefferson Counties, PA Environmental Scientist for preparation of reports for thirteen municipalities/authorities detailing the current and projected status of hydraulic and organic loading.

Wastewater Treatment Facility Sampling, Saxton Borough Municipal Authority, Bedford County, PA Environmental Scientist for wastewater treatment plant operators by assisting with sampling and testing to achieve vector attraction reduction requirements for sludge disposal to landfill.

Act 537 Plan, Muddy Run Regional Authority, Clearfield County, PA Environmental Scientist for site investigations, door-to-door surveys, and water sampling.

NPDES Permit, Portage Wastewater Treatment Facility, Portage Borough Sewer Authority, Cambria County, PA

Environmental Scientist for permit renewal, composition and submittal of the NPDES permit.

Act 537 Plan Revisions, Shippensville Borough, Clarion County, PA Environmental Scientist for plan revisions of upgrades to wastewater treatment facility.

Education

BS - Environmental Science, Juniata College

Registration

Certified Environmental Professional-In Training, 2013

Continuing Education

Pennsylvania Highlands Community College, Fundamentals of Technical Writing

Pennsylvania Association of Professional Soil Scientist, Field Seminar on Regional Supplement, Hydric Soil and New Data Forms

United States Army Corps of Engineers, Wetland Delineation & Management Training Program, Richard Chinn Environmental Training, Inc.

Land Application of Biosolids, PADEP Southcentral Regional Office

Erosion Control and Stormwater Management, Blair County Conservation District

Professional Affiliations

Academy of Board Certified Environmental Professionals

Wastewater System Upgrade, Porter Township Joint Sewer Authority, Alexandria Borough and Porter Township, Huntingdon County, PA
Environmental Scientist for Chapter 105 Joint Permit Application and design assistance of 60,000 linear feet of sewer line.

Wastewater Collection and Conveyance System, Cooper Township Municipal Authority, Montour County, PA
Environmental Scientist for permitting and design assistance of 48,000 L.F. of sewer line, a large capacity sewage lift station, two sewage pumping stations, and approximately, 13,100 L.F. of interconnection force mains. Completed NPDES permits, Erosion & Sedimentation (E&S) Pollution Control Plan, GP-5 Utility Line crossing permits and wetland delineation.

Wastewater Collection System, Belfast Township, Montour County, PA
Environmental Scientist for permitting and design of 13,000 L.F. sewer line and three sewage pumping stations. Completed Erosion & Sedimentation (E&S) Control Plan, GP-5 Utility Line crossing permits, and wetland delineation.

Neelyton Water Cooperative, Dublin Township, Huntingdon County, PA
Environmental Scientist for design and permitting of public water supply including amendment for installation of new disinfection equipment to convert an iodine feed system to liquid chlorine feed system.

Sludge Digestion Evaluation, Altoona Water Authority, Blair County, PA
Environmental Scientist for intensive sampling and testing program at Easterly and Westerly Wastewater Treatment Facilities. Assessed activated sludge, aerobic digestion and sludge handling processes.

Wastewater Collection and Treatment System, Karthaus-Burnside Joint Sewer Authority, Clearfield & Centre Counties, PA
Environmental Scientist for permitting of 50,000 L.F. wastewater collection system, including General Permit 5, Riparian Buffer Waiver Application and wetland delineation.

High Street Rentals, Dorman Land Development, Porter Township, Clinton County, PA
Environmental Scientist for design, NPDES permit, and Erosion & Sedimentation Pollution Control Plan for an eleven acre commercial subdivision.

Wolf Creek Park Rails-to-Trails, Washington Twp., Jefferson County, PA
Environmental Scientist for permitting of 4.3 miles of trail, three parking lots, and rehabilitation of two 20-foot railroad bridges.

Kittanning Watershed Assessment, Altoona Water Authority, Blair County, PA
Environmental Scientist for development and implementation of watershed assessment and sampling plan. Established baseline conditions of water quality to evaluate and monitor watershed activities within the primary water supply area.

Gabriel L. Pellegrini, P.E., P.L.S.

SURVEY COORDINATOR/PROJECT MANAGER

Results oriented hands-on Civil Engineering Professional with 35 years of experience in all facets of engineering and land surveying. Track record for the successful completion of multi-million dollar Land Development Projects and Transportation projects. Relationship builder with owners, government officials, contractors, employees, vendors, engineers and inspectors. Versed in contact negotiations, engineering design issues, permitting, change orders, project meetings, employees relationship, project documentations, project job costing, scheduling, and project close out.

Provided Civil Engineering, Surveying and Construction Inspection services for over 4,000 public works projects through out Pennsylvania, Maryland, Delaware, West Virginia, North Carolina and Ohio. Services involved supervising and managing a staff of 45 professional engineers, surveyors, technicians and administrative staff. Completed projects ranging from \$1,000 to over \$30,000,000 million dollars.

Education

Fundamentals in Engineering,
Penn State University, 1967-70

Registration

Professional Engineer
Pennsylvania, [REDACTED]

Professional Land Surveyor
Pennsylvania No. [REDACTED]

Teaching

College Engineering Surveying Courses

Penn State University, 2014 & 2017
Elementary Surveying for the 4-Year
Railroad Transportation Engineering

Robert S. Lechner

CONSTRUCTION OPERATIONS DIRECTOR

Over 25 years experience in construction management for commercial, state, municipal and institutional projects including infrastructure, water/wastewater treatment plants, water/wastewater conveyance systems, mechanical equipment and piping, plumbing, HVAC, electrical work and roadways with a total construction value exceeding \$200 million.

Specific management and design experience including preparation of contract bidding documents, bid tabulations, review of contractor's qualifications, plans and specifications, construction conferences, contractor's application for payment and change orders and project design. Comprehensive experience including supervision and assignment of inspection personnel in overseeing project construction. Assisted with design of projects, reviewed drawings for constructability, performed detailed take-offs and cost estimates, prepared plans and specifications, reviewed submittals and shop drawings, performed project site visits and assisted project inspectors with special construction problems.

Duties as a General Contractor have included: Estimating for commercial projects (Specializing in Water and Wastewater), purchasing materials for projects, following project costs and developing cost budgets for future projects, attend project meetings with contractors, engineers and architects, perform value engineering services for engineers and architects, project management for projects from start to finish, purchasing and scheduling of material deliveries to project sites, scheduling of manpower for the various project job sites, scheduling and coordination of sub-contractors for project job sites, assist the job foreman/superintendent with scheduling start-up activities, made initial contact with suppliers/vendors and set up tentative dates for equipment start-ups, completed equipment check list start-up sheets for the vendors prior to them sending out field technicians, finalized exact dates for start-ups with the foreman on site as to the progress of the job, attend job site meetings with engineers, architects and owners, establish and submit applications for payment to the engineer and owners, follow cost accounting for the projects and develop job histories.

Key Projects

Cobun Creek Dam No. 2, Morgantown Utility Board, Monongalia County, WV
Project Construction Engineer for new \$40 million earth embankment dam and 370 MG water supply reservoir including state road relocation.

Clarion Wastewater Treatment Facility Renovations, Clarion County, PA
Construction manager for \$10 million plant upgrade and expansion.

Education

BS - Structural Design & Construction
Engineering
Pennsylvania State University

AD - Mechanical Engineering
Pennsylvania State University

BNR Upgrade Project Easterly Wastewater Treatment Facility, Altoona Water Authority, Blair County, PA Construction manager for \$30 million plant upgrade and expansion.

Karthus Wastewater Treatment Facility, Clearfield and Centre Counties, PA Construction manager for \$3 million new wastewater treatment facility.

Wastewater Facility Upgrade, East Providence Township Municipal Authority, Bedford County, PA Construction manager and design engineer for \$4 million wastewater plant upgrade.

Wastewater Treatment Plant Upgrade, Petersburg Borough Sewer Authority, Huntingdon County, PA Construction manager for \$2.5 million wastewater plant upgrade and expansion.

Shawnee State Park Water Treatment Facility

Lancashire AMD Wastewater Treatment Facility

McConnellsburg Water Treatment Facility

Spring Creek Wastewater Treatment Facility

Roth Lane Wastewater Treatment Facility

Greenwood Furnace State Park Wastewater Treatment Facility

Moose Creek Water Treatment Facility

Logan Township Wastewater Treatment Facility

Moshannon Creek Water System Improvements

Osceola Mills Wastewater Facility

Spangler Water Treatment Facility

Snake Springs Water Treatment Facility

Brown Township Wastewater Facility

Fort Littleton Wastewater Facility (2006-2007)

Schellsburg/Shawnee State Park Wastewater Treatment Facility

Penn Nursery Office Building

Saxton Water Treatment Facility

Penn State Water Treatment Facility

Robert J. Beck

CADD MANAGER

CADD Manager for nine CADD technicians and designers. Oversees the preparation of site plans, architectural plans, water and sewer line drawings, standard details and right-of-way drawings for various projects. Comprehensive experience in drafting, design and inspection of water and wastewater treatment plants, pumping stations, water distribution lines and storm and sanitary sewer lines. Duties include property research at county courthouses, preparation of easements, and right-of-way drawings for municipal/PennDOT related projects. Management experience including scheduling, progress monitoring of assignments, resolving related technical problems, training, updating CADD standards, and performance monitoring of the CADD department.

Key Projects

New Cobun Creek Dam No. 2, Morgantown Utility Board, Monongalia County, WV Project Designer and CADD manager for a new water reservoir for the City of Morgantown. Work included design and drafting for the new reservoir, relocation of a state roadway, securing all state and federal permits, design of the embankment, spillway, intake tower with access bridge, 36" outlet piping, toe drains, access roads, downstream stabilization, soil and erosion protection and property acquisitions.

Membrane Filtration Water Treatment Facility & Water System Improvements, Johnsonburg Municipal Authority, Elk County, PA Project Designer and CADD manager overseeing the design and drafting of waterlines, pump stations and water storage tanks. Project included supervision of drafting staff and drafting of civil, architectural, structural, and electrical drawings as well as drafting of waterline plans. Applied for highway occupancy and DEP general permits. Created easement drawings for water system facilities and a property subdivision for the proposed water treatment facility.

Water Transmission Main Replacement, Sykesville Borough, Clearfield and Jefferson Counties, PA Project Designer and CADD manager for water transmission main from the City of Dubois in Clearfield County to the Borough of Sykesville in Jefferson County. Work included design and drafting of approximately four miles of water transmission main, new chlorination/pressure boosting station, and highway occupancy and DEP general permits and right of way acquisitions.

Water System Improvements, Northeast Bradford School District, Bradford County, PA Project Designer for upgrades to the school's water storage facilities and distribution pumping system. Plans included details of existing and proposed water system throughout the school, including pipe routing and connections to existing facilities.

Education

AD - Specialized Training, Triangle Institute of Technology

Continuing Education

Overview of the US Public Land Survey System, Pennsylvania Society of Land Surveyors

Easements-Create and Terminate, Pennsylvania Society of Land Surveyors

Writing Legal Descriptions, Pennsylvania Society of Land Surveyors

State Plane Coordinate Systems, Pennsylvania Society of Land Surveyors

Boundary Law, Pennsylvania Society of Land Surveyors

Encroachments, Pennsylvania Society of Land Surveyors

Boundary Line Agreements, Pennsylvania Society of Land Surveyors

Railroad Surveying, Pennsylvania Society of Land Surveyors

West Liberty Street Storm Sewer Improvements, Jefferson County
Commissioners, Borough of Sykesville, Jefferson County, PA Project Designer and CADD Manager for design and drafting of plans and profiles with a drainage area study to size of the new storm sewer pipes.

South 4th Avenue, South Street and Sub-basin 3A Sewer Project, Pennsylvania American Water Company, Clarion County, PA Project Designer and CADD Manager for design and permitting services for sewer line projects including base mapping, design layout of plan and profiles for several sewer line replacements in the area.

Pump Station No. 7 Renovation, Spring Benner-Walker Joint Authority, Centre County, PA Project Designer and CADD Manager for renovations to a wastewater pump station including site work, addition to the existing pump station with new pumps and electrical system.

Wastewater System Improvements, Brookville Municipal Authority, Jefferson County, PA Project Designer for second phase improvement to the existing wastewater system including replacement of additional sewer lines and upgrades to the existing wastewater treatment plant.

Exit 81 - Sewer Extension, Jefferson County Industrial Development Authority, Jefferson County, PA. Project Designer and CADD manager for sewer extension crossing Interstate 80 to serve the existing county fairgrounds and a proposed business park. Work included 400 L.F. sanitary sewer force main under Interstate 80 and 3,800 L.F. sanitary sewer force main, 650 L.F. of gravity sewer line and a sewage lift station.

Wastewater Treatment Facility Upgrade and Logan Township Sewer Extension, Petersburg Sewer Authority, Huntingdon County, PA.
CADD manager and drafter for a wastewater treatment facility upgrade and a sewer extension into neighboring Logan Township which included gravity sewer lines, wastewater lift station, and force main designs.

Sewerline Extension, Woodland Bigler Area Authority, Clearfield County, PA
CADD Manager overseeing the design of approximately 2,750 LF of sanitary sewer force main, 1,040 LF of gravity sewerline and two sewage lift stations along State Route 0970.

Sewerline Extension, Karthaus-Burnside Joint Sewer Authority, Centre County, PA
Project Designer and CADD Technician for sanitary sewer extensions including base mapping, drafting existing property and utility information, sewer line layout and profiling, acquiring permits, quantity takeoff and right of way acquisitions.

Outpatient Building Addition, Veterans Affairs Medical Center, Berkeley County, WV Designer and CADD manager for site design, utility relocation, design of stormwater management and site landscaping.

John W. Conrad, P.G.

SENIOR GEOLOGICAL CONSULTANT

Mr. Conrad has over 45 years of experience in geological reconnaissance, field investigations, test boring operations and logging, hydrogeology, geochemistry, structural geology and related sciences. Specific experience includes geological site assessments for earth dams and bituminous coal mining operations, stratigraphy interpretation, solid waste landfill permitting, hydrogeological assessments, groundwater supply exploration and development, coal refuse piles site suitability, dam inspections and soil sampling and materials testing.

Additional experience includes geotechnical investigations for public buildings, industrial structures, roadways, and bridges involving subsurface investigations, interpreting laboratory test results and performing geotechnical analyses for foundation design. Mr. Conrad has also reviewed permit applications for municipal and residual waste disposal facilities and post mining land use plans for quarries and bituminous surface mining activities. He has also performed water quality studies at circulating fluidized bed combustion (CFBC) ash facilities, participated in groundwater modeling studies and directed water supply replacement activities.

Key Projects

Subsurface Exploration and Geological Assessment, Proposed Cobun Creek Dam No. 2, Morgantown Utility Board, Monongalia County, WV - Project Geologist for proposed 70- foot high earth embankment dam and 385 million gallon public water supply reservoir including supervision of exploratory drilling and testing program, geological reconnaissance, literature review and research, preparation of geology logs from soil and rock core sampling, pressure testing analysis, rock strength testing and preparation of geological report.

Subsurface Exploration and Geological Assessment, Impounding Dam Modifications, Altoona Water Authority, Blair County, PA - Project Geologist for proposed modifications to a 60-foot high earth embankment dam and 370 million gallon public water supply reservoir including supervision of exploratory drilling and testing program, geological reconnaissance, literature review and research, preparation of geology logs from soil and rock core sampling, dam foundation and abutment evaluation, stability and seepage assessment and geological report.

Subsurface Exploration and Geological Assessment, Sink Run Dam No. 2 Modifications, Borough of Tyrone, Blair County, PA - Project Geologist for proposed modifications to a 60-foot high earth embankment dam and 150 million gallon public water supply reservoir including supervision of exploratory drilling and testing program, geological reconnaissance, literature review and research, preparation of geology logs from soil and rock core sampling, dam foundation and abutment evaluation, stability and seepage assessment and geological report.

Education

B.S. Geological Sciences
Pennsylvania State University, 1970

Officer Basic Course
US Army Engineer School, 1971

Registration

Professional Geologist
No. [REDACTED] Pennsylvania

Professional Affiliations

Pennsylvania Mining Professionals

Groundwater Exploration and Well Field Development, Borough of Driftwood, Cameron County, PA - Project Hydrogeologist for well field development for a 100-customer public water supply system including geological reconnaissance, preparation of drilling and testing specifications, exploratory drilling, 72-hour aquifer pump testing, water quality sampling and testing, drawdown curve, safe yield evaluation and DEP Public Water Supply Permit application.

Groundwater Exploration and Well Field Development, Mapleton Borough Water Authority, Huntingdon County, PA - Project Hydrogeologist for well field development for a 150-customer public water supply system including geological reconnaissance, preparation of drilling and testing specifications, exploratory drilling, 72-hour aquifer pump testing, water quality sampling and testing, drawdown curve, safe yield evaluation and DEP PWS permit application.

Coal Exploration, Reserves and Valuation Report, O.W. Lerch Tract, Licking Township, Clarion County, PA - Coal Geologist for a coal reserve and valuation study including preparation of coal exploration drilling program, preparation of geologists logs from rock core sampling, stratigraphy evaluation, coal proximate analysis (sulfur, moisture, volatile matter, ash, fixed carbon) and BTU thermal testing, reserves and valuation analysis and report preparation.

Hazardous Waste Site Groundwater Monitoring and Evaluation, Easterly Wastewater Treatment Facility, Altoona Water Authority, Blair County, PA - Project Hydrogeologist for groundwater monitoring project relative to a hazardous wastewater disposal site at a wastewater treatment facility including sampling, testing and chemical analysis evaluation. Contaminants of concern included perchloroethylene, trichloroethylene and benzene.

Coal Exploration and Bituminous Surface Mine Permitting, C&K Coal Company, Western Pennsylvania - Coal Geologist for large bituminous surface mining company with operations throughout Clarion, Jefferson and Cambria Counties; work included supervising coal exploration drilling programs, logging test borings, performing overburden analysis, preparing geologic and hydrogeologic components of PADEP mine drainage and mine permit applications and managing water quality monitoring programs.

Groundwater Contamination Site Assessment and Monitoring, PA Department of Environmental Protection, Southcentral Regional Office, Harrisburg, PA - Staff Hydrogeologist for evaluation of groundwater contamination sites throughout the PADEP Southcentral Region including Olin Chemical, Red Lion, PA; Hamilton Watch, Lancaster, PA and AMP, Harrisburg, PA.

Municipal Solid Waste Landfill Permit Application Reviews, PA Department of Environmental Protection, Southcentral Regional Office, Harrisburg, PA - Staff Hydrogeologist for reviewing waste management permit applications throughout PADEP Southcentral Region including, Keystone Landfill, Dunmore, PA; Greater Lebanon County Landfill; Southcentral Counties Solid Waste Authority Landfill, Hopewell, PA; Adscos Landfill, Biglerville, PA; among others.



Mr. Patrick E. Gallagher P.E., CPGS

President – CTL Engineering of West Virginia, Inc.

Projects successfully completed under Mr. Gallagher's direction include: Civil Site Design, Foundation Design, Storm Water Management, Waste Water Design, Roadway Design, Parking Lot Design, Geotechnical Investigations & Design, Site Stability Analyses, Mine Subsidence Evaluations, Failure Investigations and Environmental Investigations and Expert Witness Testimony. Prior to joining CTL Engineering, Mr. Gallagher was the chief of the Abandoned Mine

Reclamation Program for the State of Maryland, Department of Natural Resources, and Bureau of Mines. In addition, he was also responsible for overall engineering/geologic support to the Maryland Bureau of Mines Program. His career began in Pittsburgh as a project geotechnical engineer with Orbital Engineering.

Education

B.S., Civil Engineering, 1975, Virginia Polytechnic Institute and State University, Blacksburg, Virginia
Geology (Minor), 1975 Virginia Polytechnic Institute and State University, Blacksburg, Virginia

Professional Registration / Certification

Registered Professional Engineer, Ohio, [REDACTED] Maryland, [REDACTED] West Virginia, [REDACTED] Pennsylvania, [REDACTED] Wyoming, [REDACTED] North Carolina, [REDACTED] Kentucky, [REDACTED]
Certified Professional Geological Scientist, [REDACTED]
Professional Surveyor, WV
Adjunct Professor – Civil Engineering – Fairmont State College, 2001 – Present

CTL Project Experience

Transportation

I-79 Interchange Morgantown – Geotechnical Project Manager on this Design Build to the Town Centre.
Lonaconing, MD - Camera Evaluation of 2,000 LF of Stormwater System evaluation to assess condition for replacement of portions of the system.
Emerson Avenue-Slope Stabilization Investigation & Design. Wood County, W.V.
I-81 Martinsburg to Marlow Interchange-Design Build. Martinsburg, W.V.
Morgantown Municipal Airport-Geotechnical Services. Morgantown, W.V.
Black Water Bridge Abutments-Surveying & Design Services. Tucker County, W.V.
Charles Point Roadway Cut Evaluation-Geotechnical Services. Bridgeport, W.V.

Education Facilities

New University High School-Variou Services. Morgantown, W.V.
Church Properties: Central School-Surveying & Design Services. Morgantown, W.V.
South Jefferson High School-Variou Services. Jefferson County, W.V.
Morgantown High School Stadium Renovations-Variou Services. Morgantown, W.V.
Huff Consolidated School-Geotechnical Services. Wyoming County, W.V.
Fairmont State Athletic Field-Geotechnical Services. Fairmont, W.V.

Healthcare

Mon General Site Development-Site Design. Morgantown, W.V.
Ambulatory Care Center-Geotechnical Services. Morgantown, W.V.
Preston Memorial Hospital Construction-Variou Services. Preston County, W.V.
WVUH Data Center-Geotechnical Services. Morgantown, W.V.
Fresenius Medical Center-Geotechnical Services. Preston County, W.V.

Energy

Harrison Step II Construction Monitoring-Variou Services. Harrison County, W.V.
Harrison Power Station Phase V Step I-Construction Services. Harrison County, W.V.
Harrison Power Station Cell A Repair-Construction Services. Harrison County, W.V.
Overland Conveyor Permitting-Permitting & Surveying. Monongalia County, W.V.
Harrison Power Station Landfill QA/QC Leachate Collection Layer Expansion-Variou Services. Harrison County, W.V.

Building Development

University Place-Site, Civil & Geotechnical Services. Morgantown, W.V.
Grand Central Apartments-Geotechnical Services. Morgantown, W.V.
Gateway Development-Site & Civil Services. Morgantown, W.V.
Federal Correctional Institute-Variou Services. Hazelton, W.V.
Parkview Heights Retaining Wall-Geotechnical Services. Bridgeport, W.V.

Mine Related

Morgantown Anderson Highwalls-AML Reclamation Design. Morgantown, W.V.
Schramm, Gordon, East Franklin Landslide-AML Reclamation. Maryland.
Douglas Avenue Stormwater System-Geotechnical & Hydrologic Services. Allegheny County, M.D.
Fairmont Subsidence-AML Reclamation & Geotechnical Services. Falmont, W.V.
Ottawa State Route 2 Mine Subsidence-Geotechnical Services & Grouting Plan. Ottawa County, O.H.

Forensic / Expert Testimony

Mr. Gallagher has been involved in numerous Failure Investigations and Forensic Projects over the past 40 years. He has been approved as an expert in the areas of Foundation Failures, Blasting, Flooding, Slope failures, Construction Defects, Structural, and Residential Construction Defects.

Douglas Batt, M.S., P.E.
Cincinnati Branch Manager



As a Project Manager and Geotechnical Engineer, Mr. Batt is responsible for supervision of professional, technical and laboratory personnel and resources performing geotechnical engineering services. Mr. Batt's experience as a geotechnical and materials engineering consultant covers a variety of infrastructure, commercial and industrial projects. His technical and project

management experience includes geotechnical investigations, foundation design and evaluations, and construction materials testing and inspections for the following types of projects: roadways and bridges; reinforced earth embankments, earth dams, and earth retaining systems; slope stability analyses and landslide remediations; above and below ground fuel and water storage tanks; wastewater treatment facilities; manufacturing and parking facilities; and multistory office, hotel and school buildings.

In addition, Mr. Batt has performed flexible and rigid pavement designs and assessments; monitored and evaluated pile load tests for industrial and commercial facilities; and has monitored, inspected and authored EPA certification reports for Subtitle D landfill liner and cap construction projects.

EDUCATION

Master of Science

University of Cincinnati, Cincinnati, Ohio 1992

Bachelor of Science, Civil Engineering

University of Cincinnati, Cincinnati, Ohio 1989

PROFESSIONAL REGISTRATION / CERTIFICATION

Registered Professional Engineer, Ohio, Kentucky & New Jersey

CTL PROJECT EXPERIENCE

CLEAR FORK RESERVOIR DAM SEEPAGE INVESTIGATION

City of Mansfield, Ohio

Miami Valley Hospital South, Highway Sign, Cincinnati, Ohio

SHAWNEE STATE FOREST DAM IMPROVEMENTS AND REPAIRS (ODNR)

Adams and Scioto Counties, Ohio

Developed remediation design plans, specifications and construction cost estimates for the retrofit of the existing earth dams. Executed Preliminary Investigation, Preliminary Design and Final Design phases for four earth embankment dams that required increased storage-discharge capacity, structural repair of the principal concrete box culvert spillways along with evaluating the improvements for stability and seepage control. Performed geotechnical explorations, hydrologic and hydraulic analyses of watersheds and dam outlet structures, design of earth retaining walls, spillway inlets, sliplining of box culvert outlets and roller

compacted concrete (RCC) dam embankment overlayment. His design approach included value engineering of several design alternatives that included increasing the height of three existing embankments along with constructing new emergency spillways and developing a breaching plan for fourth dam embankment.

MEMORIAL PARKWAY TREATMENT PLANT RESERVOIR

Fort Thomas, Kentucky

Mr. Batt acted as CTL's Project Manager for the geotechnical exploration on a project that consisted of the analysis of the existing reservoir embankment slopes, including laboratory testing of the soils encountered in the embankments and slope stability analyses in both long term steady state seepage and rapid drawdown conditions.



Carl Selfridge

Manager

Geotechnical & Drilling Services

Annually manages 100+ various geotechnical projects including; education, transportation, commercial development and a variety of public and private clients. Mr. Selfridge is responsible for directing all aspects of the Geotechnical Engineering Department for CTL Engineering of West Virginia, Inc.

This includes the management of field drilling activities, field classification of soil and rock, field and laboratory safety procedures, the assignment of a laboratory testing program, and performing geotechnical evaluations. Engineering evaluations include foundation recommendations, settlement analysis, slope stability analysis, earth pressure coefficients and report preparation.

Education

A.A.S. Mechanical Technology – Drafting & Design
Adirondack Community College, Queensbury, N.Y. 1991
A.S. Engineering Science
Adirondack Community College, Queensbury, N.Y. 1994
B.S. Civil Engineering (Geotechnical & Structural)
Rensselaer Polytechnic Institute, Troy, N.Y. 1996
Graduate Studies-Civil Engineering (Geotechnical)
Rensselaer Polytechnic Institute, Troy, N.Y. 1996-1999

Professional Registrations / Certifications

Engineer Intern (EI): New York, 1998
Pennsylvania Dept of Transportation Level II Drilling Inspector,

CTL Project Experience

Mine & Landfill Related

Eccles and MacArthur Subsidence-Subsidence Investigation & Mitigation. Raleigh County, W.V.
Shinns Run Portals & AMD-AML Reclamation & Geotechnical Services. Harrison County, W.V.
Tunnel Ridge Slurry Cell A-Piezometer Installations & Geotechnical Services. Ohio County, W.V.
Pine Creek: Omar Landfill-Geotechnical Services. Logan County, W.V.
WV State- wide Landfill-Geotechnical Services.
Buzzard Pond Dam-Geotechnical Services. Marshall County, W.V.

Water / Wastewater Treatment

Water Treatment Plant Corrective Action Design-Geotechnical Services. Marion County, W.V.

Transportation

Benedum Airport Towers-Geotechnical Services. Harrison County, W.V.
I-81 Martinsburg to Marlowe Interchange-Design Build. Jefferson County, W.V.
Hughes Creek Landslide-Geotechnical Services. Kanawha County, W.V.
Dick Henderson Bridge-Geotechnical Services. Kanawha County, W.V.
Morgantown Airport Alternative Access Road-Geotechnical Services. Morgantown, W.V.
Leon Bridge-Geotechnical Services. Mason County, W.V.
Morgantown Rest Area-Geotechnical Evaluation. Morgantown, W.V.
Veterans Memorial Bridge-Geotechnical Services. Hancock County, W.V.

Healthcare

New Preston Memorial Hospital-Geotechnical Evaluation. Preston County, W.V.
Mon General Hospital Development-Site Design Services. Morgantown, W.V.
Pierpont Centre Dental Office-Geotechnical Evaluation. Morgantown, W.V.
Davis Memorial Hospital Addition-Geotechnical Services. Randolph County, W.V.
Chestnut Ridge Hospital Addition-Geotechnical Services. Morgantown, W.V.
WVU Hospitals Data Center-Geotechnical Services. Morgantown, W.V.
Molecular Lab and Morgue-Geotechnical & Surveying Services. Morgantown, W.V.
Ambulatory Care Center-Geotechnical Services. Morgantown, W.V.

Building Development

University Park-Civil Site, Geotechnical, Environmental & Surveying Services. Morgantown, W.V.
Gateway Development-Civil Site, Geotechnical, Environmental & Surveying Services. Morgantown, W.V.
Shoney's Restaurant-Geotechnical Investigation. Morgantown, W.V.
Grand Central Apartments-Geotechnical Services. Morgantown W.V.
Oak Valley Garden Apartments-Geotechnical Services. Gilmer County, W.V.
West Minister Apartments: Phase I & II-Civil Site, Environmental, Geotechnical & Surveying Services. Jefferson County, W.V.
University Place-Civil Site, Environmental, Geotechnical & Surveying Services. Morgantown, W.V.

Education

Huff Consolidated Schools-Geotechnical Services. Wyoming County, W.V.
Central Preston Middle School-Variou Services. Preston County, W.V.
Bruceeton Mills-Variou Services. Preston County, W.V.
WVU Stewart Hall Retaining Wall-Geotechnical Services. Morgantown, W.V.
Alderson Broaddus Football Field-Geotech Services. Philippi, W.V.

Section 4

PROJECT APPROACH - DAM AND SLOPE STABILITY PROJECTS

Project Management/Administration - GD&F's Project Management Team will plan, schedule, organize and control the resources to achieve specific objectives within established schedule, budget and quality standards. GD&F's Project Manager is responsible for, but not limited to, the following:

1. Assemble and direct the design team
2. Conduct project kick-off meetings
3. Serve as the single point of contact for project communication
4. Coordinate project issues with outside agencies
5. Schedule project development activities
6. Review product quality and assure compliance
7. Monitor design team performance and project development
8. Control project costs
9. Promote an atmosphere of team work among project participants
10. Coordinate the flow of information concerning the project
11. Conduct constructability review

We will provide personnel to attend all project meetings to maintain proper liaison with Department of Agriculture. Minutes of all meetings and records of telephone conversations, along with directives or decisions, will be prepared and distributed by GD&F to Department of Agriculture.

Surveys - This task consists of providing the survey requirements associated with specific Department of Agriculture projects designated for studies, reports, design and construction.

GD&F will obtain published horizontal and vertical control data for specific project use. GD&F will research municipal, County and Department of Agriculture files to obtain existing mapping and other pertinent information. Upon completion of this research, we will determine field information requirements and perform the field survey. Proper field survey notebook compilations, numbering and content indexing will be used to record all survey information.

GD&F will establish horizontal and vertical control relative to referenced monumentation. Project control monumentation will be completed in the field. The horizontal control will be based on the State Plane Coordinate System NAV 83. The vertical control will be based on the NGVD 88 vertical datum. Benchmarks and references for construction stakeout will be established and recorded.

Utility Investigation - While investigating property information in the applicable County Courthouse, we will obtain a utility listing in accordance with Act 187. We will utilize the West Virginia Miss Utility System to notify utilities of the project and to obtain underground facility locations.

Plans will be developed and forwarded to all utilities involved for their verification and identification of potential conflicts. The input received from the affected utilities will be incorporated into the design and construction documents.

Erosion Control Plan - GD&F will prepare a Soil Erosion and Sedimentation Control Plan and narrative for the proposed construction in accordance with the West Virginia Erosion and Sedimentation Requirements and the Erosion and Sediment Pollutant Control Program Manual.

The narrative will include description of work, description of stormwater handling, sedimentation control, project construction schedule, experience of plan preparer, staging of earthmoving activities, description of temporary and permanent control measures and maintenance program.

We will submit the Erosion Control Plan to Department of Agriculture for review and comment, and then after required revisions, if necessary, submit to the applicable County Conservation District for their approval.

Geotechnical Engineering Report - This task consists of the development of the Geotechnical Engineering Report (GER) presenting final geotechnical design and construction recommendations for the project, along with supporting documentation, based on the subsurface conditions determined and any previous project geotechnical investigations.

The GD&F team including CTL Engineering personnel will perform a preliminary data and publication search to obtain background geological information and maps, boring logs, project files and reports, environmental documents and R/W plans to describe the soil/rock/ hydrologic setting.

GD&F will do a field reconnaissance of the site, interview local residents and engineers and define the soil/rock/hydrologic setting.

GD&F will administer the testing program by performing the water, soil and rock testing. GD&F will collect readings and present reduced data from field instruments and perform the geophysical investigation.

The reconnaissance for soils and geological survey evaluate the feasibility of each structure considered for the project site. This work will begin during the hydrologic and hydraulic study. The reconnaissance will consist of the following phases:

1. **Search for Published and Unpublished Information**

During this phase, we will review all available published and unpublished information such as preliminary plans of the proposed construction, surface features on topographic maps, geologic maps and other sources of geologic information, soil survey maps, aerial photographs, mine maps and subsidence information, previous geotechnical explorations in the vicinity of the project, logs of existing borings and water wells and records and photographs regarding the construction and behavior of nearby structures relative to the proposed structures. We will contact WV Geological and Economic Survey and the U.S. Department of Interior, Office of Surface Mining, National Mine Map Repository, Pittsburgh, PA to obtain information concerning mining beneath or adjacent to the site.

2. Visual Site Inspection

We will verify and supplement the information obtained above with a site inspection. It will include determination of the location of the proposed structural, other existing structures in the project vicinity including their type and condition; visual examination of surface soils, topography and vegetation; drainage features; rock outcrops; excavations; visible indications of subsurface conditions; existing problem areas such as slope movements, subsidence, mine shafts or sinkholes; and utility locations.

3. Reconnaissance Soils and Geological Engineering Report

GD&F will prepare a report to present the findings of our soils and geological investigations as outlined above. It will include the site identification; data obtained during the search for published and unpublished information; mining information correspondence; subsurface features and structures observed during visual site inspection and air photo interpretation; scope of subsurface exploration, if conducted; identification of geological formations in the area; conditions encountered in the subsurface exploration; evaluation of the effect of the condition encountered or anticipated on the proposed construction; relative advantages and limitations of the sites under consideration; topographic map showing proposed site and locations of important site features; indication of further exploration requirements such as in situ and/or laboratory testing, if needed, for the determination of bearing capacity and/or settlement analysis for the proposed foundations.

4. Foundation and Soils Exploration Plan

We will prepare the number of test borings for each structure unit, a discussion of the possible adverse and positive subsurface conditions, mining information, profile showing existing and design grades, alignment, estimated typical section, recommended method of subsurface exploration, plan sheet noting suggested test boring locations, recommended laboratory testing program and a copy of pertinent foundation information from the Reconnaissance Soils and Geological Engineering Report. Recommended laboratory tests may include rock strengths such as unconfined compression, shear resistance, etc. and soil parameters such as gradation, density, direct shear, consolidation and CBR.

5. Laboratory Testing

To characterize and assess the engineering behavior of soils/rock at the project site, a laboratory testing program will be prepared, with the testing only performed upon concurrence by Department of Agriculture. All laboratory soil testing will be performed at an approved laboratory. The laboratory testing program will include unconfined compression tests on intact rock cores (if applicable) and tests to determine the corrosive potential of soil and water samples. Soil testing including soil classification, standard penetration test (SPT), Atterberg limits, soil density-moisture testing and tri axial shear and direct shear tests (where obtainable). The proposed laboratory testing program will be included with the geotechnical engineering report. GD&F will obtain testing approval.

Subsurface Exploration - This task is the performance of core borings for structures by an approved test boring contractor.

The core boring contractor will notify all affected utility companies affected by core boring operations. We will ensure that utility lines have been located by the utility companies before starting core borings. Stake out of core borings in the field, intent-to-enter notices to all affected property owners, if required, and locations of all utilities affected by core borings operations will be provided by GD&F. Boring location stakeouts shall be marked in the field with white paint per WV Miss Utility requirements.

GD&F's geotechnical engineer will maintain daily contact with the GD&F inspector throughout the drilling activities to allow for any required test boring adjustments. Our geotechnical engineer will keep Department of Agriculture informed about the progress of drilling work with an invitation to visit and review the work after the completion of the first boring, and at any time when major changes are contemplated.

GD&F will prepare a record copy of the engineer's logs for the borings for submission with the Geotechnical Report for the dam. Upon completion, the engineer's field boring log will be verified by our geotechnical engineer. We will supply Department of Agriculture with two sets of the respective boring logs for review along with drillers log, laboratory test results and the original field engineer's logs. We will also provide the typewritten copies of the field engineer's logs with tracings of the logs endorsed by our geotechnical engineer.

Hydraulic and Hydrologic Report - This task consists of the preparation of Hydrologic and Hydraulic (H&H) reports for all project intake structures, overflow spillways, terminal structures, downstream channels, dam drains and outlet conduits.

GD&F will gather existing information to be used in the development of the hydrologic and hydraulic analyses and in the preparation of the H&H Report. GD&F will research and analyze existing flood data. This data will include any existing gauge stations, WV DEP, FEMA, or U.S. Army Corps of Engineers report insurance studies, high water marks, local historical information and personal interviews.

A spillway design flood will be generated based on the hazard classification of the dam as coordinated and approved by the WV Division of Dam Safety.

GD&F will perform a hydrologic analysis of the watershed using HEC-HMS model simulations. All assumptions and/or limitations of each model will be clearly identified and referenced. Multiple hydrologic models will be used to assist in validating the selected approach. An analysis of the flood history will also be considered. The hydraulic analysis will use HEC-RAS modeling software for spillway chute and downstream channel design. A flood routing analysis will be simulated for the reservoir to determine the effect of storage on peak discharge.

Scour countermeasures will be designed, if necessary. We will also evaluate the channel stability and design countermeasures, if needed.

The Hydrologic and Hydraulic Report will include all necessary narrative and data review and approval by the WV Division of Dam Safety.

Waterway Permits/Environmental Review - This task is the coordination with the appropriate environmental agencies and the preparation of permit applications.

GD&F's work will involve preparation of a Corps of Engineers 404 or NPDES application including an Environmental Assessment Form. This task includes Wetland Identification/Mitigation, if required. The appropriate coordination with required agencies is included in this task.

Early coordination and necessary information will be obtained to complete the Application Checklist and Environmental Assessment Form. This form will accompany the permit application. GD&F will prepare the permit application and all supporting documentation for submission to Department of Agriculture which will then be forwarded to WVDEP. GD&F will coordinate with the U.S. Fish and Wildlife Service, the West Virginia Division of Culture and History, the U.S. Army Corps of Engineers and the WV Department of Environmental Protection related to threatened or endangered species, National Register listed or eligible historic properties, wetlands and other environmentally sensitive issues.

Archaeology investigation will be limited to a preliminary plans and narrative submission to PHMC by GD&F on behalf of Department of Agriculture for WV Division of Culture and History review and clearance. Should WV Division of Culture and History require further studies after their initial review, the agreement with Department of Agriculture may be supplemented for the additional work scope.

Preliminary Design Engineering Report - This task consists of the assembly of preliminary design engineering studies and development of recommendations for proposed dam improvements.

GD&F will provide preliminary design and engineering with respect to the selection of dam spillways, outlet structures, overtopping and erosion protection, mitigation measures during construction, embankment stability modifications, intake/dam drain conduits, concrete rehabilitation, and related modifications.

The Preliminary Design Engineering submission will include the following tasks:

1. Develop a location map showing the features to be constructed.
2. Evaluate results of geotechnical report to identify potential foundation and stability structure mitigation measures.
3. Recommend spillway modifications.
4. Evaluate constructability and site constraint issues.
5. Prepare cost estimates for alternative modification designs.
6. Prepare justification for recommended alternative.
7. Prepare transmittal letter, plans and report for Department of Agriculture submission.
8. Provide outline plans and specifications
9. Identify all required permits and approvals.

Utility Coordination - GD&F will work with the affected utilities to incorporate the most accurate information in final design. We will prepare and submit plans to utility companies for verification of the utility type and size based on the WV Miss Utility requirements to locate any utilities within the project area. Coordination efforts will be maintained with the utility during design for solutions to all known and potential utility/bridge project conflicts. The utility relocation engineering will be incorporated into the project construction contract documents. We will provide all information and application forms for utility agreements and permits.

Structure Foundation Report - This task consists of the development of a Structure Foundation Report for each dam structure in the project. The report will present recommendations for design and construction of the dam structure foundations, and provides geotechnical data in support of the recommendations.

We will tabulate the results of the soil, rock and water testing required allowing analysis of foundation conditions. We will perform an analysis to determine the preferred foundation for the structure, and document the rationale for the preference. The analysis will include cost comparisons for each of the foundation alternatives. A tabular summary will be prepared of the site conditions and foundation recommendations at each substructure location. We will identify and address special site conditions through appropriate design. We will develop foundation notes, construction details, and special provisions as warranted. We will prepare plotted boring log sheets for the core borings used in foundation analysis and design. We will prepare the Structural Foundation Report for the structure, with the tabular summary of foundation recommendations, foundation notes, construction details, special provisions, quality assurance (QA) form and plotted boring log sheets.

Erosion and Sedimentation Control Plan/NPDES Permit - This task is the development of the Erosion & Sedimentation Control Plan and submission of the NPDES Permit Application.

All information prepared and comments obtained during the preliminary Erosion and Sedimentation Control Plan Submission (along with comments obtained during other preliminary submissions) will be assembled to prepare the Final Erosion and Sedimentation Control Plan.

The following elements will be included in the Erosion and Sedimentation Control Plan:

1. Develop the Erosion and Sedimentation Control Plan to include:
 - Cover sheet
 - Location map
 - Topography of the area including watershed areas and watercourses receiving project runoff
 - Proposed alterations to the area
 - Limits of the project
 - The location of all temporary and permanent erosion and sediment pollution control measures and facilities
 - All pertinent erosion control and construction details

2. Develop a narrative report describing the project and indicating project purpose, engineering assumptions, specifications and calculations for erosion control measures and facilities. The narrative shall include a schedule of installation and removal of temporary and permanent erosion control measures and facilities as related earth-moving operations with a maintenance program for each temporary and permanent erosion control measure and facility.
3. Provide detail instructions of the sequence of construction on the plan and in narrative form. Include staging, sequencing and scheduling of earthmoving activities and installation and removal of erosion and sediment pollution control measures and facilities, as required.
4. In the narrative report, provide a detailed description of all soil types located within the project limits including each soil type, depth, slope and resistance to erosion. The soil boundaries and a summary table of the soil types and limitations will also be included on the plans.
5. Provide all applicable construction schedules, maintenance programs (including the removal and disposal of accumulate soil materials).
6. Prepare transmittal letter, plans and narrative report for submission to the County Conservation District. Meet with the County Conservation District before submission to discuss submission requirements and to review conceptual plan.

The following tasks will be prepared for the NPDES permit application:

1. Develop an NPDES boundary map that includes the following information: limits of disturbance, dam alignment, cut & fill limits, ROW lines, contours, stations, location identifiers and the permit boundary.
2. Complete the NPDES Permit Application. The application package will consist of the following items: Act 15 Notification, PNDI Form, location map, NPDES Application Form, Cultural Resources Notice (if involving a Special Protection Watershed), General Information Form (if involving a Special Protection Watershed or an Individual NPDES Application) and the Erosion and Sediment Pollution Control Plan.
3. Submit NPDES Permit Application package to Department of Agriculture for review, if required. Revise as necessary. Obtain Department of Agriculture's notarized signature on the application and make the designated amount of copies to submit to the County Conservation District and, if applicable, to WVDEP.
4. Schedule review meetings with the agencies before submitting the NPDES permit package to expedite the permitting process.
5. Submit permit package to the Conservation District/WVDEP.

Final Dam Modification Plan - This task is the development of the final dam modification.

GD&F will incorporate information from the hydrologic-hydraulic report, water obstruction permit application, Structure Foundation Report and prepare final design calculations, drawings and specifications for the proposed dam modifications to show the character and extent of the work.

The cost estimate will be based on estimated quantities and historical cost data for similar structures in the project area. Consideration for access, phasing and relative difficulty of construction (constructability) will also be used in establishing unit prices and estimated costs.

We will revise the final plans as required and submit same to Department of Agriculture for the final plan check including documented responses to comments. All comments and recommendations received during the final plan check will be incorporated into the final plans. The revised final submission will include final plans, special provisions, quantity estimates, cost estimates, QA/QC forms and computations properly signed and sealed.

Assemble Final Project Documents/Plans, Specifications and Cost Estimate - This task is the preparation of the plans, specifications and cost estimate submission to Department of Agriculture.

GD&F will prepare the plans, specifications and estimate information for the project. In general, the information will include design computations, quantities determination, tabulation and summary sheets, special provisions and a detailed cost estimate.

GD&F will assemble all available information on the project from the designers, such as plans or sketches, permits, non-standard special provisions, agreements, utility clearance and right-of-way certification.

The contract will be let and awarded by Department of Agriculture.

Construction Phase Services

Bid Phase Services

1. Prepare bidding document, including Department of Agriculture documents.
2. Submit preliminary bid documents to Department of Agriculture for review and approval prior to finalizing.
3. Reproduce approved bid documents and construction drawings as needed.
4. Provide additional information, clarifications and addenda in response bidder questions.
5. Participate in Department of Agriculture pre-bid conference
6. Prepare all addenda for review and approval by Department of Agriculture.
7. If requested by Department of Agriculture, attend the bid opening and review bid packages.

8. Review and tabulate bids and furnish a written recommendation for awarding of the bids and/or rejection of any or all bids.
9. As required by Department of Agriculture, provide advice on modifying the project documents (deleting items or limiting quantities, preparing and reviewing alternate designs, bids or contingencies) if lowest bids exceed available construction funds.

Construction Coordination

1. Participate in a Department of Agriculture preconstruction conference, finalize the contract and participate in all meetings related to construction activities.
2. Review and approve all material and equipment samples, shop drawings, certificates, renderings and other pertinent construction documentation submitted by the contractors.
3. Prepare all change orders, as required.
4. Attend regular on-site construction progress meetings (as required) with all parties to review and discuss construction. Make other field visits to the work site as frequently as requested by Department of Agriculture to:
 - a. Observe the quality of work
 - b. Confirm the quality of materials and equipment delivered to the work site
 - c. Ensure full compliance with project specifications
 - d. Guard against work defects and deficiencies
5. If directed by Department of Agriculture, prepares minutes of all on-site construction progress meetings and distribute copies of minutes to all parties.
6. Advise and fully participate in negotiations and pertinent Department of Agriculture conferences for the duration of the project.
7. Prepare all design revisions, if requested by Department of Agriculture.
8. Certify and prepare written recommendations for contractor payments. A payment schedule will be negotiated prior to construction.
9. As required by the Department of Agriculture, be available to consult with contractors during construction
10. Participate in the Department of Agriculture initial inspection to identify and document all deficiencies in workmanship and materials to be completed or corrected, if necessary. If deficiencies are identified, schedule and conduct follow-up final inspections until all corrections have been successfully completed.

Section 4: PROJECT APPROACH - DAM PROJECTS

11. Review contractors operating instructions and manuals, extended warranties, guarantees and other similar documentation of materials and equipment used and installed during construction.
12. Prepare and submit to the Department of Agriculture reproducible as-built record drawings and CAD files.
13. Prepare a simple methodology showing recommended procedures for new system operation and maintenance, if applicable.

Section 5

REFERENCES

**PA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
BUREAU OF FACILITY DESIGN AND CONSTRUCTION**

Rachel Carson State Office Building
8th Floor, 400 Market Street
Harrisburg, PA 17101

Attn: Edward Raptosh, P.E., Civil Engineer Manager
Phone: 717-783-3329
Email: eraptosh@pa.gov

CITY OF LOCK HAVEN

City Hall, 2nd Floor
20 East Church Street
Lock Haven, PA 17745

Attn: Jason Dershem, P.E., City Engineer
Phone: 570-893-5904
Email: jdershem@lockhavenpa.gov

ALTOONA WATER AUTHORITY

900 Chestnut Avenue
Altoona, PA 16601

Attn: Michael Sinisi, P.E., Chief Engineer
Phone: 814-949-222
Email: msinisi@altoonawater.com

CLEARFIELD MUNICIPAL AUTHORITY

107 East Market Street
Clearfield, PA 16830

Attn: John C. Williams, Manager
Phone: 814-765-9609
Email: cma.jcw@gmail.com



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