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Header @ 1

List View

General Information [Contact](#) [Default Values](#) [Discount](#) [Document Information](#) [Clarification Request](#)

Procurement Folder: 1235750

Procurement Type: Central Contract - Fixed Amt

Vendor ID:

Legal Name: CTL ENGINEERING OF WV INC

Alias/DBA:

Total Bid: \$0.00

Response Date:

Response Time:

Responded By User ID:

First Name:

Last Name:

Email:

Phone:

SO Doc Code: CEOI

SO Dept: 0310

SO Doc ID: DNR2300000005

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Status: Closed

Solicitation Description:

Total of Header Attachments: 1

Total of All Attachments: 1



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

State of West Virginia
Solicitation Response

Proc Folder: 1235750
Solicitation Description: A&E - Pendleton Lake Dam Renovations
Proc Type: Central Contract - Fixed Amt

Solicitation Closes	Solicitation Response	Version
2023-06-22 13:30	SR 0310 ESR06192300000006411	1

VENDOR
000000204737
CTL ENGINEERING OF WV INC

Solicitation Number: CEOI 0310 DNR2300000005
Total Bid: 0
Response Date: 2023-06-19
Response Time: 16:13:34
Comments:

FOR INFORMATION CONTACT THE BUYER
James H Adkins
(304) 558-3397
jamie.h.adkins@wv.gov

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

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

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Professional engineering services				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments: EOI

Extended Description:

Design and contract administration services of new dam renovations at Pendleton Lake Dam, Blackwater Falls Resort State Park.



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

State of West Virginia
Centralized Expression of Interest
Architect/Engr

Proc Folder: 1235750

Doc Description: A&E - Pendleton Lake Dam Renovations

Reason for Modification:

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2023-06-07	2023-06-22 13:30	CEOI 0310 DNR2300000005	1

BID RECEIVING LOCATION

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

VENDOR

Vendor Customer Code:

Vendor Name :

Address :

Street :

City :

State :

Country :

Zip :

Principal Contact :

Vendor Contact Phone:

Extension:

FOR INFORMATION CONTACT THE BUYER

James H Adkins
(304) 558-3397
jamie.h.adkins@wv.gov

Vendor
Signature X

FEIN#

55-063-1834

DATE

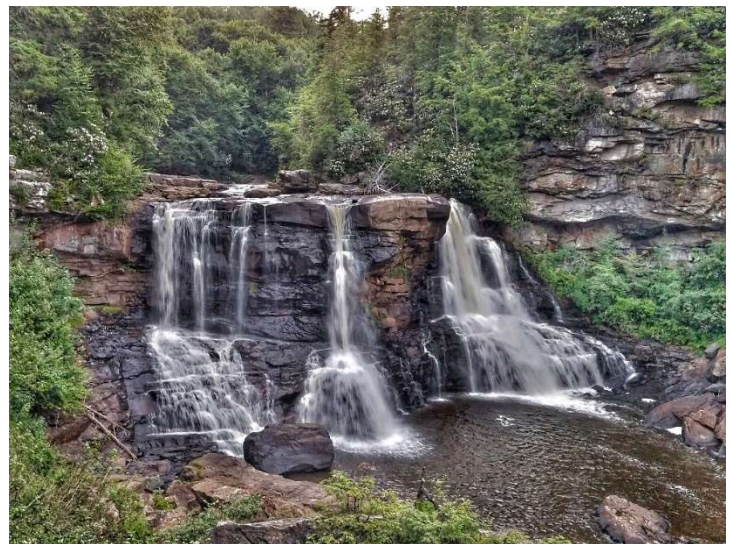
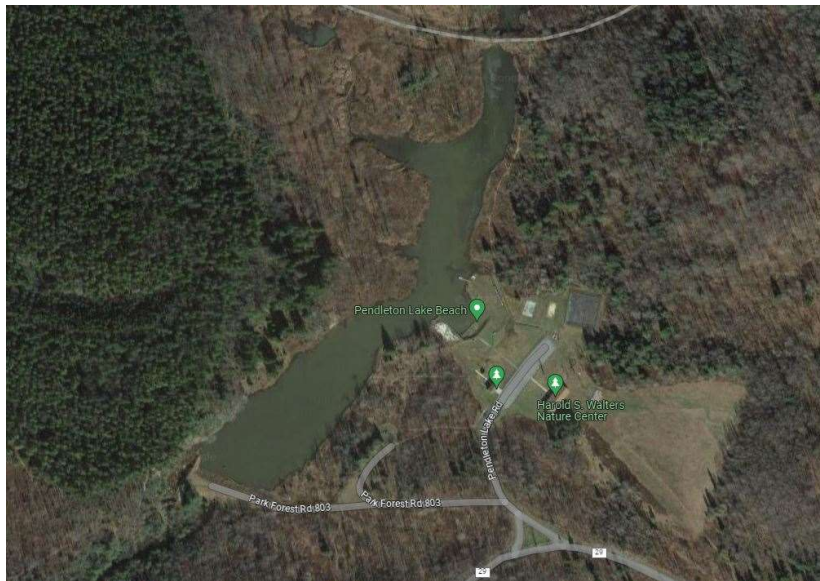
6/22/2023

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



EXPRESSION OF INTEREST

Pendleton Lake Dam Renovations



June 19, 2023

State of West Virginia
Department of Administration, Purchasing Division
2019 Washington Street E
Charleston, West Virginia 25305

Attention: Mr. James H Adkins, Buyer

Subject: Expression of Interest
Pendleton Lake Dam
CTL Proposal No.: 23050069MOR QUAL

CTL Engineering, Inc. (CTL) appreciates the opportunity to submit our expression of interest to provide professional engineering services to the WVDNR in reference to the Pendleton Lake project. CTL is a multi-discipline engineering firm specializing in many services requested by the State.

There are at least 4 specific and unique qualities that make CTL a prime candidate to service this project:

- ▶ An established record of over 96 years of providing engineering, testing services, and surveying for regional public and private sector clients.
- ▶ In-house accredited/certified laboratories for soil, concrete, aggregate, and asphalt equipped with automated instruments and updated software for various tests.
- ▶ A local office in Morgantown, WV, as well as the support of CTL's other offices, a total staff of over 300 employees including over 28 professional engineers and 234 inspectors/engineering technicians, architects, professional surveyors, certified geologists, environmental scientists, and support staff.
- ▶ Licensed Geotechnical Engineers with over 25 years of experience. The Morgantown office was established in 1981. We have a vast knowledge of the area and geotechnical conditions that are unique to WV.
- ▶ Capability to perform in-house: geotechnical soil/rock drilling, sampling and in situ testing; geophysical test methods consisting of ground penetrating radar (GPR), Electrical Resistivity Imaging (ERI), and Refraction Micro-tremor (ReMi) to augment subsurface investigations; laboratories for soils/aggregate testing, metallurgical testing, and analytical chemistry testing; environmental field screening and sampling equipment, services thereby reducing project time and costs.

We appreciate this opportunity to submit our qualifications and look forward to a favorable reply to our submittal. Please do not hesitate to contact me at (304) 292-1135 or jgrani@ctleng.com.

Respectfully Submitted,
CTL ENGINEERING, INC.



Joseph Grani, P.E.
Geotechnical Project Manager



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Firm's Expertise



FIRM'S EXPERTISE

CTL Engineering, Inc. is a full service consulting engineering, testing, inspection, and analytical services company. CTL maintains a staff of over 300 employees, including registered engineers, architects, chemists, environmental engineers & scientists, geologists, hydrogeologists, non-destructive testing specialists, certified welding inspectors and technicians. CTL has a branch office in Morgantown, WV that was founded in 1983 to provide regional service to West Virginia, Maryland and Pennsylvania.

CTL's Morgantown office has a state-wide staff of over 25 people; including licensed professional engineers, licensed land surveyors, and certified engineering technicians. Over our 42 years in West Virginia, CTL has provided numerous civil site designs, geotechnical designs, stormwater plans and surveys for commercial and residential developments and roadway projects. We have successfully prepared State and Federal 401 and 404 Permit submittals, Ms4 Phase II stormwater permits and conducted Environmental Site Assessments. CTL also has significant experience working on mining related projects including mine plans and permitting, mine refuse reclamation and subsidence evaluations and investigation. These projects were completed by conscientious interaction with Architects, Engineers, State and Federal Agencies and Owners.



Strategic Teaming Partner – RIZZO International, Inc.



RIZZO International, Inc. (RIZZO), a women-owned small business, is a client-centric engineering and earth sciences consulting firm with expertise in specialty civil, geotechnical, and structural analysis and design; hydrologic and hydraulic modeling; probabilistic and deterministic seismic hazard analysis; field and office-based geologic and hydrogeologic investigations; and construction support services.

Dam engineering services have been a core component of RIZZO's business for nearly 35 years, and in that time RIZZO has provided new and remedial design and analysis services for hundreds of water supply, flood protection, hydroelectric, and grade stabilization projects involving earth and rock fill embankment dams, buttress dams, concrete gravity dams, and roller compacted concrete (RCC) dams. RIZZO's dam engineering services have also included safety inspections for the Federal Energy Regulatory Commission (FERC) and for state dam safety programs.

RIZZO has completed more than 40 dam rehabilitation projects that have involved significant modifications to existing spillways, complete spillway redesigns and rebuilds, or major rehabilitation designs for embankments and concrete structures. Much of this work has been conducted in the eastern United States, under on-call dam engineering service agreements with electric utilities and state agencies such as the New York Power Authority (NYPA) and the New York State Office of General Services (NYSOGS). Some of our more recent work has also involved remedial design work under the jurisdiction of the Pennsylvania Department of Environmental Protection (PADEP) and remediation design to resolve Ohio Department of Natural Resources (ODNR) consent orders for dam deficiencies. As such, RIZZO has developed a qualified team of dam safety engineers with a strong regulatory knowledge and working relationships with federal, state, and local regulatory personnel.



Team's Relevant Dam Experience

The Project Management Lead, Joseph Grani has worked on many projects that fall under the purview of the Dam Safety Regulations. He is supported by other team members who have worked on Dam/Levee Safety projects including assessments, repair, or design of new or replacement dams or levees in many locations throughout the region.

The CTL Team has the experience to respond to both emergencies and routine assessments. For this project, our focus will be to prepare cost effective and practical solutions to achieve the project goals, and if necessary, providing construction administration and inspection to ensure adherence to plans and specifications.

The CTL Team will use the depth and breadth of its team member's expertise to identify, evaluate, design and execute the project goals of the State of West Virginia. This requires flexibility combined with the expertise, while using advanced technology and methods of assessment and analysis. The Team that has been assembled has that ability; including the use of non-invasive investigative methods such as Geophysical investigation including Electrical Resistivity Tomography (ERT), Streaming Potential (SP) and Seismic Wave Surveys along with traditional geotechnical investigative methods of test borings, instrumentation etc. The most important aspect of the team is to work with the Owner to identify alternative solutions that ultimately arrives at the preferred solution which has the highest level of confidence with the lowest level of risk.

The Team's dam safety engineering, design, and construction support services regularly include (but are not limited to):

- Dam safety inspections for normal operations and following extreme events;
- Emergency inspections for abnormal behavior (cracking, sinkholes, etc.);
- Dam safety performance monitoring (instrumentation and data analysis);
- Probable maximum flood (PMF) and inflow design flood (IDF) determinations;
- Dam stability analysis;
- Seepage analysis;
- Spillway and low-level outlet capacity assessments;
- Hazard screening and classification assessments;
- Dam break analysis and inundation mapping;
- Potential failure modes analysis;
- Emergency action plan (EAP) development;
- EAP coordination with state and local first responders;
- Organization and execution of table top and functional EAP training exercises;
- Owner dam safety awareness training;
- Development of dam safety inspection and maintenance plans;
- Comprehensive engineering assessments reports; and
- Dam improvement and remediation work, including (but not limited to):
 - Rehabilitation and modification design;
 - Development of design drawings and specifications;
 - Assistance with regulatory permits;
 - Engineering support during procurement of construction services;
 - Engineering support during construction; and
 - As-built documentation.



Organizational Chart



ORGANIZATIONAL CHART



Joseph Grani, PE
Project Manager

John P Osterle, PE
Dam Safety Engineer and
Design Manager
RIZZO

CIVIL

Reuben Haught, PE
Civil Engineer

Ed Zullo, PE
Civil Engineer
RIZZO

Dom Drkulec, MS
Structures
RIZZO

Paul J. Martinchich, PE
Hydrologic/Hydraulic
RIZZO

GEOTECHNICAL

Joseph Grani, PE
Geotechnical Engineer

Carl Selfridge
Geotechnical Engineer

Doug Batt, PE
Geotechnical Engineer

Fred Schoen, PE
Geotechnical/Geophysical
Testing

CONSTRUCTION ADMINISTRATION

Hassan Zahran, PE
Project Engineer

Ron Matthews
Engineering Associate
RIZZO

ENVIRONMENTAL

Chris Jaros, PE
Environmental

SURVEYING

Dave Baker, PS
Project Surveyor



Resumes



Joseph Grani, M.S., P.E.

Manager, Geotechnical Services Department



Mr. Joseph Grani P.E. presently serves as the Branch Manager for CTL's Morgantown, WV office. Joe has 30 years of experience in Geotechnical Engineering. He is responsible for the supervision of all geotechnical engineering projects including foundation analyses and recommendations for roadways, bridges, landslides, sewers, buildings, towers, and tanks. He has worked on several roadway

rehabilitation projects where unsuitable soils were encountered. His innovative solutions to projects have included using geo-grid to bridge soft soils and decrease required pavement thicknesses and the use of drying agents such as cement and lime to stabilize the soils. Mr. Grani was the Project Manager for various landslide projects including a 1,590-foot long plug pile wall (HEN-110-0.66), and a 1,170-foot long plug pile wall (ADA-125-13.30).

Also, Mr. Grani served as the Project Manager for the geotechnical explorations with varying level of design calculations on 19 landslides in ODOT District 09, 14 landslides in ODOT District 05, and 23 landslides in ODOT District 11. In addition to landslides, in the past 5 years, Mr. Grani has served as Geotechnical Project Manager on over 50 other transportation projects across Ohio including new highway interchanges, bridge and culvert replacements, and roadway realignments.

EDUCATION

Master of Science

The Ohio State University, Columbus, Ohio 1994

Bachelor of Science, Civil Engineering

The Ohio State University, Columbus, Ohio 1991

PROFESSIONAL REGISTRATION / CERTIFICATION

Registered Professional Engineer, State of West Virginia
23685

Registered Professional Engineer, State of Ohio (E-60435)

Member American Society of Highway Engineers

CTL PROJECT EXPERIENCE

DAMS/RESERVOIRS

Veto Lake, Washington County, Ohio

Stewart Lake Dam, Ross County, Ohio

ODNR Shreve Lake Dam Assessment, Wayne County, Ohio

Muskingum River Lock and Dam Assessment, Muskingum
County, Ohio

Buckeye Lake Dam, Buckeye Lake, Ohio

Clear Fork Reservoir Dam Seepage Investigation, Mansfield,
Ohio

SLOPE STABILITY/LANDSLIDES

Camp Dawson Retaining Wall, Kingwood West Virginia

Belmont County Water and Sewer, County Road 3 Landslide
Exploration, Ohio

Middleport-slip Repair, Meigs County, Ohio

Carthage Township Trustees, Jordan Run slip, Athens
County, Ohio

Island Creek Township Trustees, Jefferson County, Ohio

JEF-TR384 landslide Exploration

TR 350 slip Repair

TR 381 slip Repair

TR 383 slip Repair

Athens County Engineer, Various Landslides, Ohio

ATH-CR75-5.29

ATH-CR57-1.29

ATH-CR57-0.93

ATH-CR48-8.21

ATH-CR48-7.00

ATH-CR48-6.17

ATH-CR89-2.14-Rainbow Lake Rd.

ATH-CR94-0.29-Swett Hollow Rd.

ATH-CR10-7.25

CR 28-4.43 (McDougal Rd slip)

Jefferson County Engineer, Various Slips, Ohio

JEF-CR72

JEF-CR26

CR 26

CR 56

Knox Township, TR 246 Landslide, Jefferson County, Ohio

Ohio Department of Transportation, HEN-110-0.66 Slip, Ohio

Pike County Engineer, Ohio

Watson Rd slip into Ravine

Owl Creek Road

CR 602-slip 1

Scioto County Engineer, Walnut Hill Road, Ohio

Scioto Township, TR144A (Polk Hollow Road) Slip Repair,

Ross County, Ohio

Springfield Township, TR265 landslide Exploration, Jefferson
County, Ohio

Steubenville Township, STR170, Jefferson County, Ohio

Troy Township Trustee, ATH-TR179-0.92 Sawyer Run Road,
Athens County, Ohio

Village of Rayland, Narrows Road Slip Repair, Jefferson
County, Ohio

Warren Township Trustee, TR109A and TR113 Landslides,
Jefferson County, Ohio

Wayne Township, TR213 and TR166 Slip Repairs, Jefferson
County, Ohio

Years' Experience

37

Title/Level

Senior Vice President, Dams and Water
Resources
Level 11

Education

M.S., Civil Engineering, Carnegie-Mellon
University – 1989

B.S., Civil Engineering, Carnegie-Mellon
University – 1985

Professional Engineer

Professional Engineer: Colorado, Florida,
Georgia, Idaho, Indiana, Kansas,
Massachusetts, Maryland, Missouri,
Montana, North Carolina, North Dakota,
New Mexico, New York, Ohio, Oklahoma,
Pennsylvania, South Carolina, Texas,
Virginia, and West Virginia

Professional Certifications

Health and Safety Training OSHA 29
Facilities CRF 1910.120, "Hazardous
Waste Operations and Emergency
Response"

Approved FERC Part 12 Inspector

Professional Affiliations

American Society of Civil Engineers
#247086 – 1986

Assn. of State Dam Safety Officials

United States Society on Dams

(Chairman of the Environment &
Sustainability Committee)

Chi Epsilon – The National Civil
Engineering Honor Society

Continuing Education

International RCC Dams Seminar, Study
Tour, and Training Session, Atlanta,
Georgia, September 15, 2011

CEATI Dam Failure Case Studies, Las
Vegas, Nevada, March 15-16, 2011

ASFE's Project Management Training
Courses, Nov. 2003 and Feb. 2004

*A complete list of Mr. Osterle's
publications is available upon request.*

Skill Areas

Geotechnical Engineering
Structural Engineering
Civil Engineering
Bid Document Preparation
Foundation Recommendations

Dam Remediation
Hydraulic Analyses
Technical Specifications
Construction Cost Estimation
Dam Breach Analysis

Mr. Osterle is Senior Vice President, Dams and Water Resources at RIZZO International, Inc. (RIZZO). He is a registered professional engineer with more than 35 years of experience on a variety of geotechnical, foundation, structural, and civil engineering projects. He regularly participates in the design, analysis, permitting, and construction of dams, levees, floodwalls, power plants, and industrial facilities.

He conducts subsurface exploration and foundation evaluation studies for dams, industrial, commercial, educational, and transportation facilities. He has coordinated drilling and laboratory activities, performed site reconnaissance, evaluated field and laboratory data, developed geotechnical recommendations, and drafted geotechnical reports.

He is an approved Federal Energy Regulatory Commission (FERC) Part 12 inspector and has conducted over 20 dam safety inspections for both concrete and embankment dams. He has also performed stability analyses for concrete dams, embankment dams, levees, flood walls, slopes, and retaining walls. His experience also includes proposal preparation, senior author review of geotechnical reports prepared by others, and deep and shallow foundation construction inspection. Mr. Osterle has prepared bid documents, such as drawings and specifications, for numerous dam construction and remediation projects. He prepares construction cost estimates and has experience in construction management and observation. His field experience includes observation of rock and soil drilling, grouting, formwork construction, rebar placement, concrete placement, gabion construction, rockfill placement, dam safety inspection, geophysical testing, and post-tensioned anchor installation and testing.

PROFESSIONAL EXPERIENCE**Afobaka Hydroelectric Project, Dam Safety
Inspection/2023 Conditions Assessment and Root Cause
Analysis**

**Staatsolie Power Company Suriname N.V., Brokopondo District,
Suriname**

11/2021 – present

Independent Consultant that performed the 2021 dam safety inspection and associated report for the project. The hydroelectric project consists of a main dam with concrete, rockfill, and earthfill sections, and 16 earth embankment dikes. Also performed an independent dam safety inspection in response to the toe erosion observed in April 2023. A preliminary condition assessment was submitted to the owner and a comprehensive condition assessment and root cause analysis is currently in progress.



Mill Street Hydroelectric Project, Part 12D Inspection

City of Auburn, New York

9/2022 – 2/2023

Independent Consultant that performed the 6th Part 12D dam safety inspection and PFMA review of the project. The project included the preparation of a PFMA supplemental report based on the results of the PFMA review conducted during the inspection.

Pipestem Dam Spillway Modification

Barnard Construction Company, Jamestown, North Dakota

11/2022 – present

Project Manager for providing engineering support services for the construction of a new auxiliary spillway. Services include an RCC mix design program, a SC mix design program, Dewatering design peer review, slope stability analyses for proposed excavations, and geologic mapping of excavations.

Kankakee Hydroelectric Project, Dam Safety Inspection Report

City of Kankakee, Illinois

9/2022 – 2/2023

Senior Dam Safety Engineer that performed an inspection of the dam and hydroelectric facility. The inspection included an underwater inspection of the dam and hydroelectric facility performed by divers.

Eastvale/Hartman Dam, Dam Safety Inspection Report

Entech Engineering, Inc., Beaver Falls, Pennsylvania

10/2022 – 12/2022.

Senior Dam Safety Engineer that performed an inspection of the timber crib dam. The inspection included an underwater inspection of the dam and performed by divers. The inspection report included a detailed discussion and associated budgetary cost estimates for either rehabilitating the dam, converting the dam into a rock ramp, removing the dam, or the doing nothing.

Timber Lake Liberty Dam Rehabilitation Project

1690 Timberlake LLC | Delaware County, Ohio

11/2021 – Present

Senior consultant for the design of modifications to Timber Lake Liberty Dam, a privately owned dam located roughly 20 miles north of Columbus, Ohio. Modifications to the dam are being undertaken to comply with an Ohio Department of Natural Resources order to remediate the spillway of the dam to safely pass the probable maximum flood for the watershed.

John C. Smith Dam Rehabilitation Design

Bedford Borough Water Authority | Bedford, Pennsylvania

12/2021 – Present

Senior consultant responsible for the stability analysis of the embankment dam with the proposed rockfill berm and the proposed new concrete ogee spillway. Also assisting with the development of design drawings and construction specifications.

Youghiogheny Hydroelectric Project

D/R Hydro Company | Somerset, Pennsylvania, USA

2004 and 1/2022 - Present

Project manager and lead design engineer for the remedial design of the outlet structure of the project. The project consisted of developing design drawings for replacing and repairing steel plates located along the concrete outlet structure. The project also included the design of a temporary bulkhead structure for the penstock which will be used for construction dewatering and facilitating a Potential Failure Modes Analysis for the hydroelectric facility (powerhouse, lined tunnel, and gate structure).



Kerr Dam Remedial Design

Grand River Dam Authority | Locust Grove, Oklahoma

6/2018-Present

Engineer of record responsible for developing a remedial design for the spillway section to improve the sliding stability of the dam. The project consists of developing post-tensioned anchor details, specifications, design, drawings and other construction documents. Also participated in the focused PFMA review for the spillway conducted to address the scour observed along the toe after the 2017 flooding. The dam is a 4,494-foot-long, 90-foot-high earth embankment and concrete gravity dam with a 114 MW Powerhouse.

Gilman Hydro Dam Project

Ampersand Gilman Hydro, LP | Boston, MA

12/2021 - Present

Senior consultant for updating the stability analyses of record for the ogee spillway, flap gate, intake structure and the powerhouse in support of the Supporting Design Report (SDR) required in the re-licensing application process by the Federal Energy Regulatory Commission.

Lopez Dam Left Abutment Probabilistic Landslide Hazard Analysis

San Luis Obispo Flood Control and Water Conservation District, LP | San Luis Obispo, CA

11/2021 – 1/2022

Project Manager and senior geotechnical consultant for the probabilistic landslide hazard analysis performed for the left abutment of the dam. The project consisted of reviewing existing landslide hazard maps and geologic information, developing a logic tree, developing hazard curves, performing slope stability analyses, and preparing an engineering report.

Osage Hydroelectric Project, Part 12D Inspection and Engineering Support

Ameren-Missouri | Lake of the Ozarks, Missouri

2018 – 2021

Independent Consultant that performed the 12th Part 12D dam safety inspection and PFMA review of the project. In addition, performed an analysis of the December 2015 flood event using gaged rainfall, stage, and flow data in comparison with the existing hydrological analyses to address questions from the FERC regarding Ameren's dam operation and management of the flood event.

Salina Pumped Storage Project, Part 12D Dam Inspection

Grand River Dam Authority | Oklahoma

2021

Independent Consultant that performed the 11th Part 12D dam safety inspection and PFMA review of the project. The project includes an upper reservoir earth and rockfill dam approximately 2,000 feet long and 185 feet high and a concrete forebay structure.

Viva Naughton Dam, Emergency Spillway Design

PacifiCorp | Wyoming

2021 - present

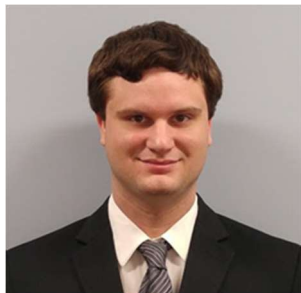
Senior consultant for the remedial design of the emergency spillway for Viva Naughton Dam. Activities consisted of facilitating the development of a conceptual design that consists of a Roller Compacted Concrete lined spillway control structure and channel.

Project Tornado Due Diligence

Confidential Client | Indiana, Michigan and Ohio

2020

Dam safety engineer that performed site inspections at the following hydroelectric facilities currently owned and operated by American Electric Power AEP Racine, Berrien Springs, Twin Branch, Buchanan, Elkhart, Mottville, and Constantine. The objective of the site inspections was to develop an initial visual evaluation of the dams, water retaining structures, and hydroelectric equipment to assist the client in his bid to purchase the facilities.



Mr. Reuben Haught, P.E.
Staff Engineer

Mr. Haught is a Staff Engineer and CAD Designer. His Responsibilities include site design, site grading, stormwater design, permitting, retaining pond design, and impoundment stability inspections. He has previous

experience with CTL Engineering in inspecting concrete and soil to ensure proper materials and installation techniques on site. He is proficient in AutoCAD Civil 3D, Hydraflow Hydrographs, Microsoft Word, and Microsoft Excel.

Education

B.S. Civil Engineering Technology
Fairmont State College, Fairmont, West Virginia 2011
A.S. Civil Engineering Technology
Fairmont State College, Fairmont, West Virginia 2011

Professional Registration / Certification

Professional Engineer, West Virginia, 2019, No. 023617
Professional Engineer, Maryland 60051
Professional Engineer, Ohio 87946
Professional Engineer, Pennsylvania 93206
Professional Engineer, Virginia 402065089

CTL Project Experience

Water/Stormwater

WVU Track and Aquatic Center Site
Layout and grading, stormwater design, erosion and sediment permitting, and retaining pond design, Morgantown, WV
WVU Medicine Clinic
Site grading, stormwater design, erosion and sediment permitting, and retaining pond design, Fairmont, WV
Mon General Outpatient Facility
Site layout and grading, stormwater design, erosion and sediment permitting, and retaining pond design, Fairmont, WV
Fairmont Federal Credit Union
Site layout and grading, stormwater design, and retaining pond design, Fairmont, WV

Mining and Gas

CONSOL Energy Impoundment Inspections
Quarterly and Annual Inspections on impoundments, West Virginia and Pennsylvania.
Eclipse Fracking Well Pads
Site layout and grading for multiple well pads, Monroe County, Ohio

Other Site Design

FedEx Distribution Center
Site layout and grading, Morgantown, WV
Grapevine Development

Redesigned grading after required site modifications, Westover, WV

Construction Site Inspection

Gavin Power Plant
Piezometer and visual inspections to ensure stability of fill placement above drained impoundment, Cheshire, OH
University Place
Inspected compaction, concrete, gypcrete, and insulation. Morgantown, WV
Morgantown High School Football Stadium Press Box
Tested compaction and concrete, Morgantown, WV
Alderson-Broadbudd College
Tested concrete for additions to football field area, Philippi, WV
Gateway Triple S Harley
Tested compaction for initial large scale earthwork and also for footings, Westover, WV
Harvest Ridge
Tested compaction for footings on Harvest Ridge lots and several other Dan Ryan Developments, Morgantown, WV
Tygart #1 Mine
Tested compaction of refuse, Grafton, WV
Fairmont Municipal Airport Airplane Parking Area
Tested compaction for construction of a parking area for small airplanes, Fairmont, WV
Concrete Cylinder Testing
Tested strength of concrete through compression of samples taken on site

Drafting

Yeager Airport Landslide Investigation
Prepared court documents in AutoCAD to illustrate investigation, Charleston, WV
Sewickley Guide Piles
Drafted profile and cross section, Sewickley, PA
University Town Centre Addition
Drafted up borehole plan, Granville, WV
Residential Beam Designs – Multiple Projects
Drafted designs for replacing several small beams with one large one
Strip Footing Designs – Multiple Projects
Drafted designs for strip footings.

Years Experience

33 Years

Title/Level

Engineering Supervisor

Level 7

EducationM.S., Geotechnical Engineering,
University of Pittsburgh, 1998B.S., Civil Engineering, University of
Pittsburgh, 1984A.S., Civil Engineering Technology,
Community College of Allegheny County**Professional Registrations/
Certifications**

Professional Engineer: WV, OH, PA

Nuclear Testing Equipment – Troxler
Electrical Laboratories, Inc.Health and Safety Training, OSHA 29
CFR 1910.120, Hazardous Waste
Operations and Emergency Response –
1990OSHA500 – Train the Trainer Course for
Construction Occupational Safety

Nuclear Lead Auditor, 2011

Professional Affiliations

American Society of Civil Engineers

Selected PublicationsZullo, E.G., *Ground Motion Amplification
Studies for Sites in the Charleston Area*,
Proceedings, Third U.S. National
Conference on Earthquake Engineering,
Charleston, SC, Volume 1, pp. 333-344Zullo, E.G., D. Lange, *Landfill Leachate
Recirculation Design in Mexico*,
Proceedings from Wastecon 1995,
SWANA's 33rd Annual International Solid
Waste Exposition, Baltimore, MD, pp. 21-
30*A complete list of Mr. Zullo's
publications is available upon request.***Skill Areas**

Quality Control

ASME NQA-1

Geotechnical Investigation

Permitting

10CFR Appendix B

Quality Assurance

Construction Oversight

Grouting & Drilling

Environmental Hazardous Waste

Document Preparation

Mr. Zullo is an Engineering Supervisor who has worked as an engineer and manager for more than 30 years on a variety of geotechnical and construction projects for dams and water resources. His geotechnical experience includes 5 years working in a soil laboratory, which involved performing all types of classification, strength, permeability and compressibility testing of soils and rock. He has supervised field investigations for dams, landfills, nuclear facilities, and tunnels, which included performing standard penetration testing, pressure meter testing, geophysical testing, piezometer installation, and on-site permeability testing. Mr. Zullo is familiar with all types of geosynthetic testing and was the certifying engineer for several landfill liner and cap projects. Mr. Zullo was the radiation safety officer for RIZZO in charge of the firm's nuclear density gages and radiation badge program. Mr. Zullo is a Corps of Engineers Qualified Drilling Inspector with experience in sonic drill logging and grouting projects for the Corps of Engineers. Mr. Zullo has also supervised major post-tensioned anchor installations for concrete gravity dams. Mr. Zullo has performed mix design studies for Roller-compacted Concrete (RCC) and Controlled low strength material (CLSM) for slurry trenches.

Mr. Zullo has designed and prepared bid documents, contract documents, and technical specifications. He has performed construction management and quality assurance review on several large projects for which he supervised excavation, structural fill placement, and clay liner, grouting and concrete structure construction. He has also supervised the installation of landfill liner components and prepared certification reports to be submitted to state agencies.

Mr. Zullo's experience includes closely coordinating with representatives of numerous federal, state, and local agencies, private citizens, and public and private operators of water resource facilities on a variety of environmental projects. He has performed environmental impact evaluations and prepared stormwater pollution prevention plans and spill prevention, control, and countermeasure plans. He has executed Phase I environmental site assessments and environmental audits.

Mr. Zullo has a working knowledge of building codes, the American Concrete Institute (ACI) 318 Concrete Building Code Requirements for Structural Concrete and Commentary, and the American Institute of Steel Construction Allowable Stress Design for Steel Structures (AISC ASD).

Mr. Zullo has worked in the RIZZO Quality Assurance department performing internal audits of internal projects and external audits and surveillances of vendors for nuclear safety related projects.

Mr. Zullo has taken OSHA safety training and has trained site personnel through presentations and toolbox talks during drilling and construction projects.



Independent Audit Review of Tailings Dams

Confidential Client | Confidential Location

March 2021 to present

Mr. Zullo serves on the health and safety team and reviewed several Emergency Action Plans for many dams in two mining sites. Mr. Zullo participates in weekly meetings with the client and the RIZZO field personnel.

Pahagaco Dam Landslide Repair

Pixelle Specialty Solutions | Spring Grove, PA

October 2021

Mr. Zullo evaluated and designed the repair of a downstream landslide of a water supply dam in York, Pennsylvania. This included cost estimates, drawings, specifications and permitting with the State of Pennsylvania.

Charleroi Lock and Dam Structural Survey

Trumbull/Brayman JV | Charleroi, PA

September 2021

Mr. Zullo performed a pre-construction structural survey of the locks and associated structures to document the conditions (including existing cracks) prior to demolition of the old lock structures. This included photographs of the inside and outside of all structures and a report.

Peters Township Dam- Spillway Upgrade Alternatives Analysis

Peters Township | Peters Township, PA

August 2021

Mr. Zullo analyzed several options for the upgrade of the spillway to accommodate the Probable Maximum Flood. This included hydrology and hydraulics, engineering and cost estimating for each option.

Youghiogheny Hydroelectric Plant Outlet Spillway

D/R Hydro Company | Somerset, Pennsylvania

November 2020

Mr. Zullo designed the steel plating repair at the outlet of the power plant. The stainless-steel liner was designed to resist the forces of high velocity water flowing out of the plant.

Bagnell Dam Post-Tensioned Anchor Replacement and Concrete Overlay

AMEREN | Missouri

2/2017 – 7/2018

Bagnell Dam is a concrete gravity type structure with a crest length of 2,543 feet and a maximum height above bedrock of 148 feet. The dam consists of a 331-foot-long non-overflow section, a 511-foot-long integral powerhouse, a 520 foot long gated spillway section, and another 1,181 foot long non-overflow section.

The work consisted of 68 new high capacity post-tensioned anchors in the dam. The post-tensioned anchors were up to approximately 120 feet long and include up to 55 strands, each were 0.6 inch in diameter with seven wires. Several rounds of grouting and water pressure testing were required to verify that the holes were grout-tight prior to anchor installation. Mr. Zullo observed grouting QC tests and verified compliance. New foundation drains were installed concurrently with the new post-tensioned anchors. The work also included hydroblasting of the downstream face of the dam, placement of a reinforced concrete overlay doweled into the dam concrete, and placement of mass concrete between highway piers at the top of the dam.

As full-time quality assurance engineer, Mr. Zullo was responsible for reviewing all quality control testing and inspection reports submitted by the contractor for compliance with the contract documents. Mr. Zullo notified the construction manager of compliance or non-compliance, and recommended approval or rejection of the contractors' submittals to the construction manager.

Years' Experience

15 Years

Title/LevelDirector Northeast Region
Level 8**Education**M.S., Civil Engineering, Drexel University,
Philadelphia, PA, 2011B.S., Civil Engineering, University of
Zagreb, Zagreb, Croatia, 2004**Professional Registrations**

Engineer-In-Training (E.I.T.)

Professional AffiliationsAmerican Society of Civil Engineers
(ASCE)American Institute of Steel Construction
(AISC)**Computer Skills**

SAP2000, RISA, STAAD Pro,

SASSI, PC-SPEC, ANSYS,

LPile, SLOPE/W, Tekla Tedds

AutoCAD, Mathcad, and Microsoft Project

Languages

English, German, Croatian, Serbian

Skill AreasDam Safety Evaluation
Dam Breach Analysis
Civil Engineering
Bid Document Preparation
Foundation Design
Technical Specifications
Reinforced Concrete Design
Structural BehaviorDam Remediation
Hydraulic Analyses
Geotechnical Engineering
Construction Cost Estimation
Structural Engineering
Project Management
Structural Steel Design
Seismic Engineering

Mr. Drkulec is a Director for the Northeast Region at RIZZO International, Inc. (RIZZO). Mr. Drkulec has over 15 years of engineering experience in geotechnical and structural engineering projects related to the hydropower generation industry. He specializes in analysis and design of dams' appurtenances, spillways, gates and outlet works. Mr. Drkulec has experience with dam safety inspections and hazard classification verifications of numerous concrete and earthen dams, has coordinated geotechnical field investigations for several state-regulated dams, and is well versed in NYS dam safety regulations. Mr. Drkulec has supervised dam remediation projects for several dams in the US. Mr. Drkulec specializes in structural analysis and design, earthquake engineering, seismic probabilistic risk assessment, structural dynamics, and steel and concrete structural design.

RIZZO EXPERIENCE**Gilman Hydro Dam Project****Ampersand Gilman Hydro, LP | Boston, MA****12/2021 – present**

Mr. Drkulec is the Project Manager for updating the stability analyses of record for the ogee spillway, flap gate, intake structure and the powerhouse in support of the Supporting Design Report (SDR) required in the re-licensing application process by the Federal Energy Regulatory Commission.

Yough Hydro Plant**D/R Hydro, | PA****12/2021 – present**

Mr. Drkulec is involved in a temporary bulkhead design, required for dewatering during construction. Work includes developing design details for repairing the damaged vertical plating located between the end of the tunnel and the wheel gate.

Kayuta Hydro Dam Project**Ampersand Kayuta Lake Hydro, LP | Boston, MA****12/2021 – present**

Mr. Drkulec is the Assistant Project Manager for updating the stability analyses of the powerhouse that includes inspection loading conditions. Work includes the preparation of a supplemental report for the results of the last PFMA review performed during the last Part 12D inspection.



Ogdensburg Dam Project

Ampersand Gilman Hydro, LP | Boston, MA

12/2021 – present

Mr. Drkulec is the Assistant Project Manager for the updating of the stability analysis of the sluice gate structures for all updated IDF loading conditions. Work included evaluation of the concrete-bedrock interface strength parameters that are used in the stability analysis.

Vischer Ferry Dam

New York Power Authority | New York

09/2018 – 11/2018

Mr. Drkulec performed a stability analysis using the Gravity Method for the concrete dam. He evaluated the impact of concrete deterioration on the dam's stability. Analysis was done in accordance with FERC regulations and the U.S. Army Corps of Engineers guidelines. He evaluated the impact of the potential failure planes at different elevations on dam's stability, due to the discovery of minor cracks on the upstream side of the dam.

Osage Hydroelectric Tainter Gates Rehabilitation

Ameren | Sunset Hills, Missouri

9/2015 – 07/2016

Mr. Drkulec performed an inspection of the twelve steel tainter gates and verified the existing RISA model of the gates. As well, Mr. Drkulec performed structural analysis of all tainter gates considering section loss and other structural deficiencies present on the structure. Work included developing a complete design package for all the repairs on the tainter gates. In addition, Mr. Drkulec prepared a Quality Control and Inspection Program (QCIP) and Temporary Construction Emergency Action Plan (TCEAP) for the tainter gates rehabilitation effort.

Water Impounding Structures Dam Safety Risk Screening

New York State Canal System | New York Power Authority | Multiple Locations, New York

05/2015 – 07/2016

Mr. Drkulec prepared the Dam Hazard Classification Screening for various water impounding structures as part of this engineering assessment effort for the NY State Canal System.

Westchester County Dams Rehabilitation & Engineering Services

Westchester County Department of Public Works and Transportation | Multiple Locations, New York

02/2015 – 06/2016

Mr. Drkulec inspected two dams and was part of the team for design and construction drawings development for needed rehabilitation of the dams. Work also included preparation of the Dam Hazard Classification Screening. dams.

OGS, Multi Dam Inspection & Engineering Services

New York State Department of Environmental Conservation | Multiple Locations New York

03/2015 – 03/2016

Mr. Drkulec prepared calculations for reservoir storage, spillway capacity and sunny day breach discharge for ten dams owned by the New York State Department of Environmental Conservation. Work consisted of performing dam safety inspections and NYSDEC-based hazard classifications reconnaissance for thirty dams. More detailed H&H and dam breach analysis are being performed for six dams' projects to confirm the hazard classification. Work included a detailed dam inspection and an initial downstream hazard evaluation for all the dams.

Windmill Lake Dam

Windmill Club, Inc. | Thompson, New York

04/2015 – 12/2015

Mr. Drkulec was part of the Engineering Dam Safety Assessment; and has led geotechnical investigations on the dam. Mr. Drkulec performed embankment slope stability using SLOPE/W and a liquefaction analysis using the empirical procedure developed by Youd et al. entitled Liquefaction Resistance of Soils. Mr. Drkulec prepared Engineering Assessment Report for submittal to the New York State regulator.

Years Experience

30 Years

Title/Level

Chief Engineer
Level 9

Education

BS, Civil Engineering, 1990
Carnegie Mellon Univ., Pittsburgh, PA

Professional Engineer

PA

Training and Certifications

Project Management Professional (PMP),
National Green Infrastructure Certification
Program (NGICP), HAZWOPER Health
and Safety Training, Nuclear Densimeter
Testing Equipment Certification

Technical Skills

Delft3D, HEC-RAS, HEC-HMS, and
MODFLOW

Skill Areas

Hydrologic Analyses	Geotechnical Engineering
Hydraulic Analyses and Design	Site Investigations
Coastal Modeling	Solid Waste Management
Stormwater Management	Structural Engineering
Wastewater Management	Forensic Engineering
Civil Engineering	Construction Drawings
Environmental Engineering	Construction Quality Assurance
Geotechnical Engineering	

Mr. Paul J. Martinchich, P.E., P.M.P. has over 30 years of experience in civil engineering. His diverse background includes water resources, geotechnical, and environmental engineering, design, and permitting. Paul has worked on many types of infrastructure projects including water supply and distribution systems, wastewater systems, hydroelectric dams, nuclear power plants, border fence projects, and various types of waste disposal facilities. He has executed projects requiring local, state, and federal permitting and licensing, including permitting with State DEP and county conservation districts, as well as federal-level licensing with FERC-regulated hydropower projects and NRC-regulated nuclear power plants. He is a registered Professional Engineer and is PMP and National Green Infrastructure Certification Program (NGICP) certified.

RIZZO EXPERIENCE

Chief Engineer

Rizzo International

12/2022 – present (and previously 09/1991 – 07/1993, and 01/2022 – 02/2002)

Mr. Martinchich serves as the Chief Engineer and Manager of Rizzo's Hydrology and Hydraulics (H&H) Department. He provides technical and managerial expertise to the H&H analyses and designs for critical infrastructure projects such as U.S./Mexico border fence, dams and hydroelectric stations, and nuclear power stations. He is responsible for project scoping, budgeting, and scheduling, and the successful execution of projects, technical oversight, and management of the project team.

Osage Hydroelectric Project, PMF Study

Ameren Missouri | Lake Ozark, Missouri

08/2008 – 08/2009

As Hydrologic Engineer, Mr. Martinchich was responsible for determining the revised PMF for this large hydroelectric project. The total watershed area is 14,000 square miles and includes 5 major US Army Corps flood storage reservoirs. Mr. Martinchich used ARC-GIS, ARC-HYDRO, and HEC-GeoHMS with digital topography maps to develop a sophisticated and accurate Hydrologic Runoff and Reservoir Models. He generated PMP rainfall distributions using HMR-52 methodologies, and has done evaluations of watershed soils, surface cover, infiltration, runoff, and baseflow and has developed related modeling parameters. Parameter calibration to historic storms-of-record is included in the modeling.



Taum Sauk Pumped-Storage Project, Dam Break Analysis

Ameren Missouri | Lesterville, Missouri

02/2007 – 01/2008

As Hydraulic Engineer, Mr. Martinchich performed the Dam Break analyses and inundation mapping for potential failure scenarios of the Upper and Lower Taum Sauk Reservoirs, situated on the East Fork Black River. Mr. Martinchich used the ARC-GIS and HEC-GeoRAS computer tools to develop a very detailed model of the river and reservoir systems, which included over 50 river miles, three highway bridges, the two Taum Sauk Reservoirs, and the Clearwater Dam/Reservoir, a large Army Corps flood storage project downriver of Taum Sauk. The model performed unsteady flow calculations for the progression of PMF and dambreak floodwaves through the river and reservoir system. The flood maps were produced on color orthographic photographs of the Black River area, and the submittal to FERC included GIS data for inclusion in emergency management databases.

Taum Sauk Upper Reservoir, Failure Analysis & Redesign

Ameren Missouri | Lesterville, Missouri

01/2006 – 08/2007

As Project Engineer, Mr. Martinchich designed the spillway for the new design of the Taum Sauk Upper Reservoir, a FERC regulated hydropower project. The design included a broad-crested overflow section at the top of the dam, a 100-foot high stepped spillway, and an energy dissipater stilling basin at the toe of the spillway. Mr. Martinchich also designed the stormwater conveyance system for the dam site for construction and post-construction conditions. He also prepared the Stormwater Pollution Prevention Plan (SWPPP) for the reconstruction phase of the project.

Pleasure Lake Dam

Fallsburg Fishing and Boating Club | Fallsburg, New York

10/2002 – 01/2007

This project includes the hydrologic and hydraulic analyses and remedial design measures for this high-hazard dam. The Pleasure Lake Dam is a combination masonry and earthen structure constructed in the mid-1800s, approximately 30 feet high and 500 feet long. As Hydraulic Engineer, Mr. Martinchich performed comprehensive hydrologic analyses, including PMF event estimates, as well as periodic return interval design flood estimates. Mr. Martinchich evaluated the discharge conditions of the dam's spillway facilities for the various flood event estimates, and proposed conceptual remedial measures to address identified deficiencies. In addition, he performed dam break analyses and prepared related dam break inundation mapping to identify potentially impacted structures downstream of the dam. Mr. Martinchich also created the Emergency Action Plan for this dam.

Saluda Dam Remediation

South Carolina Electric & Gas | Columbia, South Carolina

02/2002 – 09/2005

As Hydraulic Engineer, Mr. Martinchich prepared the Stormwater Management and Stormwater Pollution Prevention Plan Permit Application as part of the Saluda Dam Remediation Project. The plan included the construction of 12 sediment ponds to control sediment-laden runoff, as well as numerous other sediment control devices, from the approximate 326-acre disturbed project area. The plan also included the design of all stormwater collection, conveyance, and discharge structures to provide safe, non-erosive stormwater conveyance and discharge during and after construction. It also includes means necessary to protect environmentally sensitive areas such as the approximate 47 acres of wetlands within the project area, the Saluda River, and the Saluda River floodway. The plan addresses the complicated sequencing of the diverse site activities involved in the Saluda Dam Remediation Project including rock excavation, transport, and storage; rock crushing and processing operations; reconfiguration of the existing ash landfill; soil excavation, transport and storage; RCC processing and production; and the sequential construction of the rockfill and RCC berms. The plan required the protection of, and minimal interference with, the ongoing operations of the existing hydroelectric and coal-fired electric generation plants.



Carl Selfridge

Geotechnical Engineer / Project Manager



Mr. Selfridge 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 REGISTRATION / CERTIFICATION

Engineer Intern (EI): New York, 1996
Pennsylvania Dept of Transportation Level II Drilling
Inspector, 1999

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.

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

Mr. Batt acted as CTL's Project Manager for the seepage investigation to evaluate the stability of the existing Clear Fork Reservoir Dam. CTL's investigation utilized original construction plans, previous ODNR inspection and evaluation reports, observations of the project site made during various times of the year, test borings, slug (pump) tests, soil laboratory tests, electrical resistivity imaging across the embankment and downstream area, along with monitoring wells equipped with pneumatic piezometers to develop models of the earth embankment and foundation soil.

CTL analyzed pore water migration (seepage) through and beneath the dam using the 2D models to evaluate the exit gradients and comparing these gradients with the

critical exit gradient per USACE requirements and provided recommendations to increase the Factor of Safety to acceptable values. CTL also performed slope stability analysis of the dam embankments and determined all three cases met the minimum Factors of Safety against a rotational failure.

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.



Frederick Schoen, P.E.

Manager, Geotechnical Engineering Services



Mr. Frederick L. Schoen, P.E. has over 24 years of experience in geotechnical engineering as well as construction quality control testing and observation. He has experience providing geotechnical engineering consulting on transportation, school, commercial and manufacturing projects. He is responsible for coordination the

geotechnical field activities, assigning laboratory testing and writing the geotechnical engineering reports.

His experience also includes conducting electrical resistivity imaging (ERI) in order to locate and/or identify subsurface features and characteristics such as karst, voids, buried structures, differing geology, groundwater sources, as well as mine voids and spoil materials which are difficult to access with conventional drilling equipment.

In addition, he has performed over million square feet of random traffic floor flatness testing and helped revise and implement the company's Quality System Manual. He is also responsible for the calibrations of the company's nuclear densometer gauges. As an engineering technician, Mr. Schoen's responsibilities have included the testing and inspection of concrete, foundations, reinforcing steel, and soils.

EDUCATION

B.S.C.E. / 1997 / Geotechnical Engineering, The Ohio State University

PROFESSIONAL REGISTRATION / CERTIFICATION

Professional Engineer, State of Ohio #75304
ACI Level I Concrete Technician Certification
NICET Level II in Soils
Nuclear Densometer ~ Certification per USNRC
ICC Spray-Applied Fireproofing Special Inspector
ICC Masonry Special Inspector

CTL PROJECT EXPERIENCE

DAMS/RESERVOIRS

Lake Hope Dam Slurry Wall Testing and Observation, Vinton County, Ohio
Cave Lake Dam, Pike County, Ohio
Apple Valley Lake Dam, Howard, Ohio
Lake White Waste Area Slope Evaluation, Pike County, Ohio
Clear Fork Reservoir Dam Seepage Investigation, Mansfield, Ohio
Fawn Lake Dam Repair, Sidney, Ohio

GEOPHYSICAL TESTING PROJECTS

Mr. Schoen performed Electrical Resistivity on the following projects:

OSU Arts District
NOVA Substation
Franklin County Correctional Center
University Parkway
West High Street Sewer Rehabilitation
Turkey Foot Swine Farm
Stillwater Crossing Proposed Development
Union Memorial Hospital Addition

WATER/WASTEWATER TREATMENT PLANTS, SEWER LINES AND WATER TANKS

Johnstown WTP Upgrades, Johnstown, Ohio
Magnetic Springs Sanitary Sewer, Magnetic Springs, Ohio
Wapakoneta Short Road Elevated Water Tower, Wapakoneta, Ohio
Wapakoneta Schaub Well Field Improvements, Wapakoneta, Ohio
Minster New 100K Gallon Elevated Water Tank, Minster, Ohio
Dunbridge Water & Sewer Extension, Bowling Green, Ohio
Rockford 100K Gallon Water Tower, Rockford, Ohio
Sherwood 100,000 Gallon Water Tower, Sherwood, Ohio
Minster Northwest Water Tower, Minster, Ohio
State Route 55 Water Line Extension, Miami County, Ohio
Sludge Lagoon Retaining Wall, Middletown, Ohio
Lake Loramie WWTP Improvements, Ft. Loramie, Ohio
Bensman Stormwater Ponds, Sidney, Ohio
WWTP Lagoon Expansion, Russia, Ohio
Wharton Sanitary Sewer System, Wyandot County, Ohio
WWTP Flow Equalization Basin and Standby Generator Plant, Piqua, Ohio
NORW Depth to Rock Study, Bellevue, Ohio
Wells Road Residential STS Soil Evaluation, Anna, Ohio
Proposed Water Tower, Russia, Ohio
New 5-Acre Lagoon Project, New Bremen, Ohio
Cooper Farms WWTP Lagoons, Ft. Recovery, Ohio
McCartyville Sanitary Sewer Building, Anna, Ohio
WTP and Water Main Improvement, Urbana, Ohio
Sanitary Sewer and Water Line Improvements, Troy, Ohio
Wastewater Lagoon Project, St. Henry, Ohio
Sanitary Sewer Line Project, Huntsville, Ohio
1.5 Million Gallon Water Tower, Celina, Ohio
St Henry WWTP Expansion, St. Henry, Ohio
Preliminary Water Line Evaluation, East Liberty, Ohio
Urbana City Schools, North Elementary Classroom Bearing Evaluation, Urbana, Ohio
Fairlawn K-12 School, Sidney, Ohio
Indian Lake Local Schools, New Indian Lake K-4 School, Lewistown, Ohio

POWER AND CHEMICAL PLANTS

Union Substation, Vandalia, Ohio
Hemlock-Bryson 69kv Line Build, Meigs County, Ohio
Guernsey Power Station Electrical Resistivity Testing, Byesville, Ohio



Hassan Zahran, P.E.

Project Manager, Construction Engineer Level 2



Hassan has 30+years of experience in managing complex construction projects working for the Ohio Department of Transportation (ODOT, D-06) and the City of Columbus. During his tenure at ODOT, Hassan served as the assistant construction engineer for D-06 and also served as the LPA Construction

Monitor. As an LPA construction monitor, He was responsible for monitoring all the construction activities on all LPA projects for D-06, provided training on contract administration to counties and city staff. Hassan has experience with all facets of construction administration ranging from the jobsite documentations, inspection of work and materials (PBOM), dispute resolution, investigating and mitigating contract claims, analyzing CPM schedule (P-6), contract interpretation issues as well as a thorough understanding of ODOT specifications, policies and procedures. Hassan has played a major role in assisting/training LPA staff in contract administration, negotiating extra work prices, processing change orders. He has managed hundreds of complex construction projects ranging from \$100K- \$85M for ODOT (Franklin, Madison, Fayette, Delaware, Pickaway, Morrow, Union, Marion, Clark Counties), and cities.

EDUCATION

B.S., Civil Engineering – Youngstown State University, 1985

PROFESSIONAL REGISTRATION / CERTIFICATION

Professional Engineer, State of Ohio #55181

ODOT PREQUALIFICATION

ODOT Construction Engineer Level 2

CTL PROJECT EXPERIENCE

TRANSPORTATION

Bridge Repair, Rehabilitation and Replacement, OTIC 43-18-05 Parts A and B, Mahoning County, Ohio
Licking County Transportation Improvement District, LIC-310-1.33 (LCTID) CA/CI Task 2, Licking County, Ohio
City of Columbus Department of Public Utilities, FRA-70/71-12.89/14.93, Columbus, Ohio
Ohio Department of Transportation District 6, LOG UNI FRA-33 Smart Mobility PID 106769, Union County, Ohio
Ohio Department of Transportation District 6, FRA-New Albany Signals, PID No. 99846, New Albany, Ohio
Ohio Department of Transportation District 6, FRA-Whitehall Signals Interconnect, PID No. 99827, Franklin County, Ohio
Lorain County Engineer, LOR-CR 32-2.04, Lorain County, Ohio

City of New Franklin, City of New Franklin - Center Road (East) Resurfacing PID 103833, New Franklin, Ohio
City of Gahanna, Larry Lane Bridge Replacement, Gahanna, Ohio
City of Gahanna, Pizzurro Park Drive Bridge Replacement, Gahanna, Ohio

WATER/WASTEWATER TREATMENT PLANTS, SEWER LINES AND WATER TANKS

City of Columbus Department of Public Utilities, Lateral Lining Clintonville 1 Weisheimer Indian Springs CIP 650872-110172, Columbus, Ohio
City of Columbus Department of Public Utilities, Union Ave. Area WL Improvements CIP 690236-100081, Columbus, Ohio
City of Columbus Department of Public Utilities, Scottwood Road Area Waterline Improvement 690236-100076, Columbus, Ohio
City of Columbus Department of Public Utilities, Terrace Ave. Broad St Stormwater System Improvements CIP 611009-100000, Columbus, Ohio
City of Columbus Department of Public Utilities, Weisheimer - Indian Springs Roadway Improvements, Columbus, Ohio
City of Columbus Department of Public Utilities, Sale Road Water Line Improvements, CIP No. 690236-100079, Columbus, Ohio
City of Columbus Department of Public Utilities, Weisheimer/Indian Springs Integrated Solutions, CC17116 COC, Columbus, Ohio
City of Columbus Department of Public Utilities, Petzinger Road Sanitary Sewer CIP 650739-100000, Columbus, Ohio
City of Columbus Department of Public Utilities, Lateral Lining - Clintonville 1 Blenheim/Glencoe, CIP 650872-110173, Columbus, Ohio

POWER PLANT

City of Columbus Department of Public Utilities, Alternate 69kV Line to West Substation CIP No. 670772-100000, Columbus, Ohio

PRIOR EXPERIENCE

CITY OF COLUMBUS

City Engineer/ Administrator, Division of Design and Construction (2008- 2016):

OHIO DEPARTMENT OF TRANSPORTATION (1985-2008)

Assistant District 6 Construction Engineer (2005 - 2008):

As the District 6 Assistant Construction Engineer Coordinated activities with Franklin County, municipalities, and adjacent counties.

- Developed and executed successful strategies for efficiency, accountability, and customer service.

Years Experience

22 Years

Title/Level

Engineering Associate &
Manager of CADD Department
Level 6

Education

M.S., Engineering Management, Robert
Morris University, Pittsburgh, PA, 2004

B.S., Civil Engineering Technology, Point
Park College, Pittsburgh, PA, 1992

Professional Certifications

NICET – Associate Engineering
Technologist, Level CT, Technician ID:
86214

ACI Level 1 Field Technician, 133101

Troxler Certified

Floor Profiler – 1992

Troxler Hazmat Certification

MSHA – 40 hour safety training (W. VA)

River Barge Training (W.VA)

MSHA- Class: 04 Surface Apprentice
2013

MSHA- W.VA River 2013

Professional Affiliations

American Concrete Institute

American Society of Certified Engineering
Technicians

Selected Publications

J.Deible, K.Gerhardt, R.Matthews,
N.Ward, "Rehabilitation of the Outlet
Works at the Taum Sauk Pumped
Storage Plant," North American
Tunneling Conference, Indianapolis, IN,
2012.

*A complete list of Mr. Matthews'
publications is available upon request.*

Skill Areas

Engineering Management
Civil Engineering
Scheduling
RCC Quality Control
RCC Mix Design

Technical Specifications
Site Investigations
Construction Quality Assurance
Drilling and Grouting
Field Testing Programs

Mr. Ronald Matthews is an Engineering Associate with RIZZO. He has over 20 years of project experience and has been RIZZO's Lead Construction Inspector on multiple projects. Mr. Matthews has experience working with several engineering codes including ACI and AWS welding codes and has worked within the nuclear quality program, compliant as it refers to 10CFR50 Appendix B. He has served as a Roller Compacted Concrete (RCC) Quality Assurance Assistant and Lead Quality Control Plant Inspector; an RCC Quality Control and Placement Supervisor; a RCC and Bedding mix designer; and as a Consultant during the RCC Mix Design Process and field-testing programs.

Mr. Matthews has developed bid grouting packages and design drawings, prepared schedules utilizing Primavera scheduling software, performed slope stability analysis, performed geotechnical investigations, performed expansive materials studies, and reviewed laboratory test results for various clients throughout his career. Mr. Matthews also manages the CADD staff.

John C Smith Dam

Stifler, McGraw, and Associates, Inc. | Bedford County, PA
6/2021-Present

The John C. Smith Dam is located in Bedford County, PA and is designated by the PADEP as a high hazard dam of intermediate height. Mr. Matthews is working both as an Engineering Associate and CAD Manager on the rehabilitation of this dam.

Charleroi Locks

Trumbull Brayman | A Joint Venture Charleroi, Pennsylvania
06/2019 – Present

The Charleroi Locks and Dam River Expansion Completion project includes replacement of an original (single) 56-foot-wide lock with two (2) new 84-foot wide by 720-foot-long chambers on the Monongahela River in Washington County, Pennsylvania. The locks are owned and operated by the United States Army Corps of Engineers.

Mr. Matthews was selected as the lead Instrumentation Officer for the Charleroi Locks and Dam project in Charleroi, PA. Phase 1 of the project called for taking over an existing monitoring program that included reading 28 tilt plates, 12 tiltmeters, 5 saw cuts and 5 construction joints.

In 2020, Mr. Matthews was selected as the lead Instrumentation Officer for the 2nd phase of the Charleroi Locks and Dam project, providing seamless instrumentation information for both phase 1 and phase 2. Phase 2 included installation of 52 tiltplates and 21 tiltmeters and the middle and river wall chambers. The tiltmeters are read daily with a weekly update; the tiltplates are read weekly.



Forestport Feeder Canal Repairs

New York State Canal Corporation | New York

06/2018 – 08/2018

Mr. Matthews was the lead grouting supervisor in the field for the emergency work at the Feeder Canal – Moose River Road Leak/Seep. He designed the grout hole locations and depths, which included 15 primary, 10 secondary and 1 tertiary grout hole. He performed theoretical mix designs which were the mixes used in the field. Mr. Matthews made changes to the program as field conditions warranted. He oversaw the grouting contractor, prepared daily field and progress reports and kept track of all grout quantities. Mr. Matthews completed the Final Grouting Report and associated As-Built Drawings.

Bloomsburg Flood Risk Management Project Geotechnical Investigation

Borton-Lawson Engineering, Inc. | Bloomsburg, Pennsylvania

11/2017 – Present

Mr. Matthews, as a Project Engineer Associate, worked on the second phase of the flood wall being constructed around Bloomsburg. He provided construction support services during the site field investigation program as well as geotechnical design services. The geotechnical investigation consisted of 18 borings. The findings contributed to the final flood wall design for the Project. Mr. Matthews developed daily reports, chose samples for laboratory testing, and developed profiles for future use. He also contributed to the Draft and Final Subsurface Investigation Reports to the client. Currently Mr. Matthews is working on the final design and geotechnical report.

Spring Grove, Mill Dam Spillway and Wing Wall Rehabilitation

P.H. Glatfelter Company | York County, Pennsylvania

07/2017 – Present

Mr. Matthews performed Quality Control for the spillway overlay and rehabilitation of the south abutment wall at this site. The program included the removal of some of the existing spillway and supervising the contractor to ensure the existing spillway was properly prepared to receive the overlay. He prepared daily field and progress reports. Mr. Matthews is currently finishing the Final Grouting Report and associated As-Built Drawings.

Osage HydroElectric Anchor Replacement Project, FERC Project No. 0459

Ameren Missouri | St. Louis, Missouri

05/2016 – 08/2018

Mr. Matthews worked on cost estimates and schedule and developing specifications and drawings for the Osage Hydroelectric Project. He was involved in the bid process through the selection of the firm. He was also one of the on-site field inspectors.

Westchester County Parks & Dams

Westchester County Dept of Public Works and Transportation | White Plains, New York

08/2016- Present

Mr. Matthews worked on drawings, developed specifications and drawings for various dams in Westchester County, New York.

East Branch Clarion River Lake Dam Project

Bencor Global, Inc. | Wilcox, Pennsylvania

03/2016 – 06/2016

Mr. Matthews, in his role as Qualified Drilling Inspector, assisted in all the sonic drilling and samples description, as well as initial stage and following multistage grouting of embankment, foundation soils and rock interface in the field investigation for the Army Corps of Engineers Pittsburgh District East Branch Interim Risk Reduction Project.

Muddy Run Pumped Storage Facility

Exelon Power | Susquehanna River, Drumore Township, PA

05/2015 – 09/2018

Mr. Matthews performed an evaluation of the current Upper Reservoir Embankment (Main Dam) monitoring Instrumentation system at Muddy Run. The review included design documents, construction history, operation



Chris Jaros, P.E.

Manager, Environmental Services



Mr. Chris Jaros, P.E. is Senior Environmental Consultant and Environmental Manager for CTL Engineering, Inc., with over 24 years of experience who has grown relationships with clients and associates as a trusted consultant, technical expert, community builder and a strategic team leader.

His Professional experience covers a wide variety of projects ranging from due diligence and regional petroleum account management to complex remediation projects with co-mingled contaminant plumes of chlorinated solvents, hazardous materials, petroleum hydrocarbons and emerging contaminants. Mr. Jaros' expertise includes Phase I Environmental Site Assessments (ESA), Phase II Site Investigations, soil and groundwater remediation work plans including design/implementation, vapor intrusion assessments, litigation support, brownfield redevelopment for public and private entities, and wellfield protection consulting.

He is knowledgeable regarding the applications of appropriate risk-based cleanup actions, and counsels local, state and federal regulatory agencies for environmental solutions related to site management and closure. Mr. Jaros consults on matters pertaining to Clean Water Act (CWA), Comprehensive Environmental Response Compensation Liability Act (CERCLA), and Resource Conservation Recovery Act (RCRA) issues, working within RCRA, State Cleanup and Voluntary Remediation (VRP) programs with the Indiana Department of Environmental Management (IDEM) and US EPA Region V. Mr. Jaros provides expert witness testimony in matters concerning environmental issues, and is a qualified reviewer of other consultant's work for insurance industry, legal counsel and municipalities.

Prior to joining CTL Engineering, Mr. Jaros worked for a large national engineering firm as the Environmental Division Manager for the Indianapolis office, where he lead technical managers and operations in services of due diligence/compliance, industrial hygiene, brownfields and remediation, and grew opportunities for Atlas in the Midwest region with local, regional and national law firms.

EDUCATION

B.Sc. / 1992 / Civil Engineering, Valparaiso University, Valparaiso, Indiana

PROFESSIONAL REGISTRATION / CERTIFICATION

Registered Professional Engineer, Indiana #11200687
40-Hour OSHA Health and Safety (29 CFR 1910.120)
10-Hour Construction Management Training
Project Management Course - Truby Achievement Center

PROJECT and CONSULTING EXPERIENCE

REGULATORY MANAGEMENT

Indiana, Illinois

Managed dozens of projects in accordance with the IDEM Voluntary Remediation Program (VRP) and Risk Integrated System of Closure (RISC) and RCG policies. VRP projects have included VRP/RISC application completion, obtaining and negotiating the Voluntary Remediation Agreements (VRAs) with the IDEM and determining site Contaminants of Concern (COCs). Project activities have included site characterization/investigation, laboratory analytical data evaluation, feasibility analysis, soil/groundwater/vapor remediation, confirmatory soil/groundwater sampling, and all associated project completion reporting, including the negotiation and administration of appropriate Environmental Restrictive Covenants (ERCs) for the procurement of final Covenants Not to Sue (CNTS).

Managed over 60 State Cleanup Program sites with all regulatory reporting requirements from work plans, Site Investigations, through Quarterly Reporting, Corrective Action and Obtaining No Further Action Letters.

Managed over 150 environmental projects within different areas of IDEM and IEPA Leaking Underground Storage Tank (LUST) Branch, from beginning assessment activities to completion and obtainment of No Further Action Letters. Worked with City, State and Region V EPA Brownfield Programs to make properties viable through the use of various grants and have secured Brownfield Comfort letters for clients and municipalities. Familiar with the Illinois LUST Program using the Tiered Approach for Corrective Action Objectives (TACO).

Speedway Retail, Assessments/Management 1992-1998

Coordinated and managed environmental consulting for Speedway retail stations in Illinois, Indiana according to respective state LUST programs. Account management included UST system compliance, development of SPCC plans for stations in a three-state region, subsurface assessment and remediation, budget preparation and management, and all affiliated regulatory management and reporting and communications on behalf of client.

Stewart Manufacturing, Phase II/Remediation 2006-2012+

Project involved remediation of client's chlorinated solvent contamination, while providing convincing evidence to IDEM regarding an additional five PRPs contributing into the co-mingled plume migrating into the municipal wellfield. The result supported litigation efforts and provided a cohesive approach to the regulator for a remedial strategy and the health department for protection of the well field.



Chris Jaros, P.E.

Manager, Environmental Services

Wellfield Protection Consulting 2007-2012+

Managed the technical aspects of the wellfield protection program for the City of Indianapolis for over 4 years which included reviewing SPCC provisions, design features of new construction, adding/requiring components of best management practices, implementing program and city ordinance improvements, and performing inspections at facilities with chemical management obligations. Additionally, have provided expert witness support documentation in matters relating to plume discovery, and migration as related to wellfield protection in Indiana community.

ENVIRONMENTAL SITE ASSESSMENTS

Midwest - 6 States

Conducted Phase I Environmental Site Assessments (ESA's) for over 50 industrial and commercial properties for financing and transactions to meet All Appropriate Inquiry (AAI) requirements. Designed and conducted over 200 Phase II investigations utilizing standard drilling rigs, direct push soil probes, and sonic drilling at industrial and commercial sites in Indiana and Illinois. Provided design, direction and oversight for the installation of over 800 permanent groundwater monitoring wells. Conducted sampling, slug and pump tests, and performed and directed data analysis for groundwater flow evaluation. Directed vapor intrusion studies at over 200 structures to evaluate human risk exposure scenarios. Chemicals of concern (COCs) have included petroleum products, chlorinated solvents, polychlorinated biphenyls (PCB), heavy metals and per- and polyfluoroalkyl substances (PFAS).

Clark Oil Retail, Phase II/Further Site Investigation 1995

Coordinated and managed environmental consulting for acquisition portfolio of 50 retail gasoline station involving soil and groundwater assessments at each station in multiple states in 2 month period for major oil company, including records research, UST system evaluation and risk quantification.

Imperial Oil, Phase II/Further Site Investigation 1996-1997

Designed and conducted a dynamic investigation for a client's MTBE petroleum plume crossing from Indiana into Michigan and into a neighborhood with potable wells. Accelerated access and work include a mobile lab, and carbon canister filtration, and risk communication at homes with potable well impacts.

AEMCO Phase II/Remediation 2006-2012+

Indiana VRP project involved Site characterization of a multiple chlorinated solvent plumes originating from dry cleaner sewer discharges. Sewer cameras were used to direct drilling and eventual remediation in three separate on-Site and off-Site groundwater plumes. Vapor intrusion

sampling, mitigation and monitoring commenced at apartment buildings and strip mall concurrent with remediation.

Pharmaceutical Meeting Facility/Phase II 2008-2010

Project included the investigation of petroleum product discovered during site construction, with delineation and quarterly monitoring of the groundwater plume, identification of risk factors, and a scoring mechanism with natural attenuation was engineering to graphically show plume extent reduction over time supported that no further action was required.

Peerless Cleaners, Phase II/Remediation 2013-2018+

Designed and conducted a triad investigation for a client's chlorinated solvent contamination plume migrating into a neighborhood toward a lake using a mobile laboratory. The result provided optimal placement of the groundwater monitoring well network, reduced costs and less iterations of delineation, thereby allowing Site remedy to occur sooner.

REMEDIATION DESIGN & ANALYSIS

Indiana, Illinois, Wisconsin and Michigan

19 years of proven experience performing feasibility, design, installation and evaluation of various types of remediation methods and systems, including mechanical soil and groundwater remediation systems at industrial facilities contaminated with chlorinated hydrocarbons and petroleum hydrocarbons. Remedies included surgical excavation, pump and treat systems, soil vapor extraction (SVE) with ozone enhanced and traditional air-sparging, thermal remediation, and in-situ groundwater treatment via injection substrate alternatives. Over 20 projects have had pathway elimination measures such as indoor air mitigation systems, or activated carbon water purification systems in neighborhoods where groundwater was above MCLs. Experience obtaining regulatory approval for exposure control remedies such as risk assessment/monitored natural attenuation/plume stability demonstrations in support of regulatory closure and protection of human health and the environment.

Blue Island Terminal, Remediation 1996-98

Designed and installed pump and treat barrier for oil release at terminal facility providing groundwater capture to prevent discharge into a waterway.

Crescent Cleaners, Remediation 2006-2012+

Region V EPA project involved Site treatment with SVE and ozone injection, followed by injection of emulsified oil between homes off site based on Vapor Intrusion (VI) testing and risk management. This project used numerical groundwater modeling to establish to the EPA the source removal was sufficient to protect a down-gradient school and long term health concerns.

David M. Baker, PLS *Project Surveyor*



Mr. David Baker has nearly 50 years' experience at many types of surveys throughout the United States with focus in the Ohio, Pennsylvania, & West Virginia regions. He is responsible for the review and supervision of survey projects. These responsibilities include preparing the scope of work,

schedule, project plans and specifications and reviewing field work and preparation and review final drawings, final plats, deed descriptions, and other deliverables..

Mr. Baker has completed many large, complex highway, airport, bridge and natural gas surveying projects. He has performed surveys for verification of construction layout and as-built features, location and topographic surveys for design and utility investigation, and site and lot mapping, including ALTA property boundary surveys and legal descriptions; and has coordinated and set control for underground mining and for aerial mapping.

EDUCATION

Pennsylvania State University, Engineering 1971-1972,
1976-1978

ICS Surveying and Mapping 1978-1983

PROFESSIONAL REGISTRATION / CERTIFICATION

Registered Professional Surveyor, Commonwealth of Pennsylvania

Registered Professional Surveyor, State of Ohio

Registered Professional Surveyor, State of West Virginia

Registered Professional Surveyor, State of New York

Registered Professional Surveyor, Commonwealth of Kentucky

OSHA 10 hour and 40 hour

PROJECT EXPERIENCE

MAPPING AND TOPOGRAPHY

Progressive Field Cleveland Guardians Stadium concourse concrete replacement as-built survey

Progressive Field Cleveland Guardians Stadium Ninth Street access existing conditions topography.

Washington County PA Courthouse Parking garage existing conditions topographic survey

Alcosan Inspection & Hydraulic Analysis of Diversion

Structures and Manholes Inspection Program – South Basin.

Location of constructed sewer lines and manholes using both conventional and GPS techniques. Maintained field sketches of existing structural conditions and database of survey

information in format for use in creating GIS model. Located over 400 manholes and diversion structures along Saw Mill Run.

West Virginia Department of Environmental Protection Teter Creek Conservation Easement project, located in Barbour County, WV. Determination of boundaries and boundary descriptions for the conservation easements.

ENERGY

Utica East Ohio Kensington Cryo plant and connecting pipeline projects located in Kensington, OH. Mapping and staking for the plant and routing, mapping, right of way exhibits, centerline staking for approximately 8 miles of pipeline split between 2 lines entering the Kensington site.

AEP Power Transmission – 6 miles new transmission line corridor mapping, right-of-way and structure stakeout. Responsible for overall management of field crews and CADD personnel and coordination with right of way acquisition.

Air Quality Control Retrofit at Sammis Power Generating Station in Stratton, OH. Responsible for management and scheduling of survey crews and data processing for construction stakeout and design for limestone slurry air quality treatment including 800 foot tall chimney, 400 feet of air duct along Ohio Rte 7, and 3000 feet of new rail siding.

TRANSPORTATION & AIRPORTS

Runway Protection Zone, Obstacle Clearance, New Castle Airport. Surveyed properties within the RPZ at both ends of runway 5-23. Prepared overview plans showing all impacted properties and individual property plot plans. Surveyed the vertical limits of the clearance, mapping all structures and trees within the clearance area. Tied obstruction location and type to property maps.

Renovation of Pennsylvania Avenue, Weirton, West Virginia (WV). Responsible for performing a detailed topographic and location survey, setting of construction centerlines, centerline profiles, control point referencing, setting of benchmarks, geotechnical boring location, utility location, for design of renovation of Pennsylvania Avenue.

ALTA/NSPS SURVEYS

AEP Pittsburgh Drive Delaware OH – 37 Acres

AEP Kroger Generation Newark Oh – 20 Acres

American National Title Clearview Mall Butler, PA - 10 Acres

IM Data Center Wilkinsburg PA – 4 Acres



Project Approach



PROJECT APPROACH

The CTL Team's project approach will consist of performing the following tasks described below.

Throughout the project's execution, CTL's Project Manager, Joseph Grani, will actively communicate with the Owner's Project Representative and WVDNR personnel to keep them aware of project's progress. The Team anticipates conducting a kickoff meeting to discuss the project goals and responsibilities, and to further identify site constraints or protocols in the execution of our work for the project. Project progress meetings will be conducted with the Owner and key personnel from WVDNR and CTL's Team to plan and coordinate efforts for project completion. A project schedule, with identification of each major task and their corresponding durations, will be developed and provided to the Owner's Project Representative. The purpose is to not only track completion of milestones and overall project delivery, but to also proactively identify hurdles which may affect the completion of the project on time and within budget.

1. **Review of Existing Project Information** – The CTL Team will review readily available information including (but not necessarily limited to) previous inspection reports, hydrologic and hydraulic analyses and data related to water storage and releases, original design drawings, as-built drawings, construction records and photographs, drawings and construction records related to major modifications or maintenance, and geotechnical exploration reports and studies/investigations performed by other engineering consultants for previous construction or improvement studies. The information reviewed will assist in forming the basis for the scope of services to be performed by CTL's Team.
2. **Site Reconnaissance** – CTL Team personnel will visit the project site to perform a general reconnaissance of the project area and a specific inspection of the existing site conditions within the seepage area(s). In addition, CTL's Team will observe and inspect any existing control structures (as/if present) to determine condition and functionality.
3. **Site Survey and Mapping** - Our survey crew will complete an existing conditions topographic survey of the impoundment site. This survey will include locating the embankment, the edge of water within the impoundment, any seepage areas within a minimum distance of 100 ft from the impoundment's edge, and surface drainage features that contribute to the existing impoundment. CTL Team personnel will also locate surrounding surface and underground utilities, relevant structures close to the embankment, and inlet and outlets structures that pertain to the function of the impoundment. The existing site conditions map will be used to develop the model for seepage analysis and for hydrologic and hydraulic analyses and designs for a new control structure, if necessary. CTL Team personnel will also locate the geotechnical borings after completion.
4. **Geotechnical Exploration** – A geotechnical exploration will be performed to determine subsurface conditions and support evaluation and design parameters. Also if any areas of seepage are detected, the team will expand the geotechnical scope to include to support evaluation and the modeling of the apparent seepage either through or beneath the dam. We anticipate the following tasks being performed as part of the geotechnical exploration:
 - a. **Test Borings**: The number of cross sections and test borings will be based upon the information reviewed and our site visit. At each cross section, we plan to drill and sample test borings at the crest and toe of the embankment slope to a suitable depth to determine the conditions for evaluation, modeling, and analysis. The underlying embankment fill materials and native soils will be sampled continuously to identify the soil strata and their in-situ properties for the seepage analysis. If areas of seepage are encountered, the CTL Team will perform test borings to develop subsurface cross sections of the dam where the seepage is observed. We anticipate the installation of monitoring wells



b. **In Situ Field Testing:** Standard Penetration Tests (SPTs) will be performed in the test borings during soil sampling. Subsequent to drilling and sampling, selected test borings will be converted to monitoring wells. If underlying granular soil strata are encountered, CTL Team personnel will perform slug testing within the granular soils to determine in situ permeability for the purpose of developing the seepage analysis model. The pore water pressure in each new monitoring well will be continuously collected by vibrating wire piezometers using a data logger and downloaded at predetermined intervals for a suitable period of time, to provide sufficient data to develop and calibrate seepage analytical models.

Once the 2D resistivity data sets have been acquired, they will be processed for recognition of variations in subsurface materials and apparent moisture content. The modelling and inversion processing will be conducted using EarthImager 2D software by Advanced Geosciences, which is a resistivity inversion program. Once the profiles are inverted and the data sets adjusted, we will plot each profile. Depending on the actual field data line locations, it may be possible to develop constant depth or constant elevation resistivity 'slice maps' of sufficient accuracy that indicate the potential pathway connections between the profile lines with depth.

5. **Seepage Analysis** – If areas of seepage are encountered, the CTL Team will perform a two-dimensional (2D) seepage analysis utilizing the findings from the results of the test borings, field and laboratory testing, geophysical testing and the topographical mapping of the project site, to determine the critical exit gradient parameter at the toe of the downstream slope due to the seepage through and/or beneath the embankment at the cross section locations.

Using our HEC-HMS model, we will independently compute a probable maximum precipitation (PMP) event for the site and a corresponding probable maximum flood (PMF) for any existing control structures at the dam. We will also develop a breach simulation for the embankment in order to evaluate possible inundation extents



at the Pendleton Lake. These simulations will include tabulations and flood routing information such as peak flood elevations, peak discharges, and peak flow arrival times for critical locations.

The CTL Team personnel will develop the breach simulations for Pendleton Lake Dam using the USACE's HEC River Analysis System (RAS). Inundation extents will be drafted/drawn on high-resolution aerial imagery and thus will also identify infrastructure (roads, bridges, etc.) and structures relevant to the hazard classification.

7. **Engineering Report** – CTL Team will prepare a written engineering report that will summarize the results of the geotechnical exploration, seepage analysis, and hydrologic and hydraulics study. The report will include a topographic survey of the site, test boring logs, boring locations plan and scaled soil profiles of the dam embankment and foundation soil where the test borings were performed, geophysical test results, graphical representations of the seepage analysis, and flood hazard model output.

If areas of seepage are encountered, then based on the results of the seepage analysis performed, the CTL Team will present recommendations for addressing the seepage. In addition, we will provide recommendations related to control structure rehabilitation or replacement.

8. **Control Structure Design** – If the hydrologic capacity of the dam is deemed deficient, The CTL Team will begin to develop a conceptual design (or designs) for the remediation of any existing control structures, or construction of a new control structure, to comply with West Virginia Department of Environmental Protection (WVDEP) Division of Dam Safety requirements for the safe passage of the PMF or some other acceptable inflow design flow (IDF). Our conceptual design is specifically expected to consist of an engineering sketch, a schedule for full design, and a preliminary budgetary construction cost estimate.

Based on feedback from relevant stakeholders at the WVDNR, the Team will further optimize and advance (to a 30 percent level) our conceptual designs for the remediation or replacement of the dam control structure. We expect to then develop a short preliminary design letter report that will include a description and evaluation of the potential modifications and identify an optimal modification to carry forward to detailed design. We intend to develop a drawing package for the recommended design option as part of the preliminary design report. We anticipate that this drawing package will include a cover sheet presenting a map of the wider project area and a list of drawings; a sheet showing existing dam appurtenances and topographic conditions; a sheet showing control structure modification or replacement plans; and a sheet showing modification sections and details.

Prior to undertaking detailed (i.e., final) designs, we propose a meeting between our project team and WVDEP engineering staff to present our preliminary (30 percent) design results. Corresponding construction schedules and cost estimations for the recommended option are also expected to be developed as part of the presentation. It is expected that the meeting will result in a general agreement on an optimal design option, and a clear directive with respect to project advancement.

Following our in-person preliminary design review meeting with WVDEP engineering staff, we will develop and submit a 75 percent detailed design drawing package for WVDEP review. A final (100 percent) design package will then be developed on receipt of WVDEP comments. The CTL Team will confirm that comments provided by the WVDEP have been addressed and resolved accordingly in the 100 percent design package.

9. **Construction Plans and Specifications** – Our 75 percent and 100 percent design submittals are expected to include detailed design drawings for control structure modifications and for the remediation of seepage-related issues and are expected to be used (ultimately) for construction. As such, our 75 percent and 100 percent design submittals will include technical/construction specifications for clearing, grubbing, and earthwork, for concrete, for masonry, and for steel (as appropriate). We will then provide engineering support during bidding and construction as required and as directed. Our support during the bid process will likely include participation



in a pre-bid conference, responses to contractor requests for information, issuance of addenda to bid documents, and updates to our drawings and specifications for construction.

10. **Construction Administration** - We are also prepared to provide engineering support during construction, and on-site inspection during construction. The team will have personnel on site during construction to monitor daily construction activities. It is anticipated that the CTL Team will provide the following:

- Pre-Construction Conference
- Prepare Field Inspection & Quantities Reports
- Prepare Construction Docs & provide to Construction Admin
- Field Engineering in conjunction with Construction Administrator
- Observe & verify materials being used for the project
- Observe, identify and notify Construction Admin of deficiencies
- Provide Admin w/ monthly quantities for payment prep
- Material Testing, i.e., compaction, concrete, asphalt, etc.
- Project Closeout Activities



Project Experience

**Project: Clear Fork Reservoir Dam | Seepage Investigation****Owner: City of Mansfield****Location: Mansfield, Ohio****Project Features**

The Clear Fork Reservoir Dam has developed wet surface areas downstream of its north embankment that were first documented in an inspection prepared in 1979 on behalf of the USACE. Subsequent inspection reports and investigations indicated that under seepage occurs beneath the north embankment but did not pose a threat to the stability of the dam's north embankment, however monitoring of the seepage, and then later investigation of the seepage was required by ODNR. CTL Engineering, Inc. conducted an investigation to evaluate seepage at the existing Clear Fork Reservoir Dam.

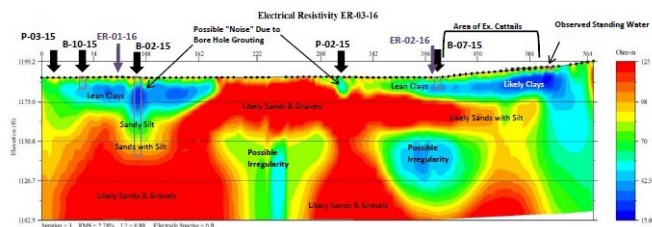
CTL's investigation utilized original construction plans, previous ODNR inspection and evaluation reports, observations of the project site made during various times of the year, test borings, slug (pump) tests, soil laboratory tests, electrical resistivity imaging across the embankment and downstream area, along with monitoring wells equipped with vibrating wire piezometers with data loggers to develop models of the earth embankment and foundation soil. CTL analyzed pore water migration (seepage) through and beneath the dam using the 2D models at two cross sections to evaluate the exit gradients and comparing these gradients with the critical exit gradient per U.S. Army Corps of Engineers (USACE) Engineering Manual EM 1110-2-1901.

Client Reference

Mr. Robert Bianchi, PE (419) 755-9702

Project Completion

2019





**Project: Northern WV Region & Western Pennsylvania Region
Annual & Quarterly Impoundment Certifications**

Owner: Murray American Energy & Consol Energy, Inc.

Location: West Virginia & Pennsylvania

Project Features

Provide annual and quarterly inspection and certification services for the AMD Facilities for the Northern WV Region and the Western Pennsylvania Region for Murray American Energy Inc and CONSOL Energy Inc respectively as required by the WVDEP, the PADEP and M.S.H.A.

On behalf of Murray and Consol, CTL annually and quarterly inspects and certifies for stability approximately 120 varying size major impoundments, sedimentation, ponds, settling ponds and aeration ponds at various operating and closed mine facilities throughout both regions.

Client Reference

Mr. Larry Jimison (304) 534-4734

Mr. Brian Bogden (724) 485-4059

Project Completion

Ongoing



Project: Barnesville Reservoir | Seepage Investigation/Spillway Repair

Owner: Village of Barnesville

Location: Barnesville, Belmont County, Ohio

Project Features

The project consisted of repairing and/or rehabilitating the existing spillway. It was understood that ongoing seepage beneath the spillway may have created voids, and the spillway integrity may be compromised.

CTL Engineering, Inc. performed visual and Eco Hammer sounding observation of the existing Spillway structure, advanced 5 slab cores, and performed Ground Penetrating Radar (GPR) along the spillway. The purpose of this investigation was to:

1. Identify possible voids and seepage under the spillway slab.
2. Determine the slab thickness of the spillway, its compressive strength, and integrity.
3. Evaluate existing subgrades along spillway slab.

Client Reference

Mr. Roger Deal (740) 425-1880

Project Completion

2019



Project: Buckeye Lake Dam Improvements

Owner: Ohio Department of Natural Resources

Location: Buckeye Lake, Ohio

Project Features

The original dam was a 4.1 mile long earthen dam that was constructed nearly 200 years ago and was determined to be at a significant risk of failure. The project included the installation of a seepage barrier and buttress to strengthen the dam. These elements extend from 25 to 40 feet below the surface and were constructed by deep soil mixing which is the process of mixing Portland Cement Grout with the existing soil. The overall construction cost was approximately \$110M.

CTL and Gannett Fleming provided Phase I design services included Probably Failure Modes Analysis workshop, geotechnical investigations, laboratory testing, mix design testing for soil-mixed materials, surveying, hydrologic and hydraulic analyses, and design of a 43-foot-deep soil-mixed cutoff wall. Construction phase services includes construction administration, inspection, and performance of verification coring of soil-mixed materials. Phase II (New Replacement Dam) design was completed in 2017 and construction is ongoing and scheduled to be completed in mid-2019. Design phase services include preliminary and final dam design, final hydrologic and hydraulic analyses, and modification of the forebays of each of the two spillways.

Client Reference

Mr. Robert Kline, P.E. (717) 763-7211
Gannett Fleming

Project Completion

2018



Project: Lowe AMD Impoundment | Seepage Investigations

Owner: Murray American Energy

Location: West Virginia

Project Features

The Lowe Impoundment which was constructed in the 1960's has over time developed random areas of wet surface areas from seepage on the face of the downstream slope and along the groin areas from ground water infiltration.

In an effort to capture, control and effectively discharge this seepage and infiltration, CTL designed a series of blind ditches (French Drains) to transverse the face of the downstream slope near the decant discharge pipe valve box. Additionally, CTL designed a new anti-seep collar to be installed on the upstream face to prevent seepage from traveling along decant internal discharge pipe tied into the valve box.

Client Reference

Mr. Larry Jimison (304) 534-4734

Project Completion

2016



Project: Nelly Hollow AMD Impoundment | Seepage Investigations

Owner: Murray American Energy

Location: West Virginia

Project Features

The Neely Hollow Impoundment which was constructed in the 1960's has over time developed random areas of wet surface areas from seepage on the face of the downstream slope and along the groin areas from ground water infiltration.

In an effort to capture, control and effectively discharge this seepage and infiltration, CTL designed a series of blind ditches (French Drains) to transverse the face of the downstream slope and parallel along the groin areas. Additionally, CTL performed an updated stability analysis of the impoundment to verify the current factor of safety.

Client Reference

Mr. Larry Jimison (304) 534-4734

Project Completion

2016



Project: Austin Lake Dam Improvements

Owner: Austin Lake, Inc.

Location: Jefferson County, Ohio

Project Features

The project consists of improving the Austin Lake Dam (ODNR No. 0305-001) located at TR 285A in Knox Township, Jefferson County, Ohio. The improvements consist of construction the following:

1. Two retaining walls at outlet of existing primary spillway, west side of dam.
2. New concrete emergency spillway channel/slab with retaining walls.
3. New parapet wall along crest of dam.
4. Improve existing E. Road Emergency Channel.

Soil data obtained from field and laboratory testing were used to determine the existing soil conditions and to develop subsurface models required to perform the required scour potential, seismic coefficients and retaining wall/foundation support for the dam improvement.

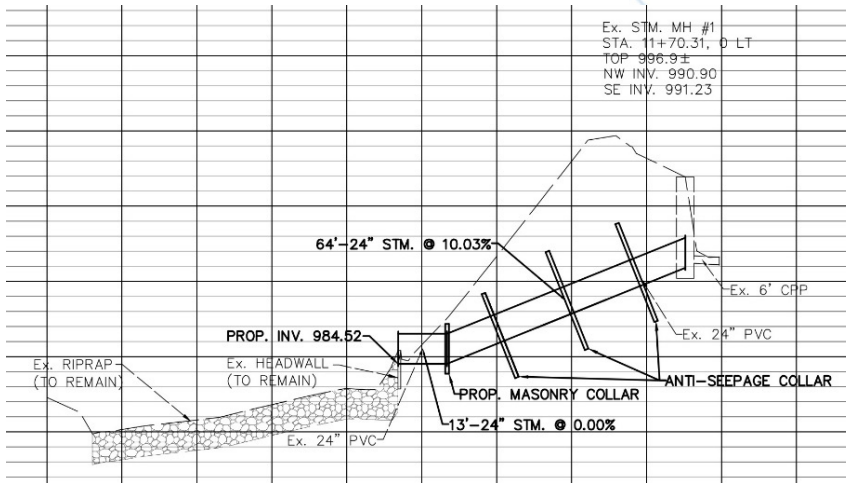
Client Reference

Mr. William Cable (740) 544-5253

Austin Lake, Inc.

Project Duration

6/23/2014 – 6/23/2016

**Project: Fawn Lake Dam Improvements****Owner: Fawn Lake Association****Location: Sidney, Ohio****Project Features**

Fawn Lake is a man-made, Class III, ± 10.1 -acre lake with by a 20-foot high, 675-foot long embankment acting as an earthen dam. It was reported that the dam began to leak and following a site visit by Ohio Department of Natural Resources (ODNR), the leak was verified, and it was expressed that the cause of the leak was a sinkhole that formed on the waterside of the earthen embankment that allowed the retained water to seep into the embankment alongside an existing storm sewer that acts as the lake drain. The initial cause of the sinkhole was suspected to have been associated with animal activities.

CTL Engineering was asked to investigate, consult, and observe the repair of the leak per the requirements of ODNR. In doing so, CTL Engineering performed a geotechnical evaluation of the existing dam for problems associated with the leak. We were also the lead Engineer in creating design plans and specifications for the dam repair. Subsequent to plan approval, CTL worked with the owner in hiring a contractor for the dam repair. CTL also provided construction observation and material testing during construction of the dam repair.

Client Reference

Mr. Jerry Long (937) 497-1488

Project Completion

2012



Project: Buzzard Pond Dam
Owner: West Virginia DNR
Location: Marshall County, WV

Project Features

In 2011, CTL Engineering was contracted by Kelly Surveying to perform Geotechnical Engineering services for the investigation, evaluation, and stability analysis of The Buzzard Pond Dam. Five test borings were advanced using a truck-mounted, rotary drill rig. These samples were then returned to CTL's in-house testing laboratory and analyzed in reference to minimum slope stability values. After these tests were performed, the conclusion was made that the dam embankment conditions and the fill material should be considered stable

Client Reference

Mr. Kenneth Kelly (304) 338-6985
Kelly Surveying

Project Duration

03/29/2011-12/31/2011

PIPESTEM DAM SPILLWAY MODIFICATION PROJECT JAMESTOWN, NORTH DAKOTA, USA	YEAR COMPLETED	
	PROFESSIONAL SERVICES 2023	PROJECT CONSTRUCTION 2023-2025
PROJECT OWNER U.S. ARMY CORPS OF ENGINEERS		

BRIEF PROJECT DESCRIPTION: This project consists of modifying the Pipestem Dam emergency spillway to armor the downstream end of the spillway against erosion and accommodate emergency flows that may be experienced due to large outflow events. This project includes the construction of a full and useable emergency spillway capable of handling extreme runoff events, and includes modifying the existing spillway channel, construction of a reinforced concrete labyrinth weir, roller compacted concrete (RCC) terminal structure and training dikes on each side of the channel. The terminal structure will consist of a RCC spillway chute structure with an integrated reinforced concrete labyrinth crest control structure, reinforced concrete approach walls, and a roller compacted stilling basin. Additionally, the work includes excavation of the existing spillway channel to accommodate emergency flows and construction of earthen training dikes with an internal soil cement key on each side of the spillway channel to direct flows to the terminal structure.



RIZZO is providing engineering and quality control testing services to Barnard Construction Company in support of the three-year-long Pipestem spillway rehabilitation project.

RIZZO's Scope of Work is detailed as follows:

- Roller Compacted Concrete Mix Design (including primary RCC, secondary RCC, and bedding mortar)
- Soil Cement Mix Design
- Dewatering Design Review and Slope Stability Analysis for Excavations
- Geologic Mapping for exposed shale rock foundation
- Quality Control Testing Laboratory and Quality Control construction oversight

RIZZO Contract Value: \$2,400,000

RIZZO Project Number: 21-6227



JOHN C. SMITH RESERVOIR DAM BEDFORD COUNTY, PENNSYLVANIA	YEAR COMPLETED	
	PROFESSIONAL SERVICES 2020 – Present	PROJECT CONSTRUCTION N/A
PROJECT CLIENT STIFFLER, MCGRAW, AND ASSOCIATES, INC.		

RIZZO initially provided a detailed peer review of the 2010 GeoMechanics study entitled “*Feasibility Study to Evaluate Stability and Seepage Conditions*”. This task included a statement on the current stability of the earthen embankment from the perspective of a globally recognized expert in dam stability. Our review included a formal list of exceptions based on the review GeoMechanics 2010 study. Also included exceptions to assertions made by the PADEP from correspondence provided to RIZZO.

To support the remedial design effort, RIZZO completed structural/stability analyses for representative cross-sections of the proposed earth-fill buttress and rock-fill toe and the proposed new spillway structure. In particular, for each cross-section, RIZZO performed stability analyses for dry pool, IDF, PMF, and sudden drawdown conditions, to determine the adequacy of our design configurations for various loadings.

RIZZO is currently developing a 75% design for the remediation of the dam. The remedial design will consist of

- A new concrete spillway structure, energy dissipater, and dentated sill;
- An intake tower and connecting walkway;
- An earthen buttress and new rock toe;
- A chimney drain;
- A drain/sump system to collect and direct seepage; and
- A flow monitoring system.

The design currently underway will consist of the following deliverables:

- Both draft and revised 30% design packages;
- Draft and revised 75% design packages; and
- Draft and revised 100% design packages.

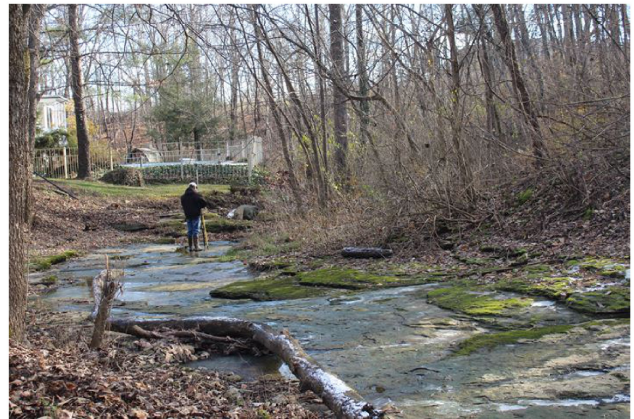
The project also includes providing permitting, bid document, and construction support.

RIZZO CONTRACT AMOUNT: \$527,000



TIMBER LAKE LIBERTY DAM REHABILITATION DELAWARE COUNTY, OHIO	YEAR COMPLETED	
	PROFESSIONAL SERVICES Oct 2018 – Present	PROJECT CONSTRUCTION N/A
PROJECT OWNER/CLIENT CONFIDENTIAL		

Located in south-central Delaware County, Ohio, Timber Lake Liberty Dam (The Dam) is a high hazard earthen embankment approximately 285 feet in length, 34 feet in height, and 12 feet in width (at crest). Both the dam and most of the reservoir are privately owned and maintained for recreational and aesthetic purposes. Presently, the dam includes a service spillway consisting of a 48-inch diameter concrete drop inlet riser structure and 36-inch diameter low-level outlet pipe. Historically, The Dam featured an open channel emergency spillway on the right abutment of the dam. Circa 2009, the control section of the emergency spillway was back-filled but has since been repaired to include four (4) oblong concrete culverts, roughly 3-feet high and 5-feet wide.



Despite the aforementioned repairs, concerns have remained as regards the discharge capacity of the existing service and emergency spillways at The Dam. The Ohio Department of Natural Resources (ODNR) consequently mandated further modifications to The Dam to ensure adequate capacity for the safe discharge of a probable maximum flood (PMF) resulting from a probable maximum precipitation (PMP) event, and also to address a number of other dam safety deficiencies identified during inspections. **RIZZO** was consequently retained by the dam owner (in October 2018) to provide engineering analyses and designs for the required modifications.

To date, **RIZZO's** engineering and design services for the owner of The Dam have included (but are not limited to):

- Inspections and topographic surveys of the dam and appurtenant structures, and general reconnaissance of upstream and downstream areas, including surveys of inflow base elevations and upstream culverts and ponds;
- Detailed video surveys of the condition of the vertical drop inlet and low-level outlet pipework comprising the service spillway;
- Complete hydrologic and hydraulic analyses of existing site conditions and for safe spillway design options using the USACE's HEC-HMS and HEC-RAS software packages;
- Analyses of potential consequences of a breach of The Dam, including inundation mapping;
- Hydraulic analyses of energy dissipation options for flood flows; and
- Development of a design drawing package for repair/rehabilitation of the dam.

RIZZO's rehabilitation/repair designs for The Dam have specifically included a permanent lake drain installation, construction of a new emergency spillway control section consisting of a series of new, pre-cast box culverts and corresponding wingwalls and headwalls, excavation and armoring of the emergency spillway approach and exit, regrading of a portion of the downstream embankment to repair minor sloughing and slumping, repair of low-level outlet joints, and installation of a new trash rack and anti-vortex plate on the service spillway drop inlet.

Stamped design drawings for The Dam (for construction) have been submitted to the ODNR for review; however, work has largely been on hold since August 2020 owing to separate legal proceedings tied to deeding of the properties located adjacent to the dam and reservoir. Finalization and implementation of the designs is consequently not presently progressing. In the interim, RIZZO has separately developed and filed (with the ODNR) an emergency action plan (EAP) and operation, maintenance, and inspection (OMI) manual for the dam.

RIZZO CONTRACT AMOUNT: \$282,141, RIZZO PROJECT NO.: 18-5971



WILLOW BROOK DAM ENGINEERING SERVICES FOR DAM SAFETY REGULATORY COMPLIANCE TOWN OF BLOOMING GROVE, NEW YORK	YEAR COMPLETED	
	PROFESSIONAL SERVICES 2016 – Present	PROJECT CONSTRUCTION 2019
PROJECT OWNER / RIZZO CLIENT TOWN OF BLOOMING GROVE/ ORANGE & ROCKLAND UTILITIES, INC.		

RIZZO International, Inc. (RIZZO) acquired RIZZO Associates, Inc. in November 2017. RIZZO remains a global engineering and consulting firm headquartered in Pittsburgh, Pennsylvania US. This project was contracted/completed under the RIZZO Associates name.

RIZZO was retained to provide professional engineering services in connection with dam safety regulatory compliance issues for Willow Brook Dam, a Class C High-Hazard Dam. The dam is located in the Town of Blooming Grove, Orange County, New York. The dam is regulated by the New York State Department of Environmental Conservation (NYSDEC).

Willow Brook Dam was constructed circa 1924 by Orange & Rockland Electric Co. Construction of Willow Brook Dam created Orange and Rockland Lakes, a series of small lakes that are hydraulically interconnected and act as one reservoir. The Dam was originally constructed to provide cooling water for a coal-fired power plant which has since been demolished. The lake is currently only used for recreational purposes. Willow Brook Dam is a 550-foot long earthen embankment dam. The crest of the earthen embankments is at El. 587.5. The embankment is approximately 20 feet tall at the maximum section.



The Project involves:

- Evaluation of existing data and site conditions;
- Preparation of a Dam Safety Inspection Report;
- Development of an Inspection and Maintenance (I&M) Plan;
- Development of an Emergency Action Plan (EAP);
- Preparing an Engineering Assessment Report for submission to the NYSDEC; and
- Development of the Upgrade Design.

The Engineering Assessment included:

- Hazard classification reconnaissance;
- Complete Dam Safety Inspection;
- Evaluation of the Dam’s spillway capacity, structural stability, and outlet works (lake drain) capacity;
- Review of the Dam’s Emergency Action Plan (EAP);
- Conclusions as to whether the Dam is in conformance with current Dam regulations and safety guidance; and
- Recommendations based on the observations and conclusions of the engineering assessment.

The Upgrade Design included the following work to bring Willow Brook Dam into conformance with NYSDEC Regulations:

- Design the Spillway to safely pass the SDF and to be stable against overturning and sliding;
- Re-grade the downstream embankment slope to increase the sliding stability;
- Design a proper seedbed near the culvert to prevent erosion from backflows at the base of the dam;
- Design and specify a precast box culvert to pass the SSDF flow; and also
- Investigate the potential for liquefaction.

Currently, RIZZO also provided NYSDEC Permit Assistance to ORU. Construction is anticipated for 2019.

RIZZO CONTRACT AMOUNT: \$ 203,757

RIZZO PROJECT NO.: NY13-5047



FLOWER CREEK DAM REPLACEMENT PROJECT LIBBY, MONTANA	YEAR COMPLETED	
	PROFESSIONAL SERVICES 2011 – 2016	PROJECT CONSTRUCTION N/A
PROJECT OWNER CITY OF LIBBY		

RIZZO International, Inc. (RIZZO) assisted Morrison-Maierle, Inc. (MMI) with the development and evaluation of options and prepared detailed design for the replacement of an existing arch dam that supplies water to the city of Libby, Montana. Conceptual designs were initially considered and cost estimates were reviewed for several options, including a new gravity dam and a new arch dam. RIZZO's Scope for the conceptual design included the following:

- Review of existing documents for the Project, including the Inspection Report;
- Review and development of conceptual designs and cost estimates, including conceptual stability analysis, to confirm quantities;
- Preparing a Report to summarize comments on the conceptual designs, cost estimates, and any additional dam replacement alternatives to be considered.



RIZZO prepared the detailed design of the new concrete gravity dam downstream of the existing arch dam. RIZZO's responsibilities include: stability analysis and optimization of the cross section of the dam; development of design details including instrumentation; design of the foundation treatment and grout program; interpretation of geotechnical data; and development of associated drawings and specifications. RIZZO also performed thermal analysis, seismic analysis, and an erodibility analysis.

The Flower Creek Project highlights RIZZO experience with the following tasks:

- Structural and Dynamic Stability Analysis;
- Stress Analysis;
- Geological and Geotechnical Investigations;
- Design Plans and Specifications;
- Instrumentation Design and Monitoring;
- Drafting Services;
- Concrete Mix Design; and
- Grout Program Design

TOTAL PROJECT COST: \$15 MILLION (EST.)
RIZZO CONTRACT: \$500,000



**MILL DAM INSPECTION AND REMEDIATION
SPRING GROVE, PENNSYLVANIA**

YEAR COMPLETED
PROFESSIONAL SERVICES
2012 – 2013
PROJECT CONSTRUCTION
2013

PROJECT OWNER/CLIENT

P.H. Glatfelter Company

RIZZO prepared a remedial design for the left abutment, dam downstream face, right abutment, and left abutment approach wall. The remedial design consisted of construction drawings and specifications to replace and grout the left abutment wall, patch the right abutment wall, and repair the downstream face.

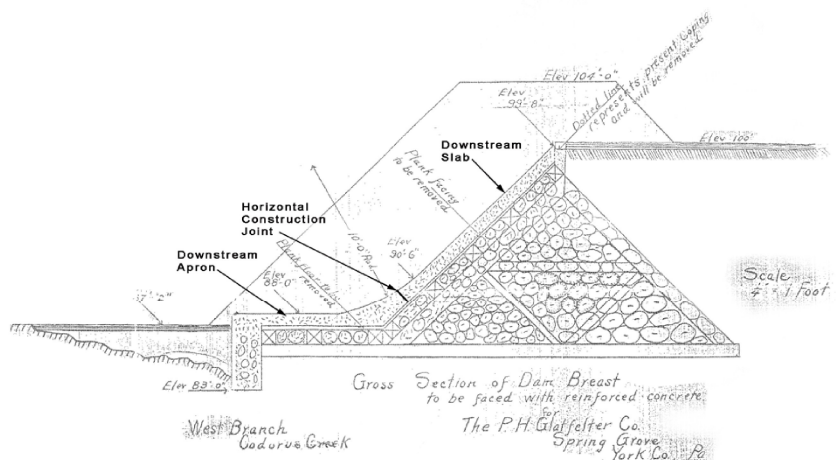
The Spring Grove/Mill Dam is located along the western side of Hanover Road (State Route 3092), approximately 1/2 mile south of Spring Grove, Pennsylvania. The Dam provides a daily water supply to the Spring Grove Mill. This Project consisted of performing an inspection of the Spillway's wing walls, and downstream concrete face and preparing a remedial design to insure its integrity for its 30 year service life. In addition, the project consisted of the design and construction inspection of a grouting program for the Left Abutment of the Dam and the remediation of a reinforced concrete approach wall to the left Abutment of the dam.

The Spring Grove/Mill Dam Spillway is a 255-foot (ft) long stone crib structure with a reinforced concrete downstream face. The Spillway has a concrete wing wall abutment at the south end and a masonry wing wall abutment at the north end. The Spillway crest is approximately 11 ft above the Spillway apron. When the Spillway was constructed in the early 1900s, it had a wood plank face. The wood planking was eventually replaced with the concrete face that exists today. The concrete spillway face and apron are both approximately 8 inches (in.) to 12 in. thick. The Spring Grove/Mill Dam is a run of the river dam along the west branch of Codorus Creek, and according to Glatfelter is in a state of constant flow.

The design was reviewed and approved by the PADEP.

The repairs for the left abutment were completed in December 2012. Construction for the remainder of the dam is was completed in 2016.

RIZZO CONTRACT AMOUNT: \$89,000
RIZZO PROJECT NO.: 12-4863



PAHAGACO DAM INSPECTION AND ENGINEERING SPRING GROVE, PENNSYLVANIA	YEAR COMPLETED	
	PROFESSIONAL SERVICES 2011 - 2012, 2018 - 2022	PROJECT CONSTRUCTION 2023 (scheduled)
PROJECT SPONSOR P.H. GLATFELTER/PIXELLE SPECIALTY SOLUTIONS LLC		

RIZZO provided inspection and engineering services to P.H. Glatfelter for the PaHaGaCo Dam. PaHaGaCo Dam is located along the western side of Lake Road (State Route 3092) approximately one mile west of Spring Grove, Pennsylvania. The Dam was designed in the 1950s and is currently used for recreational and water supply purposes.

During a routine dam inspection performed by the Owner during September 2011, surface cracking was observed at the crest and bulging was observed at the toe along the downstream slope of the Dam about 75 feet from the right abutment. RIZZO performed a brief visual inspection of the crest, upstream, and downstream slopes of the Dam on September 23, 2011. Based on this inspection, a plan was developed to repair the slough by completely removing the displaced material and replacing it with engineered fill.

The slough area on the downstream face of the Dam was repaired by removing the displaced material up to a maximum depth of 5 ft. The average depth of removal was approximately 3 ft. A series of benches were constructed for compaction of new material. The side slopes were constructed at 2H:1V to tie into the existing dam. After excavation, the area was backfilled with compacted clay material from an off-site source and the area was covered with topsoil and an erosion control mat.



In 2019, RIZZO was engaged by Glatfelter to prepare spillway and embankment modification plans and specifications to lower the reservoir 10 feet to minimize seepage observed flowing through the dam. The project as designed will consist of demolishing a portion of the existing concrete spillway, lowering the crest of the dam, and flattening the downstream slope. The plans, specifications, and engineering calculations were submitted to the Dam Safety Division of the Pennsylvania Department of Environmental Protection for review and approval. In 2021, RIZZO was engaged by Pixelle Specialty Solutions LLC (formerly Glatfelter) to inspect an observed slough along the downstream slope and design remedial measures for the downstream slope of the dam. These measures will be addressed during the remedial construction currently scheduled for 2023.

RIZZO CONTRACT AMOUNT: \$32,000 and \$120,000
RIZZO CONTRACT NO.: 11-4674, 18-5963, and 18-5963A



DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Joe Grani, PE Branch Manager

(Address) 1091 Chaplin Road Morgantown, WV 26501

(Phone Number) / (Fax Number) 304-292-1135 / 304-296-9302

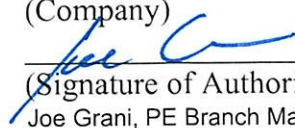
(Email address) jgrani@ctleng.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

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

CTL Engineering, Inc.

(Company)


(Signature of Authorized Representative)

Joe Grani, PE Branch Manager

(Printed Name and Title of Authorized Representative) (Date)

304-292-1135 / 304-296-9302

(Phone Number) (Fax Number)

jgrani@ctleng.com

(Email Address)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DNR2300000005

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)


- ☐ Addendum No. 1
- ☐ Addendum No. 2
- ☐ Addendum No. 3
- ☐ Addendum No. 4
- ☐ Addendum No. 5

- ☐ Addendum No. 6
- ☐ Addendum No. 7
- ☐ Addendum No. 8
- ☐ Addendum No. 9
- ☐ 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.

CTL Engineering, Inc.

Company



Authorized Signature

6-22-2023

Date

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