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Header

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General Information

Contact

Default Values

Discount

Document Information

Procurement Folder: 171220

Procurement Type: Central Contract - Fixed Amt

Vendor ID: VS0000004981

Legal Name: Hull & Associates, Inc.

Alias/DBA: HULL

Total Bid: \$0.00

Response Date: 02/18/2016

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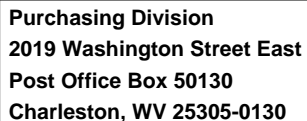
Close Time: 13:30

Status: Closed

Solicitation Description: Addendum 01 EOI: Webster County
Landfill Closure Cap Design

Total of Header Attachments: 0

Total of All Attachments: 0



State of West Virginia Solicitation Response

Proc Folder : 171220

Solicitation Description : Addendum 01 EOI: Webster County Landfill Closure Cap Design

Proc Type : Central Contract - Fixed Amt

Date issued	Solicitation Closes	Solicitation No	Version
	2016-02-18 13:30:00	SR 0313 ESR02181600000003616	1

VENDOR

VS0000004981

Hull & Associates, Inc.

HULL

FOR INFORMATION CONTACT THE BUYER

Beth Collins

(304) 558-2157

beth.a.collins@wv.gov

Signature X

FEIN #

DATE _____

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

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Water testing services				\$0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description :	Site Characterization Study, Leachate Management and Closure Cap Design for the Webster County Landfill per the attached specifications, bid requirements, and terms and conditions, incorporated here by reference and made a part hereof.
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February 18, 2016

State of West Virginia
Department of Environmental Protection
Office of Environmental Remediation
601 57th Street SE
Charleston WV 25304

RE: Expression of Interest Webster County Landfill Site Characterization Study, Leachate Management and Closure Cap Design

To whom it may concern:

Hull & Associates, Inc. (Hull) is pleased to present to the State of West Virginia the following Expression of Interest (EOI) for Landfill Site Characterization Study, Leachate Management and Closure Cap Design Services at the closed Webster County Landfill. We have teamed with The Thrasher Group, Inc. (Thrasher), a leading consulting engineering firm in the state of West Virginia to provide professional mapping services, along with field support.

Project Understanding and Approach

The State of West Virginia's purpose of the project is to provide services for the West Virginia Department of Environmental Protection's Landfill Closure Assistance Program (LCAP). We understand that the State of West Virginia Department of Environmental Protection (WVDEP) is seeking an engineering firm to provide professional mapping and design services for the Webster County Landfill, including a site characterization study, leachate management and closure cap design.

Based on our comprehensive landfill engineering, facility characterization studies and surveying experience, we are confident that our team can perform the work required and work with the Agency as a partner along with other applicable regulatory agencies. We believe our team is well suited for this project and can bring our assessment, design and construction expertise to assist the WVDEP in determining the appropriate path moving forward for closure of the facility.

We understand the services will include, but not necessarily be limited to, the following:

- Review of governing documents and initial meeting with WVDEP;
- Develop a detailed scope of services and associated costs, and effectively manage the projects to minimize change orders;
- Perform field assessments and site characterization, including surveying/mapping, subsurface investigations and laboratory testing, determining limits of waste, and environmental monitoring;
- Develop closure design and prepare required permit applications;
- Prepare bid package and construction drawings/specifications, and solicit/evaluate bids; and
- Meetings with the State of West Virginia, the WVDEP, as necessary as part of the permitting process.

The initial step of the project will be to have Hull's key team members meet with the Agency's team to discuss the project and develop a thorough understanding of the objectives, constraints and desired schedule. Following this initial meeting, Hull will develop a detailed scope of services, cost estimate and schedule to present to the Agency. Upon receiving any feedback, Hull will update these documents (as needed) and begin project implementation.

Hull / Thrasher Team's Strengths:

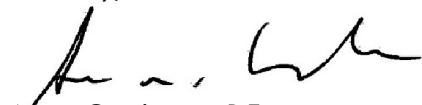
The Hull / Thrasher team is an absolute fit based on our ability to perform the requirements of this EOI and work with the State of West Virginia as a partner, along with other applicable regulatory agencies. We

would like to note the following key strengths of the Hull / Thrasher team related to this project:

1. Hull has been recognized as a leader in the waste management arena. We have been working in West Virginia for over 12 years and Ohio for over 30 years, and have provided landfill engineering and science services to greater than 160 landfill facilities in over 12 states. We have provided various services for over 180 acres of landfill cells within West Virginia. In addition, our experience with varying types of facilities and different design components allows us to quickly integrate into a site. Many of the projects that we have successfully completed required our quickly becoming familiar with site design, permitting and construction requirements, and helping the site transition from a previous consultant. We are confident that we can do the same for this project, and work as an effective team with the State of West Virginia to thoroughly assess site conditions and develop an environmentally sound and cost-effective closure design that meets all requirements.
2. The Hull / Thrasher team consists of highly-skilled professionals composed of seasoned industry experts with significant experience and proven results providing engineering and environmental solid waste management services. The team members possess high competency as indicated by their experience, technical knowledge, training, and education. Hull's team of waste management experts dedicated to this project have a combination of private and public sector experience, and understand that opportunities and challenges with a project such as this. In recognition that the project team is not familiar with the Landfill's design and construction information, **we will not charge any of the time needed to review readily available existing information to familiarize ourselves with the site. Hull and Thrasher have various offices in the Midwest Region and commits to bill from the closest office for their respective personnel for travel-related work, regardless of which home office personnel reside.**
3. We understand the very real challenges of plan implementation and construction that can result in indirect costs associated with cap design choices, leachate management, stormwater management, borrow soils, etc. We will consider constructability and sustainability (and relative cost) in every stage of design, which should minimize overall closure construction and post-closure care costs.
4. Hull and Thrasher have a strong track record for delivering high quality work product. We achieve this through understanding and anticipating the client's need and expectations, and through proper planning, management, and execution of the work. We believe ongoing, open communication with all team members during the project and providing experienced, appropriate personnel at all levels are the best steps to ensure successful project completion. We will follow this approach by providing the State of West Virginia up-to-date information regarding the status of the project tasks and budget to assist with proper management and implementation of the project.

As demonstrated within this EOI, the Hull / Thrasher team has the personnel resources, technical knowledge, and experience needed to successfully complete the characterization, leachate management and closure cap work required. We are confident we can provide a valuable service and look forward to meeting the State of West Virginia team, further discussing the details of this project, and refining the scope and costs. If you have any questions or need additional information to help the strategically address challenges and achieve your project goals, please contact me at 419-385-2018 or by email at agerdeman@hullinc.com.

Sincerely,



Angie Gerdeman, P.E.
Sr. Project Manager
Landfill Engineering Practice Leader

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

PROJECT NAME: Site Characterization Study, Leachate Management and Closure Cap for Webster County Landfill		DATE (DAY, MONTH, YEAR): 18 February 2016		FEIN: 34-1549829																																					
1. FIRM NAME Hull & Associates, Inc.		2. HOME OFFICE BUSINESS ADDRESS 3401 Glendale Avenue, Suite 300 Toledo, Ohio 43614		3. FORMER FIRM NAME <i>Not Applicable</i>																																					
4. OFFICE TELEPHONE 614.793.8777	5. ESTABLISHED 1980	6. TYPE OF OWNERSHIP Corporation	6A. WV REGISTERED DBE NO																																						
7. PRIMARY OFFICE: ADDRESS TELEPHONE PERSON IN CHARGE NO. PERSONNEL EACH OFFICE 3401 Glendale Avenue, Suite 300 Toledo, Ohio 43614 419.385.2018 Michael Coonfare 36 employees 6397 Emerald Parkway, Suite 200 Dublin, Ohio 43016 614.793.8777 Dave Mustafaga 50 employees 4 Hemisphere Way Bedford, Ohio 44146 440.232.9945 Eric Wilburn 27 employees 300 Business Center Drive, Ste 320 Pittsburgh, Pennsylvania 15205 412.446.0315 Dom Anselmo 12 employees 4770 Duke Drive, Suite 300 Mason, Ohio 45040 513.459.9677 Eric Montgomery 11 employees 146 West Main Street, Second Floor St. Clairsville, Ohio 43950 800.241.7173 AJ Smith 9 employees 126 Margaret Circle Austin, Texas 78737 800.241.7173 Lance Turley 1 employee																																									
8. NAME TITLE TELEPHONE NUMBER OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> Craig A. Kasper, PE CEO Director 614.793.8777 John H. Hull, PE Chairman Director 419.385.2018 Bradford S. White, Ph.D. Director 513.459.9677 </div> <div style="width: 48%;"> David L. Richards, PE COO Director 614.793.8777 David B. Mustafaga, CPG Director 614.793.8777 Eric H. Wilburn, PE Director 440.232.9945 </div> </div>																																									
9. NUMBER OF PERSONNEL BY DISCIPLINE (Bold Lettering Indicates Minimum Design Team Members) Detailed information on Team to be included <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">16 Administrative</td> <td style="width: 25%;">8 Ecologists</td> <td style="width: 25%;">Landscape Architects</td> <td style="width: 25%;">2 Structural Engineers</td> </tr> <tr> <td>Architects</td> <td>Economists</td> <td>Mechanical Engineers</td> <td>83 Surveyors</td> </tr> <tr> <td>8 Biologists</td> <td>Electrical Engs</td> <td>Mining Engineers</td> <td></td> </tr> <tr> <td>4 CADD Operators</td> <td>Environmentalists</td> <td>Photogrammetrists</td> <td>Others</td> </tr> <tr> <td>Chemical Engineers</td> <td>4 Estimators</td> <td>Planners: Urban/Regional</td> <td></td> </tr> <tr> <td>37 Civil Engineers</td> <td>22 Geologists</td> <td>Sanitary Engineers</td> <td></td> </tr> <tr> <td>11 Construction Inspectors</td> <td>Historians</td> <td>69 Soils Engineers</td> <td></td> </tr> <tr> <td>5 Designers</td> <td>34 Hydrologists</td> <td>Specification Writers</td> <td></td> </tr> <tr> <td>Draftsmen</td> <td></td> <td></td> <td>319 Total Personnel</td> </tr> </table>						16 Administrative	8 Ecologists	Landscape Architects	2 Structural Engineers	Architects	Economists	Mechanical Engineers	83 Surveyors	8 Biologists	Electrical Engs	Mining Engineers		4 CADD Operators	Environmentalists	Photogrammetrists	Others	Chemical Engineers	4 Estimators	Planners: Urban/Regional		37 Civil Engineers	22 Geologists	Sanitary Engineers		11 Construction Inspectors	Historians	69 Soils Engineers		5 Designers	34 Hydrologists	Specification Writers		Draftsmen			319 Total Personnel
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Draftsmen			319 Total Personnel																																						
TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 3 * RPEs other than Civil must provide supporting documentation that qualifies them to supervise and perform this type of work.																																									
10. If submittal is by a joint venture, list participating firms and outline specific areas of responsibility (including administrative, technical and financial) for each firm. Each participating firm must complete a "Consultant Confidentiality Qualification Questionnaire". Not Applicable																																									
10a. HAS THIS JOINT VENTURE WORKED TOGETHER BEFORE? YES NO																																									
11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED:																																									
NAME AND ADDRESS: THRASHER 600 White Oaks Blvd. Bridgeport, WV 26330		SPECIALITY: Surveying Soils Lab Ecological		WORKED WITH BEFORE: YES																																					

12A. Is your firm experienced in SOLID WASTE LANDFILL CLOSURE DESIGN?**YES – Description and Number of Projects**

Hull has provided waste management solutions to municipal and private clients for over 30 years. Our chief practitioners have over 150 years of combined experience in waste management. In fact, our company was originally founded on waste management solutions service offerings. Included in Hull's EOI is a Landfill Experience Matrix that provides a comprehensive list of projects and services. We have provided closure design services at over 40 landfills. At many of these landfills we have also prepared construction documents (bid/construction drawings, specifications and detailed cost estimates) and provided construction quality control/quality assurance (QA/QC) at many of these landfills. Our involvement in the construction process has provided experience essential to developing sound and cost-effective closure designs.

12B. Is your firm experienced in SOLID WASTE LANDFILL SITE CHARACTERIZATION ASSESSMENT AND EVALUATION?**YES – Description and Number of Projects**

Hull has performed site characterization assessment and evaluation work at over 50 landfills. We have successfully assisted our clients with responsible site characterization, assessment and corrective measures strategies at active and closed solid waste and residual waste landfills. We have conducted site-specific and regional groundwater studies to establish a baseline understanding of site conditions and potential environmental impacts; developed conceptual site models; established groundwater monitoring programs to monitor water quality and flow data; completed groundwater modeling and risk assessment studies; conducted surface water studies to model storm water flow and quality and its relationship to groundwater; conducted studies to assess groundwater impact on receiving streams; and conducted studies to develop models to evaluate how the landfill was constructed, materials managed at the site, current conditions within the landfill, and the overall relationship between the landfill and its surrounding environs.

12C. Is your firm experienced in LANDFILL CLOSURE CONSTRUCTION INSPECTION?**YES – Description and Number of Projects**

Hull has provided landfill construction QA/QC services for approximately 50 municipal, residual, industrial and construction and demolition debris landfills. Services have included: preparing construction documents; performing soil borrow investigations and laboratory testing; constructing soil test pads (as needed); providing field representatives to observe and document construction activities, and perform field testing of soil and geosynthetic materials; providing office technical guidance and support during construction activities; providing certification surveying during construction to verify compliance with the design/permit requirements; and preparing the construction certification report for submittal to the appropriate regulatory agencies. We have also provided comprehensive services to many clients that included overall project management and planning, providing multi-person field teams on large projects involving year-round construction for several years, and setting up field laboratories for soils testing.

12D. Is your firm experienced in AERIAL PHOTOGRAPHY and the Development of CONTOUR MAPPING?**YES – Description and Number of Projects**

MERCER COUNTY SOLID WASTE AUTHORITY–Mercer County Landfill Topo Update–147 acre update @ 1:1200 W/ 2' CI
 CENTEC – Nicholas County Landfill Update Topo – 148 acre update @ 1:1200 w/ 2' CI
 ALLIANCE – Raleigh County Landfill Topo Update – 235 acre update @ 1:1200 w/ 2' CI
 ALLIANCE – Hurricane Landfill Topo Update – 109 acre update @ 1:1200 w/ 2' CI
 VECCELLIO & GROGAN - Ridgeview High School – 110 acre topo @ 1:1200 W/ 2' CI
 RALEIGH COUNTY AIRPORT AUTHORITY – Airport/Industrial Development Topo – 137 acre topo @ 1:1200 w/ 2' CI
 WILLIAMS FIELD SERVICES - Oak Grove Pad – Topo, plan, and mosaic from manned aircraft
 ECLIPSE RESOURCES - Eclipse David Stadler – Asbuilt pad – Topo, plan, and mosaic from UAV
 ANTERO - Long Compressor Stake Out – Asbuilt pad – Topo, plan, and mosaic from UAV
 MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC – Momentum Spur Line - Pad – Topo, plan, and mosaic from UAV
 WES-UIC Waste Facility – Two proposed pads – Topo from public lidar, mosaic and plan from UAV
 ANTERO - Olive Rich CS – Proposed pad – Topo from public lidar, mosaic from UAV
 ANTERO - Olive Dry CS – Proposed pad – Topo from public lidar, mosaic from UAV
 ANTERO - SouthFork South Dry CS – Proposed pad – Topo from public lidar, mosaic from UAV
 MARRIOTT COLLEGE PARK-THOMAS HAMILTON & ASSOC – Hotel – Plan and mosaic from UAV
 Marketing – Charles Point Farmers Market – Topo, plan, and mosaic from UAV

12E. Is your firm experienced in EVALUATING GROUNDWATER CONTAMINATION, such as may be associated with landfills?

YES – Description and Number of Projects

Hull has evaluated groundwater contamination for more than 50 landfills. Our team has extensive experience in evaluating groundwater monitoring programs, conducting assessment investigations to determine potential groundwater contamination, and determining the most efficient and effective corrective measures, if merited. As part of these evaluations, we have completed detailed geochemical demonstrations including geochemical modeling to determine if a potential release of leachate-derived constituents to the groundwater has occurred. The Hull team has extensive experience with geochemical modeling to support/assist in these analyses. We have completed geochemical conceptual models, using hydro geologic, geochemical, isotopic, mineralogical, and climatological data to simulate precipitation infiltration and subsequent chemical reaction pathways to serve as a tool to determine the expected geochemical results of a leachate release to groundwater. Our understanding of groundwater geochemistry has proved invaluable to our clients in preventing some sites from going into assessment, effectively conducting assessment investigations to understand the potential groundwater contamination in others, and selecting the most effective corrective measures.

12F. Is your firm experienced in LANDFILL CLOSURE COST ESTIMATING?

YES – Description and Number of Projects

Hull is very experienced in preparing detailed engineer's estimates of probable construction costs for landfill closure and development projects, and have provided related services for more than 50 landfills. Our team of professionals is experienced in performed detailed quantity take-offs. We have an internal database that we regularly update that contains construction pricing for projects we have been involved with, and also have strong relationships with many contractors that we reach out to, as needed, to help refine our estimates. We work closely with our clients to assist them with forecasting costs, and also phasing projects to match the client's budgetary constraints.

13. Personal History Statement of Principals and Associates responsible for overall LANDFILL CLOSURE DESIGN project

NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Landfill QA/QC Experience	Years of Heavy Earthwork Construction Experience
Gerdeman, Angie M., P.E.	24	27	27

Brief Explanation of Responsibilities:

Angie will be the project manager for the Webster County Landfill project. She is a Senior Project Manager with more than 25 years of experience and is the Landfill Engineering Practice Leader for Hull. She started at Hull in our in-house soils laboratory and performed construction quality assurance activities in the field on numerous landfill test pads, cells, cap systems, which provided practical experience to base future design work upon. Her years of landfill consulting experience include municipal and industrial landfill siting, design and permitting of new landfills and landfill expansions, construction quality assurance, test pad evaluations, compliance, operations, closure, subsurface investigations and laboratory analyses. Additional experience includes dam design, permitting, and construction for water-supply reservoirs and lime residual waste settling ponds.

Education (Degree, Year, Specialization): B.S., Civil Engineering, 1992 – University of Toledo

Membership in Professional Organizations:

- National Society of Professional Engineers
- American Coal Ash Association
- Engineers Without Borders

Registration (Type, Year, State):

- Registered PE, West Virginia #017858
- Registered PE, Arkansas, Kentucky, Pennsylvania, and Texas, Ohio
- Certified CQA Geosynthetic Materials and Compacted Clay Liner Inspector (2013)
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)
- Radiation Safety and Use of Nuclear Soil Gauges Certification

13. Personal History Statement of Principals and Associates responsible for overall LANDFILL CLOSURE DESIGN project			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Landfill QA/QC Experience	Years of Soils Laboratory Experience
Hull, John H., P.E.	36	36	36
Brief Explanation of Responsibilities: <p>John will be a technical resource for the Webster County Landfill project. He is the founder and Chairman of Hull with more than 41 years of experience with a wide variety of engineering and environmental issues. He is a registered Professional Engineer in 14 states and is recognized as a Board Certified Environmental Engineer in solid waste management by the American Academy of Environmental Engineers. John serves on governor-appointed committees, advises clients on complicated challenges, and provides strategic planning experience to current staff and assists Hull's clients achieve environmentally protective and cost-effective solutions.</p>			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> Permanent Certified UST Professional (#0255) American Academy of Environmental Engineers American Society of Civil Engineers Association of Soils and Foundation Engineers National Society of Professional Engineers Ohio Environmental Health Association Order of the Engineer Water Environment Federation Western Dredging Association National Water Well Association/National Ground Water Association 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered PE, West Virginia #011340 Registered Professional Engineer (PE) Ohio Registered PE, Michigan, Pennsylvania, Indiana, New Hampshire, Kentucky, Texas, Connecticut, Vermont, Illinois, Alabama, Massachusetts, Maine Board Certified Environmental Engineer Solid Waste Management (AAEE) 	
13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE and GEOTECHNICAL TASK			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Geotechnical Engineering Experience	Years of Soils Laboratory Experience
McGee, Shawn, P.E.	18	18	18
Brief Explanation of Responsibilities: <p>Shawn McGee will lead the geotechnical efforts for the Webster County Landfill project. He is a Senior Project Manager for Hull, and the leader of Hull's Geotechnical practice. He has over 18 years of diverse experience in landfill and geotechnical engineering. His experience focuses on municipal, industrial, and construction and demolition debris landfills which includes siting; design and permitting of new landfills and expansions; Quality Assurance/Quality Control (QA/QC) services and construction support; planning; test pad evaluations; compliance; operations; and closure. Shawn has also planned comprehensive subsurface investigations and borrow investigations, and conducted a diverse variety of slope stability and landfill stability analyses, which includes staged loading analysis. He is currently the manager of Hull's AASHTO Accredited Geotechnical/materials Testing Laboratory.</p>			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> American Society of Civil Engineers National Society of Professional Engineers Ohio Dam Safety Organization/ Water Management Association of Ohio 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Engineer, Ohio Radiation Safety and Use of Nuclear Soil Gauges Certification Mine Safety and Health Administration, Impoundment Inspection Certification (2012) 	

13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE AND QA/QC					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Landfill Closure Experience	Years of Landfill QA/QC Experience	Years of Heavy Earthwork Construction Experience		
Camargo, Fernando, P.E.	10	10	10		
Brief Explanation of Responsibilities: Fernando will assist with both the landfill closure design and QA/QC portions of the project. He is a Project Manager at Hull and has prepared Permit-To-Install (PTI) applications for municipal and residual solid waste landfills in West Virginia, Ohio, and Arkansas; prepared closure plans and corrective measures plan for closed landfills; managed QA/QC projects; observed and documented field activities and prepared construction documentation reports for landfill cell, capping and infrastructure projects; prepared detailed landfill phasing plans; and prepared detailed engineer's estimates of probable construction costs for landfill development and closure.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations: <ul style="list-style-type: none"> American Society of Civil Engineers Ohio Society of Professional Engineers 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Engineer(PE) Ohio Registered PE West Virginia #020254 Radiation Safety and Use of Nuclear Soil Gauges Certification 			
13. Personal History Statement of Principals and Associates responsible for HYDROGEOLOGICAL TASK					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Landfill Experience	Years of Hydrogeological Experience	Years of Site Assessment Experience		
Gross, Steve, CPG, CP	28	28	28		
Brief Explanation of Responsibilities: Steve will lead any hydrogeological work needed for the Webster County Landfill project. Gross is a Senior Project Manager with over 28 years of experience in environmental consulting. He has been responsible for managing and implementing numerous site assessment investigations and remedial activities in different and complex hydrogeologic environments. These projects have included solid and hazardous waste landfill sites; brownfield sites; industrial and commercial properties; assessment and remediation under the guidance Resource Conservation Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations; and Bureau of Underground Storage Tank Regulations (BUSTR). His experience also includes justification, design, and implementation of groundwater monitoring and recovery systems; management of sampling and analysis programs; and remedial assessments. Remedial activities include soil vapor extraction, bioventing and air sparging, in-situ and ex-situ bioremediation, risk assessment, and natural attenuation.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations:		Registration (Type, Year, State): <ul style="list-style-type: none"> Ohio EPA Voluntary Action Program, Certified Professional – CP192 Certified Professional Geologist, American Institute 			

13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE AND QA/QC					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Landfill Experience	Years of Hydrogeological Experience	Years of Site Assessment Experience		
Petruzzi, William G.	29	29	29		
Brief Explanation of Responsibilities: William (Bill) will lead Hull's site characterization/environmental monitoring and compliance team for the Webster County landfill project. His areas of expertise include: solid waste management and solutions; environmental monitoring and compliance programs; hydrogeochemical evaluations; remedial investigations; and special regulatory and research development projects. He is responsible for project management; solid waste permitting, closure and post-closure programs; life cycle analyses and financial evaluations; environmental monitoring and statistical evaluations for a variety of waste and process materials; beneficial use; conservation/restoration projects; storm and wastewater programs; and project development, strategic planning and regulatory advocacy and outreach programs.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations: <ul style="list-style-type: none"> Association of Ground Water Scientists and Engineers, National Ground Water Association Ohio Water Pollution Control Association/Water Environmental Federation International Association of Hydrologists University of Toledo Earth, Environment, & Energy Committee National Solid Waste Management Association American Coal Ash Association 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Geologist – State of Kentucky Registered Professional Geologist – State of Pennsylvania Radiation Safety and Use of Nuclear Soil Gauges Certification 			
13. Personal History Statement of Principals and Associates responsible for CONSTRUCTION CONTRACT TASK					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Heavy Construction Experience	Years of Contract Document Prep Experience	Years of Project Estimator Experience		
Baltzer, Dave, P.E.	30	30	30		
Brief Explanation of Responsibilities: Dave will lead the construction contract team for the Webster County Landfill project. He is a Senior Project Manager for Hull, and the leader of Hull's Construction Services practice. He has established respected relationships with public and private owners, contractors, and other consultants. He has served the lead role on many multidisciplinary projects, which includes the management of a wide range of project issues, including the avoidance of potential litigious situations. With over 30 years of experience in the construction and development arena, he has lead and managed projects pertaining to energy, waste management, urban revitalization, industry, educational facilities, commercial office buildings and utility infrastructure. Dave manages Hull's construction cost database and is very experienced in preparing engineer's estimates of probable construction costs.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations: <ul style="list-style-type: none"> Columbus Chapter of the Construction Specifications Institute (CSI) Associated General Contractors of America Ohio Society of Professional Engineers 		Registration (Type, Year, State): <ul style="list-style-type: none"> Professional Engineer in the state of West Virginia, Ohio ODOT Prequalification – Construction Engineering Level 1 & 2 			

14. Provide a list of SOFTWARE AND EQUIPMENT available in the primary office which will be used to complete this project – Site Characterization Study, Leachate Management and Closure Cap for Webster County Landfill.

FACILITIES AND EQUIPMENT

Hull has the computer software programs essential to maintain a successful engineering and consulting business. We use Microsoft Office products including Word, Excel, Adobe Acrobat, and Outlook. Most of our senior staff members have laptop computers with high speed networking capabilities in their homes that can support remote office work or telecommuting capabilities.

Hull has a state-of-the-art communications network that allows for the efficient use of internal resources and provides the capability to transfer electronic data with clients as requested. Hull maintains a wide-area network with dedicated data lines between all offices. The communications network is protected by a firewall and dedicated virus scanning software for all incoming and outgoing email, Internet, and FTP traffic. All file and print servers as well as email servers have redundant architecture such as RAID 5 hot-swappable hard drives and power supplies and all data is backed up daily for disaster recovery. Hull maintains an in-house Intranet site as well as an external web site at www.hullinc.com.

If document files are too large for emails, we frequently place those documents on our FTP site or web site for password protected uploading/downloading capabilities.

Hull uses state-of-the-art software for engineering planning and design including:

- Autodesk Land Development Desktop
- HydroCAD
- Haestad Methods WaterCAD, StormCAD, SewerCAD, and FlowMaster
- Scientific Software Group HydraFlow
- GeoSlope International Ltd. SLOPE/W Version 4
- AutoCAD Civil 3D with AutoTURN
- STABL Version WV-2008 Slope Stability Software”
- Bentley® MicroStation Version 8 and gINT Professional Version 8i
- Benkley CulvertMaster (V3.3), FlowMaster (V8i), PondPak (V8i)
- XP-SWMM (V12.1-2010)
- Hydrologic Evaluation of Landfill Performance Version 3.07
- Hydrograph Hydrawflow (V9.22)
- Pile Buck International, Inc. SPW 911 Sheet Pile Design Software
- Ensoft, Inc., LPILE
- Microsoft Project 2013
- WinEst Version 11 with accompanying database packages (Echos Environmental Remediation, RS Means Civil Composite with Assemblies, and RS Means Electrical Cost with Assemblies)

This software runs on networked IBM-compatible PCs. Large-format black-line and color plotting capabilities are present in all Hull offices. By utilizing this communications network, Hull maintains efficient use of internal resources as well as provides the capability to transfer electronic data with clients as requested.

Hull maintains a significant inventory of equipment and materials (field, lab, and office) used to satisfy project objectives. In instances where Hull does not directly own equipment or materials, we maintain agreements with vendors and suppliers who can supply them to Hull within a day's notice.

MATERIALS TESTING LABORATORY

Thrasher's Construction Services Division is capable of performing a wide range of field and laboratory tests. Our laboratory is nationally AMRL & CCRL certified to perform in depth testing for a variety of clientele. All of our labs serve as resources for our engineers and project representatives who perform tests both in the field and in the lab to best serve our clients' needs.

The Thrasher team possesses expertise in every facet of material and laboratory testing and are trained to industry standards in these disciplines. We pride ourselves on being a partner in projects and providing excellent service and testing results.

Materials Testing and Laboratory Expertise:

- Concrete testing and inspection
- Soil testing and inspection
- Aggregate testing and inspection
- Mortar and grout
- Steel, Welds, and Rebar Inspection
- Asphalt
- Paint Coatings
- Sprayed-on fireproofing
- Subsidence testing
- Caisson and piling inspection
- Engineering during construction
- Regularly scheduled progress meetings
- Daily logs and progress sheets
- Digital photo logs
- Cut sheets
- Quantity tracking

15. Current activities on which your firm is the DESIGNATED ENGINEER OF RECORD associated with or relating to LANDFILL CLOSURE OR CONSTRUCTION.				
PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Nature of your firm's RESPONSIBILITIES	Estimated Construction Cost	Percent Complete
Moraine Properties Landfill Closure Design and Construction, Moraine, Ohio	Moraine Properties LLC Moraine, Ohio	We negotiated closure requirements with the regulatory agency, performed a waste characterization, provided waste removal, consolidated the on-site material, prepared the design of the cap system, installed the cap system, and provided construction QA/QC.	\$800,000	Cap QA/QC is 95%
Little Broad Run Landfill Design and Cell Construction, New Haven, West Virginia	American Electric Power 1 Riverside Plaza Columbus, Ohio	We designed and prepared the expansion permit for the liner and final cover system of the industrial waste landfill; prepared construction documents; provided overall engineering planning and determined landfill phasing; prepared construction cost estimates, drawings and specifications; provided construction QA/QC and prepared certification reports.	\$2.3 million	Area 1B/1C QA/QC is 95% complete; engineering support is ongoing; minor permit modification will begin in spring 2016
Flint Creek Power Plant Landfill Intermediate Liner, Leachate Collection System and Final Cover System Design and Construction QA/QC, Gentry, Arkansas	American Electric Power 1 Riverside Plaza Columbus, Ohio	We designed and prepared the expansion permit for the liner and final cover system of the industrial waste landfill; prepared construction documents; provided overall engineering planning and determined landfill phasing; prepared construction cost estimates, drawings and specifications; provided construction QA/QC and prepared certification reports.	\$8.9 million	Cell and Cap QA/QC is 75% complete; engineering support is ongoing
TOTAL NUMBER OF PROJECTS:		TOTAL ESTIMATED CONSTRUCTION COSTS:		
3		\$12,000,000		

16. Current activities on which your firm is serving as a SUB-CONSULTANT to others relating to LANDFILL CLOSURE OR CONSTRUCTION.					
PROJECT NAME TYPE LOCATION	Nature of your firm's RESPONSIBILITIES	OWNER NAME AND ADDRESS	Estimated Completion Date	Estimated Construction Cost	
				Entire Project	Your Responsibility
None					

17. Completed work within last 5 years on which your firm was the DESIGNATED ENGINEER OF RECORD (list 5 to 7).				
PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Estimated Construction Cost	Year	Constructed (YES or NO)
Little Broad Run Landfill Liner and Final Cover System Design, New Haven, West Virginia	American Electric Power 1 Riverside Plaza Columbus, Ohio	Over \$50 million	2004- current	YES (portions completed)
Flint Creek Power Plant Landfill Intermediate Liner, Leachate Collection System and Final Cover System Design and Construction QA/QC, Gentry, Arkansas	American Electric Power 1 Riverside Plaza Columbus, Ohio	\$15 million	2009- present	YES (ongoing)
Moraine Properties Landfill Closure Design and Construction, Moraine, Ohio	Moraine Properties, LLC Moraine, Ohio	\$500,000	2007- present	YES (nearly ongoing)
Frontier Recycling and Disposal, Inc., Richland County, Ohio	Miliron Industries 2395 Springmill Road Mansfield, Ohio 44903	Over \$10 million	2012- present	NO
Pine Grove Landfill Modified Final Cover Design Permit Modification, Amanda, Ohio	Republic Services 5131 Drinkle Road SW Amanda, Ohio 43102	Over \$10 million	2006- 2013	NO
Wilmington Sanitary Landfill Modified Final Cover/Cap Design Permit Modification, Wilmington, Ohio	City of Wilmington 397 S. Nelson Avenue Wilmington, Ohio 45177	Over \$5 million	1990s- present	YES
Kyger Creek Landfill Liner and Final Cover System, Cheshire, Ohio	American Electric Power 1 Riverside Plaza Columbus, Ohio	Over \$30 million	2005- 2013	YES

18. Completed work within last 5 years in which your firm has been a SUB-CONSULTANT to other firms (indicate phase of work which your firm was responsible for) (list 5 to 7)

PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Estimated Construction Cost of Your Firm's Portion	Year	Constructed (YES or NO)	Firm Associated With
Goodyear Seiberling Street Landfill; Hull provided QA/QC and certification services for the contractor during closure activities; Akron, Ohio	City of Akron Akron, Ohio	Hull's services were \$200,000	2012-2014	YES	Sitetech, Inc. (earthwork contractor)

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

Please see attached *Expression of Interest for the Webster County Landfill Closure Cap Design*

20. The forgoing is a statement of facts:

Signature:  _____

Title: COO _____

Printed Name: David L. Richards, PE _____

Date: February 17, 2016 _____

**EXPRESSION OF INTEREST
WEBSTER COUNTY LANDFILL CLOSURE CAP
DESIGN**

FEBRUARY 18, 2016

submitted to the
**STATE OF WEST VIRGINIA
PURCHASING DIVISION**



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SECTION 1 | PROJECT APPROACH

HULL / THRASHER TEAM'S SERVICES AND GENERAL APPROACH

We understand that WVDEP is seeking an engineering firm to provide professional consulting services including site characterization, leachate management and closure cap work for the Webster County Landfill. We believe our team is well suited for this project and can bring our assessment, design and construction expertise to assist the WVDEP in determining the appropriate path moving forward for the closure of the facility. Hull has significant landfill experience in the following areas that will prove beneficial to the Webster County Landfill project:

- We have designed numerous landfill cap systems, evaluated existing in-place capped landfills, and provided construction quality assurance/quality control (QA/QC) during construction of composite cap systems;
- We have provided technical review of information for a class-action lawsuit related to closure and evaluated closure cost estimates and scenarios for multiple landfills in multiple states;
- We have successfully designed and implemented alternative caps using Subtitle D standards;
- We have significant experience with West Virginian geology, as well as laboratory and field testing of soils;
- We have worked closely with regulatory agencies on past projects to determine effective environmental controls using sound engineering and science, and doing so in a cost-effective manner.

The initial steps of the project will be to have Hull review the governing documents for the Webster County Landfill, and then meet with the WVDEP team to discuss the project and develop a thorough understanding of WVDEP's objectives, constraints and desired schedule. It will be essential to review all relevant permitting, construction, operational, and analytical information that is available for the site to have a clear understanding of known site conditions and challenges, which will allow us to develop appropriate and cost-effective leachate and cap controls. Following the initial meeting, Hull will develop a detailed scope of services, cost estimate and schedule to present to WVDEP. Upon receiving any feedback from WVDEP, Hull will update these documents (as needed) and begin project implementation.

After completing the upfront planning discussed above, the Hull / Thrasher team will execute the work, which is anticipated to include, but may not be limited to, the following:

- Pro-actively communicating with WVDEP throughout the project, including attending meetings as needed, and effectively managing the project to minimize change orders. Communications protocol will be established with WVDEP at the onset of the project to ensure expectations are known.
- Performing field assessments and site characterization including surveying the landfill and surrounding areas; performing subsurface investigations to evaluate potential soil borrow sources and obtain soil samples for testing, and determine the horizontal and vertical limits of waste; performing laboratory analysis of soil and water; and performing environmental monitoring that may be needed to fully evaluate the site characteristics.
- Developing the closure design including: the grading plan and cap cross-section; the leachate collection and storage systems; and the surface water management components and erosion control features including sediment ponds, drainage ditches, erosion control terraces, etc. Conceptual design information will be submitted to WVDEP for input and approval at the frequency agreed upon with WVDEP.
- Preparing the appropriate permit applications including right-of-ways, right of entries, etc.
- Assisting the WVDEP with selecting a contractor including preparing the bid package, construction contract drawings and specifications; soliciting the bids; evaluating the bids received; and securing the contract, as needed.

Although not listed in Item 4 of Section 3 of the Expression of Interest, we will also be able to assist the WVDEP with construction QA/QC and certification activities during cap construction.

SECTION 2 | FIRM OVERVIEW



Hull & Associates, Inc. (Hull) is a project development and engineering company that helps business and government solve complex challenges related to land, energy, and the environment – transforming undervalued resources into viable community assets.

We leverage our expertise in infrastructure, environmental and energy services to design solutions that meet our client's needs. We develop an integrated plan based on our client's specific objectives and assist with execution and oversight of those strategies through project completion.

Our technical, engineering, and construction staff offer the following services:

- Landfill Engineering
- Ecology and Wetlands
- Geoenvironmental
- Site Assessment and Remediation
- Liability Assessment
- Environmental Monitoring
- Construction Services
- Risk Assessment
- Geographic Information Systems (GIS)
- Civil Engineering

Specific to landfills, Hull has provided waste management solutions for over 30 years, including participating in the development and implementation of related technology and regulatory programs from their inception. We have worked on over 120 landfills. In fact, our company was originally founded on waste management solutions service offerings. We evaluate each client's objectives, activities and needs to prepare a comprehensive strategy. Our team then prioritizes steps to minimize waste generation, beneficially reuse waste where feasible, and identify responsible, efficient management of residuals. Hull's expertise in other areas such as environmental compliance, urban redevelopment and conservation, general land use practice, and our alternative energy and power help us identify innovative solutions to waste management that can also address other public and business objectives. Our experience also recognizes the benefits of including community outreach and the concept of public-private partnerships to achieve success in waste management initiatives.

We help our clients identify risk and evaluate alternative approaches to risk management. Where appropriate, we will partner with our clients to address long-term risks and help them remain in compliance with applicable regulations. A strategic waste management plan will reduce business risks and operating costs while improving the environment.

LANDFILL ENGINEERING

Hull offers several services related to solid waste management. Landfill siting, design, permitting, and operations usually involve several stages of work, as well as regulatory agencies and the general public. Hull's diversity allows for a widespread service package for nearly every possible project scenario. Careful planning and execution of all aspects of landfill development are paramount in today's regulatory environment. Some of the related landfill engineering services include: regulatory assistance; active participation in the rule revision process; identifying changes in regulations and evaluating impact to clients; and assisting clients with evaluating Findings & Orders and negotiating with regulatory agencies.

ENVIRONMENTAL MONITORING

Hull provides permitting, design and environmental monitoring services required to maintain regulatory compliance for all media, including air, wastewater, stormwater, ground water and other regulated media. We also develop the plans required to maintain compliance with applicable regulations to document that the performance of engineered systems are working or to identify, assess or correct potential impacts.

GEOENVIRONMENTAL

Hull's geoenvironmental engineers solve environmental challenges within a multidisciplinary setting for industrial developments, as well as waste containment facilities and brownfield projects. We have a diverse staff of geotechnical engineers, civil engineers, hydrogeologists, as well as supporting staff with science-based disciplines (e.g., soil scientists, ecologists, biologist, etc.) who understand the full spectrum of project implications including: site characterization, environmental management and risk assessment, waste management solutions, soil and groundwater remediation, and infrastructure development.

THRASHER Formed in 1983, Henry A. Thrasher and H. Wood Thrasher created Thrasher with a commitment to excellence and professionalism in engineering. Thrasher specializes in all facets of engineering from site development to public works projects. In 2005, the company added architecture services to their ever-expanding list of capabilities. Throughout the past 5 years, Thrasher has continued to grow to nearly 250 professionals. Thrasher's growth has allowed them to bring aboard some of the most sought after talent around. They believe that the partnership they establish with their clients is what makes them and their projects successful. This philosophy is the foundation of their growing company.

With multi-discipline capabilities, Thrasher covers all of the professional services needed to deliver successful projects to both public and private clientele. The firms' roots were planted in civil engineering and consulting services for public utility projects. Over the years, their success has allowed them to branch out, expanding their services to meet both the needs of their clients and the growing need for more responsive and effective solutions. For this project, Thrasher will be providing surveying services and field personnel, as needed.

SECTION 3 | RELEVANT PROJECT EXPERIENCE

Below are project write-ups for specific projects similar to the Webster County Landfill Closure Cap Design project. We have also included a comprehensive matrix at this end of this section that includes a list of Hull's solid waste experience.

■ **LITTLE BROAD RUN LANDFILL | Landfill Siting, Design, Permitting, CQA and Operational Assistance | New Haven, West Virginia**

Client Name: American Electric Power
Project Duration: 2004 – Present
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To complete liner and leachate collection system design and permitting on a compressed timeline. During this, we identified design improvements and also pursued a vertical expansion to increase disposal capacity at a reduced overall cost.

Hull assisted our client by providing **comprehensive engineering design, permitting, construction planning, construction quality assurance (CQA), and operational assistance** at this existing Class F Industrial Landfill facility in West Virginia.



The projects included:

- Preparing **permit redesign drawings** for multiple disposal areas (~150 acres) to provide stable slopes along the valley fill, minimizing significant cuts in the existing grade;
- **Designing a composite soil and PVC geomembrane liner and leachate collection systems;**
- Incorporating a unique design feature that included the use of fly ash as structural fill;
- Developing an **alternate geomembrane material performance evaluation report** for using 30-mil PVC geomembrane in lieu of 60-mil HDPE liner, which was approved;
- Preparing a **vertical expansion feasibility study** and follow-up **vertical expansion permit documents** that provided environmental improvements and obtained significant additional airspace over a 210-acre landfill area;
- Designing new leachate management system upgrades includes a new leachate forcemain and pumping system, a new leachate conveyance pipe that provide flexibility for system management and cleanout, a new leachate collection pond, and modifications to the existing leachate collection pond.
- Preparing a **siting study;**
- Preparing leachate surge pond design documents, construction drawings and bid documents;
- Updating the QA/QC plan to incorporate landfill components;
- Designing sedimentation ponds and other drainage and erosion control structures, and preparing comprehensive stormwater pollution prevention plans;
- Preparing detailed construction cost estimates and construction drawings for multiple landfill areas, leachate ponds, sediment ponds, vertical expansion development, etc.;
- Performing detailed soils and fly ash laboratory testing to assist in preparing the landfill design and operational plans;
- Performing comprehensive soil borrow investigations;
- Performing landfill CQA services for construction of a 90-acre portion of the landfill and the initial two vertical expansion phases (totaling approximately 25 acres), and preparing construction certification reports for submittal to WVDEP; and

- Developing long-term operational construction and sequencing plans that include stormwater diversions to reduce run-on and contact water management system components to separate and convey contact water to the leachate management structures.

■ **JOHN E. AMOS PLANT LANDFILL** | Construction Quality Assurance/Quality Control | Winfield, West Virginia

Client Name: American Electric Power
 Project Duration: 2010 – Present
 Contact: Pedro Amaya, PE | 614.716.2991
 Type of Project: Multi-year landfill cell QA/QC and certification services.
 Project Goals & Objectives: To complete construction QA/QC services and obtain approval for multiple landfill cells. We identified borrow sources and developed processing techniques for weathered shales to improve construction and testing, and provided comprehensive on-site observation and testing services. The certification report was prepared and submitted in a timely manner.

Hull is teaming with our client to provide construction Quality Assurance/Quality Control (QA/QC) activities to comply with West Virginia Department of Environmental Protection at this existing Class F Industrial Landfill facility in West Virginia during a three-year construction period for development of Sequence 1B (approximately 13 acres) and Sequence 2 (approximately 25 acres). The work will also include the construction of supporting sedimentation ponds, soils precharacterization, borrow site development and stockpiling.



The activities include:

- Reviewing manufacturer's data for geosynthetic materials, coordinating the pre-construction testing of geosynthetic materials, reviewing the data, and evaluating the laboratory data for compliance with permit and construction documents;
- Reviewing historic soils data, collecting new soil samples from the designated borrow areas, performing laboratory tests on soil samples, and determining the required compaction specifications needed to meet project requirements;
- Observing and documenting overall construction activities including groundwater interceptor drains, subgrade preparation, structural fill construction, clay liner placement and compaction, geosynthetic materials installation (PVC geomembrane, geotextile and geocomposite), leachate collection system installation, sedimentation basin construction, and installation of erosion and sediment controls;
- Attending regular project meetings, reviewing contractor submittals, and performing other project management activities; and
- Preparing construction certification reports and annual construction summary reports.

■ **EVERGREEN RECYCLING AND DISPOSAL FACILITY** | Landfill Design, Permitting, Construction Quality Assurance/Quality Control, and Compliance | Northwood, Ohio

Client Name: Waste Management
 Project Duration: 1999 – Present (Expansion Permit 2007)
 Contact: John Randolph, PE | 419.466.5136
 Type of Project: Comprehensive landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.

Project Goals & Objectives: To perform in-situ permeability testing of completed clayey soil liner, and to vertical expansion permit for the landfill. During the vertical expansion, we identified a design change that provided significant additional disposal volume while significantly reducing the quantity of soils needed for construction.



Ohio engineering design/permitting, landfill gas and control system design, construction document preparation, construction quality assurance, construction engineering support. Hull assisted Evergreen Recycling and Disposal Facility (RDF) with verification of a constructed clayey soil liner's in-situ permeability. **After successfully completing the field verification project and receiving certification approval from Ohio EPA, Hull began engineering design, permitting, and construction, Quality Assurance/Quality Control (QA/QC) services, as well as support for ongoing**

compliance issues.

Hull's comprehensive services included:

- Preparing the **vertical expansion permit**;
- Preparing **construction drawings, specifications and supporting contract documents** for numerous construction projects including cell, cap, forcemain, leachate tank, gas system and surface water improvements;
- Performing extensive **soil borrow characterizations**;
- Testing and documenting in-situ permeability of test pads;
- Assisting with compliance issues, including annual report preparation and asbestos mapping;
- Providing construction QA/QC services and preparing certification reports for construction of several landfill cells, closure over a portion of the landfill, construction of two new storm water basins, installation of a leachate forcemain, and upgrades to the gas management system;
- Quarterly in-place density determinations to assist the landfill with assessing operational issues; and
- Other miscellaneous site improvements.

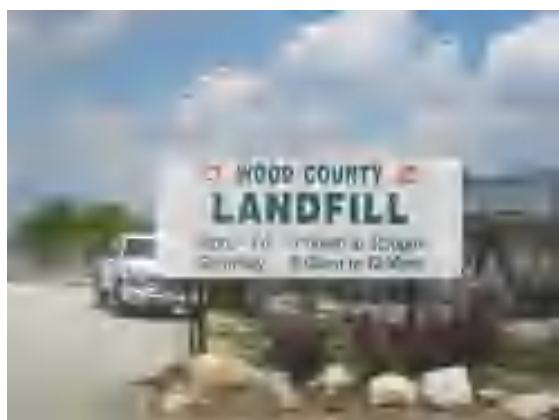
During the vertical expansion permitting process, Hull provided several value-added services, including:

- Design recommendations that would allow flexibility for future landfill development;
- Identification of design changes that would improve overall quality and constructability while reducing construction costs; and
- Identification of design components to increase the landfill disposal volume.

■ **WOOD COUNTY LANDFILL | Engineering Design, Construction Observation, Environmental Monitoring, and Operations Support | Wood County, Ohio**

Client Name: Wood County Solid Waste Management District
Project Duration: 1980s – Present (Currently Permitting an Expansion)
Contact: Ken Vollmar | 419.352.0180
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC, assessment and compliance services.

Project Goals & Objectives: To provide forward-thinking landfill design and permitting services on time and on budget. This has been accomplished by actively partnering with Wood County to assist them with effective long-term planning, phasing, operations and construction of the landfill.



The Wood County Landfill in Bowling Green, Ohio was one of Hull's first clients. Hull provided general engineering support beginning in the early 1980s and has been assisting them with **design/permitting, environmental monitoring, landfill gas and control system design, construction document preparation, construction quality assurance, construction engineering support, operations support, and compliance issues ever since.**

Hull assisted the landfill to obtain a Permit-to-Install in 1991 that utilized the construction of a new Best Available Technology (BAT) landfill cell between the two existing landfill areas (North Area and South Area) to combine the landfill area into one common footprint. The innovative

design also included the installation of a separatory liner system over the North and South Areas that serves as a cap to the existing waste and a base liner for the new waste that incorporated an effective leachate collection system that directed leachate from unlined to lined areas of the landfill.

Hull also designed a vertical expansion of the facility with the permit being issued in July 2003. During the vertical expansion permitting process, Hull provided several value-added services. Hull was an active participant in the rule revision process and provided feedback to the Ohio EPA during the rule development that became effective in August 2003. Although the expansion PTI was prepared and submitted prior to the change in Ohio solid waste regulations, Hull followed Ohio EPA's draft design requirements (e.g., settlement analyses, geotechnical testing parameters, etc.). This allowed Hull to provide design recommendations that would allow flexibility for future landfill development, identified design changes that would improve overall quality and constructability (while reducing construction costs), and identified design components that increased the landfill disposal volume. Hull is currently preparing a vertical and lateral expansion PTI package that will provide the County a long-term and sustainable solution for waste management for the local community for years to come.

In addition to preparing the permit applications and providing design services, Hull has provided construction observation and QA/QC services, prepared construction specifications and bid documents, performed extensive soil borrow characterizations, tested and documented in-situ permeability for a test pad, and assisted with compliance issues such as preparation of annual reports and operating records. Hull has also provided construction observation, testing and documentation services for the construction of composite liner system, separatory liner, final cover placement, and other miscellaneous site improvements. Construction observation and QA/QC services included geomembrane installation observation, non-destructive field testing of placement of the flexible membrane liner, soils and geosynthetics laboratory testing, review of all field and laboratory QA destructive and conformance seam testing results, and moisture/density testing of compacted soil.

Groundwater monitoring at the facility has included: regulatory review; preparation of groundwater sampling and analysis plans; sample preparation, collection, documentation; and data entry/reduction and statistical analyses. Hull managed the landfill's ground-water program through two different changes in the applicable regulations, collecting and/or analyzing more than 30 sets of analytical data over 20 years. Hull successfully demonstrated that the elevated concentration of one parameter was the result of the suspended solids in the sample and not due to activities at the facility. In addition to sampling and analysis plans, Hull assisted in the development of a hydrogeological and groundwater monitoring plan, certified the groundwater statistical reports, detection sampling, and analysis plan.

Hull also prepared a Solid Waste Management Plan for the Wood County Solid Waste Management District and assisted with plan implementation. As part of the preparation of the District Plan, Hull evaluated county-wide waste generation and completed characterization activities for preparation of a general district solid waste management plan. Activities included identifying and completing preliminary assessments of abandoned dumps and active landfills within the county and involving close coordination with local, county, and state government representatives.

Hull also conducted an initial feasibility study and is currently performing a pilot study for a gas-to-energy system and assisted the Wood County Landfill in public relations and a number of other environmental monitoring and compliance programs including, but not limited to:

- Leachate monitoring; storm water/National Pollutant Discharge Elimination System (NPDES) monitoring;
- Spill Prevention Control and Countermeasures Plan (SPCC), Stormwater Pollution Prevention Plan development and employee training;
- Composting compliance;
- Fugitive dust permitting;
- Beneficial use of materials for various applications;
- Methane gas monitoring; and,
- Closure plan and economic analysis for post-closure monitoring.

■ WILMINGTON SANITARY LANDFILL | Vertical Expansion | Wilmington, Ohio

Client Name: City of Wilmington, Ohio

Project Duration: January 2009 – Present (Vertical Expansion in 2010)

Contact: Braden Dunham

Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC, monitoring, assessment and compliance services.

Project Goals & Objectives: To obtain a vertical expansion over the existing landfill footprint in a timely manner and minimize the need for additional permitting and construction costs. This was accomplished through pro-active and regular communications with Ohio EPA during the design and permitting process.

Hull teamed with the City of Wilmington to **design a vertical expansion** over the existing waste area to extend the life of Wilmington Landfill, which was scheduled to be closed in first quarter of 2009. Hull's activities included:

- An expansion design consisting of placing a separatory liner system and developing disposal areas for future operation;
- Designing a leachate collection system for the expansion area to use gravity to convey the leachate to the existing sump; and
- Designing the soil barrier layer portion of the cap to serve as the soil liner of the expansion area, since the majority of the site has an existing single composite soil liner system.



Hull's expansion design extended the life of the landfill by approximately 14 years and enabled the City to continue utilizing the existing facility for solid waste disposal. The expansion permit was reviewed and

approved by the Ohio Environmental Protection Agency (EPA) in less than 12 months after the submittal. The shortened permitting timeframe was accomplished by regularly communicating with Ohio EPA personnel to have them actively involved in the design process.

■ **HOFFMAN ROAD LANDFILL** | Landfill Engineering, Compliance Monitoring, Leachate Management, and Landfill Gas | Toledo, Ohio

Client Name: City of Toledo, Ohio
Project Duration: 1995 – Present
Contact: Scott Lockhart, PE | 419.936.2642
Type of Project: Engineering design, construction drawings and specifications, construction QA/QC, environmental monitoring and assessment, and compliance services.
Project Goals & Objectives: To provide forward-thinking landfill design, monitoring, assessment and compliance services on time and on budget.



Hull partnered with the City of Toledo in providing extensive services for the Hoffman Road Landfill. Our work at this site includes:

- **Development of conceptual design alternatives for a vertical expansion**
designed to maximize disposal footprint, extend the time frame for new cell development, and minimize the per cubic yard disposal cost;
- Preparation **of construction documents for Phase II Cells 3 and 4 construction**, including drawings of compacted clay liner and geomembrane liner plans; leachate collection, removal, and storage systems; and ancillary support items such as perimeter roads and surface water management controls.
- Construction Quality Assurance services for Phase II Cell 5 construction and Phase II Cell 3 closure including additional construction level documents requested by the City; the City continued operations uninterrupted through this process because Hull Cell 5 construction documentation was completed in two phases and coordinated closely with the Ohio EPA. Hull was able to conduct all activities, including additional efforts, within the original budget limits.
- Preparation of construction level staking drawing for the first phase of the proposed expansion at the facility. The Ohio EPA issued an ORC3734.02(G) exemption to the City of Toledo, allowing them to move forward with additional filling of solid waste prior to issuance of the Permit-to-Install application. Tasks included interpretation of design documents, coordination with the City of Toledo, establishing construction control points, and preparing construction staking drawings.
- Third party engineering, consulting evaluation to review feasibility of transporting landfill gas from the Hoffman Road Landfill to the Bay View Waste Water Treatment Plant (WWTP) and preliminary environmental assessment.
- Preparation of a Spill Prevention Control and Countermeasures (SPCC) Plan, Storm Water Pollution Prevention Plan (SWPPP), PCB / Hazardous Waste Management Plan, and assistance with employee training;
- Assistance in the analysis of the potential all-in-cost to the City if the landfill were to be employed in the management of the dredge material, including valuation of airspace reflecting all total capital, operational and financial assurance costs, post closure obligations, etc.

- Assistance with oversight and compliance issues related to management of dredge material at the landfill;
- Evaluation of renewable energy credits, carbon offset, or potential energy sales from the ongoing management of landfill gas at the facility and identification of potential grants that might apply to the gas-to-energy project.
- Assistance with preparation of public education / information publication;
- A leachate recirculation feasibility study to increase/enhance gas from the facility and potentially increase the energy production that will be supplied to the City of Toledo's Waste Water Treatment Plant.
- A review of the facility's operations to analyze leachate generation rates and provided the tools needed to decrease it and thereby reduce costs.

Ecological services Hull provided at the Hoffman Road Landfill include:

- A surface water delineation in the western portion of the facility for relocation of a petroleum pipeline that runs through the area. Hull identified six wetlands totaling approximately three acres and was confirmed by a representative from the U.S Army Corps of Engineers (USACE).
- Completing a Clean Water Act permit associated with the emergency repair of a broken City of Toledo waterline in a wetland adjacent to Mud Creek. Hull responded promptly by immediately visiting the site of the repair, documented the appropriate information and submitted an after-the-fact Section 404 Clean Water Application to the USACE. A Nationwide Permit 12 for the waterline repair was subsequently issued to the City of Toledo by USACE.

Hull's additional environmental compliance activities included managing all aspects of environmental compliance associated with groundwater monitoring for the Hoffman Road Landfill. These activities include:

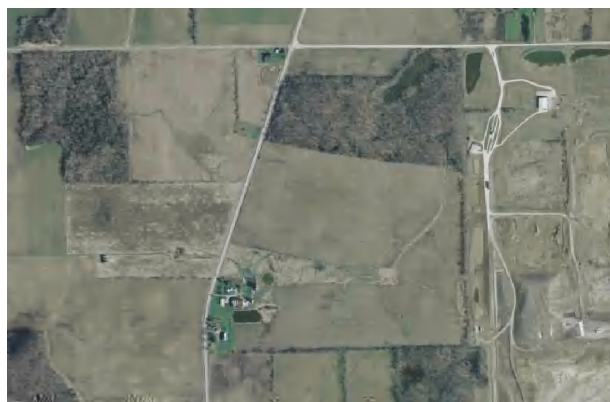
- Preparation and implementation of a detection monitoring sampling and analysis plan to bring the facility into compliance with the Ohio Administrative Code (OAC) regulations;
- Negotiations with the Ohio EPA on behalf of the City, resulting in reductions of fines assessed to City allowances;
- Technical evaluations to support City's position;
- Assistance to the City of Toledo in reducing the current groundwater monitoring well network, resulting in significant cost savings to the City;
- A detailed review of all available hydrogeologic information available for the facility to assist in the development of a state-of-the-art groundwater monitoring well network;
- A comprehensive monitoring well field evaluation to determine the yield characteristics of each monitoring well installed in three water-bearing zones at the facility;
- Monitoring well installation activities;
- Bid package development;
- Assistance in the selection of the analytical laboratory;
- Management of the large database of groundwater quality data associated with three water-bearing zones;
- Reports of Groundwater Quality consistent with the OAC Regulations;
- Storm water monitoring and reporting in accordance with the facility's NPDES permit; and
- Leachate and explosive gas monitoring, reporting and compliance activities.

Hull also developed a conceptual model for a Municipal Solid Waste Landfill (MSWL) using hydrogeologic, geochemical, mineralogical, and climatological data to simulate precipitation infiltration and subsequent chemical reaction pathways. The objective of this model was to serve as a tool to demonstrate the expected geochemical results of a leachate release in lieu of statistically evaluating groundwater quality data, where limitations in the methodology often results in "false positive" triggers. As part of the groundwater monitoring program, Hull made successful demonstrations to Ohio EPA to verify that the statistical significances were attributed to a source other than landfill operations.

■ FRONTIER RECYCLING AND DISPOSAL, LLC | Landfill Siting, Design and Permitting | Richland County, Ohio

Client Name: Frontier Recycling and Disposal, LLC
Project Duration: 2012 – Present
Contact: Grant Milliron | 419.747.6522
Type of Project: Comprehensive hydrogeological, ecological, and landfill design/permitting services.
Project Goals & Objectives: To provide forward-thinking landfill design and permitting services on time and on budget. Pro-active planning allowed the facility to be sited as a captive municipal waste landfill, which had some added benefits to the client.

Hull is working with Frontier Recycling and Disposal, LLC, an entity of Milliron Industries, to site, design and permit the Frontier Recycling and Disposal Facility. This 33-acre solid waste landfill will exclusively accept auto shredder residue from Milliron Industries. It is designed to provide a total gross airspace of approximately 5.2 million cubic yards and is anticipated to be operational for 26 years.



Hull completed the **initial siting and feasibility studies**. We also completed **engineering analyses and design and prepared the required permits for the facility**. Hull's work included the hydrogeologic and subsurface investigations; a Landfill Stability Analysis Report that included a hydrostatic uplift analysis, static stability analysis, seismic stability analysis, and settlement analysis; leachate and surface water management plans and engineering designs (including design of two sedimentation ponds); groundwater monitoring and explosive gas monitoring plans; construction quality assurance/quality control plan; and a final closure/post-closure plan. Hull also prepared and submitted to Ohio EPA a National Pollution Discharge Elimination System (NPDES) Permit, air permit, Isolated Wetland Permit, Landfill Permit to Install (PTI), and Nationwide Permit/Jurisdictional Determination for the U.S. Army Corps of Engineers. Hull participated in Ohio EPA's informational meetings about this project and other stakeholder meetings to gain input from the community and to share information about project plans.

Hull continues to participate in ongoing discussions with Ohio EPA as they review the PTI and all wetlands issues have been resolved with Ohio EPA and the U.S. Army Corps of Engineers. Pending agency approval, it is anticipated that landfill construction could begin in 2016.

■ FLINT CREEK POWER PLANT LANDFILL | Landfill Design and Permitting | Arkansas

Client Name: American Electric Power
Project Duration: 2009 – Present
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, and construction QA/QC.
Project Goals & Objectives: To complete liner and leachate collection system design and permitting on a compressed timeline. During this, we identified design improvements that reduced overall construction costs and timeframe.

Hull prepared a **permit modification** for an existing Class 3 Non-Commercial Landfill in Arkansas to incorporate an intermediate liner system and leachate collection system over the existing fill area. The project design and permit document preparation work included:

- Performing a **site investigation** including drilling soil borings outside the landfill limits to obtain in-situ soil samples for geotechnical testing, and drilling borings inside the landfill limits to determine in-situ fly ash and set piezometers;
- Evaluating existing siting criteria;
- Designing intermediate liner system grades to optimize regrading efforts and work within the existing facility's design structure, while also incorporating design features that will be conducive with a potential future horizontal and/or vertical expansion;
- Designing the leachate collection system, storage pond and forcemain;
- **Preparing the permit modification application, design report and plan** set that incorporates a vertical expansion and changes in waste stream;
- **Preparing the quality assurance/quality control plan**, operations plan and hazardous waste exclusion plan;
- **Preparing detailed construction cost estimates and landfill volumes**;
- Preparing stormwater pollution prevention plans and designing erosion and sediment control structures;
- Designing contact water management structures and pond;
- Evaluating the reuse of dredged ash from the ash pond and the relocation and placement of the dredge material within the landfill, including the construction of a test fill and development of material placement specifications;
- Performing comprehensive borrow investigations to identify borrow soils for long-term planning purposes;
- Preparing construction drawings, specifications and other supporting documents required for bidding.
- Performing landfill CQA services for construction of the intermediate liner and leachate collection system, final cover system, sedimentation basins, leachate and contact water ponds, contact water conveyance pipe, and landfill stormwater control structures.
- Providing engineering assistance during construction.
- Preparing operations plan designed to provide guidance for initial phase of filling, including separation of stormwater and contact water.

■ **KYGER CREEK LANDFILL | Landfill Siting, Design, Permitting and Construction Support | Cheshire, Ohio**

Client Name: American Electric Power
Project Duration: 2005 – 2013
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To complete the design and permitting on the greenfield site in a timely manner while negotiating the complex hydrogeology and topography at the site. Hull was able to reclassify three aquifers to significant saturated zones through detailed investigations and demonstrations. In addition, we designed a temporary storage area to assist with disposal challenges at the plant and meet client needs.

Hull assisted our client by providing **comprehensive engineering design, permitting, construction planning, and engineering support** to develop a new Class III Residual Waste Landfill in Ohio.

The projects have included:

- Performing a final **site selection study** to assist in determining the most suitable site for development from the previously two selected two possible sites;

- Performing **comprehensive hydrogeological and geotechnical investigations** including hydrogeological field investigations, geotechnical laboratory analyses and slope stability and settlement analyses;
- Preparing the **design and permit documents** for the main landfill area, as well as a temporary storage area wastewater treatment permit that was needed to provide a disposal area prior to receipt of the final Class III residual waste permit;
- Designing the groundwater interceptor, liner and final cover systems;
- Designing the leachate collection system and storage ponds;
- Designing the surface water management structures including sedimentation ponds, drainage ditches, culverts and rock letdowns;
- Developing the groundwater monitoring program;
- Preparing the quality assurance/quality control plan;
- Assisting with the design of the main asphalt haul road;
- Performing site-wide geotechnical investigations and laboratory testing to assist with the long-term borrow development and construction planning;
- Preparing detailed construction cost estimates and construction drawings for the temporary storage area, phase I of the landfill development; and the haul road;
- Preparation of a detailed, four-year stormwater pollution prevention plan to identify appropriate sediment and erosion control measures during development of the temporary storage area, haul road and initial landfill construction activities;
- Preparation of **construction documents for cell extension and leachate pond construction**, and providing engineering support during construction.

By demonstrating yields of less than 0.1 gallons per minute, we were able to obtain a reclassification of three aquifers to significant saturated zones. In addition, Hull has also provided general engineering and operational during landfill development activities, including developing a plan to manage contact water during different stages of operation.

■ **NOBLE ROAD LANDFILL** | Greenfield/Municipal Solid Waste Landfill | Richland County, Ohio

Client Name: Milliron Industries
 Project Duration: 1992 – 2003
 Contact: Grant Milliron | 419.747.6522
 Type of Project: Comprehensive hydrogeological, ecological, landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
 Project Goals & Objectives: To complete the design and permitting on the greenfield site in a timely manner while negotiating through the complex hydrogeological and ecological challenges at the site.

Hull partnered with this client to provide siting and overall design of a new solid waste landfill including a four stage hydrogeologic study, an archaeological study, and a comprehensive wetland mitigation process. Unique features included the establishment of a facility footprint that minimizes impacts on wetlands and an adjoining State Nature Preserve. As a greenfield development, public opposition was great, and Hull was therefore involved in many public information meetings and public hearings.

As part of the wetland permitting process, Hull:

- completed an Alternative Site Analysis as part of the Federal Clean Water Act Section 404 permit application;
- provided wetland mitigation design services as part of federal and state requirements; and
- attended many meetings with U.S. Army Corps of Engineers and Ohio EPA officials.

The composite liner system contained five feet of recompacted clayey soils, a 60 mil HDPE flexible membrane liner and a granular leachate collection system. The facility is adjacent to a State Nature Preserve that caused significant public opposition. The facility design considered the sensitivity of the Nature Preserve along with high quality wetland habitat. We successfully provided a 102-acre landfill footprint with a minimum of impact (less than five acres) on wetland communities. The wetland mitigation, accomplished on-site, is considered a model for this part of Ohio by regulatory agencies. Hull provided QA/QC services for the placement of 100,000 cy of added geologic materials, approximately 200,000 cy of recompacted soil liner, the installation of approximately 1,000,000 sq. ft. of 60 mil HDPE liner, and the installation of the leachate collection system. Hull oversaw and documented the construction of the facility infrastructure including a 30,000 gallon leachate conveyance and storage system, approximately 2,000 feet of a full depth asphalt haul road, a state of the art tire wash, and the office/maintenance facilities. Hull also observed, documented and implemented all of the construction and environmental monitoring programs for this “Greenfield” landfill.

■ CITY OF TIFFIN LANDFILL | Environmental Assessment and Corrective Action | Tiffin, Ohio

Client Name: City of Tiffin, Ohio
Project Duration: 1999 – Present
Contact: Brent Howard | 419.447.2521
Type of Project: Comprehensive site assessment/corrective actions, ecological, cap and surface water management system design, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To negotiate a responsible assessment and corrective measures strategy for a historic closed landfill, and implement the strategy in a cost-effective manner.

Hull partnered with the City of Tiffin to negotiate a responsible site assessment and corrective measures strategy at a pre-1976 closed landfill owned by the City. This was in response to Clean Water Act violations issued by Ohio EPA as a result of a verified citizen's complaint.

Hull negotiated a responsible site assessment and corrective measures strategy at the closed landfill. As part of the assessment, Hull completed:

- Site-specific and regional groundwater studies to establish a baseline understanding of site conditions and potential environmental impacts; conceptual site model;
- A groundwater monitoring program to monitor water quality and flow data, subsequently used in modeling and risk assessment studies;
- Surface water studies to model storm water flow and quality and its relationship to groundwater, as well as wetlands determinations/delineations, biotic integrity reviews and an assessment of the water quality and aquatic indicators in the Sandusky River; and
- Studies to develop a conceptual model of how the landfill was constructed, materials managed at the site, and current conditions within the landfill, including leachate distribution, quality and physical landfill cap characteristics, storm water and surface water runoff, and the overall relationship between the landfill and its surrounding environs.



Hull also negotiated an innovative corrective measures strategy that has been implemented and is currently pending final approval from Ohio EPA. This strategy includes risk-based target cleanup standards for groundwater and alternate criteria for surface water discharges to wetlands. Also, the strategy focused on appropriateness and cost and equivalency of the corrective measures, considering that it was an unregulated landfill with minimal cap design requirements.

Corrective measures implemented at the site included:

- Targeted landfill cover (cap) improvements to minimize infiltration of surface water runoff and to minimize leachate migration;
- Surface water and stormwater management to improve drainage to minimize ponding of water;
- Landfill gas management to relieve gas pressure within the landfill;
- Wetland maintenance, monitoring and development of alternate discharge criteria to address surface and groundwater discharges to the wetland; and
- Institutional control to provide access and to allow a buffer zone between waste and adjacent properties.

Cap enhancements focused on establishing positive drainage and were designed to make improvements away from areas where mature vegetation was present (materials were only added to achieve a 1976 OAC cap thickness). Also, monitoring programs for various media were established to evaluate the performance of the corrective measures, and a contingency plan was developed.

Due to the high level of interest by the local media and residents living near the landfill, Hull directed several events to help inform residents about results of landfill investigations and helped correct misinformation being disseminated in the community. Hull established and maintained an information repository at the local library, held press conferences, a public meeting, and responded to media inquiries on behalf of the City.

■ **BDM WARREN STEEL, LLC. (FORMER WARREN STEEL FACILITY IN WARREN, OHIO |** **Assessment and Remediation | Warren, Ohio**

Client Name: BDM Warren Steel, LLC
Project Duration: 2014 – Present
Contact: Chuck Betters | 724.375.6170
Type of Project: Site Assessment & Remediation, Engineering and Permitting
Project Goals & Objectives: To place back into a the tax base an underutilized former industrial property

The BDM Warren Steel Site is an approximately 1,200 acre brownfield located on the west side of Pine Avenue SE, approximately 0.25 miles south of South Street SE. The property, which began steel-making operations around 1912, has changed ownership and names multiple times over the years and has been known as Republic Steel Corporation, LTV Steel Company, WCI Steel, RG Steel, and BDM Steel. Steel production at the mill has ceased and BDM has demolished most of the buildings for site redevelopment. Site redevelopment will occur in multiple phases and is currently in progress.

The Facility manufactured hot rolled strip steel, pickled and oiled hot rolled steel strip, cold rolled steel, and coated flat steel products. Spent pickle liquor, mill scales, metallic sludges, process wastewaters, waste oil, basic oxygen furnace (BOF) slag, BOF precipitator dust, and galvanized lime baghouse dust have been generated during manufacturing operations.

Hull is currently providing multiple-disciplinary services at the Site that includes our Infrastructure and Environmental Market Areas.

Environmental:


- Assessment - The Site is entered into the Ohio Voluntary Action Program (VAP) Memorandum of Agreement (MOA) track and a VAP Phase I Property Assessment has been completed. Phase II Property Assessment activities are planned to commence in the first quarter of 2016.
- Surface Water Impoundments— Two surface water impoundments, named Pond #5 and the 56-inch Hot Mill Lagoon, are actively being closed in accordance with an approved Closure Plan that follows Ohio EPA Closure Plan Review Guidance for RCRA Facilities (October 2009). As part of this impoundment closure, several million gallons of water was monitored and discharged to the City of Warren Wastewater Treatment Plant under an activity-specific Order issued by the City of Warren. In addition, several thousand cubic yards of sediments in the base of both ponds was mixed with weathered slag material located on the Property and was placed and compacted within the footprint of Pond #5 under an Integrated Alternative Waste Management Plan (IAWMP) that was approved by the Ohio EPA in December 2016. These alternative management approaches to both the liquids and semi-solid materials located in the ponds resulted in the savings of over \$5 million. The ponds are anticipated to be backfilled to surrounding grade by the end of the first quarter of 2016.
- RCRA Closure— A former area of the Site was formerly used to recycle spent pickle liquor. The process results in the regeneration of the hydrochloric acid used in the steel making process and iron oxide fines. Because spent pickle liquor is a listed hazardous waste and iron oxide fines are generated through the acid regeneration process, the iron oxide is a regulated material if it is not beneficially used. Ohio EPA approved the RCRA Closure Plan in December of 2015 and closure activities are planned to be completed by the end of the first quarter of 2016. Closure activities include the removal of underground lines formerly used to convey spent pickle liquor to the acid regeneration area and the removal of approximately 170,000 gallons of liquid from the former acid storage basin.
- NPDES Program Management— The Site is located adjacent to the Mahoning River and several outfall to the river are monitored under a NPDES permit with the Ohio EPA. On the behalf of our client, Hull negotiated a revised permit with Ohio EPA that reduced the number of outfalls being monitored and the parameters that were included as part of the monitored points. Hull is currently involved with the monthly monitoring and reporting components of the NPDES program.

Engineering:

- Specification Preparation and Bid Process Assistance— Hull has prepared demolition specifications for the removal, processing and beneficial use of approximately \$6.5 million of concrete slabs and footers. In addition to the preparation of the bid document, Hull provided bid process assistance that included attending a pre-bid site walk, answering contractor questions through the preparation of addenda to the bid document, and recommendation of a contractor.
- Conceptual Site Layout— Hull prepared for the client a conceptual site layout for approximately 400 acres of the Site. The layout included several medium to large parcels and proposed internal infrastructure.
- Landfill Material Reclamation— On behalf of the Client, Hull is currently negotiating with Ohio EPA on the drawdown strategy of an established escrow account (established by a previous property owner). The escrow account will be used to fund active mining and beneficial use of landfilled materials on the Site and will be based on meeting certain performance standards. The end result will be the beneficial use of a majority of the landfilled materials currently located within a permitted landfill at the south end of the Site.

In addition to these activities, Hull is providing value-added services that includes public relations and funding. To date, Hull has coordinated and led site tours with regulatory entities and local and regional development groups, conducted stakeholder outreach, and coordinated dialogue on funding and grant opportunities.

HULL'S LANDFILL EXPERIENCE

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Project Name											
ACME Landfill, Ohio						X					
AEP Little Broad Run Landfill, New Haven, West Virginia	X			X	X	X	X				
AEP Amos Landfill, Winfield, West Virginia					X						
AEP Cardinal Landfill, Brilliant, Ohio				X	X						
AEP Conesville						X					
AEP Kyger Creek Landfill, Cheshire, Ohio	X			X		X	X				
AEP Mitchell Landfill, Moundsville, West Virginia					X						
AEP Quarrier Landfill, Winfield, West Virginia					X						
Allied (Laidlaw) Celina Landfill, Ohio	X		X	X	X	X	X			X	X
Allied (Laidlaw) Cherokee Run Landfill, Bellefontaine, Ohio	X		X	X	X	X					X
Allied Ottawa landfill**											
Allied (Laidlaw) Williams County Landfill, Bryan, Ohio	X		X	X	X	X	X		X	X	X
Allied (Superior) Oakland Marsh Landfill, Shiloh, Ohio	X	X	X	X	X	X	X	X	X	X	X
Ashland County Landfill, Ashland, Ohio	X	X	X	X	X	X	X	X	X	X	X
Bath Township, Summit County, Ohio		X	X	X	X	X	X				
Bedford Heights Landfill, Ohio						X					
BFI Medical Waste Facility, Toledo, Ohio				X		X			X		
BFI of Ohio-Michigan C&DD Landfill, Toledo, Ohio	X		X	X	X	X			X	X	
BP Chemical, Lima, Ohio					X						
Bradley Road C&DD Landfill, Cuyahoga County, Cleveland, Ohio	X	X		X		X	X			X	
Brush Wellman Residual Waste Landfill, Elmore, Ohio	X	X			X	X	X	X		X	
C&R Excavating, Ohio	X		X		X	X	X				
Cardington Road Landfill Superfund Site, Kettering, Ohio											X
City of Cleveland, Ohio						X					
City of Garfield Heights, Ohio						X					
City of Greenville Landfill, Greenville, Ohio		X		X	X	X	X		X		
City of Middletown Landfill, Ohio	X	X	X	X	X	X	X			X	X
City of Rossford Landfill, Ohio	X	X	X	X		X	X			X	
City of Solon, Ohio						X					



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
City of St. Marys Landfill, Ohio	X	X	X	X	X	X	X	X	X	X	X
City of Tiffin, Former CR 90 Landfill, Tiffin, Ohio	X		X	X		X	X		X		X
City of Wapakoneta Landfill, Ohio	X	X	X	X	X	X	X				X
City of Wilmington Landfill, Ohio	X	X	X	X	X	X	X				X
Clarkco Landfill, Clark County, Ohio				X	X	X		X			X
Closed City of Celina Landfill, Celina, Ohio				X						X	
Closed Richard County Landfill, Mansfield, Ohio		X		X	X	X				X\	
Confidential Client, Ashtabula County, Ohio	X			X		X	X		X		X
Confidential Industrial Waste Landfill, Ohio		X									
County Environmental of Wyandot, Carey, Ohio	X	X	X	X	X	X	X	X			
Doherty Landfill, Geneva, Ohio		X	X	X	X	X			X	X	X
Dura Landfill, Toledo Ohio		X	X			X	X				X
Eleventh Street C&DD Landfill, Cleveland, Ohio	X	X					X				
Envirosafe Landfill, Oregon, Ohio					X						
AEP Flint Creek Landfill, Gentry, Arkansas	X			X	X	X	X	X			X
Former North Cove Landfill, Lucas County, Toledo, Ohio											
Fulton County Landfill, Delta, Ohio			X								
General Chemical Allied Bike Trail										X	
Graymont Dolime (OH), Inc. Landfill, Genoa, Ohio	X			X	X	X					X
Hardin County Landfill, Kenton, Ohio		X	X	X		X	X				X
Hardy Road Landfill, Akron, Ohio	X										
Hoffman Road Sanitary Landfill, Toledo, Ohio	X	X	X	X	X	X	X			X	X
Hogrefe Landfill, Napoleon, Ohio		X	X			X				X	
Huron County Materials Recovery Facility, Ohio						X		X			X
Inland-Solon Sanitary Landfill, Solon, Ohio						X					X
Lakeview Bluffs, Ohio		X	X	X	X	X	X				X
Lima Composting Facility, Ohio	X			X		X			X		
Millennium Chemicals (captive facility), Ashtabula, Ohio	X	X		X	X	X	X		X		X
North Turkeyfoot Rd/Logan Pkwy Landfill, Summit County, Akron, Ohio		X		X		X					



Project Name	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Old Brooklyn, Cuyahoga County, Ohio						X					
Phoenix Landfill, Ohio						X					
Preble County Landfill, Eaton, Ohio								X			
Republic Countywide Landfill	X	X	X	X	X	X	X	X	X	X	X
Republic Pine Grove Landfill									X	X	X
Roberts Landfill, Urbana, Ohio					X						
Rockside Landfill, Garfield Heights, Ohio						X					
Seiberling Street Landfill, Summit County, Akron, Ohio	X			X		X	X				X
Settlement Street Landfill, Summit County, Akron, Ohio				X						X	
Sidney Sand & Gravel, Shelby, Ohio			X	X	X					X	
Solvay Waste Landfill						X	X				
Stickney Landfill, Toledo, Ohio		X	X	X			X			X	
Stickney West Industrial Park C&DD Landfill, Toledo, Ohio	X			X	X	X	X			X	X
Sunny Farms Landfill, Ohio					X						
Terminal Services Landfill, Bath Township, Ohio	X		X	X		X				X	X
Tremont Landfill, Clark County, Ohio	X		X	X	X	X			X		X
Tunnel Hill Landfill**											
Tyler Landfill, Toledo, Ohio	X		X			X				X	
Unitcast Industrial Landfill, Ohio		X	X				X				
U.S. Gypsum (captive facility), Gypsum, Ohio	X		X	X	X	X					
West 11th Street C&DD Landfill, Cuyahoga County, Cleveland, Ohio		X		X						X	
Westover Sanitary Landfill, Toledo, Ohio			X	X		X	X				
WM American Landfill**											
WM Coshocton Landfill**											
WM Evergreen Recycling and Disposal Facility, Northwood, Ohio	X			X	X	X	X			X	X
WM Gallia County Landfill**											
WM Stony Hollow Landfill, Dayton, Ohio						X					
Wood County Landfill, Bowling Green, Ohio	X	X	X	X	X	X	X	X	X	X	X
Wood County Landfill Composting, Bowling Green, Ohio				X		X					



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Wyandot County Materials Recovery Facility, Ohio						X		X			X
Savannah Regional Landfill, Savannah, Georgia		X	X								
Swift Creek Landfill, Macon, Georgia		X	X								
Wayne Regional Landfill, Jesup, Georgia		X	X								
Allied Belleville Sanitary Landfill, Illinois	X			X	X	X					
Livingston Landfill, Pontiac, Illinois					X	X					
Rumpke, Uniontown Landfill, Crothersville, Indiana **			X								
Rumpke, Batesville Landfill, Batesville, Indiana **			X								
Rumpke, Aurora Landfill, Aurora, Indiana **			X								
Rumpke, Milan Landfill, Milan, Indiana **			X				X				
Rumpke, Medora Landfill, Medora, Indiana **			X				X				
Republic, Worthington Landfill, Worthington, Indiana **			X				X				
Republic, MacBeth Road Landfill, Fort Wayne, Indiana **			X				X				
Republic, Victory Env. Services Landfill, Terre Haute, Indiana **							X				
Allied, Clinton County Landfill, Frankfort, Indiana **				X			X				
New Paris Pike Landfill, Richmond, Indiana **			X				X				
Munster Landfill, Munster, Indiana **			X				X				
Randolph Farms Landfill, Modoc, Indiana **			X				X				
Decatur Hills Landfill, Greensburg, Indiana **							X				
South Side Landfill (C&DD), Indianapolis, Indiana **				X			X				
South Side Landfill, Indianapolis, Indiana **				X			X				
Dozit County Landfill, Inc., Morganfield, Kentucky		X	X								
Epperson Waste Disposal, Inc., Williamstown, Kentucky		X	X								
Green Valley Landfill, Ashland, Kentucky		X	X								
Ohio County Balefill Landfill, Beaver Dam, Kentucky		X	X								
Tri-K Landfill, Inc. Stanford, Kentucky		X	X								
Albion Sheridan Landfill, Albion, Michigan		X	X	X							
Allied (BFI) Vienna Junction Landfill, Erie, Michigan	X		X	X	X	X	X	X	X	X	X
Allied (Laidlaw) Adrian Landfill, Michigan	X	X	X	X	X	X	X	X	X	X	X



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Fort Gratiot Sanitary Landfill, Michigan			X	X	X	X	X				
Hillsdale Transfer Facility, Michigan				X		X					
Huron Dev. Co. Landfill, Port Huron, Michigan					X	X					
Lyon C & C Landfill, Marshall, Michigan				X	X	X					
Lyon Dev. Co. Landfill, Milford, Michigan				X	X	X	X			X	X
Smith's Creek Landfill, Port Huron, Michigan					X	X					
Pfohl Brothers Landfill, Cheektowage, New York					X	X					
Foothills Regional MSW landfill, North Carolina											
Montgomery County Landfill, Troy, North Carolina		X	X								
Uwharrie Regional Landfill, Troy, North Carolina		X	X								
Envirite Clarion Landfill, Clarion, Pennsylvania	X		X			X					
Little Cooley, Pennsylvania	X										
Meadville, Pennsylvania	X										
Oil City, Pennsylvania	X										
AEP Little Broad Run Landfill, New Haven, West Virginia	X			X	X	X	X				
Prichard Landfill, West Virginia		X	X								

¹. This experience includes expert witness, due diligence investigations and similar activities.

** - These projects were performed by current Hull staff while working for a previous employer.

■ **ERMA BYRD BIOMEDICAL RESEARCH FACILITY** | THRASHER | Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506

Thrasher provided services for materials testing and inspection for the new construction of the Erma Byrd Biomedical Research Facility which is a \$40 million, four-story, 120,000 square foot facility.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.



■ **MARY BABB RANDOLPH CANCER CENTER** | THRASHER | Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506
Type of Project:
Project Goals & Objectives:

Thrasher provided services for materials testing and inspection for the renovation of the Mary Babb Randolph Cancer Center was approximately \$15 million which expanded the facility to 87,000 square feet.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.



■ **BLANCHETTE ROCKEFELLER NEUROSCIENCE INSTITUTE (BRNI) | THRASHER |**
Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506
Type of Project:
Project Goals & Objectives:

Thrasher provided services for materials testing and inspection for the new construction of the \$30 million BRNI building which is a three-story, 84,000 square foot facility.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.

■ **WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION | THRASHER | AML**
Projects | West Virginia

Thrasher has worked with the Department of Environmental Protection to successfully complete the following AML projects. Thrasher is aware of the importance of accurate survey and mapping that is needed to get these projects to engineering design.

- Roaring Creek | Portals, Subsidence Depressions, Dewatering of Farm pond into subsided areas
- Anglins Run | Portals and AMD
- Squire's Creek | Portals, Highwall, AMD and Refuse
- Overfield (Lafferty) | Clogged Stream, Portal and Landslide
- Clarksburg (Lyons) Landslide | 2 acre Landslide
- Lauren Run #1 | Portals, Highwall and AMD
- Pleasant Valley (Brown) | Portals, Highwall and AMD
- Roger Camp Hill | 1/2 Acre AMD Impoundment and Refuse
- Stowe (Prince) Landslide | Emergency Landslide
- Owl Creek #2 | Portals, Highwalls, AMD and Refuse
- Landgraff Refuse Pile | Refuse
- Canyon Refuse and Dump | Portals, Highwalls and Refuse

■ **WEST VIRGINIA COAL COMPANIES | THRASHER | Topographic Surveys and Aerial**
Mapping | West Virginia

Thrasher has successfully completed topographic surveys and aerial mapping for the following coal companies in and surrounding West Virginia.

- Apogee Coal Company | Scott Depot, West Virginia
- ARCH/Beckley, LLC | Eccles, West Virginia
- ARCH/Mountain Laurel Mining | Sharples, West Virginia
- Greenbrier Minerals, Coronado Coal II | Rupert, West Virginia
- MET Resources | Bridgeport, West Virginia
- Pinnacle Mining LLC | Cleveland, Ohio
- Sugar Camp Energy, LLC | Macedonia, Illinois
- Vecellio & Grogan, Inc. | Beckley, West Virginia
- Mid-Vol Coal Sales | Princeton, West Virginia

- Berkeley Land Surveyors, Inc. | Berkeley Springs, West Virginia
- Cliffs Logan County Coal, LLC | Cleveland, Ohio
- Magnum Coal Company | Yolyn, West Virginia

■ WEST VIRGINIA DIVISION OF HIGHWAYS | THRASHER | Surveying | West Virginia

Thrasher's survey teams have performed numerous survey assignments for the WVDOH through our Statewide Agreement. The following is a list of recent projects:

- Brooke County – Route 2 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Putnam County - Route 35 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys
- Fairmont Connector – Construction Stakeout for Mountaineer Contractors | Construction layout, quantity surveys
- Hurricane Creek Road – WVDOH Project #U340-35-4.40 00 | Construction layout, property corner verifications, GPS control verifications, GPS control confirmation, cemetery location, electronic deliverables, and route location surveys for 6 miles of proposed roadway.
- Lodgeville Road – WVDOH Project # X317-50/76-00.00 00 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys
- Jakes Run Arch Bridge – WVDOH Project #BR0007(180) | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Old Bridgeport Hill Drainage – WVDOH Project # S317-20/75-0.43 00 | Prepared right-of-way plans, legal descriptions, plats, field survey
- SR 279 North Bridgeport By-Pass – WVDOH Project #X317-279-0.00 | Performed route location surveys, construction layout, prepared right-of-way plans, legal descriptions, plats, field surveys
- Route 11 Near Musselman High School – WVDOH Project # U302-11-4.36 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- King Coal Hwy Baisden-Mudlick – WVDOH Project #U330-52-44.70 00 C-2 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Corridor H, Grant County, West Virginia – WVDOH Project #X312- H-79.05 00 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys

■ CONFIDENTIAL OIL AND GAS CLIENTS | THRASHER | Topographic Surveys and Mapping | West Virginia

Thrasher has completed every phase of topographical survey and mapping needed to properly execute site development for various confidential oil and gas clients. Examples of this work includes the following:

- Confidential Client | 500 mile survey, mapping and alignment sheets
- West Virginia Confidential Client | 34 mile survey, mapping, erosion and sediment control plans and routing recommendations
- West Virginia Confidential Client | 60 mile survey for construction of propane line
- Marion and Monongalia Counties, West Virginia | 8,000 linear feet of survey and drawings completed within 4 months
- TL 536/ TL 543 in Wellsville, NY | 22 mile survey, wetland survey, as-built survey and mapping completed within 10 months
- LN-19 in Delmont, Pa | 2 mile as-built survey for gas transmission line completed within 3 months
- TL260 in Bridgeport, Harrison County, WV | 1.5 mile survey for gas transmission line completed within 3 months
- Tioga/Storage Field in Tioga, PA | 4.8 mile stakeout, survey and mapping completed within 10 weeks
- TL-272 in Cornwell Compressor Station, Clendenin, WV | Two hundred foot of as-built survey in Kanawha County, West Virginia completed within 1 month

- TL-570/TL-263 Boone County, WV | 6.4 mile survey for rural areas of Boone County, West Virginia, completed within 7 months
- TL-342/EXT.4 Waynesburg, Pa | 9.7 mile pre-construction survey in Greene County, Pennsylvania completed within 3 months

■ TRANSMISSION/ DISTRIBUTION | THRASHER | Line Field Survey | Various

Specific examples of project experience for transmission lines include:

Performed boundary, ALTA, topographic, and/or control and construction stakeout surveys for substation sites at:

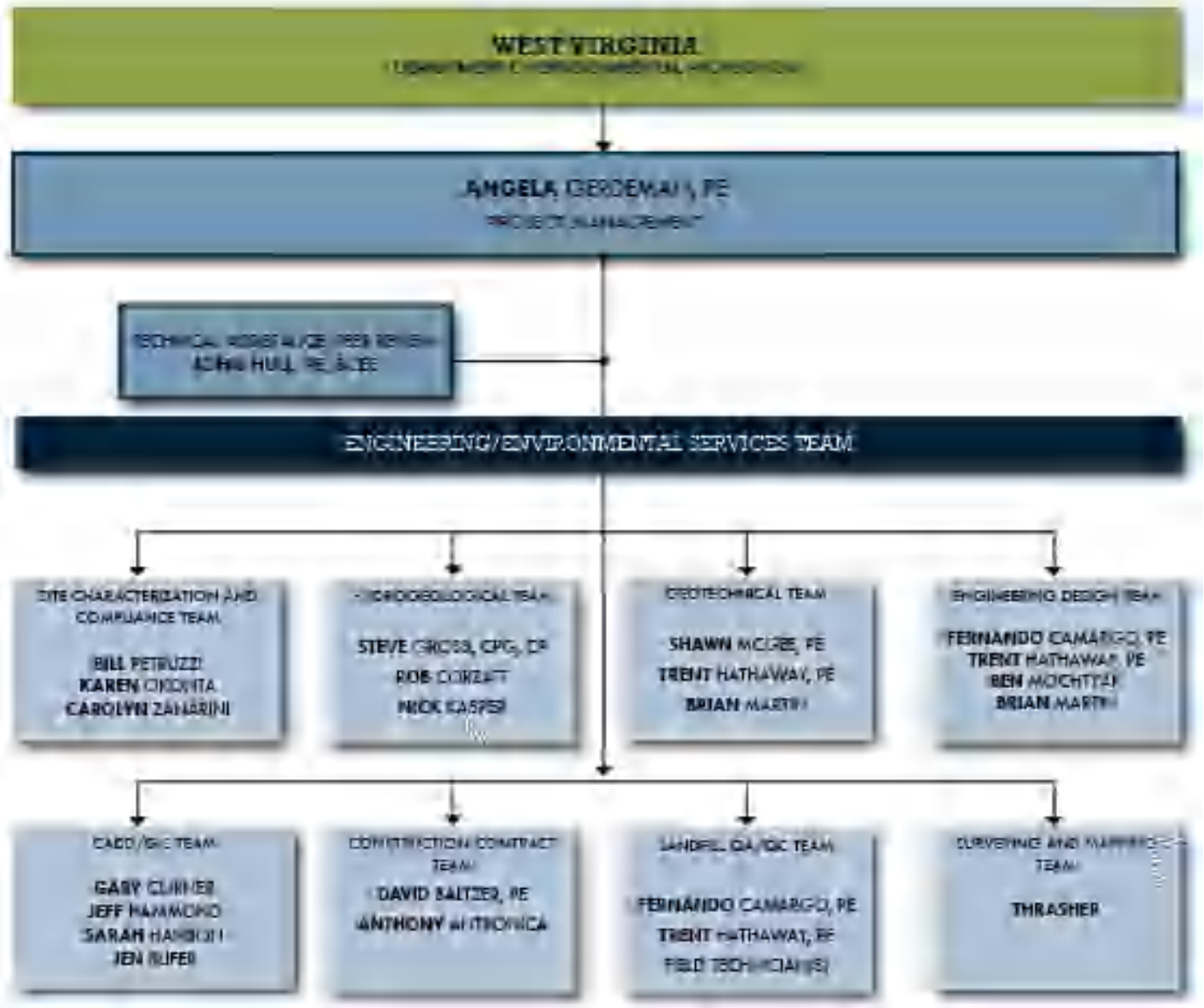
- Lazenby – Mercer County, WV
- Jarrold – Raleigh County, WV
- McGraws – Wyoming County, WV
- Caretta – McDowell County, WV
- Hall's Ridge – Mercer County, WV
- Patrick Street – Kanawha, WV
- Claypool Hill – Tazewell County, VA
- Spectra Energy – Washington County, VA
- Garrison Switch – Boone County, WV
- Rockhouse Road – Boone County, WV
- Lockhart – Dickenson County, VA
- Cross Lanes – Kanawha County, WV
- Patrick Street – Kanawha County, WV
- Lanham - Kanawha County, WV
- Duffield – Scott County, VA
- Wellmont – Sullivan County, TN

Performed Transmission Line Surveys at:

- McGraws – Wyoming County, WV
- Patrick Street – Kanawha County, WV
- Halls Ridge – Mercer County, WV
- Lockhart – Dickenson County, VA
- Spectra Energy – Washington County, VA
- Jaeger-Wharnccliffe – McDowell/Mingo County, WV
- Duffield, Scott County, VA

SECTION 4 | KEY PERSONNEL

4.1 | ORGANIZATIONAL CHART



4.2 | RESUMES OF LEAD TEAM MEMBERS

■ ANGELA GERDEMAN, PE | Senior Project Manager | PROJECT MANAGEMENT



EDUCATION:

- Bachelor of Science, Civil Engineering, The University of Toledo, 1992

TRAINING:

- Landfill Construction Services Refresher (2012)
- Geosynthetic Liner, Compacted Clay Liner and GCL seminar (2012)
- Landfill CQA Training Refresher (2012)
- Landfill Construction Services Training (2008)
- The Engineer as Leader Seminar, Engineers Foundation of Ohio (2005)
- Comprehensive Nutrient Management Planning Seminar, EMS Solutions (2003)
- Short Course on Embankment Dams, Including Safety of Existing Dams (1999)
- Project Management for Design Professionals (1997)
- Construction Project Administration & Claims Avoidance Seminar (1997)
- OSHA 1910.120, 40-Hour Training Course, 8-Hour Refresher Courses
- Nuclear Densitometer Trained Technician (1989)

CERTIFICATIONS:

- Registered Professional Engineer – Ohio, West Virginia, Pennsylvania, Arkansas, and Kentucky Certified CQA Geosynthetic Materials and Compacted Clay Liner Inspector
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)

AFFILIATIONS:

- National Society of Professional Engineers
- Engineers Without Borders
- Ohio Dam Safety Organization/ Water Management Association of Ohio
- American Coal Ash Association (Associate Member)

Angie is a senior project manager and the Landfill Engineering Practice Leader for Hull. She has more than 25 years of consulting experience. Angie's expertise includes municipal, industrial, residual, and construction and demolition debris (C&DD) landfill siting, design, permitting, subsurface investigations, laboratory analyses, construction quality assurance (CQA), planning, operations, and closure. She is additionally experienced at dam/impoundment design, permitting, and CQA for water-supply reservoirs and waste settling ponds.

Angie's expertise includes:

Landfill Construction Quality Assurance (CQA) Services and Support

- Manages the construction quality assurance of landfill components such as landfill cells, landfill caps, stormwater sediment ponds and support structures, test pads, leachate collection systems, and protective cover placement.
- Evaluates landfill capacity needs and prepares detailed construction phasing drawings that effectively handle potential surface water runoff, contact water, and leachate generated by construction.
- Performs geotechnical explorations and laboratory testing; observes/tests pads and fills; develops soil processing plans; prepares CQA Plans, construction SWPPPs, and construction reports; and manages CQA services.
- Prepares bid/construction documents, reviews and analyzes bids, and prepares engineer's estimates of probable construction costs.
- Has lead CQA field teams in the construction of double-composite cells, test pads, and composite cap systems at a variety of landfill types.

Landfill Design, Operations, and Supporting Services

- Manages the design and permitting of municipal, industrial, residual, and C&DD landfills in multiple states; experience includes performing siting studies to identify and rank possible sites, preparing design and Permit-to-Install (PTI) packages; preparing final closure/post-closure plans; developing explosive gas and groundwater monitoring plans; and hydrogeological investigations including wetland and stream evaluations.
- Assists clients with developing long-term phasing and operational plans for landfill development based on planned tonnage, location of access roads, clean and contact water management structures, and interim cover placement. Assists with regulatory compliance.
- Manages the preparation of annual operational and quarterly asbestos reports, operating record updates, quarterly in-place density calculations, and bioremediation of contaminated soils.
- Prepares 10-year best available technology reviews of existing permit documents to assess compliance with existing regulations.

Select Project Experience

- Hoffman Road Landfill | Toledo, Ohio
- Multiple AEP Landfill Projects | Ohio, West Virginia, and Arkansas
- Waste Management Stony Hollow Landfill | Dayton, Ohio
- Waste Management Evergreen RDF | Northwood, Ohio
- Stickney Recycling C&DD | Toledo, Ohio
- Wilmington Sanitary Landfill | Wilmington, Ohio
- Milliron Industries | New Greenfield ASR Landfill | Mansfield, Ohio

■ JOHN HULL, PE, BCEE | Technical Assistance



EDUCATION:

- Master of Science Civil Engineer, Stanford University, 1976
- Bachelor of Science Civil Engineer, Ohio Northern University, 1975

REGISTRATIONS:

- Registered Professional Engineer - Ohio, Michigan, Pennsylvania, Indiana, New Hampshire, Kentucky, West Virginia, Texas, Connecticut, Vermont, Illinois, Alabama, Massachusetts, Maine
- Board Certified Environmental Engineer Solid Waste Management (AAEE)

PROFESSIONAL AFFILIATIONS:

- Permanent Certified UST Professional (#0255)
- American Academy of Environmental Engineers
- American Society of Civil Engineers
- Association of Soils and Foundation Engineers
- National Society of Professional Engineers
- Ohio Environmental Health Association
- Order of the Engineer
- Water Environment Federation
- Western Dredging Association
- National Water Well Association/National Ground Water Association

U.S. PATENT NO.s:

- 5,082,500 | 5,538,787
- 5,897,946 | 6,386,796
- 6,558,081 | 7,011,766
- 5,763,734 | 6,024,971

John is the founder and Chairman of Hull with more than 30 years of experience with a wide variety of engineering and environmental issues. He serves on governor-appointed committees, advises clients on complicated challenges, and provides strategic planning experience to current staff and assists Hull's clients achieve environmentally protective and cost-effective solutions. He is also a Trustee of Ohio Northern University and is a member of the Nature Conservancy (Ohio) board of trustees. John is a registered Professional Engineer in 14 states and is recognized as a Board Certified Environmental Engineer in solid waste management by the American Academy of Environmental Engineers.

John's expertise includes:

Solid Waste Management Planning

- Helped solid waste management districts develop and draft solid waste plans including waste composition studies, waste generation projections, financial budgeting,, recycling and composting programs, disposal capacity projections, and required regulatory update reports. Also assisted with public meetings and communications.
- Directed a recycling study of 12 state universities in Ohio for Ohio DNR.
- Participated in multiple beneficial use projects and delisting of waste streams

Landfill Siting, Design, and Construction

- Conducted feasibility studies of alternative landfill options for municipalities, counties, and private waste management companies.
- Assisted developers with siting or expanding more than 20 residual/industrial waste sites, construction and demolition debris, and municipal solid waste landfills; Permits-To-Install, wetlands and NPDES (surface water discharge and stormwater) permitting, Clean Air Act Title V permit applications, landfill cell designs, and public relations activities.
- Managed the engineering design of new landfills or landfill expansions and obtained regulatory approval for construction activities at 40+ landfills; diverse designs included integrated stormwater management systems, environmental monitoring, final closure, and QA/QC plans.

Environmental Monitoring Programs for Landfills

- Provided guidance and oversight for environmental monitoring activities for ongoing operations and post-closure monitoring plans for groundwater, surface water, explosive gas, surface water, and leachate collection systems at more than 60 active and closed landfills.
- Oversaw investigation of potential remedial actions for leachate transport/methane generation at sanitary landfills and closed dumps; also provided remediation, construction services, and litigation support.

Selected project experience:

- Multiple AEP Waste Management Projects | Landfills, Permitting, and Construction | West Virginia and Ohio
- Toledo Harbor Sustainable Dredge Management Plan | Identification and evaluation of multiple alternatives for 1,000,000 cy/year sustainable dredge management | Toledo, Ohio
- Milliron Industries | New Greenfield ASR landfill | Mansfield Ohio



EDUCATION:

- Coursework toward Master of Science in Geology, University of Toledo
- Bachelor of Science in Geology, Youngstown State University, 1986

TRAINING:

- OSHA 1910.120, 40-Hour Hazardous Waste Training Course and Annual 8-Hour Refresher
- State of Michigan Storm Water Management at Construction Sites

CERTIFICATIONS:

- Registered Professional Geologist – State of Kentucky
- Registered Professional Geologist – State of Pennsylvania
- Radiation Safety and Use of Nuclear Soil Gauges Certification

AFFILIATIONS:

- Association of Ground Water Scientists and Engineers, National Ground Water Association
- Ohio Water Pollution Control Association/Water Environmental Federation
- International Association of Hydrologists
- University of Toledo Earth, Environment, & Energy Committee
- National Solid Waste Management Association
- American Coal Ash Association

Bill's areas of expertise include solid waste management; environmental monitoring and compliance programs; hydrogeochemical evaluations; remedial investigations; and special regulatory and research and development projects. He is responsible for project management; solid waste permitting, closure and post-closure programs; life cycle analyses and financial evaluations; environmental monitoring and statistical evaluations for a variety of waste and process materials; beneficial use and conservation projects; storm and waste water programs; project development and strategic planning; and regulatory programs.

Bill's expertise includes:

Solid Waste Management and Solutions

- Responsible for leading solid waste management initiatives with private and public sector clients.
- Completes audits, waste characterization, and profiles to evaluate best material management alternatives, including beneficial uses, waste to energy, leachate recirculation, land applications, and waste/storm water management strategies.
- Conducts financial analyses incorporating risk assessment and liability management issues as well as regulatory compliance and life cycle analyses. Supports financial assurance reviews.
- Participates in strategic planning, multi-party negotiations and public relations, expert witness and litigation support, policy analysis, technical studies and rule making processes.

Compliance Projects

- Works on remedial system installation/O&M projects; responsibilities include installing system piping, assisting with clients in meeting applicable state and federal regulations, negotiating findings and orders for public and private clients, evaluating draft findings and orders, and assisting legal counsel with technical aspects of settlement negotiations, including risk evaluations, environmental impacts, cost-benefit analyses, alternate criteria or variances, and fate and transport models.

Environmental Monitoring Programs for Landfills

- Provided guidance and oversight for environmental monitoring activities for ongoing operations and post-closure monitoring plans for groundwater, surface water, explosive gas, surface water, and leachate collection systems at more than 60 active and closed landfills.
- Oversaw investigation of potential remedial actions for leachate transport/methane generation at sanitary landfills and closed dumps; also provided remediation, construction services, and litigation support.

Selected project experience:

- Groundwater, Leachate, Surface Water and Explosive Gas Projects for the City of Toledo, Ohio including: Stickney Avenue and Tyler Street Landfills, Hoffman Road Landfill, Dura Landfill and Former XXKem Facility
- Multiple Republic Services, Inc. Projects | Kentucky and North Carolina

■ STEVEN M. GROSS, CPG, CP | HYDROGEOLOGICAL TEAM LEAD



EDUCATION:

- Bachelor of Science, Geology & Mineralogy, The Ohio State University, 1987

TRAINING:

- Ohio Department of Transportation (ODOT) NEPA Document Preparation Training (1999)
- Ohio Department of Transportation (ODOT) Category Exclusion Document Preparation Training (2000)
- Transport & Fate Principles & Parameter Estimation (2000)
- Probability, Statistics and Geostatistics for Environmental Professionals (1993)
- Field Maintenance Technology, University of Toledo (1991)
- OSHA 1910.120, 40-Hour Hazardous Materials Safety Course (1989) and Annual 8-Hour Refresher Courses

CERTIFICATIONS:

- Ohio EPA Voluntary Action Program, Certified Professional – CP192
- Certified Professional Geologist, American Institute

Steven is a Senior Project Manager with over 28 years of experience in environmental consulting. He has been responsible for managing and implementing numerous site assessment investigations and remedial activities in different and complex hydrogeologic environments. Steven's experience includes working with solid and hazardous waste landfill sites, brownfield sites, industrial and commercial properties, assessment and remediation under the guidance RCRA and CERCLA regulations, Ohio Voluntary Action Program (VAP) regulations and BUSTR.

Steven's expertise includes:

Environmental Assessment

- Has served as project manager and lead for over 200 Phase I/Phase II Environmental Site Assessments at facilities including small to large retail facilities, commercial storage facilities, manufacturing facilities in the automotive parts/repair and metal processing industry, medical facilities, former industrial sites, and undeveloped property.
- Conducts on and off-site file reviews, site inspections, interviews, intrusive site investigations, and report preparation while ensuring that work is compliant with regulations and client objectives; has also conducted several projects through legal counsel.
- Conducts hydrogeologic investigations and groundwater monitoring using technologies such as ground recovery, soil vapor extraction, bioventing and air sparging, stabilization, and insitu and exsitu bioremediation.

Site Remediation

- Responsible for managing and implementing site investigations and remedial activities by acting as an Ohio VAP Certified Professional; defining project scopes to meet client needs; providing technical oversight and guidance; reviewing assessment Work Plans; reviewing and comparing data with risk-based VAP standards; and assisting in the development of remedial alternatives.
- Experience includes Superfund/CERCLA Removal Actions; RCRA Remedial Investigations, Corrective Actions, and Closures; NEPA assessments and documentation; U.S. EPA Brownfield Pilot Grant projects; and emergency response.

Selected project experience:

- Anchor Hocking Plant No. 2 | Phase I and Phase II Environmental Assessment and Remedial Action Plan | Lancaster, Ohio
- Closed Municipal Landfill Remediation | Superfund Removal Actions | Ashtabula County, Ohio
- Due Diligence Investigation of Waste Disposal Facilities | Multiple Locations, Ohio and Michigan
- Coal Tar Release Emergency Response | Pond Sediment Assessment & Remediation | Bank Stabilization | Northwest Ohio
- Greenfield FGD Landfill Hydrogeological Investigation and Assessment/Southeast Ohio
- Prepared 17 No Further Action Letters under the Ohio VAP, 14 of which have received a Covenant Not to Sue from Ohio EPA

■ SHAWN MCGEE | GEOTECHNICAL TEAM LEAD



EDUCATION:

- Master of Science, Civil Engineering, University of Toledo, 2001
- Bachelor of Science, Civil Engineering, University of Toledo, 1998

TRAINING:

- Managing and Understanding Sediments in Your Watershed (2011)
- ODOT Geotechnical Consultants Workshops (2004-2010)
- NHI Subsurface Investigation Workshop (2006)
- Earth Retaining Structures (2005)
- Watershed and Stream Investigation, Stabilization and Restoration Workshop (2005)

CERTIFICATIONS:

- Registered Professional Engineer, Ohio
- American Society of Civil Engineers
- National Society of Professional Engineers
- Ohio Dam Safety Organization/ Water Management Association of Ohio
- Utility Solid Waste Activities Group (Affiliate Member)
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)

ACCOMPLISHMENTS:

- 2007 Ohio Society of Professional Engineers Young Engineer of the Year
- 2006 ASCE, Toledo Section Young Engineer of the Year
- 2006 Toledo Young Engineer of the Year, National Engineer's Week
- Chi Epsilon (National Civil Engineering Honor Society)

Shawn specializes in geoenvironmental engineering, which includes traditional geotechnical and slope stability analyses. He has performed numerous geotechnical explorations and forensic investigations across the Midwest, planned comprehensive subsurface investigations, and performed a diverse variety of slope stability and subsurface analyses. He is experienced with a wide range of construction projects, including landslide stabilization/remediation, brownfield redevelopment projects, residual waste and municipal landfills, dams/levees, reservoirs, road and bridge rehabilitation/construction, and multi-story structures. Shawn is also the manager of Hull's AASHTO Accredited Geotechnical/Materials Testing Laboratory.

Shawn's expertise includes:

Geotechnical Explorations and Evaluations

- Plans and coordinates comprehensive geotechnical explorations for various site development projects.
- Performs evaluations of subsurface conditions and provides foundation and pavement design considerations and construction recommendations when applicable.
- Performs extensive soil pre-characterizations and borrows source investigations to determine usable soil types for various projects.
- Provides technical oversight to various projects requiring the remediation and management of contaminated sediments. Specific project activities include assisting with sediment sampling and analysis efforts as well as assisting with determining appropriate remedial options.

Dam/Levee Design and Permitting

- Involved from conception through construction of several reservoir expansions for municipality drinking water supplies. Projects included permitting, developing plans to fill the reservoir and handle emergencies, performing slope stability analyses; performing detailed geotechnical explorations; preparing contract documents for bid and construction; and observing/documenting construction of the reservoirs.
- Planned, performed and supervised a subsurface exploration for a levee that will provide flood control from the Scioto River.
- Design engineer for an ODNR dam permit application for the construction of a new settling pond for a lime processing facility in Ohio.
- Conducted hydrologic analysis of drainage basins and hydraulic analysis of spillways. Analyzed downstream damage that could occur in the event of a dam failure.

Select Project Experience:

- Materion Brush Inc. | Engineering Support on Various Remediation, Landfill and Civil Engineering Projects | Elmore, Ohio
- Wood County Landfill | Landfill Engineering, Permitting and Environmental Monitoring | Bowling Green, Ohio
- Multiple AEP Waste Management Projects | Landfills, Permitting, and Construction | West Virginia and Ohio
- Milliron Industries | New Greenfield ASR landfill | Mansfield Ohio
- City of Upper Sandusky Reservoir Expansion | Upper Sandusky, Ohio
- Village of North Baltimore Upground Reservoir Geotechnical Investigation and Construction Management | Village of North Baltimore, Ohio
- Dike 14 | Coastal Ecosystem Restoration | Cleveland, Ohio

■ FERNANDO CAMARGO, PE | ENGINEERING DESIGN TEAM LEAD



EDUCATION:

- Bachelor of Science, Civil Engineering, University of Sao Paulo, Brazil, 2004

TRAINING/SEMINARS:

- OSHA 29 CFR 1910.120, 40-hr Hazardous Waste Operations & Emergency Response (April 2006)
- Radiation Safety and Nuclear Densitometer Operator Certification (March 2006)
- The Engineer As Leader, Engineers Leadership Institute – Engineers Foundation of Ohio (February 2013)
- Coal Ash Landfill Management and Ash Pond Closure Course (March 2014)
- ACAA “Coal Combustion Products Utilization and Management: A Practical Workshop”, Lexington, KY, April 29-30, 2014

PROFESSIONAL AFFILIATIONS:

- Registered Professional Engineer, Ohio and West Virginia
- American Society of Civil Engineers
- Ohio Society of Professional Engineers

Fernando is a Project Manager and has eight years of experience that includes permitting, construction and operation support, and closure/post-closure care of several landfills in Ohio, West Virginia, and Arkansas. Fernando has also contributed to the development of a long-term harbor dredging plan for a significant port in Ohio. Fernando is a registered Professional Engineer in Ohio and West Virginia.

Fernando's expertise includes:

Landfill Design, Permitting and Compliance

- Assists with the preparation of Permit-to-Install and Permit Modification Application packages for residual and solid waste landfills; responsibilities include overall landfill design, leachate generation analysis, comprehensive design for leachate collection and management systems, surface water management system design, and preparing QA/QC, Closure and Post-Closure plans, and Explosive Gas Management Systems.
- Generates preliminary evaluations and cost estimates to support design of several components of landfill construction and operation structures.

Landfill QA/QC Services and Construction Support

- Acts as the lead QA/QC officer for the construction and expansion of landfills and landfill components such as leachate forcemains, explosive gas monitoring systems, and municipal and residual waste landfills. Work has included overall construction oversight and preparation of Construction Certification Reports.

Landfill Operations and Compliance Support

- Prepares interim filling plans, annual operational reports and operating record updates, quarterly in-place density calculations for several municipal solid waste landfills in Ohio, regulatory compliance support for closed landfills in Ohio.

Dredge Material Management Plan

- Assisted in the development of a plan that evaluated relative costs, feasibility, and environmental, ecological and human impacts/benefits for several different options for long-term sediment management and use of dredge material from Lake Erie.

Selected project experience:

- Little Broad Run Landfill | Construction and Operations Support | New Haven, West Virginia
- Flint Creek Power Plant Landfill | Permit Modification and Construction Support | Gentry, Arkansas
- AEP Mitchell Landfill | Moundsville, West Virginia
- Evergreen RDF, Inc. | Construction and Operations Support | Northwood, Ohio
- Toledo-Lucas County Port Authority | Toledo Harbor Sediment Management and Use Plan | Toledo, Ohio
- Frontier Recycling and Disposal Facility | Mansfield, Ohio

■ GARY CORNER | CADD/GIS TEAM LEAD



EDUCATION:

- Bachelor of Science, Mechanical Engineering Technology, University of Toledo, 1985
- Associate Degree in Mechanical Engineering Technology, University of Toledo, 1983

Gary Corner's 19 years of consulting experience includes design plans of municipal and industrial landfills; permitting; construction; planning; operations; and closures. He has designed dams, reservoirs and lime residual waste settling ponds, and provided construction grade plans for each one. Gary holds Associate and Bachelor's degrees in mechanical engineering technology from the University of Toledo.

Gary's expertise includes:

Expansion PTI Plan Sets for Landfills

- Designs and prepares plan sets showing underdrain; secondary and primary leachate collection systems; final waste grades; cross-sections associated with different grades; and detail sheets showing how landfill expansion is to be constructed; also prepares plans for significant landfill modifications. Landfill base and final grade design are based on specified regulatory design parameters.
- Performs volume analysis for landfill airspace and useful life calculations.

Landfill Closure/Post-Closure Plans

- Designs and prepares plan sets that show final top of waste grades, final cap grades, surface water drainage, components, and details associated with final construction.

Water Supply Reservoir Plans

- Designs and prepares plan sets showing reservoir embankments, water supply piping, inlet and outlet structures, surface water control structures, wetland and stream mitigation areas, forcemain and pump station details, and road details.
- Calculates water storage and soil volumes to determine soil balance.
- Prepares bid plans showing grades of different construction components with survey points and associated detail drawings for construction.

Construction Documentation Support

- Prepares nuke test completion maps, geomembrane deployment and repair drawings, construction details, record drawings, bid plans, and detailed construction development plans and cross-sections.

Construction Design Plan Sets

- Designs and prepares plan sets showing details plans, cross-sections and details showing how the design needs to be constructed. The plans also show survey staking information (i.e., northing, easting, elevation, description of feature) for the construction company and site surveyor.

Select project experience:

- Hoffman Road Landfill | Toledo, Ohio
- Little Broad Run Landfill | Construction and Operations Support | New Haven, West Virginia
- Flint Creek Power Plant Landfill | Permit Modification and Construction Support | Gentry, Arkansas
- Evergreen RDF, Inc. | Construction and Operations Support | Northwood, Ohio
- Upper Sandusky Reservoir – Design and Construction plans – Upper Sandusky, Ohio
- Wood County Landfill | Bowling Green, Ohio
- AEP Mitchell Landfill | Moundsville, West Virginia
- AEP Amos FGD Landfill | Winfield, West Virginia
- Frontier Recycling and Disposal Facility | Mansfield, Ohio

■ DAVID BALTZER, CSI, PE | Construction Contract Team Lead



EDUCATION:

- Bachelor of Science, Civil Engineering, The Ohio State University

CERTIFICATIONS:

- Professional Engineer in the state of Ohio
- Professional Engineer in the state of West Virginia
- ODOT Prequalification – Construction Engineering Level 1 & 2

AFFILIATIONS:

- Columbus Chapter of the Construction Specifications Institute (CSI)
- Associated General Contractors of America
- Ohio Society of Professional Engineers

David Baltzer is the leader of Hull's Construction Services practice. With over 29 years of experience in the construction and development arena, he has lead and managed projects pertaining to energy, waste management, urban revitalization, industry, shale oil & gas, educational facilities, commercial office buildings, treatment facilities and infrastructure. David has established long and respected relationships with public and private owners, contractors, and other consultants, and serves in the lead construction management role for many complex, multidisciplinary projects.

Dave's expertise includes:

Municipal Wastewater/Stormwater Collection Systems and Water Distribution

- Acted as project manager and monitored CA/RPR tasks for wastewater/stormwater collection systems (i.e. ditch improvements, box culverts, tunnel culverts, gravity sewers, pump stations, and force mains).
- Acted as project manager and monitored CA/RPR tasks for water distribution projects including installation and testing of water main lines, service connections, valves, hydrants and other water line appurtenances.

Landfill Engineering

- Senior Project Manager responsible for providing a constructability review of Closure Plans for a private landfill designed by a Design-Build entity. Also provided limited construction administration and coordinated/scheduled Hull's project representative to monitor construction progress and quality and develop the associated punch list.
- Experienced acting as a Senior Project Manager responsible for providing funding assistance during closure and post closure activities on public landfill sites; managing internal and external resources regarding QA/QC services (soils, concrete, asphalt) for haul roads on a private landfill projects; and coordinating/peer reviewing engineers' opinions of probable construction costs at a private residual waste landfill project.

Selected project experience:

- Demolition and UST Closure: Indian Meadow and Tiffin River Service Plazas | Ohio Turnpike Commission Milepost 20.8
- East 44th Street Roadway & Utility Improvements | Cuyahoga County, Ohio
- Water Line and Sewer Inspection | Northwestern Water & Sewer District
- Pilkington Glass Facility Powerhouse Demolition Project | Ottawa, IL
- ODNR Muskingum River Lock Repairs | Zanesville, Ohio
- 52-Story High Rise Office Building | Construction Management | Indianapolis, Indiana
- Rio Grande University Campus Building Project | Construction Management | Rio Grande, Ohio
- Former Frick Gallagher | Ray O Vac Site Demolition and Remediation Project | Lancaster, Ohio
- Cardinal Haul Road | Quality Assurance/Quality Control | Brilliant, Ohio
- Countywide RDF West Haul Road Project | East Sparta, Ohio
- Franklin County Metroparks | Glacier Ridge Metro Park Roadway Project | Jerome Township in Union County, Ohio

Jeff Gola, PE Project Engineer



Jeff Gola, PE has built a successful portfolio of streetscape, highway, community improvement, airport and commercial site development projects. He is experienced in all aspects of project control, form design and drafting to construction and project oversight. Jeff has an excellent understanding of bid processes and construction inspection.

Jeff's expertise in designing and planning roadways, bridges, sidewalks, retaining walls, utility plant structures, storm water management and demolition plans is exceptional. He has first hand knowledge in obtaining permits and their requirements. His understanding of erosion and sediment control make him an excellent project manager.

Education:

- Bachelor of Science, Civil Engineering - West Virginia University

Registrations/Licenses:

- Registered Professional Engineer
 - States of West Virginia [#15621] and Maryland [#33492]

Affiliations/Certifications:

- American Society of Civil Engineers
- American Society of Highway Engineers
- City of Mannington Enforcement Board of Appeals
- Harrison County Planning Commission Board of Appeals

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Site Brownfields Project** - Harrison County, West Virginia
- **Fairmont State University Housing Demolition and Site Reclamation Project** - Marion County, West Virginia
- **City of Mount Hope Housing and School Demolition and Site Reclamation** - Fayette County, West Virginia



THRASHER

Chadwick Biller, PE Principal



In 1999, Chad Biller, PE, joined the team at Thrasher and is now a partner within the firm. Mr. Biller has extensive experience in all aspects of civil engineering, but his primary emphasis lies in highway, road, bridge, and airport projects. Mr. Biller oversees all project management and design for WVDOH projects at Thrasher.

These projects include several four-lane divided highways, bridges, two-lane roads, and several road widenings throughout the state. Site development for both public and private clientele has always been an area where Mr. Biller excels. His repertoire of projects within this realm include mass grading, road design, drainage, storm water management, erosion, and sediment control.

Education:

- Bachelor of Science, Civil Engineering - West Virginia University

Registrations:

- Registered Professional Engineer
- States of West Virginia, Ohio, and Pennsylvania

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Brownsfields Reclamation** - Harrison County, West Virginia
- **Marion County Economic Development Council Palatine Park Master Plan: Boat Ramp, Parking Improvements, and Splash Park** - Marion County, West Virginia
- **Raleigh County Industrial Park** - Raleigh County, West Virginia
- **Raleigh County Memorial Airport Industrial Park** - Raleigh County, West Virginia
- **Putnam County Business Park** - Putnam County, West Virginia
- **Wolf Creek Industrial Park Bridge** - Fayette County, West Virginia



THRASHER

Mike Nestor, PE Project Engineer



Michael R. Nestor, PE, joined Thrasher in 2005, upon graduation from Fairmont State University. Mr. Nestor has accrued an extensive resume in residential and commercial site development projects throughout his career. His breadth of work has led him to utilize all aspects of infrastructure design including street and parking lot layout, street profiles, and extensions of public utility systems to these developments. Mr. Nestor is highly knowledgeable in the EPS's Municipal Separate Storm Sewer Systems (MS4) conveyances.

Mike has completed multiple MS4 plans and dozens of projects that utilized his sharp storm water management skills. The knowledge Mike gained from these projects led him to obtain his Certified Flood Management certification in 2012. Mike is also involved with several commercial development storm water projects such as White Oaks Business Park and Meridian Pointe as well as over 20 residential sub-developments in the Eastern Panhandle of West Virginia. These notable projects have all included miscellaneous drainage structures as well as coordination with permitting agencies and various local utilities companies.

Education:

- + Bachelor of Science, Civil Engineering Technology - Fairmont State University

Registrations:

- Registered Professional Engineer
- State of West Virginia

Affiliations/Certifications:

- Certified Flood Plain Manager
- President of the North Central WV Chapter of American Society of Highway Engineers
- American Society of Civil Engineers

Related Experience Includes:

- **White Oaks Business Park** - Harrison County, West Virginia
- **Charles Pointe Development** - Harrison County, West Virginia
- **West Virginia University, Silver Lot Storm Water Project** - Monongalia County, West Virginia



THRASHER

RJ Hovatter, PE Project Engineer



Richard "RJ," Hovatter joined Thrasher in 2011 and serves as Project Engineer for the firm. Mr. Hovatter is a graduate of Fairmont State University and has extensive knowledge of the engineering field through education and previous experiences. RJ's impeccable interpersonal skills and precise attention to detail make him a much sought after Project Engineer.

As Project Manager, Mr. Hovatter has completed numerous site and grading designs, storm water plans, and dozens of erosion and sediment control plans for Antero Resources. His work in conjunction with the Antero staff has resulted in repeatedly successful projects from start to finish.

Education:

- Bachelor of Science, Civil Engineering - Fairmont State University

Registrations:

- Registered Professional Engineer (PE)
 - States of West Virginia and Pennsylvania

Affiliations/Certifications:

- Level I Rosgen Natural Stream Construction
- Level II Rosgen Natural Stream Construction
- HEC—RAS Operator Training Short Course
- Annual Oil & Gas Training Pennsylvania—Expedited Review of ESCGP-1
- MSHA Training

Related Experience Includes:

- **Confidential Client Canton Water System Project** - Doddridge County, West Virginia
- **Confidential Client Langford Water Project** - Doddridge County, West Virginia
- **Confidential Client West Fork Intake** - Harrison County, West Virginia



THRASHER

Robert Milne, PE Principal



Robert Milne, P.E. joined Thrasher in 2010 and was named Partner in the firm in 2012. Mr. Milne has over 25-years of experience working throughout the tri-state area. Mr. Milne is the firm's site development manager and is responsible for the over all management of projects including staff supervision, assignments, contract administration, cost control and on-time project delivery.

Mr. Milne is experienced in civil/site design, public utilities, buildings, as well as roadways, highways, bridges, traffic studies and storm sewer design and construction administration and inspection. Prior to joining Thrasher, Mr. Milne was the civil engineer of record for following projects within the Morgantown area: Northside Fire Station, Morgantown Event Center and Parking Garage (TIF), and the WVU Honors Dormitory.

Education:

- Masters of Science, Civil Engineering - West Virginia University

Registrations:

- + Registered Professional Engineer
 - States of West Virginia, Ohio, Maryland, Virginia and Pennsylvania

Affiliations/Certifications:

- Leadership Monongalia County, WV
- Foundations of Leadership / National Leadership

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Brownsfields Reclamation** - Harrison County, West Virginia
- + **West Virginia DNR Palatine Park Master Plan: Boat Ramp and Parking Improvements** - Marion County, West Virginia
- **Marion County Economic Development Council Master Plan and Splash Park** - Marion County, West Virginia
- **Canal Place Master Plan** - Allegany County, Maryland
- + **Boy Scouts of America Welcome Center Site Planning and Master Conceptual Design** - Fayette County, West Virginia
- **WVU Roadways and Parking** - Monongalia County, West Virginia



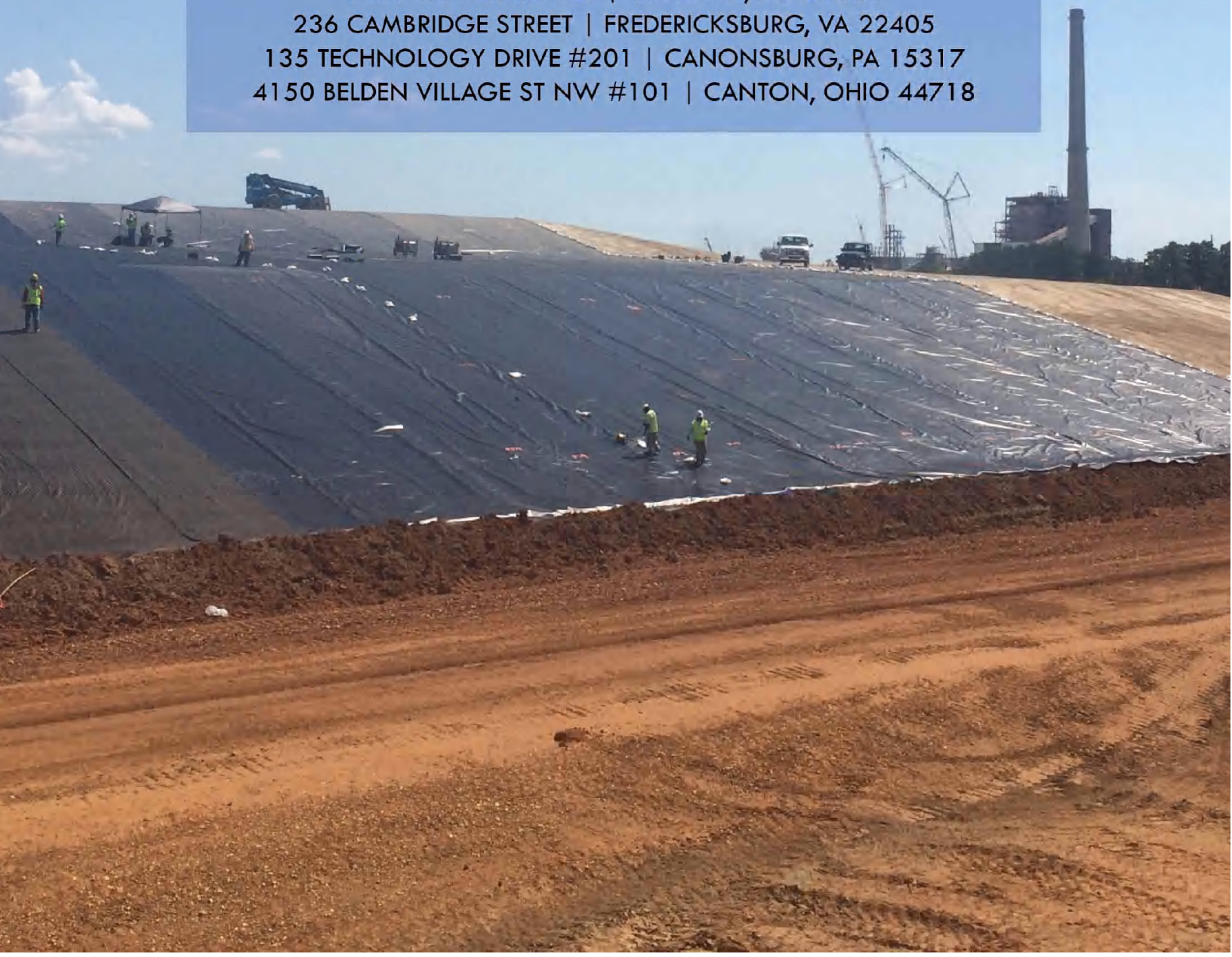
THRASHER

HULL & ASSOCIATES, INC.

4 HEMISPHERE WAY | BEDFORD, OHIO 44146
6397 EMERALD PARKWAY, SUITE 200 | DUBLIN, OHIO 43016
4770 DUKE DRIVE, SUITE 300 | MASON, OHIO 45040
59 GRANT STREET | NEWARK, OHIO 43055
300 BUSINESS CENTER DRIVE, SUITE 320 | PITTSBURGH, PA 15205
146 WEST MAIN STREET, 2ND FLOOR | ST. CLAIRSVILLE, OHIO 43950
3401 GLENDALE AVENUE, SUITE 300 | TOLEDO, OHIO 43614
126 MARGARET CIRCLE | AUSTIN, TEXAS 78737

THE THRASHER GROUP, INC.

600 WHITE OAKS BLVD. | BRIDGEPORT, WV 26330
300 ASSOCIATES DRIVE | CHARLESTON, WV 25311
155 BLUE ANGEL LANE | BEAVER, WV 25813
3000 THAYER CENTER | OAKLAND, MD 21550
236 CAMBRIDGE STREET | FREDERICKSBURG, VA 22405
135 TECHNOLOGY DRIVE #201 | CANONSBURG, PA 15317
4150 BELDEN VILLAGE ST NW #101 | CANTON, OHIO 44718



STATE OF WEST VIRGINIA
Purchasing Division**PURCHASING AFFIDAVIT**

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

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

DEFINITIONS:

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

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

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

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

WITNESS THE FOLLOWING SIGNATURE:Vendor's Name: Hull & Associates, Inc.Authorized Signature:  Date: February 17, 2016State of OhioCounty of Franklin, to-wit:Taken, subscribed, and sworn to before me this 17th day of February, 2016.My Commission expires 04/12/2016, 20 .

AFFIX SEAL HERE

VICKY R. MURNANE
NOTARY PUBLIC, STATE OF OHIO
My Commission Expires 4/12/2016

NOTARY PUBLIC



Purchasing Affidavit (Revised 07/01/2012)

CERTIFICATION AND SIGNATURE PAGE

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

Hull & Associates, Inc.

(Company)



| David L. Richards, PE | COO

(Authorized Signature) (Representative Name, Title)

614.793.8777 | 614.793.9070 | February 17, 2016

(Phone Number) (Fax Number) (Date)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)

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

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

Hull & Associates, Inc.

Company



Authorized Signature

February 17, 2016

Date

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



February 18, 2016

State of West Virginia
Department of Environmental Protection
Office of Environmental Remediation
601 57th Street SE
Charleston WV 25304

RE: Expression of Interest Webster County Landfill Site Characterization Study, Leachate Management and Closure Cap Design

To whom it may concern:

Hull & Associates, Inc. (Hull) is pleased to present to the State of West Virginia the following Expression of Interest (EOI) for Landfill Site Characterization Study, Leachate Management and Closure Cap Design Services at the closed Webster County Landfill. We have teamed with The Thrasher Group, Inc. (Thrasher), a leading consulting engineering firm in the state of West Virginia to provide professional mapping services, along with field support.

Project Understanding and Approach

The State of West Virginia's purpose of the project is to provide services for the West Virginia Department of Environmental Protection's Landfill Closure Assistance Program (LCAP). We understand that the State of West Virginia Department of Environmental Protection (WVDEP) is seeking an engineering firm to provide professional mapping and design services for the Webster County Landfill, including a site characterization study, leachate management and closure cap design.

Based on our comprehensive landfill engineering, facility characterization studies and surveying experience, we are confident that our team can perform the work required and work with the Agency as a partner along with other applicable regulatory agencies. We believe our team is well suited for this project and can bring our assessment, design and construction expertise to assist the WVDEP in determining the appropriate path moving forward for closure of the facility.

We understand the services will include, but not necessarily be limited to, the following:

- Review of governing documents and initial meeting with WVDEP;
- Develop a detailed scope of services and associated costs, and effectively manage the projects to minimize change orders;
- Perform field assessments and site characterization, including surveying/mapping, subsurface investigations and laboratory testing, determining limits of waste, and environmental monitoring;
- Develop closure design and prepare required permit applications;
- Prepare bid package and construction drawings/specifications, and solicit/evaluate bids; and
- Meetings with the State of West Virginia, the WVDEP, as necessary as part of the permitting process.

The initial step of the project will be to have Hull's key team members meet with the Agency's team to discuss the project and develop a thorough understanding of the objectives, constraints and desired schedule. Following this initial meeting, Hull will develop a detailed scope of services, cost estimate and schedule to present to the Agency. Upon receiving any feedback, Hull will update these documents (as needed) and begin project implementation.

Hull / Thrasher Team's Strengths:

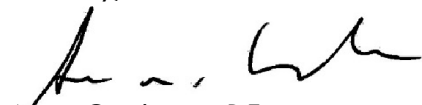
The Hull / Thrasher team is an absolute fit based on our ability to perform the requirements of this EOI and work with the State of West Virginia as a partner, along with other applicable regulatory agencies. We

would like to note the following key strengths of the Hull / Thrasher team related to this project:

1. Hull has been recognized as a leader in the waste management arena. We have been working in West Virginia for over 12 years and Ohio for over 30 years, and have provided landfill engineering and science services to greater than 160 landfill facilities in over 12 states. We have provided various services for over 180 acres of landfill cells within West Virginia. In addition, our experience with varying types of facilities and different design components allows us to quickly integrate into a site. Many of the projects that we have successfully completed required our quickly becoming familiar with site design, permitting and construction requirements, and helping the site transition from a previous consultant. We are confident that we can do the same for this project, and work as an effective team with the State of West Virginia to thoroughly assess site conditions and develop an environmentally sound and cost-effective closure design that meets all requirements.
2. The Hull / Thrasher team consists of highly-skilled professionals composed of seasoned industry experts with significant experience and proven results providing engineering and environmental solid waste management services. The team members possess high competency as indicated by their experience, technical knowledge, training, and education. Hull's team of waste management experts dedicated to this project have a combination of private and public sector experience, and understand that opportunities and challenges with a project such as this. In recognition that the project team is not familiar with the Landfill's design and construction information, **we will not charge any of the time needed to review readily available existing information to familiarize ourselves with the site. Hull and Thrasher have various offices in the Midwest Region and commits to bill from the closest office for their respective personnel for travel-related work, regardless of which home office personnel reside.**
3. We understand the very real challenges of plan implementation and construction that can result in indirect costs associated with cap design choices, leachate management, stormwater management, borrow soils, etc. We will consider constructability and sustainability (and relative cost) in every stage of design, which should minimize overall closure construction and post-closure care costs.
4. Hull and Thrasher have a strong track record for delivering high quality work product. We achieve this through understanding and anticipating the client's need and expectations, and through proper planning, management, and execution of the work. We believe ongoing, open communication with all team members during the project and providing experienced, appropriate personnel at all levels are the best steps to ensure successful project completion. We will follow this approach by providing the State of West Virginia up-to-date information regarding the status of the project tasks and budget to assist with proper management and implementation of the project.

As demonstrated within this EOI, the Hull / Thrasher team has the personnel resources, technical knowledge, and experience needed to successfully complete the characterization, leachate management and closure cap work required. We are confident we can provide a valuable service and look forward to meeting the State of West Virginia team, further discussing the details of this project, and refining the scope and costs. If you have any questions or need additional information to help the strategically address challenges and achieve your project goals, please contact me at 419-385-2018 or by email at agerdeman@hullinc.com.

Sincerely,



Angie Gerdeman, P.E.
Sr. Project Manager
Landfill Engineering Practice Leader

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

PROJECT NAME: Site Characterization Study, Leachate Management and Closure Cap for Webster County Landfill		DATE (DAY, MONTH, YEAR): 18 February 2016		FEIN: 34-1549829																																					
1. FIRM NAME Hull & Associates, Inc.		2. HOME OFFICE BUSINESS ADDRESS 3401 Glendale Avenue, Suite 300 Toledo, Ohio 43614		3. FORMER FIRM NAME <i>Not Applicable</i>																																					
4. OFFICE TELEPHONE 614.793.8777	5. ESTABLISHED 1980	6. TYPE OF OWNERSHIP Corporation	6A. WV REGISTERED DBE NO																																						
7. PRIMARY OFFICE: ADDRESS TELEPHONE PERSON IN CHARGE NO. PERSONNEL EACH OFFICE 3401 Glendale Avenue, Suite 300 Toledo, Ohio 43614 419.385.2018 Michael Coonfare 36 employees 6397 Emerald Parkway, Suite 200 Dublin, Ohio 43016 614.793.8777 Dave Mustafaga 50 employees 4 Hemisphere Way Bedford, Ohio 44146 440.232.9945 Eric Wilburn 27 employees 300 Business Center Drive, Ste 320 Pittsburgh, Pennsylvania 15205 412.446.0315 Dom Anselmo 12 employees 4770 Duke Drive, Suite 300 Mason, Ohio 45040 513.459.9677 Eric Montgomery 11 employees 146 West Main Street, Second Floor St. Clairsville, Ohio 43950 800.241.7173 AJ Smith 9 employees 126 Margaret Circle Austin, Texas 78737 800.241.7173 Lance Turley 1 employee																																									
8. NAME TITLE TELEPHONE NUMBER OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> Craig A. Kasper, PE CEO Director 614.793.8777 John H. Hull, PE Chairman Director 419.385.2018 Bradford S. White, Ph.D. Director 513.459.9677 </div> <div style="width: 48%;"> David L. Richards, PE COO Director 614.793.8777 David B. Mustafaga, CPG Director 614.793.8777 Eric H. Wilburn, PE Director 440.232.9945 </div> </div>																																									
9. NUMBER OF PERSONNEL BY DISCIPLINE (Bold Lettering Indicates Minimum Design Team Members) Detailed information on Team to be included <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">16 Administrative</td> <td style="width: 25%;">8 Ecologists</td> <td style="width: 25%;">Landscape Architects</td> <td style="width: 25%;">2 Structural Engineers</td> </tr> <tr> <td>Architects</td> <td>Economists</td> <td>Mechanical Engineers</td> <td>83 Surveyors</td> </tr> <tr> <td>8 Biologists</td> <td>Electrical Engs</td> <td>Mining Engineers</td> <td></td> </tr> <tr> <td>4 CADD Operators</td> <td>Environmentalists</td> <td>Photogrammetrists</td> <td>Others</td> </tr> <tr> <td>Chemical Engineers</td> <td>4 Estimators</td> <td>Planners: Urban/Regional</td> <td></td> </tr> <tr> <td>37 Civil Engineers</td> <td>22 Geologists</td> <td>Sanitary Engineers</td> <td></td> </tr> <tr> <td>11 Construction Inspectors</td> <td>Historians</td> <td>69 Soils Engineers</td> <td></td> </tr> <tr> <td>5 Designers</td> <td>34 Hydrologists</td> <td>Specification Writers</td> <td></td> </tr> <tr> <td>Draftsmen</td> <td></td> <td></td> <td>319 Total Personnel</td> </tr> </table>						16 Administrative	8 Ecologists	Landscape Architects	2 Structural Engineers	Architects	Economists	Mechanical Engineers	83 Surveyors	8 Biologists	Electrical Engs	Mining Engineers		4 CADD Operators	Environmentalists	Photogrammetrists	Others	Chemical Engineers	4 Estimators	Planners: Urban/Regional		37 Civil Engineers	22 Geologists	Sanitary Engineers		11 Construction Inspectors	Historians	69 Soils Engineers		5 Designers	34 Hydrologists	Specification Writers		Draftsmen			319 Total Personnel
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5 Designers	34 Hydrologists	Specification Writers																																							
Draftsmen			319 Total Personnel																																						
TOTAL NUMBER OF WV REGISTERED PROFESSIONAL ENGINEERS IN PRIMARY OFFICE: 3 * RPEs other than Civil must provide supporting documentation that qualifies them to supervise and perform this type of work.																																									
10. If submittal is by a joint venture, list participating firms and outline specific areas of responsibility (including administrative, technical and financial) for each firm. Each participating firm must complete a "Consultant Confidentiality Qualification Questionnaire". Not Applicable																																									
10a. HAS THIS JOINT VENTURE WORKED TOGETHER BEFORE? YES NO																																									
11. OUTSIDE KEY CONSULTANTS/SUB-CONSULTANTS ANTICIPATED TO BE USED:																																									
NAME AND ADDRESS: THRASHER 600 White Oaks Blvd. Bridgeport, WV 26330		SPECIALITY: Surveying Soils Lab Ecological		WORKED WITH BEFORE: YES																																					

12A. Is your firm experienced in SOLID WASTE LANDFILL CLOSURE DESIGN?**YES – Description and Number of Projects**

Hull has provided waste management solutions to municipal and private clients for over 30 years. Our chief practitioners have over 150 years of combined experience in waste management. In fact, our company was originally founded on waste management solutions service offerings. Included in Hull's EOI is a Landfill Experience Matrix that provides a comprehensive list of projects and services. We have provided closure design services at over 40 landfills. At many of these landfills we have also prepared construction documents (bid/construction drawings, specifications and detailed cost estimates) and provided construction quality control/quality assurance (QA/QC) at many of these landfills. Our involvement in the construction process has provided experience essential to developing sound and cost-effective closure designs.

12B. Is your firm experienced in SOLID WASTE LANDFILL SITE CHARACTERIZATION ASSESSMENT AND EVALUATION?**YES – Description and Number of Projects**

Hull has performed site characterization assessment and evaluation work at over 50 landfills. We have successfully assisted our clients with responsible site characterization, assessment and corrective measures strategies at active and closed solid waste and residual waste landfills. We have conducted site-specific and regional groundwater studies to establish a baseline understanding of site conditions and potential environmental impacts; developed conceptual site models; established groundwater monitoring programs to monitor water quality and flow data; completed groundwater modeling and risk assessment studies; conducted surface water studies to model storm water flow and quality and its relationship to groundwater; conducted studies to assess groundwater impact on receiving streams; and conducted studies to develop models to evaluate how the landfill was constructed, materials managed at the site, current conditions within the landfill, and the overall relationship between the landfill and its surrounding environs.

12C. Is your firm experienced in LANDFILL CLOSURE CONSTRUCTION INSPECTION?**YES – Description and Number of Projects**

Hull has provided landfill construction QA/QC services for approximately 50 municipal, residual, industrial and construction and demolition debris landfills. Services have included: preparing construction documents; performing soil borrow investigations and laboratory testing; constructing soil test pads (as needed); providing field representatives to observe and document construction activities, and perform field testing of soil and geosynthetic materials; providing office technical guidance and support during construction activities; providing certification surveying during construction to verify compliance with the design/permit requirements; and preparing the construction certification report for submittal to the appropriate regulatory agencies. We have also provided comprehensive services to many clients that included overall project management and planning, providing multi-person field teams on large projects involving year-round construction for several years, and setting up field laboratories for soils testing.

12D. Is your firm experienced in AERIAL PHOTOGRAPHY and the Development of CONTOUR MAPPING?**YES – Description and Number of Projects**

MERCER COUNTY SOLID WASTE AUTHORITY–Mercer County Landfill Topo Update–147 acre update @ 1:1200 W/ 2' CI
CENTEC – Nicholas County Landfill Update Topo – 148 acre update @ 1:1200 w/ 2' CI
ALLIANCE – Raleigh County Landfill Topo Update – 235 acre update @ 1:1200 w/ 2' CI
ALLIANCE – Hurricane Landfill Topo Update – 109 acre update @ 1:1200 w/ 2' CI
VECELLIO & GROGAN - Ridgeview High School – 110 acre topo @ 1:1200 W/ 2' CI
RALEIGH COUNTY AIRPORT AUTHORITY – Airport/Industrial Development Topo – 137 acre topo @ 1:1200 w/ 2' CI
WILLIAMS FIELD SERVICES - Oak Grove Pad – Topo, plan, and mosaic from manned aircraft
ECLIPSE RESOURCES - Eclipse David Stadler – Asbuilt pad – Topo, plan, and mosaic from UAV
ANTERO - Long Compressor Stake Out – Asbuilt pad – Topo, plan, and mosaic from UAV
MARKWEST LIBERTY MIDSTREAM & RESOURCES, LLC – Momentum Spur Line - Pad – Topo, plan, and mosaic from UAV
WES-UIC Waste Facility – Two proposed pads – Topo from public lidar, mosaic and plan from UAV
ANTERO - Olive Rich CS – Proposed pad – Topo from public lidar, mosaic from UAV
ANTERO - Olive Dry CS – Proposed pad – Topo from public lidar, mosaic from UAV
ANTERO - SouthFork South Dry CS – Proposed pad – Topo from public lidar, mosaic from UAV
MARRIOTT COLLEGE PARK-THOMAS HAMILTON & ASSOC – Hotel – Plan and mosaic from UAV
Marketing – Charles Point Farmers Market – Topo, plan, and mosaic from UAV

12E. Is your firm experienced in EVALUATING GROUNDWATER CONTAMINATION, such as may be associated with landfills?

YES – Description and Number of Projects

Hull has evaluated groundwater contamination for more than 50 landfills. Our team has extensive experience in evaluating groundwater monitoring programs, conducting assessment investigations to determine potential groundwater contamination, and determining the most efficient and effective corrective measures, if merited. As part of these evaluations, we have completed detailed geochemical demonstrations including geochemical modeling to determine if a potential release of leachate-derived constituents to the groundwater has occurred. The Hull team has extensive experience with geochemical modeling to support/assist in these analyses. We have completed geochemical conceptual models, using hydro geologic, geochemical, isotopic, mineralogical, and climatological data to simulate precipitation infiltration and subsequent chemical reaction pathways to serve as a tool to determine the expected geochemical results of a leachate release to groundwater. Our understanding of groundwater geochemistry has proved invaluable to our clients in preventing some sites from going into assessment, effectively conducting assessment investigations to understand the potential groundwater contamination in others, and selecting the most effective corrective measures.

12F. Is your firm experienced in LANDFILL CLOSURE COST ESTIMATING?

YES – Description and Number of Projects

Hull is very experienced in preparing detailed engineer's estimates of probable construction costs for landfill closure and development projects, and have provided related services for more than 50 landfills. Our team of professionals is experienced in performed detailed quantity take-offs. We have an internal database that we regularly update that contains construction pricing for projects we have been involved with, and also have strong relationships with many contractors that we reach out to, as needed, to help refine our estimates. We work closely with our clients to assist them with forecasting costs, and also phasing projects to match the client's budgetary constraints.

13. Personal History Statement of Principals and Associates responsible for overall LANDFILL CLOSURE DESIGN project

NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Landfill QA/QC Experience	Years of Heavy Earthwork Construction Experience
Gerdeman, Angie M., P.E.	24	27	27

Brief Explanation of Responsibilities:

Angie will be the project manager for the Webster County Landfill project. She is a Senior Project Manager with more than 25 years of experience and is the Landfill Engineering Practice Leader for Hull. She started at Hull in our in-house soils laboratory and performed construction quality assurance activities in the field on numerous landfill test pads, cells, cap systems, which provided practical experience to base future design work upon. Her years of landfill consulting experience include municipal and industrial landfill siting, design and permitting of new landfills and landfill expansions, construction quality assurance, test pad evaluations, compliance, operations, closure, subsurface investigations and laboratory analyses. Additional experience includes dam design, permitting, and construction for water-supply reservoirs and lime residual waste settling ponds.

Education (Degree, Year, Specialization): B.S., Civil Engineering, 1992 – University of Toledo

Membership in Professional Organizations:

- National Society of Professional Engineers
- American Coal Ash Association
- Engineers Without Borders

Registration (Type, Year, State):

- Registered PE, West Virginia #017858
- Registered PE, Arkansas, Kentucky, Pennsylvania, and Texas, Ohio
- Certified CQA Geosynthetic Materials and Compacted Clay Liner Inspector (2013)
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)
- Radiation Safety and Use of Nuclear Soil Gauges Certification

13. Personal History Statement of Principals and Associates responsible for overall LANDFILL CLOSURE DESIGN project			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Landfill QA/QC Experience	Years of Soils Laboratory Experience
Hull, John H., P.E.	36	36	36
Brief Explanation of Responsibilities: <p>John will be a technical resource for the Webster County Landfill project. He is the founder and Chairman of Hull with more than 41 years of experience with a wide variety of engineering and environmental issues. He is a registered Professional Engineer in 14 states and is recognized as a Board Certified Environmental Engineer in solid waste management by the American Academy of Environmental Engineers. John serves on governor-appointed committees, advises clients on complicated challenges, and provides strategic planning experience to current staff and assists Hull's clients achieve environmentally protective and cost-effective solutions.</p>			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> Permanent Certified UST Professional (#0255) American Academy of Environmental Engineers American Society of Civil Engineers Association of Soils and Foundation Engineers National Society of Professional Engineers Ohio Environmental Health Association Order of the Engineer Water Environment Federation Western Dredging Association National Water Well Association/National Ground Water Association 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered PE, West Virginia #011340 Registered Professional Engineer (PE) Ohio Registered PE, Michigan, Pennsylvania, Indiana, New Hampshire, Kentucky, Texas, Connecticut, Vermont, Illinois, Alabama, Massachusetts, Maine Board Certified Environmental Engineer Solid Waste Management (AAEE) 	
13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE and GEOTECHNICAL TASK			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Closure Design Experience	Years of Geotechnical Engineering Experience	Years of Soils Laboratory Experience
McGee, Shawn, P.E.	18	18	18
Brief Explanation of Responsibilities: <p>Shawn McGee will lead the geotechnical efforts for the Webster County Landfill project. He is a Senior Project Manager for Hull, and the leader of Hull's Geotechnical practice. He has over 18 years of diverse experience in landfill and geotechnical engineering. His experience focuses on municipal, industrial, and construction and demolition debris landfills which includes siting; design and permitting of new landfills and expansions; Quality Assurance/Quality Control (QA/QC) services and construction support; planning; test pad evaluations; compliance; operations; and closure. Shawn has also planned comprehensive subsurface investigations and borrow investigations, and conducted a diverse variety of slope stability and landfill stability analyses, which includes staged loading analysis. He is currently the manager of Hull's AASHTO Accredited Geotechnical/materials Testing Laboratory.</p>			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> American Society of Civil Engineers National Society of Professional Engineers Ohio Dam Safety Organization/ Water Management Association of Ohio 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Engineer, Ohio Radiation Safety and Use of Nuclear Soil Gauges Certification Mine Safety and Health Administration, Impoundment Inspection Certification (2012) 	

13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE AND QA/QC					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Landfill Closure Experience	Years of Landfill QA/QC Experience	Years of Heavy Earthwork Construction Experience		
Camargo, Fernando, P.E.	10	10	10		
Brief Explanation of Responsibilities: Fernando will assist with both the landfill closure design and QA/QC portions of the project. He is a Project Manager at Hull and has prepared Permit-To-Install (PTI) applications for municipal and residual solid waste landfills in West Virginia, Ohio, and Arkansas; prepared closure plans and corrective measures plan for closed landfills; managed QA/QC projects; observed and documented field activities and prepared construction documentation reports for landfill cell, capping and infrastructure projects; prepared detailed landfill phasing plans; and prepared detailed engineer's estimates of probable construction costs for landfill development and closure.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations: <ul style="list-style-type: none"> American Society of Civil Engineers Ohio Society of Professional Engineers 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Engineer(PE) Ohio Registered PE West Virginia #020254 Radiation Safety and Use of Nuclear Soil Gauges Certification 			
13. Personal History Statement of Principals and Associates responsible for HYDROGEOLOGICAL TASK					
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE				
	Years of Landfill Experience	Years of Hydrogeological Experience	Years of Site Assessment Experience		
Gross, Steve, CPG, CP	28	28	28		
Brief Explanation of Responsibilities: Steve will lead any hydrogeological work needed for the Webster County Landfill project. Gross is a Senior Project Manager with over 28 years of experience in environmental consulting. He has been responsible for managing and implementing numerous site assessment investigations and remedial activities in different and complex hydrogeologic environments. These projects have included solid and hazardous waste landfill sites; brownfield sites; industrial and commercial properties; assessment and remediation under the guidance Resource Conservation Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations; and Bureau of Underground Storage Tank Regulations (BUSTR). His experience also includes justification, design, and implementation of groundwater monitoring and recovery systems; management of sampling and analysis programs; and remedial assessments. Remedial activities include soil vapor extraction, bioventing and air sparging, in-situ and ex-situ bioremediation, risk assessment, and natural attenuation.					
Education (Degree, Year, Specialization):					
Membership in Professional Organizations:		Registration (Type, Year, State): <ul style="list-style-type: none"> Ohio EPA Voluntary Action Program, Certified Professional – CP192 Certified Professional Geologist, American Institute 			

13. Personal History Statement of Principals and Associates responsible for LANDFILL CLOSURE AND QA/QC			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Landfill Experience	Years of Hydrogeological Experience	Years of Site Assessment Experience
Petruzzi, William G.	29	29	29
Brief Explanation of Responsibilities: William (Bill) will lead Hull's site characterization/environmental monitoring and compliance team for the Webster County landfill project. His areas of expertise include: solid waste management and solutions; environmental monitoring and compliance programs; hydrogeochemical evaluations; remedial investigations; and special regulatory and research development projects. He is responsible for project management; solid waste permitting, closure and post-closure programs; life cycle analyses and financial evaluations; environmental monitoring and statistical evaluations for a variety of waste and process materials; beneficial use; conservation/restoration projects; storm and wastewater programs; and project development, strategic planning and regulatory advocacy and outreach programs.			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> Association of Ground Water Scientists and Engineers, National Ground Water Association Ohio Water Pollution Control Association/Water Environmental Federation International Association of Hydrologists University of Toledo Earth, Environment, & Energy Committee National Solid Waste Management Association American Coal Ash Association 		Registration (Type, Year, State): <ul style="list-style-type: none"> Registered Professional Geologist – State of Kentucky Registered Professional Geologist – State of Pennsylvania Radiation Safety and Use of Nuclear Soil Gauges Certification 	
13. Personal History Statement of Principals and Associates responsible for CONSTRUCTION CONTRACT TASK			
NAME & TITLE (Last, First, Middle Initial)	YEARS OF EXPERIENCE		
	Years of Heavy Construction Experience	Years of Contract Document Prep Experience	Years of Project Estimator Experience
Baltzer, Dave, P.E.	30	30	30
Brief Explanation of Responsibilities: Dave will lead the construction contract team for the Webster County Landfill project. He is a Senior Project Manager for Hull, and the leader of Hull's Construction Services practice. He has established respected relationships with public and private owners, contractors, and other consultants. He has served the lead role on many multidisciplinary projects, which includes the management of a wide range of project issues, including the avoidance of potential litigious situations. With over 30 years of experience in the construction and development arena, he has lead and managed projects pertaining to energy, waste management, urban revitalization, industry, educational facilities, commercial office buildings and utility infrastructure. Dave manages Hull's construction cost database and is very experienced in preparing engineer's estimates of probable construction costs.			
Education (Degree, Year, Specialization):			
Membership in Professional Organizations: <ul style="list-style-type: none"> Columbus Chapter of the Construction Specifications Institute (CSI) Associated General Contractors of America Ohio Society of Professional Engineers 		Registration (Type, Year, State): <ul style="list-style-type: none"> Professional Engineer in the state of West Virginia, Ohio ODOT Prequalification – Construction Engineering Level 1 & 2 	

14. Provide a list of SOFTWARE AND EQUIPMENT available in the primary office which will be used to complete this project – Site Characterization Study, Leachate Management and Closure Cap for Webster County Landfill.

FACILITIES AND EQUIPMENT

Hull has the computer software programs essential to maintain a successful engineering and consulting business. We use Microsoft Office products including Word, Excel, Adobe Acrobat, and Outlook. Most of our senior staff members have laptop computers with high speed networking capabilities in their homes that can support remote office work or telecommuting capabilities.

Hull has a state-of-the-art communications network that allows for the efficient use of internal resources and provides the capability to transfer electronic data with clients as requested. Hull maintains a wide-area network with dedicated data lines between all offices. The communications network is protected by a firewall and dedicated virus scanning software for all incoming and outgoing email, Internet, and FTP traffic. All file and print servers as well as email servers have redundant architecture such as RAID 5 hot-swappable hard drives and power supplies and all data is backed up daily for disaster recovery. Hull maintains an in-house Intranet site as well as an external web site at www.hullinc.com. If document files are too large for emails, we frequently place those documents on our FTP site or web site for password protected uploading/downloading capabilities.

Hull uses state-of-the-art software for engineering planning and design including:

- Autodesk Land Development Desktop
- HydroCAD
- Haestad Methods WaterCAD, StormCAD, SewerCAD, and FlowMaster
- Scientific Software Group HydraFlow
- GeoSlope International Ltd. SLOPE/W Version 4
- AutoCAD Civil 3D with AutoTURN
- STABL Version WV-2008 Slope Stability Software”
- Bentley® MicroStation Version 8 and gINT Professional Version 8i
- Benkley CulvertMaster (V3.3), FlowMaster (V8i), PondPak (V8i)
- XP-SWMM (V12.1-2010)
- Hydrologic Evaluation of Landfill Performance Version 3.07
- Hydrograph Hydrawflow (V9.22)
- Pile Buck International, Inc. SPW 911 Sheet Pile Design Software
- Ensoft, Inc., LPILE
- Microsoft Project 2013
- WinEst Version 11 with accompanying database packages (Echos Environmental Remediation, RS Means Civil Composite with Assemblies, and RS Means Electrical Cost with Assemblies)

This software runs on networked IBM-compatible PCs. Large-format black-line and color plotting capabilities are present in all Hull offices. By utilizing this communications network, Hull maintains efficient use of internal resources as well as provides the capability to transfer electronic data with clients as requested.

Hull maintains a significant inventory of equipment and materials (field, lab, and office) used to satisfy project objectives. In instances where Hull does not directly own equipment or materials, we maintain agreements with vendors and suppliers who can supply them to Hull within a day's notice.

MATERIALS TESTING LABORATORY

Thrasher's Construction Services Division is capable of performing a wide range of field and laboratory tests. Our laboratory is nationally AMRL & CCRL certified to perform in depth testing for a variety of clientele. All of our labs serve as resources for our engineers and project representatives who perform tests both in the field and in the lab to best serve our clients' needs.

The Thrasher team possesses expertise in every facet of material and laboratory testing and are trained to industry standards in these disciplines. We pride ourselves on being a partner in projects and providing excellent service and testing results.

Materials Testing and Laboratory Expertise:

- Concrete testing and inspection
- Soil testing and inspection
- Aggregate testing and inspection
- Mortar and grout
- Steel, Welds, and Rebar Inspection
- Asphalt
- Paint Coatings
- Sprayed-on fireproofing
- Subsidence testing
- Caisson and piling inspection
- Engineering during construction
- Regularly scheduled progress meetings
- Daily logs and progress sheets
- Digital photo logs
- Cut sheets
- Quantity tracking

15. Current activities on which your firm is the DESIGNATED ENGINEER OF RECORD associated with or relating to LANDFILL CLOSURE OR CONSTRUCTION.				
PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Nature of your firm's RESPONSIBILITIES	Estimated Construction Cost	Percent Complete
Moraine Properties Landfill Closure Design and Construction, Moraine, Ohio	Moraine Properties LLC Moraine, Ohio	We negotiated closure requirements with the regulatory agency, performed a waste characterization, provided waste removal, consolidated the on-site material, prepared the design of the cap system, installed the cap system, and provided construction QA/QC.	\$800,000	Cap QA/QC is 95%
Little Broad Run Landfill Design and Cell Construction, New Haven, West Virginia	American Electric Power 1 Riverside Plaza Columbus, Ohio	We designed and prepared the expansion permit for the liner and final cover system of the industrial waste landfill; prepared construction documents; provided overall engineering planning and determined landfill phasing; prepared construction cost estimates, drawings and specifications; provided construction QA/QC and prepared certification reports.	\$2.3 million	Area 1B/1C QA/QC is 95% complete; engineering support is ongoing; minor permit modification will begin in spring 2016
Flint Creek Power Plant Landfill Intermediate Liner, Leachate Collection System and Final Cover System Design and Construction QA/QC, Gentry, Arkansas	American Electric Power 1 Riverside Plaza Columbus, Ohio	We designed and prepared the expansion permit for the liner and final cover system of the industrial waste landfill; prepared construction documents; provided overall engineering planning and determined landfill phasing; prepared construction cost estimates, drawings and specifications; provided construction QA/QC and prepared certification reports.	\$8.9 million	Cell and Cap QA/QC is 75% complete; engineering support is ongoing
TOTAL NUMBER OF PROJECTS:		TOTAL ESTIMATED CONSTRUCTION COSTS:		
3		\$12,000,000		

16. Current activities on which your firm is serving as a SUB-CONSULTANT to others relating to LANDFILL CLOSURE OR CONSTRUCTION.					
PROJECT NAME TYPE LOCATION	Nature of your firm's RESPONSIBILITIES	OWNER NAME AND ADDRESS	Estimated Completion Date	Estimated Construction Cost	
				Entire Project	Your Responsibility
None					

17. Completed work within last 5 years on which your firm was the DESIGNATED ENGINEER OF RECORD (list 5 to 7).				
PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Estimated Construction Cost	Year	Constructed (YES or NO)
Little Broad Run Landfill Liner and Final Cover System Design, New Haven, West Virginia	American Electric Power 1 Riverside Plaza Columbus, Ohio	Over \$50 million	2004- current	YES (portions completed)
Flint Creek Power Plant Landfill Intermediate Liner, Leachate Collection System and Final Cover System Design and Construction QA/QC, Gentry, Arkansas	American Electric Power 1 Riverside Plaza Columbus, Ohio	\$15 million	2009- present	YES (ongoing)
Moraine Properties Landfill Closure Design and Construction, Moraine, Ohio	Moraine Properties, LLC Moraine, Ohio	\$500,000	2007- present	YES (nearly ongoing)
Frontier Recycling and Disposal, Inc., Richland County, Ohio	Miliron Industries 2395 Springmill Road Mansfield, Ohio 44903	Over \$10 million	2012- present	NO
Pine Grove Landfill Modified Final Cover Design Permit Modification, Amanda, Ohio	Republic Services 5131 Drinkle Road SW Amanda, Ohio 43102	Over \$10 million	2006- 2013	NO
Wilmington Sanitary Landfill Modified Final Cover/Cap Design Permit Modification, Wilmington, Ohio	City of Wilmington 397 S. Nelson Avenue Wilmington, Ohio 45177	Over \$5 million	1990s- present	YES
Kyger Creek Landfill Liner and Final Cover System, Cheshire, Ohio	American Electric Power 1 Riverside Plaza Columbus, Ohio	Over \$30 million	2005- 2013	YES

18. Completed work within last 5 years in which your firm has been a SUB-CONSULTANT to other firms (indicate phase of work which your firm was responsible for) (list 5 to 7)

PROJECT NAME TYPE LOCATION	OWNER NAME AND ADDRESS	Estimated Construction Cost of Your Firm's Portion	Year	Constructed (YES or NO)	Firm Associated With
Goodyear Seiberling Street Landfill; Hull provided QA/QC and certification services for the contractor during closure activities; Akron, Ohio	City of Akron Akron, Ohio	Hull's services were \$200,000	2012-2014	YES	Sitetech, Inc. (earthwork contractor)

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

Please see attached *Expression of Interest for the Webster County Landfill Closure Cap Design*

20. The forgoing is a statement of facts:

Signature:  _____

Title: COO _____

Printed Name: David L. Richards, PE _____

Date: February 17, 2016 _____

STATE OF WEST VIRGINIA
Purchasing Division**PURCHASING AFFIDAVIT**

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

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

DEFINITIONS:

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

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

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

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

WITNESS THE FOLLOWING SIGNATURE:Vendor's Name: Hull & Associates, Inc.Authorized Signature:  Date: February 17, 2016State of OhioCounty of Franklin, to-wit:Taken, subscribed, and sworn to before me this 17th day of February, 2016.My Commission expires 04/12/2016, 20 .

AFFIX SEAL HERE

VICKY R. MURNANE
NOTARY PUBLIC, STATE OF OHIO
My Commission Expires 4/12/2016

NOTARY PUBLIC



Purchasing Affidavit (Revised 07/01/2012)

CERTIFICATION AND SIGNATURE PAGE

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

Hull & Associates, Inc.

(Company)



| David L. Richards, PE | COO

(Authorized Signature) (Representative Name, Title)

614.793.8777 | 614.793.9070 | February 17, 2016

(Phone Number) (Fax Number) (Date)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.:

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

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

Addendum Numbers Received:

(Check the box next to each addendum received)

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

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

Hull & Associates, Inc.

Company



Authorized Signature

February 17, 2016

Date

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

**EXPRESSION OF INTEREST
WEBSTER COUNTY LANDFILL CLOSURE CAP
DESIGN**

FEBRUARY 18, 2016

submitted to the
**STATE OF WEST VIRGINIA
PURCHASING DIVISION**



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SECTION 1 | PROJECT APPROACH

HULL / THRASHER TEAM'S SERVICES AND GENERAL APPROACH

We understand that WVDEP is seeking an engineering firm to provide professional consulting services including site characterization, leachate management and closure cap work for the Webster County Landfill. We believe our team is well suited for this project and can bring our assessment, design and construction expertise to assist the WVDEP in determining the appropriate path moving forward for the closure of the facility. Hull has significant landfill experience in the following areas that will prove beneficial to the Webster County Landfill project:

- We have designed numerous landfill cap systems, evaluated existing in-place capped landfills, and provided construction quality assurance/quality control (QA/QC) during construction of composite cap systems;
- We have provided technical review of information for a class-action lawsuit related to closure and evaluated closure cost estimates and scenarios for multiple landfills in multiple states;
- We have successfully designed and implemented alternative caps using Subtitle D standards;
- We have significant experience with West Virginian geology, as well as laboratory and field testing of soils;
- We have worked closely with regulatory agencies on past projects to determine effective environmental controls using sound engineering and science, and doing so in a cost-effective manner.

The initial steps of the project will be to have Hull review the governing documents for the Webster County Landfill, and then meet with the WVDEP team to discuss the project and develop a thorough understanding of WVDEP's objectives, constraints and desired schedule. It will be essential to review all relevant permitting, construction, operational, and analytical information that is available for the site to have a clear understanding of known site conditions and challenges, which will allow us to develop appropriate and cost-effective leachate and cap controls. Following the initial meeting, Hull will develop a detailed scope of services, cost estimate and schedule to present to WVDEP. Upon receiving any feedback from WVDEP, Hull will update these documents (as needed) and begin project implementation.

After completing the upfront planning discussed above, the Hull / Thrasher team will execute the work, which is anticipated to include, but may not be limited to, the following:

- Pro-actively communicating with WVDEP throughout the project, including attending meetings as needed, and effectively managing the project to minimize change orders. Communications protocol will be established with WVDEP at the onset of the project to ensure expectations are known.
- Performing field assessments and site characterization including surveying the landfill and surrounding areas; performing subsurface investigations to evaluate potential soil borrow sources and obtain soil samples for testing, and determine the horizontal and vertical limits of waste; performing laboratory analysis of soil and water; and performing environmental monitoring that may be needed to fully evaluate the site characteristics.
- Developing the closure design including: the grading plan and cap cross-section; the leachate collection and storage systems; and the surface water management components and erosion control features including sediment ponds, drainage ditches, erosion control terraces, etc. Conceptual design information will be submitted to WVDEP for input and approval at the frequency agreed upon with WVDEP.
- Preparing the appropriate permit applications including right-of-ways, right of entries, etc.
- Assisting the WVDEP with selecting a contractor including preparing the bid package, construction contract drawings and specifications; soliciting the bids; evaluating the bids received; and securing the contract, as needed.

Although not listed in Item 4 of Section 3 of the Expression of Interest, we will also be able to assist the WVDEP with construction QA/QC and certification activities during cap construction.

SECTION 2 | FIRM OVERVIEW



Hull & Associates, Inc. (Hull) is a project development and engineering company that helps business and government solve complex challenges related to land, energy, and the environment – transforming undervalued resources into viable community assets.

We leverage our expertise in infrastructure, environmental and energy services to design solutions that meet our client's needs. We develop an integrated plan based on our client's specific objectives and assist with execution and oversight of those strategies through project completion.

Our technical, engineering, and construction staff offer the following services:

- Landfill Engineering
- Ecology and Wetlands
- Geoenvironmental
- Site Assessment and Remediation
- Liability Assessment
- Environmental Monitoring
- Construction Services
- Risk Assessment
- Geographic Information Systems (GIS)
- Civil Engineering

Specific to landfills, Hull has provided waste management solutions for over 30 years, including participating in the development and implementation of related technology and regulatory programs from their inception. We have worked on over 120 landfills. In fact, our company was originally founded on waste management solutions service offerings. We evaluate each client's objectives, activities and needs to prepare a comprehensive strategy. Our team then prioritizes steps to minimize waste generation, beneficially reuse waste where feasible, and identify responsible, efficient management of residuals. Hull's expertise in other areas such as environmental compliance, urban redevelopment and conservation, general land use practice, and our alternative energy and power help us identify innovative solutions to waste management that can also address other public and business objectives. Our experience also recognizes the benefits of including community outreach and the concept of public-private partnerships to achieve success in waste management initiatives.

We help our clients identify risk and evaluate alternative approaches to risk management. Where appropriate, we will partner with our clients to address long-term risks and help them remain in compliance with applicable regulations. A strategic waste management plan will reduce business risks and operating costs while improving the environment.

LANDFILL ENGINEERING

Hull offers several services related to solid waste management. Landfill siting, design, permitting, and operations usually involve several stages of work, as well as regulatory agencies and the general public. Hull's diversity allows for a widespread service package for nearly every possible project scenario. Careful planning and execution of all aspects of landfill development are paramount in today's regulatory environment. Some of the related landfill engineering services include: regulatory assistance; active participation in the rule revision process; identifying changes in regulations and evaluating impact to clients; and assisting clients with evaluating Findings & Orders and negotiating with regulatory agencies.

ENVIRONMENTAL MONITORING

Hull provides permitting, design and environmental monitoring services required to maintain regulatory compliance for all media, including air, wastewater, stormwater, ground water and other regulated media. We also develop the plans required to maintain compliance with applicable regulations to document that the performance of engineered systems are working or to identify, assess or correct potential impacts.

GEOENVIRONMENTAL

Hull's geoenvironmental engineers solve environmental challenges within a multidisciplinary setting for industrial developments, as well as waste containment facilities and brownfield projects. We have a diverse staff of geotechnical engineers, civil engineers, hydrogeologists, as well as supporting staff with science-based disciplines (e.g., soil scientists, ecologists, biologist, etc.) who understand the full spectrum of project implications including: site characterization, environmental management and risk assessment, waste management solutions, soil and groundwater remediation, and infrastructure development.

THRASHER Formed in 1983, Henry A. Thrasher and H. Wood Thrasher created Thrasher with a commitment to excellence and professionalism in engineering. Thrasher specializes in all facets of engineering from site development to public works projects. In 2005, the company added architecture services to their ever-expanding list of capabilities. Throughout the past 5 years, Thrasher has continued to grow to nearly 250 professionals. Thrasher's growth has allowed them to bring aboard some of the most sought after talent around. They believe that the partnership they establish with their clients is what makes them and their projects successful. This philosophy is the foundation of their growing company.

With multi-discipline capabilities, Thrasher covers all of the professional services needed to deliver successful projects to both public and private clientele. The firms' roots were planted in civil engineering and consulting services for public utility projects. Over the years, their success has allowed them to branch out, expanding their services to meet both the needs of their clients and the growing need for more responsive and effective solutions. For this project, Thrasher will be providing surveying services and field personnel, as needed.

SECTION 3 | RELEVANT PROJECT EXPERIENCE

Below are project write-ups for specific projects similar to the Webster County Landfill Closure Cap Design project. We have also included a comprehensive matrix at this end of this section that includes a list of Hull's solid waste experience.

■ **LITTLE BROAD RUN LANDFILL | Landfill Siting, Design, Permitting, CQA and Operational Assistance | New Haven, West Virginia**

Client Name: American Electric Power
Project Duration: 2004 – Present
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To complete liner and leachate collection system design and permitting on a compressed timeline. During this, we identified design improvements and also pursued a vertical expansion to increase disposal capacity at a reduced overall cost.

Hull assisted our client by providing **comprehensive engineering design, permitting, construction planning, construction quality assurance (CQA), and operational assistance** at this existing Class F Industrial Landfill facility in West Virginia.



The projects included:

- Preparing **permit redesign drawings** for multiple disposal areas (~150 acres) to provide stable slopes along the valley fill, minimizing significant cuts in the existing grade;
- **Designing a composite soil and PVC geomembrane liner and leachate collection systems;**
- Incorporating a unique design feature that included the use of fly ash as structural fill;
- Developing an **alternate geomembrane material performance evaluation report** for using 30-mil PVC geomembrane in lieu of 60-mil HDPE liner, which was approved;
- Preparing a **vertical expansion feasibility study** and follow-up **vertical expansion permit documents** that provided environmental improvements and obtained significant additional airspace over a 210-acre landfill area;
- Designing new leachate management system upgrades includes a new leachate forcemain and pumping system, a new leachate conveyance pipe that provide flexibility for system management and cleanout, a new leachate collection pond, and modifications to the existing leachate collection pond.
- Preparing a **siting study;**
- Preparing leachate surge pond design documents, construction drawings and bid documents;
- Updating the QA/QC plan to incorporate landfill components;
- Designing sedimentation ponds and other drainage and erosion control structures, and preparing comprehensive stormwater pollution prevention plans;
- Preparing detailed construction cost estimates and construction drawings for multiple landfill areas, leachate ponds, sediment ponds, vertical expansion development, etc.;
- Performing detailed soils and fly ash laboratory testing to assist in preparing the landfill design and operational plans;
- Performing comprehensive soil borrow investigations;
- Performing landfill CQA services for construction of a 90-acre portion of the landfill and the initial two vertical expansion phases (totaling approximately 25 acres), and preparing construction certification reports for submittal to WVDEP; and

- Developing long-term operational construction and sequencing plans that include stormwater diversions to reduce run-on and contact water management system components to separate and convey contact water to the leachate management structures.

■ **JOHN E. AMOS PLANT LANDFILL** | Construction Quality Assurance/Quality Control | Winfield, West Virginia

Client Name: American Electric Power
 Project Duration: 2010 – Present
 Contact: Pedro Amaya, PE | 614.716.2991
 Type of Project: Multi-year landfill cell QA/QC and certification services.
 Project Goals & Objectives: To complete construction QA/QC services and obtain approval for multiple landfill cells. We identified borrow sources and developed processing techniques for weathered shales to improve construction and testing, and provided comprehensive on-site observation and testing services. The certification report was prepared and submitted in a timely manner.

Hull is teaming with our client to provide construction Quality Assurance/Quality Control (QA/QC) activities to comply with West Virginia Department of Environmental Protection at this existing Class F Industrial Landfill facility in West Virginia during a three-year construction period for development of Sequence 1B (approximately 13 acres) and Sequence 2 (approximately 25 acres). The work will also include the construction of supporting sedimentation ponds, soils precharacterization, borrow site development and stockpiling.



The activities include:

- Reviewing manufacturer's data for geosynthetic materials, coordinating the pre-construction testing of geosynthetic materials, reviewing the data, and evaluating the laboratory data for compliance with permit and construction documents;
- Reviewing historic soils data, collecting new soil samples from the designated borrow areas, performing laboratory tests on soil samples, and determining the required compaction specifications needed to meet project requirements;
- Observing and documenting overall construction activities including groundwater interceptor drains, subgrade preparation, structural fill construction, clay liner placement and compaction, geosynthetic materials installation (PVC geomembrane, geotextile and geocomposite), leachate collection system installation, sedimentation basin construction, and installation of erosion and sediment controls;
- Attending regular project meetings, reviewing contractor submittals, and performing other project management activities; and
- Preparing construction certification reports and annual construction summary reports.

■ **EVERGREEN RECYCLING AND DISPOSAL FACILITY** | Landfill Design, Permitting, Construction Quality Assurance/Quality Control, and Compliance | Northwood, Ohio

Client Name: Waste Management
 Project Duration: 1999 – Present (Expansion Permit 2007)
 Contact: John Randolph, PE | 419.466.5136
 Type of Project: Comprehensive landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.

Project Goals & Objectives: To perform in-situ permeability testing of completed clayey soil liner, and to vertical expansion permit for the landfill. During the vertical expansion, we identified a design change that provided significant additional disposal volume while significantly reducing the quantity of soils needed for construction.



Ohio engineering design/permitting, landfill gas and control system design, construction document preparation, construction quality assurance, construction engineering support. Hull assisted Evergreen Recycling and Disposal Facility (RDF) with verification of a constructed clayey soil liner's in-situ permeability. **After successfully completing the field verification project and receiving certification approval from Ohio EPA, Hull began engineering design, permitting, and construction, Quality Assurance/Quality Control (QA/QC) services, as well as support for ongoing**

compliance issues.

Hull's comprehensive services included:

- Preparing the **vertical expansion permit**;
- Preparing **construction drawings, specifications and supporting contract documents** for numerous construction projects including cell, cap, forcemain, leachate tank, gas system and surface water improvements;
- Performing extensive **soil borrow characterizations**;
- Testing and documenting in-situ permeability of test pads;
- Assisting with compliance issues, including annual report preparation and asbestos mapping;
- Providing construction QA/QC services and preparing certification reports for construction of several landfill cells, closure over a portion of the landfill, construction of two new storm water basins, installation of a leachate forcemain, and upgrades to the gas management system;
- Quarterly in-place density determinations to assist the landfill with assessing operational issues; and
- Other miscellaneous site improvements.

During the vertical expansion permitting process, Hull provided several value-added services, including:

- Design recommendations that would allow flexibility for future landfill development;
- Identification of design changes that would improve overall quality and constructability while reducing construction costs; and
- Identification of design components to increase the landfill disposal volume.

■ **WOOD COUNTY LANDFILL | Engineering Design, Construction Observation, Environmental Monitoring, and Operations Support | Wood County, Ohio**

Client Name: Wood County Solid Waste Management District
Project Duration: 1980s – Present (Currently Permitting an Expansion)
Contact: Ken Vollmar | 419.352.0180
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC, assessment and compliance services.

Project Goals & Objectives: To provide forward-thinking landfill design and permitting services on time and on budget. This has been accomplished by actively partnering with Wood County to assist them with effective long-term planning, phasing, operations and construction of the landfill.



The Wood County Landfill in Bowling Green, Ohio was one of Hull's first clients. Hull provided general engineering support beginning in the early 1980s and has been assisting them with **design/permitting, environmental monitoring, landfill gas and control system design, construction document preparation, construction quality assurance, construction engineering support, operations support, and compliance issues ever since.**

Hull assisted the landfill to obtain a Permit-to-Install in 1991 that utilized the construction of a new Best Available Technology (BAT) landfill cell between the two existing landfill areas (North Area and South Area) to combine the landfill area into one common footprint. The innovative

design also included the installation of a separatory liner system over the North and South Areas that serves as a cap to the existing waste and a base liner for the new waste that incorporated an effective leachate collection system that directed leachate from unlined to lined areas of the landfill.

Hull also designed a vertical expansion of the facility with the permit being issued in July 2003. During the vertical expansion permitting process, Hull provided several value-added services. Hull was an active participant in the rule revision process and provided feedback to the Ohio EPA during the rule development that became effective in August 2003. Although the expansion PTI was prepared and submitted prior to the change in Ohio solid waste regulations, Hull followed Ohio EPA's draft design requirements (e.g., settlement analyses, geotechnical testing parameters, etc.). This allowed Hull to provide design recommendations that would allow flexibility for future landfill development, identified design changes that would improve overall quality and constructability (while reducing construction costs), and identified design components that increased the landfill disposal volume. Hull is currently preparing a vertical and lateral expansion PTI package that will provide the County a long-term and sustainable solution for waste management for the local community for years to come.

In addition to preparing the permit applications and providing design services, Hull has provided construction observation and QA/QC services, prepared construction specifications and bid documents, performed extensive soil borrow characterizations, tested and documented in-situ permeability for a test pad, and assisted with compliance issues such as preparation of annual reports and operating records. Hull has also provided construction observation, testing and documentation services for the construction of composite liner system, separatory liner, final cover placement, and other miscellaneous site improvements. Construction observation and QA/QC services included geomembrane installation observation, non-destructive field testing of placement of the flexible membrane liner, soils and geosynthetics laboratory testing, review of all field and laboratory QA destructive and conformance seam testing results, and moisture/density testing of compacted soil.

Groundwater monitoring at the facility has included: regulatory review; preparation of groundwater sampling and analysis plans; sample preparation, collection, documentation; and data entry/reduction and statistical analyses. Hull managed the landfill's ground-water program through two different changes in the applicable regulations, collecting and/or analyzing more than 30 sets of analytical data over 20 years. Hull successfully demonstrated that the elevated concentration of one parameter was the result of the suspended solids in the sample and not due to activities at the facility. In addition to sampling and analysis plans, Hull assisted in the development of a hydrogeological and groundwater monitoring plan, certified the groundwater statistical reports, detection sampling, and analysis plan.

Hull also prepared a Solid Waste Management Plan for the Wood County Solid Waste Management District and assisted with plan implementation. As part of the preparation of the District Plan, Hull evaluated county-wide waste generation and completed characterization activities for preparation of a general district solid waste management plan. Activities included identifying and completing preliminary assessments of abandoned dumps and active landfills within the county and involving close coordination with local, county, and state government representatives.

Hull also conducted an initial feasibility study and is currently performing a pilot study for a gas-to-energy system and assisted the Wood County Landfill in public relations and a number of other environmental monitoring and compliance programs including, but not limited to:

- Leachate monitoring; storm water/National Pollutant Discharge Elimination System (NPDES) monitoring;
- Spill Prevention Control and Countermeasures Plan (SPCC), Stormwater Pollution Prevention Plan development and employee training;
- Composting compliance;
- Fugitive dust permitting;
- Beneficial use of materials for various applications;
- Methane gas monitoring; and,
- Closure plan and economic analysis for post-closure monitoring.

■ WILMINGTON SANITARY LANDFILL | Vertical Expansion | Wilmington, Ohio

Client Name: City of Wilmington, Ohio

Project Duration: January 2009 – Present (Vertical Expansion in 2010)

Contact: Braden Dunham

Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC, monitoring, assessment and compliance services.

Project Goals & Objectives: To obtain a vertical expansion over the existing landfill footprint in a timely manner and minimize the need for additional permitting and construction costs. This was accomplished through pro-active and regular communications with Ohio EPA during the design and permitting process.

Hull teamed with the City of Wilmington to **design a vertical expansion** over the existing waste area to extend the life of Wilmington Landfill, which was scheduled to be closed in first quarter of 2009. Hull's activities included:

- An expansion design consisting of placing a separatory liner system and developing disposal areas for future operation;
- Designing a leachate collection system for the expansion area to use gravity to convey the leachate to the existing sump; and
- Designing the soil barrier layer portion of the cap to serve as the soil liner of the expansion area, since the majority of the site has an existing single composite soil liner system.



Hull's expansion design extended the life of the landfill by approximately 14 years and enabled the City to continue utilizing the existing facility for solid waste disposal. The expansion permit was reviewed and

approved by the Ohio Environmental Protection Agency (EPA) in less than 12 months after the submittal. The shortened permitting timeframe was accomplished by regularly communicating with Ohio EPA personnel to have them actively involved in the design process.

■ **HOFFMAN ROAD LANDFILL** | Landfill Engineering, Compliance Monitoring, Leachate Management, and Landfill Gas | Toledo, Ohio

Client Name: City of Toledo, Ohio
Project Duration: 1995 – Present
Contact: Scott Lockhart, PE | 419.936.2642
Type of Project: Engineering design, construction drawings and specifications, construction QA/QC, environmental monitoring and assessment, and compliance services.
Project Goals & Objectives: To provide forward-thinking landfill design, monitoring, assessment and compliance services on time and on budget.



Hull partnered with the City of Toledo in providing extensive services for the Hoffman Road Landfill. Our work at this site includes:

- **Development of conceptual design alternatives for a vertical expansion**
designed to maximize disposal footprint, extend the time frame for new cell development, and minimize the per cubic yard disposal cost;
- Preparation **of construction documents for Phase II Cells 3 and 4 construction**, including drawings of compacted clay liner and geomembrane liner plans; leachate collection, removal, and storage systems; and ancillary support items such as perimeter roads and surface water management controls.
- Construction Quality Assurance services for Phase II Cell 5 construction and Phase II Cell 3 closure including additional construction level documents requested by the City; the City continued operations uninterrupted through this process because Hull Cell 5 construction documentation was completed in two phases and coordinated closely with the Ohio EPA. Hull was able to conduct all activities, including additional efforts, within the original budget limits.
- Preparation of construction level staking drawing for the first phase of the proposed expansion at the facility. The Ohio EPA issued an ORC3734.02(G) exemption to the City of Toledo, allowing them to move forward with additional filling of solid waste prior to issuance of the Permit-to-Install application. Tasks included interpretation of design documents, coordination with the City of Toledo, establishing construction control points, and preparing construction staking drawings.
- Third party engineering, consulting evaluation to review feasibility of transporting landfill gas from the Hoffman Road Landfill to the Bay View Waste Water Treatment Plant (WWTP) and preliminary environmental assessment.
- Preparation of a Spill Prevention Control and Countermeasures (SPCC) Plan, Storm Water Pollution Prevention Plan (SWPPP), PCB / Hazardous Waste Management Plan, and assistance with employee training;
- Assistance in the analysis of the potential all-in-cost to the City if the landfill were to be employed in the management of the dredge material, including valuation of airspace reflecting all total capital, operational and financial assurance costs, post closure obligations, etc.

- Assistance with oversight and compliance issues related to management of dredge material at the landfill;
- Evaluation of renewable energy credits, carbon offset, or potential energy sales from the ongoing management of landfill gas at the facility and identification of potential grants that might apply to the gas-to-energy project.
- Assistance with preparation of public education / information publication;
- A leachate recirculation feasibility study to increase/enhance gas from the facility and potentially increase the energy production that will be supplied to the City of Toledo's Waste Water Treatment Plant.
- A review of the facility's operations to analyze leachate generation rates and provided the tools needed to decrease it and thereby reduce costs.

Ecological services Hull provided at the Hoffman Road Landfill include:

- A surface water delineation in the western portion of the facility for relocation of a petroleum pipeline that runs through the area. Hull identified six wetlands totaling approximately three acres and was confirmed by a representative from the U.S Army Corps of Engineers (USACE).
- Completing a Clean Water Act permit associated with the emergency repair of a broken City of Toledo waterline in a wetland adjacent to Mud Creek. Hull responded promptly by immediately visiting the site of the repair, documented the appropriate information and submitted an after-the-fact Section 404 Clean Water Application to the USACE. A Nationwide Permit 12 for the waterline repair was subsequently issued to the City of Toledo by USACE.

Hull's additional environmental compliance activities included managing all aspects of environmental compliance associated with groundwater monitoring for the Hoffman Road Landfill. These activities include:

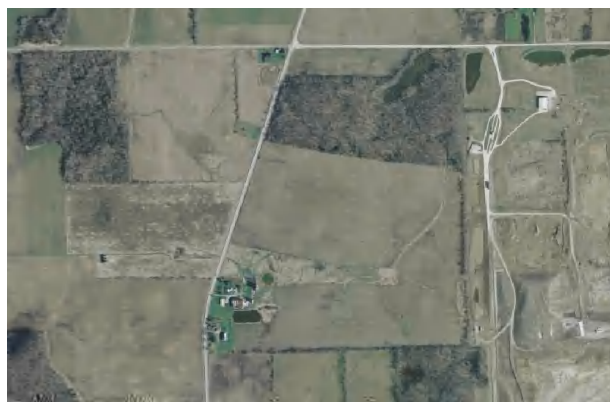
- Preparation and implementation of a detection monitoring sampling and analysis plan to bring the facility into compliance with the Ohio Administrative Code (OAC) regulations;
- Negotiations with the Ohio EPA on behalf of the City, resulting in reductions of fines assessed to City allowances;
- Technical evaluations to support City's position;
- Assistance to the City of Toledo in reducing the current groundwater monitoring well network, resulting in significant cost savings to the City;
- A detailed review of all available hydrogeologic information available for the facility to assist in the development of a state-of-the-art groundwater monitoring well network;
- A comprehensive monitoring well field evaluation to determine the yield characteristics of each monitoring well installed in three water-bearing zones at the facility;
- Monitoring well installation activities;
- Bid package development;
- Assistance in the selection of the analytical laboratory;
- Management of the large database of groundwater quality data associated with three water-bearing zones;
- Reports of Groundwater Quality consistent with the OAC Regulations;
- Storm water monitoring and reporting in accordance with the facility's NPDES permit; and
- Leachate and explosive gas monitoring, reporting and compliance activities.

Hull also developed a conceptual model for a Municipal Solid Waste Landfill (MSWL) using hydrogeologic, geochemical, mineralogical, and climatological data to simulate precipitation infiltration and subsequent chemical reaction pathways. The objective of this model was to serve as a tool to demonstrate the expected geochemical results of a leachate release in lieu of statistically evaluating groundwater quality data, where limitations in the methodology often results in "false positive" triggers. As part of the groundwater monitoring program, Hull made successful demonstrations to Ohio EPA to verify that the statistical significances were attributed to a source other than landfill operations.

■ FRONTIER RECYCLING AND DISPOSAL, LLC | Landfill Siting, Design and Permitting | Richland County, Ohio

Client Name: Frontier Recycling and Disposal, LLC
Project Duration: 2012 – Present
Contact: Grant Milliron | 419.747.6522
Type of Project: Comprehensive hydrogeological, ecological, and landfill design/permitting services.
Project Goals & Objectives: To provide forward-thinking landfill design and permitting services on time and on budget. Pro-active planning allowed the facility to be sited as a captive municipal waste landfill, which had some added benefits to the client.

Hull is working with Frontier Recycling and Disposal, LLC, an entity of Milliron Industries, to site, design and permit the Frontier Recycling and Disposal Facility. This 33-acre solid waste landfill will exclusively accept auto shredder residue from Milliron Industries. It is designed to provide a total gross airspace of approximately 5.2 million cubic yards and is anticipated to be operational for 26 years.



Hull completed the **initial siting and feasibility studies**. We also completed **engineering analyses and design and prepared the required permits for the facility**. Hull's work included the hydrogeologic and subsurface investigations; a Landfill Stability Analysis Report that included a hydrostatic uplift analysis, static stability analysis, seismic stability analysis, and settlement analysis; leachate and surface water management plans and engineering designs (including design of two sedimentation ponds); groundwater monitoring and explosive gas monitoring plans; construction quality assurance/quality control plan; and a final closure/post-closure plan. Hull also prepared and submitted to Ohio EPA a National Pollution Discharge Elimination System (NPDES) Permit, air permit, Isolated Wetland Permit, Landfill Permit to Install (PTI), and Nationwide Permit/Jurisdictional Determination for the U.S. Army Corps of Engineers. Hull participated in Ohio EPA's informational meetings about this project and other stakeholder meetings to gain input from the community and to share information about project plans.

Hull continues to participate in ongoing discussions with Ohio EPA as they review the PTI and all wetlands issues have been resolved with Ohio EPA and the U.S. Army Corps of Engineers. Pending agency approval, it is anticipated that landfill construction could begin in 2016.

■ FLINT CREEK POWER PLANT LANDFILL | Landfill Design and Permitting | Arkansas

Client Name: American Electric Power
Project Duration: 2009 – Present
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, and construction QA/QC.
Project Goals & Objectives: To complete liner and leachate collection system design and permitting on a compressed timeline. During this, we identified design improvements that reduced overall construction costs and timeframe.

Hull prepared a **permit modification** for an existing Class 3 Non-Commercial Landfill in Arkansas to incorporate an intermediate liner system and leachate collection system over the existing fill area. The project design and permit document preparation work included:

- Performing a **site investigation** including drilling soil borings outside the landfill limits to obtain in-situ soil samples for geotechnical testing, and drilling borings inside the landfill limits to determine in-situ fly ash and set piezometers;
- Evaluating existing siting criteria;
- Designing intermediate liner system grades to optimize regrading efforts and work within the existing facility's design structure, while also incorporating design features that will be conducive with a potential future horizontal and/or vertical expansion;
- Designing the leachate collection system, storage pond and forcemain;
- **Preparing the permit modification application, design report and plan** set that incorporates a vertical expansion and changes in waste stream;
- **Preparing the quality assurance/quality control plan**, operations plan and hazardous waste exclusion plan;
- **Preparing detailed construction cost estimates and landfill volumes**;
- Preparing stormwater pollution prevention plans and designing erosion and sediment control structures;
- Designing contact water management structures and pond;
- Evaluating the reuse of dredged ash from the ash pond and the relocation and placement of the dredge material within the landfill, including the construction of a test fill and development of material placement specifications;
- Performing comprehensive borrow investigations to identify borrow soils for long-term planning purposes;
- Preparing construction drawings, specifications and other supporting documents required for bidding.
- Performing landfill CQA services for construction of the intermediate liner and leachate collection system, final cover system, sedimentation basins, leachate and contact water ponds, contact water conveyance pipe, and landfill stormwater control structures.
- Providing engineering assistance during construction.
- Preparing operations plan designed to provide guidance for initial phase of filling, including separation of stormwater and contact water.

■ **KYGER CREEK LANDFILL | Landfill Siting, Design, Permitting and Construction Support | Cheshire, Ohio**

Client Name: American Electric Power
Project Duration: 2005 – 2013
Contact: Pedro Amaya, PE | 614.716.2991
Type of Project: Comprehensive hydrogeological, landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To complete the design and permitting on the greenfield site in a timely manner while negotiating the complex hydrogeology and topography at the site. Hull was able to reclassify three aquifers to significant saturated zones through detailed investigations and demonstrations. In addition, we designed a temporary storage area to assist with disposal challenges at the plant and meet client needs.

Hull assisted our client by providing **comprehensive engineering design, permitting, construction planning, and engineering support** to develop a new Class III Residual Waste Landfill in Ohio.

The projects have included:

- Performing a final **site selection study** to assist in determining the most suitable site for development from the previously two selected two possible sites;

- Performing **comprehensive hydrogeological and geotechnical investigations** including hydrogeological field investigations, geotechnical laboratory analyses and slope stability and settlement analyses;
- Preparing the **design and permit documents** for the main landfill area, as well as a temporary storage area wastewater treatment permit that was needed to provide a disposal area prior to receipt of the final Class III residual waste permit;
- Designing the groundwater interceptor, liner and final cover systems;
- Designing the leachate collection system and storage ponds;
- Designing the surface water management structures including sedimentation ponds, drainage ditches, culverts and rock letdowns;
- Developing the groundwater monitoring program;
- Preparing the quality assurance/quality control plan;
- Assisting with the design of the main asphalt haul road;
- Performing site-wide geotechnical investigations and laboratory testing to assist with the long-term borrow development and construction planning;
- Preparing detailed construction cost estimates and construction drawings for the temporary storage area, phase I of the landfill development; and the haul road;
- Preparation of a detailed, four-year stormwater pollution prevention plan to identify appropriate sediment and erosion control measures during development of the temporary storage area, haul road and initial landfill construction activities;
- Preparation of **construction documents for cell extension and leachate pond construction**, and providing engineering support during construction.

By demonstrating yields of less than 0.1 gallons per minute, we were able to obtain a reclassification of three aquifers to significant saturated zones. In addition, Hull has also provided general engineering and operational during landfill development activities, including developing a plan to manage contact water during different stages of operation.

■ **NOBLE ROAD LANDFILL** | Greenfield/Municipal Solid Waste Landfill | Richland County, Ohio

Client Name: Milliron Industries
 Project Duration: 1992 – 2003
 Contact: Grant Milliron | 419.747.6522
 Type of Project: Comprehensive hydrogeological, ecological, landfill design/permitting, construction drawings and specifications, construction QA/QC and compliance services.
 Project Goals & Objectives: To complete the design and permitting on the greenfield site in a timely manner while negotiating through the complex hydrogeological and ecological challenges at the site.

Hull partnered with this client to provide siting and overall design of a new solid waste landfill including a four stage hydrogeologic study, an archaeological study, and a comprehensive wetland mitigation process. Unique features included the establishment of a facility footprint that minimizes impacts on wetlands and an adjoining State Nature Preserve. As a greenfield development, public opposition was great, and Hull was therefore involved in many public information meetings and public hearings.

As part of the wetland permitting process, Hull:

- completed an Alternative Site Analysis as part of the Federal Clean Water Act Section 404 permit application;
- provided wetland mitigation design services as part of federal and state requirements; and
- attended many meetings with U.S. Army Corps of Engineers and Ohio EPA officials.

The composite liner system contained five feet of recompacted clayey soils, a 60 mil HDPE flexible membrane liner and a granular leachate collection system. The facility is adjacent to a State Nature Preserve that caused significant public opposition. The facility design considered the sensitivity of the Nature Preserve along with high quality wetland habitat. We successfully provided a 102-acre landfill footprint with a minimum of impact (less than five acres) on wetland communities. The wetland mitigation, accomplished on-site, is considered a model for this part of Ohio by regulatory agencies. Hull provided QA/QC services for the placement of 100,000 cy of added geologic materials, approximately 200,000 cy of recompacted soil liner, the installation of approximately 1,000,000 sq. ft. of 60 mil HDPE liner, and the installation of the leachate collection system. Hull oversaw and documented the construction of the facility infrastructure including a 30,000 gallon leachate conveyance and storage system, approximately 2,000 feet of a full depth asphalt haul road, a state of the art tire wash, and the office/maintenance facilities. Hull also observed, documented and implemented all of the construction and environmental monitoring programs for this “Greenfield” landfill.

■ CITY OF TIFFIN LANDFILL | Environmental Assessment and Corrective Action | Tiffin, Ohio

Client Name: City of Tiffin, Ohio
Project Duration: 1999 – Present
Contact: Brent Howard | 419.447.2521
Type of Project: Comprehensive site assessment/corrective actions, ecological, cap and surface water management system design, construction drawings and specifications, construction QA/QC and compliance services.
Project Goals & Objectives: To negotiate a responsible assessment and corrective measures strategy for a historic closed landfill, and implement the strategy in a cost-effective manner.

Hull partnered with the City of Tiffin to negotiate a responsible site assessment and corrective measures strategy at a pre-1976 closed landfill owned by the City. This was in response to Clean Water Act violations issued by Ohio EPA as a result of a verified citizen's complaint.

Hull negotiated a responsible site assessment and corrective measures strategy at the closed landfill. As part of the assessment, Hull completed:

- Site-specific and regional groundwater studies to establish a baseline understanding of site conditions and potential environmental impacts; conceptual site model;
- A groundwater monitoring program to monitor water quality and flow data, subsequently used in modeling and risk assessment studies;
- Surface water studies to model storm water flow and quality and its relationship to groundwater, as well as wetlands determinations/delineations, biotic integrity reviews and an assessment of the water quality and aquatic indicators in the Sandusky River; and
- Studies to develop a conceptual model of how the landfill was constructed, materials managed at the site, and current conditions within the landfill, including leachate distribution, quality and physical landfill cap characteristics, storm water and surface water runoff, and the overall relationship between the landfill and its surrounding environs.



Hull also negotiated an innovative corrective measures strategy that has been implemented and is currently pending final approval from Ohio EPA. This strategy includes risk-based target cleanup standards for groundwater and alternate criteria for surface water discharges to wetlands. Also, the strategy focused on appropriateness and cost and equivalency of the corrective measures, considering that it was an unregulated landfill with minimal cap design requirements.

Corrective measures implemented at the site included:

- Targeted landfill cover (cap) improvements to minimize infiltration of surface water runoff and to minimize leachate migration;
- Surface water and stormwater management to improve drainage to minimize ponding of water;
- Landfill gas management to relieve gas pressure within the landfill;
- Wetland maintenance, monitoring and development of alternate discharge criteria to address surface and groundwater discharges to the wetland; and
- Institutional control to provide access and to allow a buffer zone between waste and adjacent properties.

Cap enhancements focused on establishing positive drainage and were designed to make improvements away from areas where mature vegetation was present (materials were only added to achieve a 1976 OAC cap thickness). Also, monitoring programs for various media were established to evaluate the performance of the corrective measures, and a contingency plan was developed.

Due to the high level of interest by the local media and residents living near the landfill, Hull directed several events to help inform residents about results of landfill investigations and helped correct misinformation being disseminated in the community. Hull established and maintained an information repository at the local library, held press conferences, a public meeting, and responded to media inquiries on behalf of the City.

■ **BDM WARREN STEEL, LLC. (FORMER WARREN STEEL FACILITY IN WARREN, OHIO |** **Assessment and Remediation | Warren, Ohio**

Client Name: BDM Warren Steel, LLC
Project Duration: 2014 – Present
Contact: Chuck Betters | 724.375.6170
Type of Project: Site Assessment & Remediation, Engineering and Permitting
Project Goals & Objectives: To place back into a the tax base an underutilized former industrial property

The BDM Warren Steel Site is an approximately 1,200 acre brownfield located on the west side of Pine Avenue SE, approximately 0.25 miles south of South Street SE. The property, which began steel-making operations around 1912, has changed ownership and names multiple times over the years and has been known as Republic Steel Corporation, LTV Steel Company, WCI Steel, RG Steel, and BDM Steel. Steel production at the mill has ceased and BDM has demolished most of the buildings for site redevelopment. Site redevelopment will occur in multiple phases and is currently in progress.

The Facility manufactured hot rolled strip steel, pickled and oiled hot rolled steel strip, cold rolled steel, and coated flat steel products. Spent pickle liquor, mill scales, metallic sludges, process wastewaters, waste oil, basic oxygen furnace (BOF) slag, BOF precipitator dust, and galvanized lime baghouse dust have been generated during manufacturing operations.

Hull is currently providing multiple-disciplinary services at the Site that includes our Infrastructure and Environmental Market Areas.

Environmental:


- Assessment - The Site is entered into the Ohio Voluntary Action Program (VAP) Memorandum of Agreement (MOA) track and a VAP Phase I Property Assessment has been completed. Phase II Property Assessment activities are planned to commence in the first quarter of 2016.
- Surface Water Impoundments— Two surface water impoundments, named Pond #5 and the 56-inch Hot Mill Lagoon, are actively being closed in accordance with an approved Closure Plan that follows Ohio EPA Closure Plan Review Guidance for RCRA Facilities (October 2009). As part of this impoundment closure, several million gallons of water was monitored and discharged to the City of Warren Wastewater Treatment Plant under an activity-specific Order issued by the City of Warren. In addition, several thousand cubic yards of sediments in the base of both ponds was mixed with weathered slag material located on the Property and was placed and compacted within the footprint of Pond #5 under an Integrated Alternative Waste Management Plan (IAWMP) that was approved by the Ohio EPA in December 2016. These alternative management approaches to both the liquids and semi-solid materials located in the ponds resulted in the savings of over \$5 million. The ponds are anticipated to be backfilled to surrounding grade by the end of the first quarter of 2016.
- RCRA Closure— A former area of the Site was formerly used to recycle spent pickle liquor. The process results in the regeneration of the hydrochloric acid used in the steel making process and iron oxide fines. Because spent pickle liquor is a listed hazardous waste and iron oxide fines are generated through the acid regeneration process, the iron oxide is a regulated material if it is not beneficially used. Ohio EPA approved the RCRA Closure Plan in December of 2015 and closure activities are planned to be completed by the end of the first quarter of 2016. Closure activities include the removal of underground lines formerly used to convey spent pickle liquor to the acid regeneration area and the removal of approximately 170,000 gallons of liquid from the former acid storage basin.
- NPDES Program Management— The Site is located adjacent to the Mahoning River and several outfall to the river are monitored under a NPDES permit with the Ohio EPA. On the behalf of our client, Hull negotiated a revised permit with Ohio EPA that reduced the number of outfalls being monitored and the parameters that were included as part of the monitored points. Hull is currently involved with the monthly monitoring and reporting components of the NPDES program.

Engineering:

- Specification Preparation and Bid Process Assistance— Hull has prepared demolition specifications for the removal, processing and beneficial use of approximately \$6.5 million of concrete slabs and footers. In addition to the preparation of the bid document, Hull provided bid process assistance that included attending a pre-bid site walk, answering contractor questions through the preparation of addenda to the bid document, and recommendation of a contractor.
- Conceptual Site Layout— Hull prepared for the client a conceptual site layout for approximately 400 acres of the Site. The layout included several medium to large parcels and proposed internal infrastructure.
- Landfill Material Reclamation— On behalf of the Client, Hull is currently negotiating with Ohio EPA on the drawdown strategy of an established escrow account (established by a previous property owner). The escrow account will be used to fund active mining and beneficial use of landfilled materials on the Site and will be based on meeting certain performance standards. The end result will be the beneficial use of a majority of the landfilled materials currently located within a permitted landfill at the south end of the Site.

In addition to these activities, Hull is providing value-added services that includes public relations and funding. To date, Hull has coordinated and led site tours with regulatory entities and local and regional development groups, conducted stakeholder outreach, and coordinated dialogue on funding and grant opportunities.

HULL'S LANDFILL EXPERIENCE

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Project Name											
ACME Landfill, Ohio						X					
AEP Little Broad Run Landfill, New Haven, West Virginia	X			X	X	X	X				
AEP Amos Landfill, Winfield, West Virginia					X						
AEP Cardinal Landfill, Brilliant, Ohio				X	X						
AEP Conesville						X					
AEP Kyger Creek Landfill, Cheshire, Ohio	X			X		X	X				
AEP Mitchell Landfill, Moundsville, West Virginia					X						
AEP Quarrier Landfill, Winfield, West Virginia					X						
Allied (Laidlaw) Celina Landfill, Ohio	X		X	X	X	X	X			X	X
Allied (Laidlaw) Cherokee Run Landfill, Bellefontaine, Ohio	X		X	X	X	X					X
Allied Ottawa landfill**											
Allied (Laidlaw) Williams County Landfill, Bryan, Ohio	X		X	X	X	X	X		X	X	X
Allied (Superior) Oakland Marsh Landfill, Shiloh, Ohio	X	X	X	X	X	X	X	X	X	X	X
Ashland County Landfill, Ashland, Ohio	X	X	X	X	X	X	X	X	X	X	X
Bath Township, Summit County, Ohio		X	X	X	X	X	X				
Bedford Heights Landfill, Ohio						X					
BFI Medical Waste Facility, Toledo, Ohio				X		X			X		
BFI of Ohio-Michigan C&DD Landfill, Toledo, Ohio	X		X	X	X	X			X	X	
BP Chemical, Lima, Ohio					X						
Bradley Road C&DD Landfill, Cuyahoga County, Cleveland, Ohio	X	X		X		X	X			X	
Brush Wellman Residual Waste Landfill, Elmore, Ohio	X	X			X	X	X	X		X	
C&R Excavating, Ohio	X		X		X	X	X				
Cardington Road Landfill Superfund Site, Kettering, Ohio											X
City of Cleveland, Ohio						X					
City of Garfield Heights, Ohio						X					
City of Greenville Landfill, Greenville, Ohio		X		X	X	X	X		X		
City of Middletown Landfill, Ohio	X	X	X	X	X	X	X			X	X
City of Rossford Landfill, Ohio	X	X	X	X		X	X			X	
City of Solon, Ohio						X					



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
City of St. Marys Landfill, Ohio	X	X	X	X	X	X	X	X	X	X	X
City of Tiffin, Former CR 90 Landfill, Tiffin, Ohio	X		X	X		X	X		X		X
City of Wapakoneta Landfill, Ohio	X	X	X	X	X	X	X				X
City of Wilmington Landfill, Ohio	X	X	X	X	X	X	X				X
Clarkco Landfill, Clark County, Ohio				X	X	X		X			X
Closed City of Celina Landfill, Celina, Ohio				X						X	
Closed Richard County Landfill, Mansfield, Ohio		X		X	X	X				X\	
Confidential Client, Ashtabula County, Ohio	X			X		X	X		X		X
Confidential Industrial Waste Landfill, Ohio		X									
County Environmental of Wyandot, Carey, Ohio	X	X	X	X	X	X	X	X			
Doherty Landfill, Geneva, Ohio		X	X	X	X	X			X	X	X
Dura Landfill, Toledo Ohio		X	X			X	X				X
Eleventh Street C&DD Landfill, Cleveland, Ohio	X	X					X				
Envirosafe Landfill, Oregon, Ohio					X						
AEP Flint Creek Landfill, Gentry, Arkansas	X			X	X	X	X	X			X
Former North Cove Landfill, Lucas County, Toledo, Ohio											
Fulton County Landfill, Delta, Ohio			X								
General Chemical Allied Bike Trail										X	
Graymont Dolime (OH), Inc. Landfill, Genoa, Ohio	X			X	X	X					X
Hardin County Landfill, Kenton, Ohio		X	X	X		X	X				X
Hardy Road Landfill, Akron, Ohio	X										
Hoffman Road Sanitary Landfill, Toledo, Ohio	X	X	X	X	X	X	X			X	X
Hogrefe Landfill, Napoleon, Ohio		X	X			X				X	
Huron County Materials Recovery Facility, Ohio						X		X			X
Inland-Solon Sanitary Landfill, Solon, Ohio						X					X
Lakeview Bluffs, Ohio		X	X	X	X	X	X				X
Lima Composting Facility, Ohio	X			X		X			X		
Millennium Chemicals (captive facility), Ashtabula, Ohio	X	X		X	X	X	X		X		X
North Turkeyfoot Rd/Logan Pkwy Landfill, Summit County, Akron, Ohio		X		X		X					



Project Name	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Old Brooklyn, Cuyahoga County, Ohio						X					
Phoenix Landfill, Ohio						X					
Preble County Landfill, Eaton, Ohio								X			
Republic Countywide Landfill	X	X	X	X	X	X	X	X	X	X	X
Republic Pine Grove Landfill									X	X	X
Roberts Landfill, Urbana, Ohio					X						
Rockside Landfill, Garfield Heights, Ohio						X					
Seiberling Street Landfill, Summit County, Akron, Ohio	X			X		X	X				X
Settlement Street Landfill, Summit County, Akron, Ohio				X						X	
Sidney Sand & Gravel, Shelby, Ohio			X	X	X					X	
Solvay Waste Landfill						X	X				
Stickney Landfill, Toledo, Ohio		X	X	X			X			X	
Stickney West Industrial Park C&DD Landfill, Toledo, Ohio	X			X	X	X	X			X	X
Sunny Farms Landfill, Ohio					X						
Terminal Services Landfill, Bath Township, Ohio	X		X	X		X				X	X
Tremont Landfill, Clark County, Ohio	X		X	X	X	X			X		X
Tunnel Hill Landfill**											
Tyler Landfill, Toledo, Ohio	X		X			X				X	
Unitcast Industrial Landfill, Ohio		X	X				X				
U.S. Gypsum (captive facility), Gypsum, Ohio	X		X	X	X	X					
West 11th Street C&DD Landfill, Cuyahoga County, Cleveland, Ohio		X		X						X	
Westover Sanitary Landfill, Toledo, Ohio			X	X		X	X				
WM American Landfill**											
WM Coshocton Landfill**											
WM Evergreen Recycling and Disposal Facility, Northwood, Ohio	X			X	X	X	X			X	X
WM Gallia County Landfill**											
WM Stony Hollow Landfill, Dayton, Ohio						X					
Wood County Landfill, Bowling Green, Ohio	X	X	X	X	X	X	X	X	X	X	X
Wood County Landfill Composting, Bowling Green, Ohio				X		X					



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Wyandot County Materials Recovery Facility, Ohio						X		X			X
Savannah Regional Landfill, Savannah, Georgia		X	X								
Swift Creek Landfill, Macon, Georgia		X	X								
Wayne Regional Landfill, Jesup, Georgia		X	X								
Allied Belleville Sanitary Landfill, Illinois	X			X	X	X					
Livingston Landfill, Pontiac, Illinois					X	X					
Rumpke, Uniontown Landfill, Crothersville, Indiana **			X								
Rumpke, Batesville Landfill, Batesville, Indiana **			X								
Rumpke, Aurora Landfill, Aurora, Indiana **			X								
Rumpke, Milan Landfill, Milan, Indiana **			X				X				
Rumpke, Medora Landfill, Medora, Indiana **			X				X				
Republic, Worthington Landfill, Worthington, Indiana **			X				X				
Republic, MacBeth Road Landfill, Fort Wayne, Indiana **			X				X				
Republic, Victory Env. Services Landfill, Terre Haute, Indiana **							X				
Allied, Clinton County Landfill, Frankfort, Indiana **				X			X				
New Paris Pike Landfill, Richmond, Indiana **			X				X				
Munster Landfill, Munster, Indiana **			X				X				
Randolph Farms Landfill, Modoc, Indiana **			X				X				
Decatur Hills Landfill, Greensburg, Indiana **							X				
South Side Landfill (C&DD), Indianapolis, Indiana **				X			X				
South Side Landfill, Indianapolis, Indiana **				X			X				
Dozit County Landfill, Inc., Morganfield, Kentucky		X	X								
Epperson Waste Disposal, Inc., Williamstown, Kentucky		X	X								
Green Valley Landfill, Ashland, Kentucky		X	X								
Ohio County Balefill Landfill, Beaver Dam, Kentucky		X	X								
Tri-K Landfill, Inc. Stanford, Kentucky		X	X								
Albion Sheridan Landfill, Albion, Michigan		X	X	X							
Allied (BFI) Vienna Junction Landfill, Erie, Michigan	X		X	X	X	X	X	X	X	X	X
Allied (Laidlaw) Adrian Landfill, Michigan	X	X	X	X	X	X	X	X	X	X	X



Project Name

	Cost Estimates-Closure/Post-Closure	Corrective Measures / Assessment Monitoring / Alternate Source Demonstrations	Environmental Monitoring	Regulatory assistance, permitting and compliance	Landfill construction, operations and management	Engineering design and support	Hydrogeological and remedial services	Solid Waste Management and Planning	Wetland and Ecological Services	Final Use Planning	Public Presentations and Communications
Fort Gratiot Sanitary Landfill, Michigan			X	X	X	X	X				
Hillsdale Transfer Facility, Michigan				X		X					
Huron Dev. Co. Landfill, Port Huron, Michigan					X	X					
Lyon C & C Landfill, Marshall, Michigan				X	X	X					
Lyon Dev. Co. Landfill, Milford, Michigan				X	X	X	X			X	X
Smith's Creek Landfill, Port Huron, Michigan					X	X					
Pfohl Brothers Landfill, Cheektowage, New York					X	X					
Foothills Regional MSW landfill, North Carolina											
Montgomery County Landfill, Troy, North Carolina		X	X								
Uwharrie Regional Landfill, Troy, North Carolina		X	X								
Envirite Clarion Landfill, Clarion, Pennsylvania	X		X			X					
Little Cooley, Pennsylvania	X										
Meadville, Pennsylvania	X										
Oil City, Pennsylvania	X										
AEP Little Broad Run Landfill, New Haven, West Virginia	X			X	X	X	X				
Prichard Landfill, West Virginia		X	X								

¹. This experience includes expert witness, due diligence investigations and similar activities.

** - These projects were performed by current Hull staff while working for a previous employer.

■ **ERMA BYRD BIOMEDICAL RESEARCH FACILITY** | THRASHER | Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506

Thrasher provided services for materials testing and inspection for the new construction of the Erma Byrd Biomedical Research Facility which is a \$40 million, four-story, 120,000 square foot facility.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.



■ **MARY BABB RANDOLPH CANCER CENTER** | THRASHER | Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506
Type of Project:
Project Goals & Objectives:

Thrasher provided services for materials testing and inspection for the renovation of the Mary Babb Randolph Cancer Center was approximately \$15 million which expanded the facility to 87,000 square feet.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.



■ **BLANCHETTE ROCKEFELLER NEUROSCIENCE INSTITUTE (BRNI) | THRASHER |**
Materials Testing | WVU Health Sciences Center Campus, Morgantown, WV

Client Name: West Virginia University, PO Box 6201, Morgantown, West Virginia 26506
Contact: Eric Rosie (304-293-6445), PO Box 6561, Morgantown, WV 26506
Type of Project:
Project Goals & Objectives:

Thrasher provided services for materials testing and inspection for the new construction of the \$30 million BRNI building which is a three-story, 84,000 square foot facility.

Thrasher's Field Technicians were responsible for coordinating with prime and subcontractors in performing required tests and filing daily reports. Technical services included concrete testing and inspection on grade beams, caissons, light weight floor slabs, walls and piers, fire proofing inspection and testing, soil compaction testing, standard and modified lab proctors with soil classification, caisson inspection, re-bar inspection, steel inspection and testing, bolt torque, shear connector studs and visual welds.

■ **WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION | THRASHER | AML**
Projects | West Virginia

Thrasher has worked with the Department of Environmental Protection to successfully complete the following AML projects. Thrasher is aware of the importance of accurate survey and mapping that is needed to get these projects to engineering design.

- Roaring Creek | Portals, Subsidence Depressions, Dewatering of Farm pond into subsided areas
- Anglins Run | Portals and AMD
- Squire's Creek | Portals, Highwall, AMD and Refuse
- Overfield (Lafferty) | Clogged Stream, Portal and Landslide
- Clarksburg (Lyons) Landslide | 2 acre Landslide
- Lauren Run #1 | Portals, Highwall and AMD
- Pleasant Valley (Brown) | Portals, Highwall and AMD
- Roger Camp Hill | 1/2 Acre AMD Impoundment and Refuse
- Stowe (Prince) Landslide | Emergency Landslide
- Owl Creek #2 | Portals, Highwalls, AMD and Refuse
- Landgraff Refuse Pile | Refuse
- Canyon Refuse and Dump | Portals, Highwalls and Refuse

■ **WEST VIRGINIA COAL COMPANIES | THRASHER | Topographic Surveys and Aerial**
Mapping | West Virginia

Thrasher has successfully completed topographic surveys and aerial mapping for the following coal companies in and surrounding West Virginia.

- Apogee Coal Company | Scott Depot, West Virginia
- ARCH/Beckley, LLC | Eccles, West Virginia
- ARCH/Mountain Laurel Mining | Sharples, West Virginia
- Greenbrier Minerals, Coronado Coal II | Rupert, West Virginia
- MET Resources | Bridgeport, West Virginia
- Pinnacle Mining LLC | Cleveland, Ohio
- Sugar Camp Energy, LLC | Macedonia, Illinois
- Vecellio & Grogan, Inc. | Beckley, West Virginia
- Mid-Vol Coal Sales | Princeton, West Virginia

- Berkeley Land Surveyors, Inc. | Berkeley Springs, West Virginia
- Cliffs Logan County Coal, LLC | Cleveland, Ohio
- Magnum Coal Company | Yolyn, West Virginia

■ WEST VIRGINIA DIVISION OF HIGHWAYS | THRASHER | Surveying | West Virginia

Thrasher's survey teams have performed numerous survey assignments for the WVDOH through our Statewide Agreement. The following is a list of recent projects:

- Brooke County – Route 2 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Putnam County - Route 35 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys
- Fairmont Connector – Construction Stakeout for Mountaineer Contractors | Construction layout, quantity surveys
- Hurricane Creek Road – WVDOH Project #U340-35-4.40 00 | Construction layout, property corner verifications, GPS control verifications, GPS control confirmation, cemetery location, electronic deliverables, and route location surveys for 6 miles of proposed roadway.
- Lodgeville Road – WVDOH Project # X317-50/76-00.00 00 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys
- Jakes Run Arch Bridge – WVDOH Project #BR0007(180) | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Old Bridgeport Hill Drainage – WVDOH Project # S317-20/75-0.43 00 | Prepared right-of-way plans, legal descriptions, plats, field survey
- SR 279 North Bridgeport By-Pass – WVDOH Project #X317-279-0.00 | Performed route location surveys, construction layout, prepared right-of-way plans, legal descriptions, plats, field surveys
- Route 11 Near Musselman High School – WVDOH Project # U302-11-4.36 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- King Coal Hwy Baisden-Mudlick – WVDOH Project #U330-52-44.70 00 C-2 | Prepared right-of-way plans, legal descriptions, plats, field surveys
- Corridor H, Grant County, West Virginia – WVDOH Project #X312- H-79.05 00 | Prepared route location surveys, right-of-way plans, legal descriptions, plats, field surveys

■ CONFIDENTIAL OIL AND GAS CLIENTS | THRASHER | Topographic Surveys and Mapping | West Virginia

Thrasher has completed every phase of topographical survey and mapping needed to properly execute site development for various confidential oil and gas clients. Examples of this work includes the following:

- Confidential Client | 500 mile survey, mapping and alignment sheets
- West Virginia Confidential Client | 34 mile survey, mapping, erosion and sediment control plans and routing recommendations
- West Virginia Confidential Client | 60 mile survey for construction of propane line
- Marion and Monongalia Counties, West Virginia | 8,000 linear feet of survey and drawings completed within 4 months
- TL 536/ TL 543 in Wellsville, NY | 22 mile survey, wetland survey, as-built survey and mapping completed within 10 months
- LN-19 in Delmont, Pa | 2 mile as-built survey for gas transmission line completed within 3 months
- TL260 in Bridgeport, Harrison County, WV | 1.5 mile survey for gas transmission line completed within 3 months
- Tioga/Storage Field in Tioga, PA | 4.8 mile stakeout, survey and mapping completed within 10 weeks
- TL-272 in Cornwell Compressor Station, Clendenin, WV | Two hundred foot of as-built survey in Kanawha County, West Virginia completed within 1 month

- TL-570/TL-263 Boone County, WV | 6.4 mile survey for rural areas of Boone County, West Virginia, completed within 7 months
- TL-342/EXT.4 Waynesburg, Pa | 9.7 mile pre-construction survey in Greene County, Pennsylvania completed within 3 months

■ TRANSMISSION/ DISTRIBUTION | THRASHER | Line Field Survey | Various

Specific examples of project experience for transmission lines include:

Performed boundary, ALTA, topographic, and/or control and construction stakeout surveys for substation sites at:

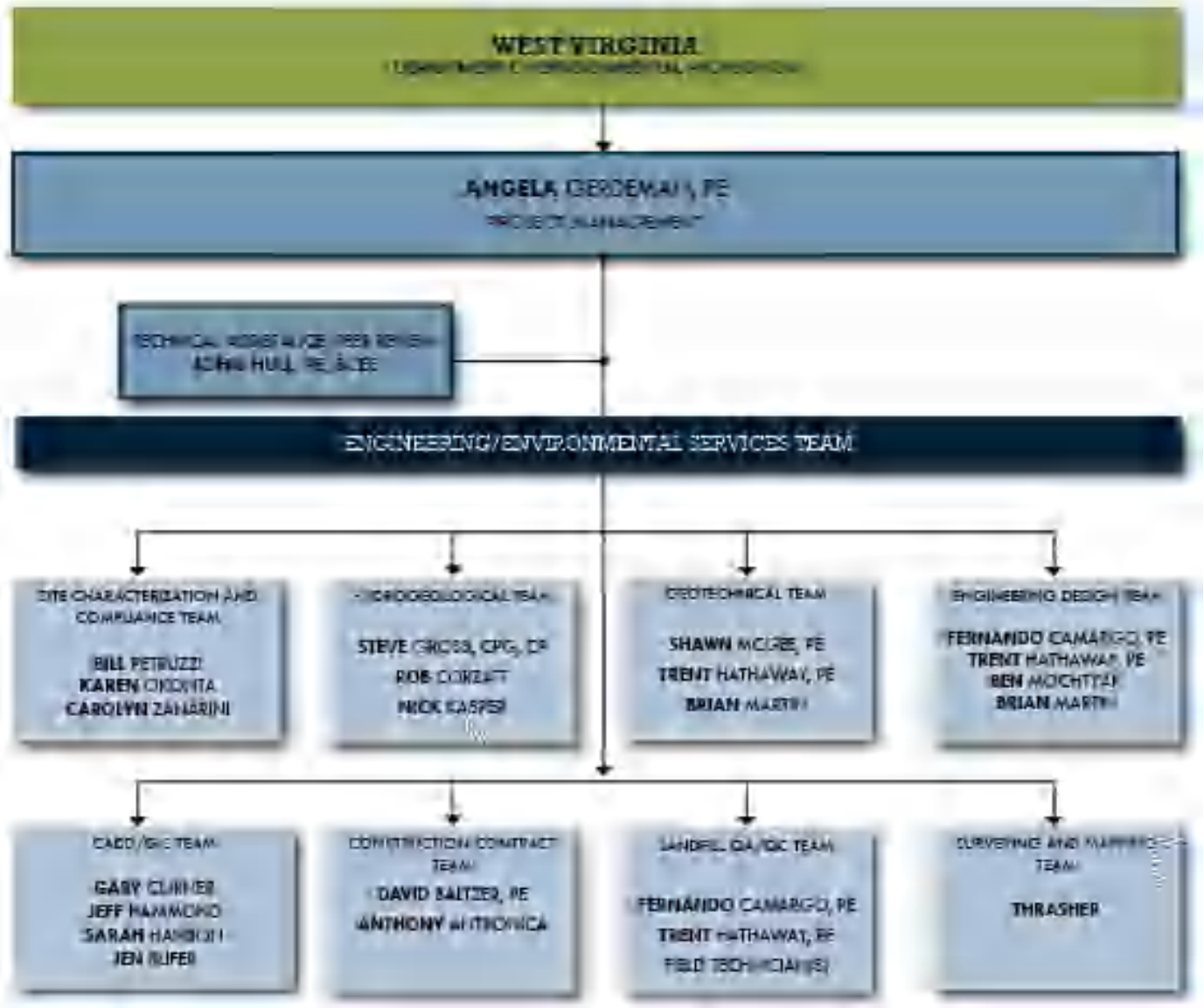
- Lazenby – Mercer County, WV
- Jarrold – Raleigh County, WV
- McGraws – Wyoming County, WV
- Caretta – McDowell County, WV
- Hall's Ridge – Mercer County, WV
- Patrick Street – Kanawha, WV
- Claypool Hill – Tazewell County, VA
- Spectra Energy – Washington County, VA
- Garrison Switch – Boone County, WV
- Rockhouse Road – Boone County, WV
- Lockhart – Dickenson County, VA
- Cross Lanes – Kanawha County, WV
- Patrick Street – Kanawha County, WV
- Lanham - Kanawha County, WV
- Duffield – Scott County, VA
- Wellmont – Sullivan County, TN

Performed Transmission Line Surveys at:

- McGraws – Wyoming County, WV
- Patrick Street – Kanawha County, WV
- Halls Ridge – Mercer County, WV
- Lockhart – Dickenson County, VA
- Spectra Energy – Washington County, VA
- Jaeger-Wharnccliffe – McDowell/Mingo County, WV
- Duffield, Scott County, VA

SECTION 4 | KEY PERSONNEL

4.1 | ORGANIZATIONAL CHART



4.2 | RESUMES OF LEAD TEAM MEMBERS

■ ANGELA GERDEMAN, PE | Senior Project Manager | PROJECT MANAGEMENT



EDUCATION:

- Bachelor of Science, Civil Engineering, The University of Toledo, 1992

TRAINING:

- Landfill Construction Services Refresher (2012)
- Geosynthetic Liner, Compacted Clay Liner and GCL seminar (2012)
- Landfill CQA Training Refresher (2012)
- Landfill Construction Services Training (2008)
- The Engineer as Leader Seminar, Engineers Foundation of Ohio (2005)
- Comprehensive Nutrient Management Planning Seminar, EMS Solutions (2003)
- Short Course on Embankment Dams, Including Safety of Existing Dams (1999)
- Project Management for Design Professionals (1997)
- Construction Project Administration & Claims Avoidance Seminar (1997)
- OSHA 1910.120, 40-Hour Training Course, 8-Hour Refresher Courses
- Nuclear Densitometer Trained Technician (1989)

CERTIFICATIONS:

- Registered Professional Engineer – Ohio, West Virginia, Pennsylvania, Arkansas, and Kentucky Certified CQA Geosynthetic Materials and Compacted Clay Liner Inspector
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)

AFFILIATIONS:

- National Society of Professional Engineers
- Engineers Without Borders
- Ohio Dam Safety Organization/ Water Management Association of Ohio
- American Coal Ash Association (Associate Member)

Angie is a senior project manager and the Landfill Engineering Practice Leader for Hull. She has more than 25 years of consulting experience. Angie's expertise includes municipal, industrial, residual, and construction and demolition debris (C&DD) landfill siting, design, permitting, subsurface investigations, laboratory analyses, construction quality assurance (CQA), planning, operations, and closure. She is additionally experienced at dam/impoundment design, permitting, and CQA for water-supply reservoirs and waste settling ponds.

Angie's expertise includes:

Landfill Construction Quality Assurance (CQA) Services and Support

- Manages the construction quality assurance of landfill components such as landfill cells, landfill caps, stormwater sediment ponds and support structures, test pads, leachate collection systems, and protective cover placement.
- Evaluates landfill capacity needs and prepares detailed construction phasing drawings that effectively handle potential surface water runoff, contact water, and leachate generated by construction.
- Performs geotechnical explorations and laboratory testing; observes/tests pads and fills; develops soil processing plans; prepares CQA Plans, construction SWPPPs, and construction reports; and manages CQA services.
- Prepares bid/construction documents, reviews and analyzes bids, and prepares engineer's estimates of probable construction costs.
- Has lead CQA field teams in the construction of double-composite cells, test pads, and composite cap systems at a variety of landfill types.

Landfill Design, Operations, and Supporting Services

- Manages the design and permitting of municipal, industrial, residual, and C&DD landfills in multiple states; experience includes performing siting studies to identify and rank possible sites, preparing design and Permit-to-Install (PTI) packages; preparing final closure/post-closure plans; developing explosive gas and groundwater monitoring plans; and hydrogeological investigations including wetland and stream evaluations.
- Assists clients with developing long-term phasing and operational plans for landfill development based on planned tonnage, location of access roads, clean and contact water management structures, and interim cover placement. Assists with regulatory compliance.
- Manages the preparation of annual operational and quarterly asbestos reports, operating record updates, quarterly in-place density calculations, and bioremediation of contaminated soils.
- Prepares 10-year best available technology reviews of existing permit documents to assess compliance with existing regulations.

Select Project Experience

- Hoffman Road Landfill | Toledo, Ohio
- Multiple AEP Landfill Projects | Ohio, West Virginia, and Arkansas
- Waste Management Stony Hollow Landfill | Dayton, Ohio
- Waste Management Evergreen RDF | Northwood, Ohio
- Stickney Recycling C&DD | Toledo, Ohio
- Wilmington Sanitary Landfill | Wilmington, Ohio
- Milliron Industries | New Greenfield ASR Landfill | Mansfield, Ohio

■ JOHN HULL, PE, BCEE | Technical Assistance



EDUCATION:

- Master of Science Civil Engineer, Stanford University, 1976
- Bachelor of Science Civil Engineer, Ohio Northern University, 1975

REGISTRATIONS:

- Registered Professional Engineer - Ohio, Michigan, Pennsylvania, Indiana, New Hampshire, Kentucky, West Virginia, Texas, Connecticut, Vermont, Illinois, Alabama, Massachusetts, Maine
- Board Certified Environmental Engineer Solid Waste Management (AAEE)

PROFESSIONAL AFFILIATIONS:

- Permanent Certified UST Professional (#0255)
- American Academy of Environmental Engineers
- American Society of Civil Engineers
- Association of Soils and Foundation Engineers
- National Society of Professional Engineers
- Ohio Environmental Health Association
- Order of the Engineer
- Water Environment Federation
- Western Dredging Association
- National Water Well Association/National Ground Water Association

U.S. PATENT NO.s:

- 5,082,500 | 5,538,787
- 5,897,946 | 6,386,796
- 6,558,081 | 7,011,766
- 5,763,734 | 6,024,971

John is the founder and Chairman of Hull with more than 30 years of experience with a wide variety of engineering and environmental issues. He serves on governor-appointed committees, advises clients on complicated challenges, and provides strategic planning experience to current staff and assists Hull's clients achieve environmentally protective and cost-effective solutions. He is also a Trustee of Ohio Northern University and is a member of the Nature Conservancy (Ohio) board of trustees. John is a registered Professional Engineer in 14 states and is recognized as a Board Certified Environmental Engineer in solid waste management by the American Academy of Environmental Engineers.

John's expertise includes:

Solid Waste Management Planning

- Helped solid waste management districts develop and draft solid waste plans including waste composition studies, waste generation projections, financial budgeting,, recycling and composting programs, disposal capacity projections, and required regulatory update reports. Also assisted with public meetings and communications.
- Directed a recycling study of 12 state universities in Ohio for Ohio DNR.
- Participated in multiple beneficial use projects and delisting of waste streams

Landfill Siting, Design, and Construction

- Conducted feasibility studies of alternative landfill options for municipalities, counties, and private waste management companies.
- Assisted developers with siting or expanding more than 20 residual/industrial waste sites, construction and demolition debris, and municipal solid waste landfills; Permits-To-Install, wetlands and NPDES (surface water discharge and stormwater) permitting, Clean Air Act Title V permit applications, landfill cell designs, and public relations activities.
- Managed the engineering design of new landfills or landfill expansions and obtained regulatory approval for construction activities at 40+ landfills; diverse designs included integrated stormwater management systems, environmental monitoring, final closure, and QA/QC plans.

Environmental Monitoring Programs for Landfills

- Provided guidance and oversight for environmental monitoring activities for ongoing operations and post-closure monitoring plans for groundwater, surface water, explosive gas, surface water, and leachate collection systems at more than 60 active and closed landfills.
- Oversaw investigation of potential remedial actions for leachate transport/methane generation at sanitary landfills and closed dumps; also provided remediation, construction services, and litigation support.

Selected project experience:

- Multiple AEP Waste Management Projects | Landfills, Permitting, and Construction | West Virginia and Ohio
- Toledo Harbor Sustainable Dredge Management Plan | Identification and evaluation of multiple alternatives for 1,000,000 cy/year sustainable dredge management | Toledo, Ohio
- Milliron Industries | New Greenfield ASR landfill | Mansfield Ohio



EDUCATION:

- Coursework toward Master of Science in Geology, University of Toledo
- Bachelor of Science in Geology, Youngstown State University, 1986

TRAINING:

- OSHA 1910.120, 40-Hour Hazardous Waste Training Course and Annual 8-Hour Refresher
- State of Michigan Storm Water Management at Construction Sites

CERTIFICATIONS:

- Registered Professional Geologist – State of Kentucky
- Registered Professional Geologist – State of Pennsylvania
- Radiation Safety and Use of Nuclear Soil Gauges Certification

AFFILIATIONS:

- Association of Ground Water Scientists and Engineers, National Ground Water Association
- Ohio Water Pollution Control Association/Water Environmental Federation
- International Association of Hydrologists
- University of Toledo Earth, Environment, & Energy Committee
- National Solid Waste Management Association
- American Coal Ash Association

Bill's areas of expertise include solid waste management; environmental monitoring and compliance programs; hydrogeochemical evaluations; remedial investigations; and special regulatory and research and development projects. He is responsible for project management; solid waste permitting, closure and post-closure programs; life cycle analyses and financial evaluations; environmental monitoring and statistical evaluations for a variety of waste and process materials; beneficial use and conservation projects; storm and waste water programs; project development and strategic planning; and regulatory programs.

Bill's expertise includes:

Solid Waste Management and Solutions

- Responsible for leading solid waste management initiatives with private and public sector clients.
- Completes audits, waste characterization, and profiles to evaluate best material management alternatives, including beneficial uses, waste to energy, leachate recirculation, land applications, and waste/storm water management strategies.
- Conducts financial analyses incorporating risk assessment and liability management issues as well as regulatory compliance and life cycle analyses. Supports financial assurance reviews.
- Participates in strategic planning, multi-party negotiations and public relations, expert witness and litigation support, policy analysis, technical studies and rule making processes.

Compliance Projects

- Works on remedial system installation/O&M projects; responsibilities include installing system piping, assisting with clients in meeting applicable state and federal regulations, negotiating findings and orders for public and private clients, evaluating draft findings and orders, and assisting legal counsel with technical aspects of settlement negotiations, including risk evaluations, environmental impacts, cost-benefit analyses, alternate criteria or variances, and fate and transport models.

Environmental Monitoring Programs for Landfills

- Provided guidance and oversight for environmental monitoring activities for ongoing operations and post-closure monitoring plans for groundwater, surface water, explosive gas, surface water, and leachate collection systems at more than 60 active and closed landfills.
- Oversaw investigation of potential remedial actions for leachate transport/methane generation at sanitary landfills and closed dumps; also provided remediation, construction services, and litigation support.

Selected project experience:

- Groundwater, Leachate, Surface Water and Explosive Gas Projects for the City of Toledo, Ohio including: Stickney Avenue and Tyler Street Landfills, Hoffman Road Landfill, Dura Landfill and Former XXKem Facility
- Multiple Republic Services, Inc. Projects | Kentucky and North Carolina

■ STEVEN M. GROSS, CPG, CP | HYDROGEOLOGICAL TEAM LEAD



EDUCATION:

- Bachelor of Science, Geology & Mineralogy, The Ohio State University, 1987

TRAINING:

- Ohio Department of Transportation (ODOT) NEPA Document Preparation Training (1999)
- Ohio Department of Transportation (ODOT) Category Exclusion Document Preparation Training (2000)
- Transport & Fate Principles & Parameter Estimation (2000)
- Probability, Statistics and Geostatistics for Environmental Professionals (1993)
- Field Maintenance Technology, University of Toledo (1991)
- OSHA 1910.120, 40-Hour Hazardous Materials Safety Course (1989) and Annual 8-Hour Refresher Courses

CERTIFICATIONS:

- Ohio EPA Voluntary Action Program, Certified Professional – CP192
- Certified Professional Geologist, American Institute

Steven is a Senior Project Manager with over 28 years of experience in environmental consulting. He has been responsible for managing and implementing numerous site assessment investigations and remedial activities in different and complex hydrogeologic environments. Steven's experience includes working with solid and hazardous waste landfill sites, brownfield sites, industrial and commercial properties, assessment and remediation under the guidance RCRA and CERCLA regulations, Ohio Voluntary Action Program (VAP) regulations and BUSTR.

Steven's expertise includes:

Environmental Assessment

- Has served as project manager and lead for over 200 Phase I/Phase II Environmental Site Assessments at facilities including small to large retail facilities, commercial storage facilities, manufacturing facilities in the automotive parts/repair and metal processing industry, medical facilities, former industrial sites, and undeveloped property.
- Conducts on and off-site file reviews, site inspections, interviews, intrusive site investigations, and report preparation while ensuring that work is compliant with regulations and client objectives; has also conducted several projects through legal counsel.
- Conducts hydrogeologic investigations and groundwater monitoring using technologies such as ground recovery, soil vapor extraction, bioventing and air sparging, stabilization, and insitu and exsitu bioremediation.

Site Remediation

- Responsible for managing and implementing site investigations and remedial activities by acting as an Ohio VAP Certified Professional; defining project scopes to meet client needs; providing technical oversight and guidance; reviewing assessment Work Plans; reviewing and comparing data with risk-based VAP standards; and assisting in the development of remedial alternatives.
- Experience includes Superfund/CERCLA Removal Actions; RCRA Remedial Investigations, Corrective Actions, and Closures; NEPA assessments and documentation; U.S. EPA Brownfield Pilot Grant projects; and emergency response.

Selected project experience:

- Anchor Hocking Plant No. 2 | Phase I and Phase II Environmental Assessment and Remedial Action Plan | Lancaster, Ohio
- Closed Municipal Landfill Remediation | Superfund Removal Actions | Ashtabula County, Ohio
- Due Diligence Investigation of Waste Disposal Facilities | Multiple Locations, Ohio and Michigan
- Coal Tar Release Emergency Response | Pond Sediment Assessment & Remediation | Bank Stabilization | Northwest Ohio
- Greenfield FGD Landfill Hydrogeological Investigation and Assessment/Southeast Ohio
- Prepared 17 No Further Action Letters under the Ohio VAP, 14 of which have received a Covenant Not to Sue from Ohio EPA

■ SHAWN MCGEE | GEOTECHNICAL TEAM LEAD



EDUCATION:

- Master of Science, Civil Engineering, University of Toledo, 2001
- Bachelor of Science, Civil Engineering, University of Toledo, 1998

TRAINING:

- Managing and Understanding Sediments in Your Watershed (2011)
- ODOT Geotechnical Consultants Workshops (2004-2010)
- NHI Subsurface Investigation Workshop (2006)
- Earth Retaining Structures (2005)
- Watershed and Stream Investigation, Stabilization and Restoration Workshop (2005)

CERTIFICATIONS:

- Registered Professional Engineer, Ohio
- American Society of Civil Engineers
- National Society of Professional Engineers
- Ohio Dam Safety Organization/ Water Management Association of Ohio
- Utility Solid Waste Activities Group (Affiliate Member)
- Mine Safety and Health Administration, Impoundment Inspection Certification (2012)

ACCOMPLISHMENTS:

- 2007 Ohio Society of Professional Engineers Young Engineer of the Year
- 2006 ASCE, Toledo Section Young Engineer of the Year
- 2006 Toledo Young Engineer of the Year, National Engineer's Week
- Chi Epsilon (National Civil Engineering Honor Society)

Shawn specializes in geoenvironmental engineering, which includes traditional geotechnical and slope stability analyses. He has performed numerous geotechnical explorations and forensic investigations across the Midwest, planned comprehensive subsurface investigations, and performed a diverse variety of slope stability and subsurface analyses. He is experienced with a wide range of construction projects, including landslide stabilization/remediation, brownfield redevelopment projects, residual waste and municipal landfills, dams/levees, reservoirs, road and bridge rehabilitation/construction, and multi-story structures. Shawn is also the manager of Hull's AASHTO Accredited Geotechnical/Materials Testing Laboratory.

Shawn's expertise includes:

Geotechnical Explorations and Evaluations

- Plans and coordinates comprehensive geotechnical explorations for various site development projects.
- Performs evaluations of subsurface conditions and provides foundation and pavement design considerations and construction recommendations when applicable.
- Performs extensive soil pre-characterizations and borrows source investigations to determine usable soil types for various projects.
- Provides technical oversight to various projects requiring the remediation and management of contaminated sediments. Specific project activities include assisting with sediment sampling and analysis efforts as well as assisting with determining appropriate remedial options.

Dam/Levee Design and Permitting

- Involved from conception through construction of several reservoir expansions for municipality drinking water supplies. Projects included permitting, developing plans to fill the reservoir and handle emergencies, performing slope stability analyses; performing detailed geotechnical explorations; preparing contract documents for bid and construction; and observing/documenting construction of the reservoirs.
- Planned, performed and supervised a subsurface exploration for a levee that will provide flood control from the Scioto River.
- Design engineer for an ODNR dam permit application for the construction of a new settling pond for a lime processing facility in Ohio.
- Conducted hydrologic analysis of drainage basins and hydraulic analysis of spillways. Analyzed downstream damage that could occur in the event of a dam failure.

Select Project Experience:

- Materion Brush Inc. | Engineering Support on Various Remediation, Landfill and Civil Engineering Projects | Elmore, Ohio
- Wood County Landfill | Landfill Engineering, Permitting and Environmental Monitoring | Bowling Green, Ohio
- Multiple AEP Waste Management Projects | Landfills, Permitting, and Construction | West Virginia and Ohio
- Milliron Industries | New Greenfield ASR landfill | Mansfield Ohio
- City of Upper Sandusky Reservoir Expansion | Upper Sandusky, Ohio
- Village of North Baltimore Upground Reservoir Geotechnical Investigation and Construction Management | Village of North Baltimore, Ohio
- Dike 14 | Coastal Ecosystem Restoration | Cleveland, Ohio

■ FERNANDO CAMARGO, PE | ENGINEERING DESIGN TEAM LEAD



EDUCATION:

- Bachelor of Science, Civil Engineering, University of Sao Paulo, Brazil, 2004

TRAINING/SEMINARS:

- OSHA 29 CFR 1910.120, 40-hr Hazardous Waste Operations & Emergency Response (April 2006)
- Radiation Safety and Nuclear Densitometer Operator Certification (March 2006)
- The Engineer As Leader, Engineers Leadership Institute – Engineers Foundation of Ohio (February 2013)
- Coal Ash Landfill Management and Ash Pond Closure Course (March 2014)
- ACAA “Coal Combustion Products Utilization and Management: A Practical Workshop”, Lexington, KY, April 29-30, 2014

PROFESSIONAL AFFILIATIONS:

- Registered Professional Engineer, Ohio and West Virginia
- American Society of Civil Engineers
- Ohio Society of Professional Engineers

Fernando is a Project Manager and has eight years of experience that includes permitting, construction and operation support, and closure/post-closure care of several landfills in Ohio, West Virginia, and Arkansas. Fernando has also contributed to the development of a long-term harbor dredging plan for a significant port in Ohio. Fernando is a registered Professional Engineer in Ohio and West Virginia.

Fernando's expertise includes:

Landfill Design, Permitting and Compliance

- Assists with the preparation of Permit-to-Install and Permit Modification Application packages for residual and solid waste landfills; responsibilities include overall landfill design, leachate generation analysis, comprehensive design for leachate collection and management systems, surface water management system design, and preparing QA/QC, Closure and Post-Closure plans, and Explosive Gas Management Systems.
- Generates preliminary evaluations and cost estimates to support design of several components of landfill construction and operation structures.

Landfill QA/QC Services and Construction Support

- Acts as the lead QA/QC officer for the construction and expansion of landfills and landfill components such as leachate forcemains, explosive gas monitoring systems, and municipal and residual waste landfills. Work has included overall construction oversight and preparation of Construction Certification Reports.

Landfill Operations and Compliance Support

- Prepares interim filling plans, annual operational reports and operating record updates, quarterly in-place density calculations for several municipal solid waste landfills in Ohio, regulatory compliance support for closed landfills in Ohio.

Dredge Material Management Plan

- Assisted in the development of a plan that evaluated relative costs, feasibility, and environmental, ecological and human impacts/benefits for several different options for long-term sediment management and use of dredge material from Lake Erie.

Selected project experience:

- Little Broad Run Landfill | Construction and Operations Support | New Haven, West Virginia
- Flint Creek Power Plant Landfill | Permit Modification and Construction Support | Gentry, Arkansas
- AEP Mitchell Landfill | Moundsville, West Virginia
- Evergreen RDF, Inc. | Construction and Operations Support | Northwood, Ohio
- Toledo-Lucas County Port Authority | Toledo Harbor Sediment Management and Use Plan | Toledo, Ohio
- Frontier Recycling and Disposal Facility | Mansfield, Ohio

■ GARY CORNER | CADD/GIS TEAM LEAD



EDUCATION:

- Bachelor of Science, Mechanical Engineering Technology, University of Toledo, 1985
- Associate Degree in Mechanical Engineering Technology, University of Toledo, 1983

Gary Corner's 19 years of consulting experience includes design plans of municipal and industrial landfills; permitting; construction; planning; operations; and closures. He has designed dams, reservoirs and lime residual waste settling ponds, and provided construction grade plans for each one. Gary holds Associate and Bachelor's degrees in mechanical engineering technology from the University of Toledo.

Gary's expertise includes:

Expansion PTI Plan Sets for Landfills

- Designs and prepares plan sets showing underdrain; secondary and primary leachate collection systems; final waste grades; cross-sections associated with different grades; and detail sheets showing how landfill expansion is to be constructed; also prepares plans for significant landfill modifications. Landfill base and final grade design are based on specified regulatory design parameters.
- Performs volume analysis for landfill airspace and useful life calculations.

Landfill Closure/Post-Closure Plans

- Designs and prepares plan sets that show final top of waste grades, final cap grades, surface water drainage, components, and details associated with final construction.

Water Supply Reservoir Plans

- Designs and prepares plan sets showing reservoir embankments, water supply piping, inlet and outlet structures, surface water control structures, wetland and stream mitigation areas, forcemain and pump station details, and road details.
- Calculates water storage and soil volumes to determine soil balance.
- Prepares bid plans showing grades of different construction components with survey points and associated detail drawings for construction.

Construction Documentation Support

- Prepares nuke test completion maps, geomembrane deployment and repair drawings, construction details, record drawings, bid plans, and detailed construction development plans and cross-sections.

Construction Design Plan Sets

- Designs and prepares plan sets showing details plans, cross-sections and details showing how the design needs to be constructed. The plans also show survey staking information (i.e., northing, easting, elevation, description of feature) for the construction company and site surveyor.

Select project experience:

- Hoffman Road Landfill | Toledo, Ohio
- Little Broad Run Landfill | Construction and Operations Support | New Haven, West Virginia
- Flint Creek Power Plant Landfill | Permit Modification and Construction Support | Gentry, Arkansas
- Evergreen RDF, Inc. | Construction and Operations Support | Northwood, Ohio
- Upper Sandusky Reservoir – Design and Construction plans – Upper Sandusky, Ohio
- Wood County Landfill | Bowling Green, Ohio
- AEP Mitchell Landfill | Moundsville, West Virginia
- AEP Amos FGD Landfill | Winfield, West Virginia
- Frontier Recycling and Disposal Facility | Mansfield, Ohio

■ DAVID BALTZER, CSI, PE | Construction Contract Team Lead



EDUCATION:

- Bachelor of Science, Civil Engineering, The Ohio State University

CERTIFICATIONS:

- Professional Engineer in the state of Ohio
- Professional Engineer in the state of West Virginia
- ODOT Prequalification – Construction Engineering Level 1 & 2

AFFILIATIONS:

- Columbus Chapter of the Construction Specifications Institute (CSI)
- Associated General Contractors of America
- Ohio Society of Professional Engineers

David Baltzer is the leader of Hull's Construction Services practice. With over 29 years of experience in the construction and development arena, he has lead and managed projects pertaining to energy, waste management, urban revitalization, industry, shale oil & gas, educational facilities, commercial office buildings, treatment facilities and infrastructure. David has established long and respected relationships with public and private owners, contractors, and other consultants, and serves in the lead construction management role for many complex, multidisciplinary projects.

Dave's expertise includes:

Municipal Wastewater/Stormwater Collection Systems and Water Distribution

- Acted as project manager and monitored CA/RPR tasks for wastewater/stormwater collection systems (i.e. ditch improvements, box culverts, tunnel culverts, gravity sewers, pump stations, and force mains).
- Acted as project manager and monitored CA/RPR tasks for water distribution projects including installation and testing of water main lines, service connections, valves, hydrants and other water line appurtenances.

Landfill Engineering

- Senior Project Manager responsible for providing a constructability review of Closure Plans for a private landfill designed by a Design-Build entity. Also provided limited construction administration and coordinated/scheduled Hull's project representative to monitor construction progress and quality and develop the associated punch list.
- Experienced acting as a Senior Project Manager responsible for providing funding assistance during closure and post closure activities on public landfill sites; managing internal and external resources regarding QA/QC services (soils, concrete, asphalt) for haul roads on a private landfill projects; and coordinating/peer reviewing engineers' opinions of probably construction costs at a private residual waste landfill project.

Selected project experience:

- Demolition and UST Closure: Indian Meadow and Tiffin River Service Plazas | Ohio Turnpike Commission Milepost 20.8
- East 44th Street Roadway & Utility Improvements | Cuyahoga County, Ohio
- Water Line and Sewer Inspection | Northwestern Water & Sewer District
- Pilkington Glass Facility Powerhouse Demolition Project | Ottawa, IL
- ODNR Muskingum River Lock Repairs | Zanesville, Ohio
- 52-Story High Rise Office Building | Construction Management | Indianapolis, Indiana
- Rio Grande University Campus Building Project | Construction Management | Rio Grande, Ohio
- Former Frick Gallagher | Ray O Vac Site Demolition and Remediation Project | Lancaster, Ohio
- Cardinal Haul Road | Quality Assurance/Quality Control | Brilliant, Ohio
- Countywide RDF West Haul Road Project | East Sparta, Ohio
- Franklin County Metroparks | Glacier Ridge Metro Park Roadway Project | Jerome Township in Union County, Ohio

Jeff Gola, PE Project Engineer



Jeff Gola, PE has built a successful portfolio of streetscape, highway, community improvement, airport and commercial site development projects. He is experienced in all aspects of project control, form design and drafting to construction and project oversight. Jeff has an excellent understanding of bid processes and construction inspection.

Jeff's expertise in designing and planning roadways, bridges, sidewalks, retaining walls, utility plant structures, storm water management and demolition plans is exceptional. He has first hand knowledge in obtaining permits and their requirements. His understanding of erosion and sediment control make him an excellent project manager.

Education:

- Bachelor of Science, Civil Engineering - West Virginia University

Registrations/Licenses:

- Registered Professional Engineer
 - States of West Virginia [#15621] and Maryland [#33492]

Affiliations/Certifications:

- American Society of Civil Engineers
- American Society of Highway Engineers
- City of Mannington Enforcement Board of Appeals
- Harrison County Planning Commission Board of Appeals

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Site Brownfields Project** - Harrison County, West Virginia
- **Fairmont State University Housing Demolition and Site Reclamation Project** - Marion County, West Virginia
- **City of Mount Hope Housing and School Demolition and Site Reclamation** - Fayette County, West Virginia



THRASHER

Chadwick Biller, PE Principal



In 1999, Chad Biller, PE, joined the team at Thrasher and is now a partner within the firm. Mr. Biller has extensive experience in all aspects of civil engineering, but his primary emphasis lies in highway, road, bridge, and airport projects. Mr. Biller oversees all project management and design for WVDOH projects at Thrasher.

These projects include several four-lane divided highways, bridges, two-lane roads, and several road widenings throughout the state. Site development for both public and private clientele has always been an area where Mr. Biller excels. His repertoire of projects within this realm include mass grading, road design, drainage, storm water management, erosion, and sediment control.

Education:

- Bachelor of Science, Civil Engineering - West Virginia University

Registrations:

- Registered Professional Engineer
- States of West Virginia, Ohio, and Pennsylvania

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Brownsfields Reclamation** - Harrison County, West Virginia
- **Marion County Economic Development Council Palatine Park Master Plan: Boat Ramp, Parking Improvements, and Splash Park** - Marion County, West Virginia
- **Raleigh County Industrial Park** - Raleigh County, West Virginia
- **Raleigh County Memorial Airport Industrial Park** - Raleigh County, West Virginia
- **Putnam County Business Park** - Putnam County, West Virginia
- **Wolf Creek Industrial Park Bridge** - Fayette County, West Virginia



THRASHER

Mike Nestor, PE Project Engineer



Michael R. Nestor, PE, joined Thrasher in 2005, upon graduation from Fairmont State University. Mr. Nestor has accrued an extensive resume in residential and commercial site development projects throughout his career. His breadth of work has led him to utilize all aspects of infrastructure design including street and parking lot layout, street profiles, and extensions of public utility systems to these developments. Mr. Nestor is highly knowledgeable in the EPS's Municipal Separate Storm Sewer Systems (MS4) conveyances.

Mike has completed multiple MS4 plans and dozens of projects that utilized his sharp storm water management skills. The knowledge Mike gained from these projects led him to obtain his Certified Flood Management certification in 2012. Mike is also involved with several commercial development storm water projects such as White Oaks Business Park and Meridian Pointe as well as over 20 residential sub-developments in the Eastern Panhandle of West Virginia. These notable projects have all included miscellaneous drainage structures as well as coordination with permitting agencies and various local utilities companies.

Education:

- + Bachelor of Science, Civil Engineering Technology - Fairmont State University

Registrations:

- Registered Professional Engineer
- State of West Virginia

Affiliations/Certifications:

- Certified Flood Plain Manager
- President of the North Central WV Chapter of American Society of Highway Engineers
- American Society of Civil Engineers

Related Experience Includes:

- **White Oaks Business Park** - Harrison County, West Virginia
- **Charles Pointe Development** - Harrison County, West Virginia
- **West Virginia University, Silver Lot Storm Water Project** - Monongalia County, West Virginia



THRASHER

RJ Hovatter, PE Project Engineer



Richard "RJ," Hovatter joined Thrasher in 2011 and serves as Project Engineer for the firm. Mr. Hovatter is a graduate of Fairmont State University and has extensive knowledge of the engineering field through education and previous experiences. RJ's impeccable interpersonal skills and precise attention to detail make him a much sought after Project Engineer.

As Project Manager, Mr. Hovatter has completed numerous site and grading designs, storm water plans, and dozens of erosion and sediment control plans for Antero Resources. His work in conjunction with the Antero staff has resulted in repeatedly successful projects from start to finish.

Education:

- Bachelor of Science, Civil Engineering - Fairmont State University

Registrations:

- Registered Professional Engineer (PE)
 - States of West Virginia and Pennsylvania

Affiliations/Certifications:

- Level I Rosgen Natural Stream Construction
- Level II Rosgen Natural Stream Construction
- HEC—RAS Operator Training Short Course
- Annual Oil & Gas Training Pennsylvania—Expedited Review of ESCGP-1
- MSHA Training

Related Experience Includes:

- **Confidential Client Canton Water System Project** - Doddridge County, West Virginia
- **Confidential Client Langford Water Project** - Doddridge County, West Virginia
- **Confidential Client West Fork Intake** - Harrison County, West Virginia



THRASHER

Robert Milne, PE Principal



Robert Milne, P.E. joined Thrasher in 2010 and was named Partner in the firm in 2012. Mr. Milne has over 25-years of experience working throughout the tri-state area. Mr. Milne is the firm's site development manager and is responsible for the over all management of projects including staff supervision, assignments, contract administration, cost control and on-time project delivery.

Mr. Milne is experienced in civil/site design, public utilities, buildings, as well as roadways, highways, bridges, traffic studies and storm sewer design and construction administration and inspection. Prior to joining Thrasher, Mr. Milne was the civil engineer of record for following projects within the Morgantown area: Northside Fire Station, Morgantown Event Center and Parking Garage (TIF), and the WVU Honors Dormitory.

Education:

- Masters of Science, Civil Engineering - West Virginia University

Registrations:

- + Registered Professional Engineer
 - States of West Virginia, Ohio, Maryland, Virginia and Pennsylvania

Affiliations/Certifications:

- Leadership Monongalia County, WV
- Foundations of Leadership / National Leadership

Related Experience Includes:

- **City of Clarksburg Adamston Flat Glass Plant Brownsfields Reclamation** - Harrison County, West Virginia
- + **West Virginia DNR Palatine Park Master Plan: Boat Ramp and Parking Improvements** - Marion County, West Virginia
- **Marion County Economic Development Council Master Plan and Splash Park** - Marion County, West Virginia
- **Canal Place Master Plan** - Allegany County, Maryland
- + **Boy Scouts of America Welcome Center Site Planning and Master Conceptual Design** - Fayette County, West Virginia
- **WVU Roadways and Parking** - Monongalia County, West Virginia



THRASHER

HULL & ASSOCIATES, INC.

4 HEMISPHERE WAY | BEDFORD, OHIO 44146
6397 EMERALD PARKWAY, SUITE 200 | DUBLIN, OHIO 43016
4770 DUKE DRIVE, SUITE 300 | MASON, OHIO 45040
59 GRANT STREET | NEWARK, OHIO 43055
300 BUSINESS CENTER DRIVE, SUITE 320 | PITTSBURGH, PA 15205
146 WEST MAIN STREET, 2ND FLOOR | ST. CLAIRSVILLE, OHIO 43950
3401 GLENDALE AVENUE, SUITE 300 | TOLEDO, OHIO 43614
126 MARGARET CIRCLE | AUSTIN, TEXAS 78737

THE THRASHER GROUP, INC.

600 WHITE OAKS BLVD. | BRIDGEPORT, WV 26330
300 ASSOCIATES DRIVE | CHARLESTON, WV 25311
155 BLUE ANGEL LANE | BEAVER, WV 25813
3000 THAYER CENTER | OAKLAND, MD 21550
236 CAMBRIDGE STREET | FREDERICKSBURG, VA 22405
135 TECHNOLOGY DRIVE #201 | CANONSBURG, PA 15317
4150 BELDEN VILLAGE ST NW #101 | CANTON, OHIO 44718

