



PROPOSAL

Landfill Development Feasibility

Russell County

June 6, 2022



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ENGINEERS ARCHITECTS SURVEYORS

June 6, 2022

Mr. Lonzo Lester, County Administrator
Russell County Board of Supervisors
137 Highland Drive, Suite A
Lebanon, Virginia 24266

RE: Request for Proposal for Engineering Services for Landfill Development Feasibility

Dear Mr. Lester:

Thompson & Litton (T&L) is very excited to submit the attached proposal for professional engineering services for the above referenced project. With more than six (6) decades of continuous service we are proud of our company's legacy of thousands of completed projects for localities throughout Virginia. In reviewing the reference RFP and in preparing our proposal we believe there are several advantages that our Team brings to this project, as follows:

- **Experience and Expertise with the Landfill Projects.** T&L has an in-depth understanding of solid waste project. T&L has forged a long standing partnership with the many solid waste clients over the past decades having assisted with many important projects.
- **Responsive.** T&L is prepared to begin work immediately on this project so that the project may become reality as soon as possible. We have the manpower available to perform the work in an efficient and timely manner. We believe that we can determine a realistic schedule and provide for efficient completion of your project. T&L's Wise office will serve as the focal point in executing this project.
- **Knowledge of Virginia Solid Waste Management Regulations.** Our proposed project team is comprised of uniquely qualified and experienced professionals with an unsurpassed passion for their work. T&L will provide the County with a uniquely knowledgeable project team that can provide the full comprehensive suite of services this project requires.
- **Effective working Relationship with the Virginia Department of Environmental Quality.** The Department of Environmental Quality (DEQ) is the primary regulatory agency for solid waste projects. T&L's years of working with this agency has provided us with a thorough familiarity of applicable regulations and requirements. Moreover, our experience has given us insight into any flexibility available for a specific regulation. T&L endeavors to utilize knowledge of regulations and relationships with regulators to incorporate the Owners' ideas and goals into the project to the maximum extent possible.
- **Small Businesses Utilization.** T&L is certified as a Small Business Enterprise (SBE) in the Commonwealth of Virginia!



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We look forward to discussing our proposal with the Selection Committee. In the meantime, please do not hesitate to contact us if you should have any questions or require additional information.

Sincerely,

Rita Baker
Project Manager



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New River Resource Authority — Closure, Expansion, Operations, and Big Picture



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Experience and qualifications of firms or individuals.



T&L's Project Team functions like an extension of the Client's staff. As such, the firm strives to maintain a very close working relationship with the client and its employees. Decisions on specific projects are coordinated through in-house Project Teams established to implement each project.

Our availability of manpower enables our firm to assign quality people to the task continuously and consistently from project conception to project completion. **You will find T&L's Project Manager, Rita Baker, to be both accessible and technically knowledgeable.**

T&L places strong emphasis on Project Management as a means of delivering a quality product. For your convenience **Rita will function as a single point of contact with respect to your projects. She will be responsible for internal communication with other Project Team Members and for external communication with you, review agencies, funding agencies, construction contractors and area residents.**

The Project Manager is key to ensuring that you will have available the key staff required to successfully complete these projects. She ensures that the correct people are made available for the project in sufficient numbers and ensures that deadlines are set and met. Rita will direct technical staff in the office assigned to this project. Rita is properly equipped to stay in touch and remain available through cell phone, email and other technical and human resources.

Past projects have been developed and managed to successful design solutions and bid within the client's budget by using this project management delivery method. T&L commits the same resources and "know-how" to your project from beginning to end.

Ultimately, the overall goal of the Project Manager is to ensure that the Project meets the County's complete expectations and satisfaction! T&L expects our Project Manager to:

- Be responsible for making the project go
 - The Project Manager has the primary responsibility of continual, forward project momentum

- Serve as your point of contact
 - No searching for who to call
 - Instant access and responsiveness

- Perform key tasks
 - Administrative functions
 - Assigns and coordinates the Project Team
 - Overall project direction
 - Management of budget and schedules

- Achieve two (2) critical goals**
 - On-time/On-budget**
 - Exceed the expectations of the County**

Please find resumes for the project team members on the following pages.





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Gregory D. Widener, PE

OFFICER-IN-CHARGE

OPERATIONS SUPPORT MANAGER

Greg Widener, PE, is a 1988 graduate of Virginia Tech where he received a Bachelor of Science Degree in Civil Engineering. With 34 years of experience in the design and construction of engineering projects, Greg has been instrumental in the preliminary and final design of various water, wastewater, site and infrastructure development projects for multiple engineering and architectural projects.

Greg will oversee all planning and development of design concepts and alternatives, and will supervise the design engineers and technicians who develop design details and construction documents. He and his support personnel will attend meetings and coordinate with regulatory agencies, as necessary.

EDUCATION & TRAINING

- Bachelor of Science, Civil Engineering, Virginia Polytechnic Institute & State University, 1988

REGISTRATIONS

- Professional Engineer: VA, 1993
- Professional Engineer: MD, 2007

PROFESSIONAL AFFILIATIONS

- American Water Works Association
- Virginia Solid Waste Management Association
- Solid Waste Association of North America (SWANA)

CONTACT INFORMATION

Thompson & Litton, Inc.
P.O. Box 1307
103 East Main Street
Wise, Virginia 24293
Phone: 276-328-2161
Fax: 276-328-1738
gwidener@T-L.com

The following is a sampling of his project-related experience:

Appalachia Site Landfill Closure Plan/Groundwater Monitoring

Wise County Board of Supervisors, Wise County, Virginia. Project Engineer.

Bedford Landfill Expansion Study

City of Bedford, Virginia. Design Engineer.

Bedford Sanitary Landfill - Phase II Development Hylton Site

Bedford County Board of Supervisors, Bedford County, Virginia. Project Engineer.

Blackwood Landfill Expansion

Wise County Board of Supervisors, Wise County, Virginia. Design Engineer.

Blackwood Landfill Expansion Phase II & III Development

Wise County Board of Supervisors, Wise County, Virginia. Project Engineer.

Bristol's Integrated Solid Waste Management Facility

City of Bristol, Virginia. Project Engineer.

Grayson County Landfill Expansion Study

Grayson County Board of Supervisors, Grayson County, Virginia. Design Engineer.

Integrated Solid Waste Management Program

City of Bristol, Virginia. Design Engineer.

Lee County Landfill Expansion Study

Lee County Board of Supervisors, Lee County, Virginia. Design Engineer.

Mercer County Landfill

Mercer County Solid Waste Authority, Mercer County, West Virginia. Project Engineer.

New River Resource Authority Design-Build Cell C Construction

New River Resource Authority, Dublin, Virginia. Project Engineer.

New River Resource Authority Partial Closure of Area A

New River Resource Authority, Dublin, Virginia. Project Engineer.

Russell County Solid Waste Transfer Station

Cumberland Plateau Planning District Commission, Russell County, Virginia. Project Engineer.

Wise County Landfill Blackwood Site Phase IV Expansion

Wise County Board of Supervisors, Wise County, Virginia. Project Engineer.



Rita H. Baker

PROJECT MANAGER



Rita Baker has over 39 years of experience in construction management. She was Construction Manager for Kendrick Engineering & Surveying Company for 12 years. Rita was responsible for project reports, contractor payment requests, and monitoring project budget of federally funded projects and continues these responsibilities for T&L. She is proficient in Microsoft Office applications and other construction related programs. Rita has been employed with T&L since October 2002.

As the Project Manager on this project, Rita will be responsible for project coordination and is the main point of contact between you and the Project Team. She will see that the necessary services are provided and that the project is completed on time and within budget constraints.

CONTACT INFORMATION

Thompson & Litton, Inc.
P.O. Box 1307
103 East Main Street
Wise, Virginia 24293
Phone: 276-328-2161
Fax: 276-328-1738
rbaker@T-L.com

The following is a sampling of her project-related experience:

Glade Hollow/Glade Hill Water Project

Russell County Public Service Authority, Honaker, Virginia. Project Manager.

Green Valley Estates Water Line Replacement Project

Russell County Public Service Authority, Russell County, Virginia. Project Manager.

Rosedale/Blackford – Preliminary Engineering Report

Russell County Public Service Authority, Russell County, Virginia. Project Manager.

Cleveland Water System Improvements

Crossroads Engineering, Russell County, Virginia. Project Manager.

Mountain Meadows Water Line Extension

Russell County Public Service Authority, Russell County, Virginia. Project Manager.

Cleveland Outdoor Recreation and Revitalization Project

Town of Cleveland, Virginia. Project Manager.

Cumberland Plateau Regional Industrial Park

Kendrick Engineering, Russell County, Virginia. Administrative Assistant.

Baker Ridge Sewer Project – Preliminary Engineering Report

Dickenson County Public Service Authority, Dickenson County, Virginia. Project Manager.

Big Caney Emergency Water Project

Dickenson County Public Service Authority, Dickenson County, Virginia. Administrative Assistant.

Big Caney V – Phase I Water Project

Dickenson County Public Service Authority, Dickenson County, Virginia. Project Manager.

Big Caney Water System Projects I - IV

Dickenson County Public Service Authority, Dickenson County, Virginia. Administrative Assistant.

Big Caney Tank & Reedy Pump Upgrades

Dickenson County Public Service Authority, Dickenson County, Virginia. Administrative Assistant.



William W. King, PE

ASSISTANT PROJECT MANAGER



EDUCATION & TRAINING

- Bachelor of Science, Civil Engineering, Virginia Military Institute, 1981

REGISTRATIONS

- Professional Engineer: VA, 1987
- Professional Engineer: TN, 1995
- Professional Engineer: WV, 1999
- Professional Engineer: NC, 2002

CERTIFICATIONS

- Lorman, "Public Contract Code and CEC/V, "Finding Today's Talent," Hot Springs, VA, 2001
- CEC/V, "Dealing with Change," Hilton Head, SC, 2002
- Barnhill, "Professional Liability," Wytheville, VA, 2002

PROFESSIONAL AFFILIATIONS

- National Society of Professional Engineers
- Virginia Society of Professional Engineers
- American Council of Engineering Companies

CONTACT INFORMATION

Thompson & Litton, Inc.
100 Fifth Street
Suite 400
Bristol, Tennessee 37620
Phone: 423-989-9491
Fax: 423-989-9010
bking@T-L.com

Bill King, PE, is a 1981 graduate of Virginia Military Institute, receiving a Bachelor of Science Degree in Civil Engineering. Bill has been with T&L since 1989 and began working as a Project Manager. He then served for over 25 years as Vice President of Project Management and Vice President of Marketing. Bill is once more servicing the firm in Project Management, with an emphasis on infrastructure projects throughout Southwest Virginia and northeast Tennessee.

As part of Bill's 42 years of experience, he has participated in and led the development, planning, funding and design of multiple water, wastewater, solid waste, site and infrastructure development projects. Prior to joining T&L, Bill served as Assistant District Engineer for the Virginia Department of Health's Division of Water Programs regional office in Abingdon, Virginia where he reviewed and approved all proposed water and sewer system projects in the New River Valley of Virginia.

The following is a sampling of his project-related experience:

Blackwood Landfill Expansion

Wise County Board of Supervisors, Wise County, Virginia.
Principal-in-Charge.

Buchanan County Solid Waste Management Plan

Cumberland Plateau Planning District Commission, Buchanan County, Virginia. Principal-in-Charge.

Design-Build Cell C Construction

New River Resource Authority, Dublin, Virginia. Principal-in-Charge.

Grayson County/City of Galax Solid Waste Management Plan

Grayson County Board of Supervisors, Grayson County, Virginia.
Principal-in-Charge.

Ingles Mountain Leachate System Evaluation

New River Resource Authority, Pulaski County, Virginia. Principal-in-Charge.

Integrated Solid Waste Management Program

City of Bristol, Virginia. Principal-in-Charge.

Lee County Landfill Closure Plan and Expansion

Lee County Board of Supervisors, Jonesville, Virginia. Principal-in-Charge.

Russell County Solid Waste Management Plan

Cumberland Plateau Planning District Commission, Russell County, Virginia. Principal-in-Charge.

Tazewell County Landfill Analysis

Tazewell County Board of Supervisors, Tazewell County, Virginia.
Principal-in-Charge.

Wise County Landfill Appalachia Site

Wise County Board of Supervisors, Wise County, Virginia.
Principal-in-Charge.

Wythe County Landfill - Closure Plan/Groundwater Monitoring and Vertical Expansion

Wythe County Board of Supervisors, Wythe County, Virginia.
Principal-in-Charge.



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Michael Andrew Monk, PE

DIRECTOR - SITE DEVELOPMENT & SOLID WASTE



Andrew Monk, PE, is a 2007 graduate of Virginia Tech receiving a Bachelor of Science Degree in Civil Engineering with special concentration in Environmental and Water Resource Engineering. Andrew has 14 years of experience in the design and construction of engineering projects. Since that time, he has played a major role in site development, stormwater and solid waste management projects.

As the Director of Site Development and Solid Waste, he will gather and evaluate project data, provide recommendations, and oversee the design details and construction documents.

The following is a sampling of his project-related experience:

EDUCATION & TRAINING

- Bachelor of Science, Civil & Environmental Engineering, Virginia Polytechnic Institute and State University, 2007

REGISTRATIONS

- Professional Engineer: VA, 2012

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers

CONTACT INFORMATION

Thompson & Litton, Inc.
726 Auburn Avenue
Radford, Virginia 24141
Phone: 540-633-1897
Fax: 540-633-1896
amonk@T-L.com

New River Resource Authority, Dublin, Virginia. Project Engineer.

- Administration Building Expansion
- Design-Build Cell C Construction
- Solid Waste Management Services - Retainer Agreement
- Stormwater Pond Sampling
- Delineation and Conceptual Mitigation Planning
- West Fork Stream Mitigation
- Ingles Mountain Leachate System Evaluation
- Major Part B Amendment
- Stormwater Pollution Prevention Plan
- Development Plan for Waste Management Facility
- Mulch Pad Construction
- Water and Sewer System Evaluation
- Mulch Pile Relocation
- Basement Entry and Access Road Improvements
- Conceptual Design and Survey for Orr Property
- Earthwork Evaluation and Letter Report
- Forrest Management and Timber Plan
- Land Management Plan - Step 2

Cumberland Plateau Region Solid Waste Transfer Stations

Cumberland Plateau Planning District Commission, Multiple Locations. Design Engineer.

Tazewell County Landfill Solid Waste Management

Tazewell County Board of Supervisors, Tazewell County, Virginia. Design Engineer.

Town of Pulaski Landfill - Corrective Action

Town of Pulaski, Virginia. Project Engineer.

Dora Highway Drop Center Relocation

Pulaski County, Virginia. Design Engineer.

Access Improvements & Parking Area

Celanese Acetate LLC, Narrows, Virginia. Design Engineer.

Multiple Site Construction Layout

Celanese Acetate LLC, Narrows, Virginia. Senior Engineer.



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Adam Clark Murray

DESIGN ENGINEER



Adam Murray is a 2018 graduate of Bluefield State College receiving a Bachelor of Science Degree in Civil Engineering. He has 8 years of experience in the design and construction of engineering projects. Adam worked on Survey teams and as an Engineering Technician while pursuing his education and upon graduating from college.

As a Design Engineer on this project, Adam will gather and evaluate project data, provide recommendations, and develop the design details and construction documents.

The following is a sampling of his project-related experience:

EDUCATION & TRAINING

- Bachelor of Science, Civil Engineering, Bluefield State College, 2018

CONTACT INFORMATION

Thompson & Litton, Inc.
726 Auburn Avenue
Radford, Virginia 24141
Phone: 540-633-1897
Fax: 540-633-1896
amurray@T-L.com

Area D Expansion Phase I

New River Resource Authority, Dublin, Virginia. Design Engineer.

Area D Design and Partial Closure

New River Resource Authority, Dublin, Virginia. Design Engineer.

Partial Closure No. 3

New River Resource Authority, Dublin, Virginia. Design Engineer.

Solid Waste Management Term Agreement 2016-Present

New River Resource Authority, Dublin, Virginia. Design Engineer.

Waste Management Consulting Services Retainer

New River Resource Authority, Dublin, Virginia. Design Engineer.

Biannual Stormwater Management Pond Sampling and Analysis

New River Resource Authority, Dublin, Virginia. Design Engineer.

Downstream Watergate Replacement - West Fork Mitigation Site

New River Resource Authority, Dublin, Virginia. Design Engineer.

Infrastructure Improvements - Phase 2

New River Resource Authority, Dublin, Virginia. Design Engineer.

Landfill Tipping Fee Rate Study

New River Resource Authority, Dublin, Virginia. Design Engineer.

Stormwater Pollution Prevention

New River Resource Authority, Dublin, Virginia. Design Engineer.

Phase I Area D Landfill Expansion

New River Resource Authority, Dublin, Virginia. Design Engineer.

Undesirable Species Identification and Mapping West Fork Mitigation Site

New River Resource Authority, Dublin, Virginia. Design Engineer.

West Fork Mitigation Site - Year 1 Post Construction Monitoring Services

New River Resource Authority, Dublin, Virginia. Design Engineer.

West Fork Mitigation Site - Year 2 Post Construction Monitoring Services

New River Resource Authority, Dublin, Virginia. Design Engineer.

Emergency Leachate Pond Design and Permitting

New River Resource Authority, Dublin, Virginia. Design Engineer.

Steven E. Conner, PE

PRINCIPAL ENGINEER

Expertise

Geotechnical Engineering

Education

Master of Civil Engineering,
Geotechnical Engineering,
Virginia Tech

Bachelor of Science,
Civil Engineering, Virginia
Tech

Registrations

Professional Engineer / KY, NC,
VA, WV

Certifications

CPR, First Aid,
FOPP - Fundamentals of
Professional Practice (ASFE)

Affiliations

G-I ASCE, ASDSO, ADSC-IAFD,
ASHE

Years with Schnabel/Total
35/37

Steve Conner has been Principal Investigator on a wide variety of projects including schools and educational facilities, buildings, landfills, highways, bridges, treatment plants, industrial facilities, earth dams, and slopes. He is Branch Leader, Senior Project Manager, and Technical Reviewer for Schnabel's Blacksburg, VA office. Steve has extensive experience related to geotechnical engineering, construction materials testing, and hydrogeologic studies. His experience includes: deep and shallow foundation analysis; ground improvement using aggregate piers, grouting and dynamic compaction; dam stability and rehabilitation evaluations; landfill site evaluations; quality assurance/quality control for landfill construction and closure; and stability analysis of natural and embankment slopes. In addition, he has extensive experience in site evaluation, foundation design, and sinkhole mitigation in karst geologic settings.

Steve has evaluated and designed mitigation programs for arresting subsidence of abandoned underground coal mines. He is also experienced in evaluating mine spoil fill sites for building and road construction, including the design of ground improvement via deep dynamic compaction and surcharge preloading.

New River Resource Authority Landfill, Area A Closure / Pulaski County, VA

QA/QC Engineer. Responsible for the quality assurance/quality control engineering and oversaw the process for closure of eight acres of an MSW landfill.

Blackwood Landfill / Wise County, VA

Geotechnical Project Manager. During multiple phases of design and construction over a timespan of two decades, was responsible for the permitting and design of municipal solid waste landfill in the coal mining region of southwestern Virginia. Responsible for the design and installation of a groundwater monitoring system in a complex hydrogeologic regime, and annual reporting of groundwater flow direction and rate. Provided geotechnical stability evaluations, including evaluation of potential deep coal mine subsidence. Served as Construction Quality Assurance engineer for composite liner construction.

Radford Recreational Center Ballfield / Radford, VA

Project Manager for the geotechnical and geophysical studies to evaluate and design a baseball field on an old, abandoned municipal solid waste landfill. Schnabel performed geophysical surveys to identify the lateral and vertical extent of buried waste cells, evaluated landfill settlement and gas generation potential, developed a landfill gas monitoring plan, and provided recommendations for grandstands and dugouts.

Cloyd's Mountain Landfill Closure / Pulaski County, VA

Project Manager for quality control testing of the clay cap, and stability evaluations for a landfill closure situated in a shale hollow.



Andrew Kassoff, PE, PG, LEED AP
Director

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Program Manager

Years of Experience
With this firm: 18*
With other firms: 23

Education
MS - Environmental Engineering, Virginia Polytechnic Institute and State University

BS - Hydrogeology, James Madison University

Registrations & Certifications
Professional Engineer: VA, NC

Professional Geologist: VA, NC

LEED Accredited Professional

HAZWOPER

Mr. Kassoff has over 41 years of experience providing local governments and state agencies with the design, implementation, and management of a broad range of environmental and engineering programs. He has extensive experience with solid waste facility siting, monitoring, closure, and corrective action, as well as implementation and management of broad range of environmental programs. Project assignments have ranged from soil and wetland evaluations to program management of landfill studies and permitting, water supply evaluations, contaminant transport and fate studies, contamination remediation and assessments, Resource Conservation and Recovery Act (RCRA) facility activities, litigation support, and permit application processes. Responsibilities have included program design, coordination and management, cost estimating and proposal writing, extensive report preparation and editing, liaison with clients and regulatory agencies, and employee supervision and training.

Mr. Kassoff's relevant experience includes:

Wheelabrator Water Technologies – Bedford, Virginia

Mr. Kassoff served as Certifying Engineer for the implementation of the first post-closure permit for a closed RCRA hazardous waste landfill. Project includes groundwater monitoring (since 2003), statistical evaluation of data, and reporting to the Virginia Department of Environmental Quality (DEQ). Prepared the post-closure permit application for the renewal of the Post Closure Permit and participated in technical negotiations with DEQ to get permit groundwater monitoring requirements reduced. Revised permit resulted in substantial savings to client due to reduced groundwater monitoring requirements. In 2012, assisted Waste Management in terminating the Post Closure permit, and instead placed an Environmental Covenant on the property under the DEQ Unified Environmental Covenant Act (UECA). An activity use limitation (AUL) was recorded on the property deed restricting groundwater use at the site. WSSI continues to provide routine maintenance and inspection of the landfill and conducts an annual engineering inspection of the landfill cap to ensure its integrity.

Indefinite Delivery Contract for Solid Waste and Environmental Engineering Services – Sussex County, Virginia

As Project Manager and Project Scientist, Mr. Kassoff performed solid waste services for two closed and unlined municipal solid waste landfills owned by Sussex County, Virginia, including preparation of Groundwater and Gas Monitoring Plans, monitoring well installation, groundwater sample collection, laboratory management, statistical analysis of groundwater data, preparation of Groundwater Protection Standards (GPS), Nature and Extent study and a Proposal for Presumptive Remedy (NES/PPR), Corrective Action Plans and Corrective Action Monitoring Plans, Alternative Point of Compliance application and permit amendment and coordination with DEQ and the public. Over the course of 15 years, WSSI staff helped Sussex County successfully navigate through two consent orders, Nature and Extent Studies, and Proposed Presumptive Remedies, Assessment of Corrective Measures, Corrective Action Plan, and Corrective Action Monitoring Plan. WSSI staff completed minor permit amendments to move the landfills from standard assessment monitoring to an Alternative Points of Compliance that negated the need to implement corrective action and greatly reduced monitoring costs and led the efforts to terminate post-closure care at both landfills.

Radford Army Ammunition Plant Groundwater Monitoring Program – Montgomery and Pulaski Counties, Virginia

Program Manager for multiple tasks at this facility, including a comprehensive groundwater monitoring program including sample collection, data validation, laboratory selection and management, reporting, and regulatory negotiation for three solid waste and six hazardous waste landfills.

Landfill Permit Studies Throughout Virginia (Harrisonburg, Fauquier, Rockingham, Covington) and North Carolina

Conducted Numerous Part A (Siting) Landfill Permit Studies. Designed groundwater monitoring networks, prepared groundwater monitoring plans, and evaluated groundwater flow characteristics.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Principal Environmental Scientist

Years of Experience
With this firm: 24*
With other firms: 11

Education
MS - Environmental Science, Indiana University

BS - Biology, Oklahoma Baptist University

BA - Public Administration, Oklahoma Baptist University

Registrations & Certifications
Certified Hazardous Materials Manager

HAZWOPER

Ms. Harless brings 35 years of experience in consulting and regulatory compliance to her environmental compliance practice. She is a former EPA Region III Project Manager. She has extensive experience with environmental compliance and compliance training, hazardous materials management for Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs), site characterization, Resource Conservation and Recovery Act (RCRA) corrective action, industrial hygiene, landfill compliance, RCRA/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigations, risk assessments, and hazardous and solid waste compliance. Her project experience includes supporting local, state, and federal government clients, as well as private clients, at facilities that range from small, remote, unmanned, utility stations, to high profile public facilities such as airports, large complex industrial complexes, and large public sector facilities such as landfills, federal facilities, prisons, and college campuses.

Ms. Harless' relevant experience includes:

Wheelabrator Landfill, Waste Management Inc. – Bedford County, Virginia

Project Manager for the implementation of a post-closure permit for a closed hazardous waste landfill, including inspection of the cap and groundwater monitoring since 2003. WSSI staff performed post-closure management required by the facility's Waste Post-Closure Permit. Tasks completed included administration and record keeping, inspections and maintenance of the cap, annual adjustments to meet the regulatory financial assurance requirements, and groundwater monitoring including sampling, statistical analysis and reporting to the DEQ. WSSI staff also prepared the Class 2 Permit Modification for Corrective Action of two former surface impoundments located at the landfill property. WSSI staff acted as Waste Management Inc.'s representative for all administrative and recordkeeping requirements of the Post-Closure Permit. Administrative duties include corresponding with the DEQ, accompanying the DEQ to the site for inspections, and permit modifications for changes at the landfill. In 2012, WSSI staff assisted Waste Management in terminating the Post Closure permit, and instead placed an Environmental Covenant on the property under the DEQ Unified Environmental Covenant Act (UECA). An activity use limitation (AUL) was recorded on the property deed restricting groundwater use at the site. WSSI continues to provide routine maintenance and inspection of the landfill and conducts an annual engineering inspection of the landfill cap to ensure its integrity.

Oxon Cove Correctional Facility – Washington D.C.

Project Scientist for environmental investigations of a landfill being considered for brownfields development as a 2,200-bed correctional facility. The work included extensive risk assessment, groundwater, and landfill gas studies as part of the design for a remedial system.

Hanover County/Hanover School Board Open-End Environmental Services – Hanover County, Virginia

Project Manager tasked with the completion of soil and ground water contamination assessment studies at 15 sites. WSSI staff also assisted the County in evaluating the impacts of a proposed development on an old construction and demolition (C&D) landfill, closure of a former chromium plating facility, and corrective action plans for two old sewage lagoons.

Chesterfield County Open-end Environmental Services – Chesterfield County, Virginia

Program Manager for multiple open-end Environmental Engineering Services contracts. During this time more than 350 individual project task orders have been completed for seven Chesterfield Departments. Relevant tasks performed include a risk assessment for a proposed sewer line adjacent to a landfill that is a Superfund site, Stormwater Pollution Prevention Plan (SWPPP) compliance monitoring of three landfills, groundwater investigations, UST/AST management, stormwater management/permitting, Phase I, II, and III ESAs, Pollution Prevention assessments and plans, hazardous materials management, environmental compliance audits, asbestos-containing materials (ACM) and lead-based paint (LBP) inspections/bid specifications/clearance monitoring, wetland and Chesapeake Bay Preservation Area (CBPA) area delineation and environmental permitting, legionella testing, drinking water sampling, air emissions compliance, and SPCC Plans and training.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Christopher Schrinel, PE
Manager - Stormwater Engineering

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Senior Engineer

Years of Experience
With this firm: 11*
With other firms: 3

Education
BS - Civil Engineering
Technology, Old Dominion
University

Registrations & Certifications
Professional Engineer, VA,
NC

Dual Combined
Administrator (E&S and
SWM), VA

Mr. Schrinel is a subject matter expert in MS4 Permitting, VA Stormwater Management Program (VSMP) Regulations, Erosion and Sediment Control (E&S) Regulations, Construction General Permitting and Industrial Permitting. He has significant experience with tasks such as Stormwater Management (SWM) and E&S site plan review, SWM permitting, development of E&S/SWM Annual Standards and Specifications (AS&S), BMP assessment and design, E&S/SWM inspections, surveying, and design of land development under various contracts with state and local governments such as VDOT, VCCS, Virginia Tech, the City of Virginia Beach, the City of Salem, and the Town of Christiansburg. He has also served as Project Manager for various large projects in the private sector providing engineering plan review for conformance with applicable E&S and SWM laws and overseeing field inspections.

Mr. Schrinel's relevant experience includes:

Stormwater Management at King and Queen Landfill – King and Queen County, Virginia

Environmental Engineer for stormwater basin evaluations and forebay design. Project included evaluation and environmental compliance inspections of five stormwater basins. Provided forebay redesign services for one stormwater basin, including design documents and post-construction inspections, and maintenance guidance for each of the stormwater basins including checklists.

Site Plan Review for Strata Solar – Surry County, Virginia

Lead Engineer for on-call environmental and E&S and SWM services for the Colonial Trail West Solar Farm, a 150 Mw development on approximately 1,852 acres in Surry County, Virginia. Task included Site Plan review with recommendations/risk mitigation steps for plan approval from multiple permitting agencies including DEQ and VDOT. Services included E&S and SWM plan review and comment. The plan review was conducted to determine conformance with applicable E&S and SWM law and regulations and the Chesapeake Bay Preservation Act (CBPA). In addition, WSSI staff provided Clean Water Act Section 401/404 permitting assistance.

Virginia Army National Guard, Term Contract for Professional Services – Virginia, statewide

Project Engineer for Term Contract for Professional Services. Projects include:

- Design of a stormwater management/drainage improvement plan for the Fort Pickett Recycling Center, which had received a notice of violation for non-compliance with stormwater discharge.
- Design of a water quality BMP to treat runoff from a portion of the 157th Engineers Quarry at MTC-Fort Pickett. Prepared associated E&S plan, project specifications, and bid documents.
- Design of Army Access Control Points Improvements to the main gate and west gate entrance roads of MTC-Fort Pickett. The work also included the design of required water quality BMPs, preparation of E&S plans, project specifications, and bid documents.
- Conceptual designs and 3D renderings for the proposed Access Control Point alternatives at CTC Camp Pendleton (SMR). The work includes conceptual design of water quality BMPs associated with the proposed alternatives.

Virginia Community College System, Term Contract for Environmental Services – Virginia, statewide

Mr. Schrinel has led and worked on many projects including development of statewide AS&S for E&S and SWM. The AS&S govern how VCCS will conduct plan review, oversee construction with inspections, close-out construction sites and provide for long term maintenance. The following are services provided by Mr. Schrinel as Project Manager during the contract:

- E&S inspections and design for construction sites. The E&S inspections were conducted in accordance with the AS&S to ensure that all procedures are followed.
- BMP design and analysis which included the design of several BMPs to ensure compliance with AS&S and the Virginia BMP Clearinghouse.
- Maintenance plans which included site excavation, grading, repair, and stabilization services for BMPs that were not functioning properly. This also includes outfalls that were eroded and in need of maintenance.
- Site inspections of BMPs, outfalls, and SWPPPs for environmental compliance.
- Construction and Municipal Storm Sewer System environmental permitting.
- Nutrient Management Plan development to ensure that nutrients are applied in accordance with state requirements.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Principal Geologist

Years of Experience
With this firm: 19*
With other firms: 25

Education
MS - Geological Sciences,
Southern Illinois University

BS - Geology, State
University of New York

Registrations & Certifications
Professional Geologist: VA

Mr. Fraser is a registered Professional Geologist with extensive environmental consulting experience assisting local, state, and federal governments in environmental permitting, compliance, planning, remediation of sites, and interfacing with regulatory agencies. Mr. Fraser specializes in environmental site assessments, hydrogeological investigations and studies, regulatory compliance, waste disposal operations, wetlands and natural resources, environmental permitting, air quality studies and permitting, and stormwater management planning and implementation. Mr. Fraser is a member of the ASTM D018 committee and an expert witness for environmental assessments. Mr. Fraser oversees a wide range of environmental contracts and projects involving environmental permitting, remediation assessment and design, and hydrogeologic characterizations. He has extensive multi-media environmental assessment and remediation experience including the assessment of soil and groundwater contamination, closure and monitoring of landfills, remediation assessment and design, wetlands and stream restoration, and hydrogeologic characterizations.

Mr. Fraser's relevant experience includes:

King George County Landfill – King George County, Virginia

Project Manager for coordination of state and local permits for a new regional landfill. Permits/approvals were needed for the solid waste permit, site plan, erosion and sediment control plan, water supply well, septic drainfield, leachate disposal, entrance road and Chesapeake Bay Preservation Act. Extensive ground-water and surface water investigations were conducted for the permit applications and as part of the permit conditions. Also helped develop a 100-acre mitigation plan that included stream restoration, wetland creation and riparian preservation.

Sussex County Indefinite Delivery Contract for Solid Waste and Environmental Engineering Services – Sussex County, Virginia

As Program Manager and Principal Scientist, Mr. Fraser directed solid waste services for two closed municipal solid waste landfills owned by Sussex County, Virginia, including preparation of Groundwater and Gas Monitoring Plans, monitoring well installation, groundwater sample collection, laboratory management, statistical analysis of groundwater data, preparation of Groundwater Protection Standards (GPS), Nature and Extent study and a Proposal for Presumptive Remedy (NES/PPR), Corrective Action Plans and Corrective Action Monitoring Plans, Alternative Point of Compliance application and permit amendment and coordination with Virginia Department of Environmental Quality (DEQ) and the public. Over the course of 15 years, WSSI staff helped Sussex County successfully navigate through two consent orders, Nature and Extent Studies, and Proposed Presumptive Remedies, Assessment of Corrective Measures, Corrective Action Plan, and Corrective Action Monitoring Plan. WSSI staff completed minor permit amendments to move the landfills from standard assessment monitoring to an Alternative Points of Compliance that negated the need to implement corrective action and greatly reduced monitoring costs and led the efforts to terminate post-closure care at both landfills.

First Piedmont Rock Quarry Superfund Site – Pittsylvania County, Virginia

Project Manager for development and implementation of Remedial Investigation/Feasibility Study (RI/FS) for an industrial waste landfill constructed in an abandoned hard rock quarry. The RI/FS included determination of impacts to soils, surface water, groundwater, wetlands, and other ecological systems, and the development of risk assessment and applicable or relevant and appropriate requirements (ARARs). A comprehensive groundwater monitoring program was developed and implemented. Principal author for Remedial Investigation Work Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Remedial Investigation report. Responsible for managing all project personnel, subcontractors, costs, and project scheduling. Assisted in the feasibility study of remedial alternatives.

Big Bethel Landfill – Hampton, Virginia

Project Manager for Completion of Part A and Part B Solid Waste Management Facility Permit for Zone of Saturation Landfill. Project involved full characterization of site hydrogeology, and hydrogeology and groundwater modeling of landfill development to evaluate leachate generation and effect on hydrogeologic system. Design included underdrain system, complex overlays of existing fill, gas, and stormwater controls. Project also involved first Special Exception in Virginia for water withdrawal.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Project Geologist

Years of Experience
With this firm: 7*
With other firms: 0

Education
MS - Geosciences, Virginia Polytechnic Institute and State University

BS - Geology, James Madison University

Registrations & Certifications
Professional Geologist, VA

Asbestos Inspector, VA

Erosion & Sediment Control Inspector, VA

HAZWOPER

sPower Safety Training

Mr. Kiracofe is a project geologist with seven years of experience in environmental consulting. He has worked on a variety of projects for state and local government entities that include Virginia Department of Transportation (VDOT), Chesterfield County, and the City of Hopewell. Projects include assisting with Phase I and II Environmental Site Assessments (ESAs), landfill gas and groundwater monitoring, data analysis, and graphics support. He also has experience statistically modeling water quality data.

Mr. Kiracofe's relevant experience includes:

Sussex County Landfill Semi-Annual Monitoring – Sussex County, Virginia

Staff Scientist responsible for performing semi-annual monitoring events at two closed landfills in Sussex County, Virginia. Specific tasks include gauging all monitoring wells to measure groundwater levels, collecting representative groundwater samples from select wells, analyzing gas wells at landfills for presence of methane, evaluation of laboratory data, and report preparation.

Landfill Monitoring Services, Select Waste Recycling Services, Inc. – Henrico County, Virginia

Project Manager responsible for conducting field work to collect monthly, quarterly, and semi-annual data from wastewater effluent for the East End Landfill to satisfy monitoring requirements for the facility's wastewater discharge permit. Prepared report documentation summarizing findings of monitoring activities and submitted to Henrico County on behalf of client. In addition, Mr. Kiracofe was responsible for collecting semi-annual stormwater samples from regulated stormwater outfalls at the East End Landfill, performing quarterly visual inspections of outfalls, analyzing gas wells at the landfill for presence of methane, evaluating of laboratory data, and preparing reports. Prepared electronic Discharge Monitoring Reports from laboratory analytical data for the client to submit to the Virginia Department of Environmental Quality.

Department of Military Affairs (DMA) Environmental Services Term Contract (Statewide, Virginia)

Staff Scientist responsible for various tasks under the term contract. Conducted inspection and photo documentation of Warehouse 15 as part of an update to the Environmental Condition of Property (ECOP) report, prepared a hazardous waste management plan update for DSCR; performed stormwater monitoring and sampling for multiple facilities at MTC-Fort Pickett in Blackstone, Virginia; performed monthly leak detection assessments at the Army Aviation Support Facility in Sandston, Virginia; and conducted sampling of various media at DMA facilities for hazardous waste characteristics.

Environmental Engineering Services Open-End Contract – Chesterfield County, Virginia

Staff Scientist for multiple tasks under this contract, including annual sediment sampling and hazardous waste characterization of on-site stormwater detention basin at Enon Public Safety Training Center, multiple asbestos, lead-based paint, and hazardous materials surveys for numerous buildings scheduled for renovation or demolition, and multiple Phase I ESAs.

Central Virginia Training Center (CVTC): Site Investigations and Virginia Voluntary Remediation Program Management – Amherst County, Virginia

Staff Scientist responsible for assisting with performing a geophysical survey of suspect landfills at the CVTC property in an effort to delineate the horizontal extent of buried waste material. Specific duties included operating survey equipment, downloading survey data, and preparing acquired data for graphical interpretation.

Frontier Drive Phase II Environmental Site Assessment – Fairfax County, Virginia

Project Scientist responsible for field reconnaissance, including collection of representative soil and groundwater samples, subcontractor oversight during drilling activities, and report preparation. Also prepared both air quality protocol and technical report for the project.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Suzanne Richert, AICP, CEP
Senior Associate Environmental Scientist

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Senior Associate
Environmental Scientist

Years of Experience
With this firm: 6*
With other firms: 15

Education
MS - Soil Science, Colorado State University

BS - Agronomy, Iowa State University

Registrations & Certifications
Certified Planner

Certified Environmental Professional

Dual Erosion & Sediment Control and Stormwater Management Plan Reviewer, VA

NEPA Certification Program, VA

Certified Project Manager

Suzanne Richert has 21 years of project experience and 12 years of project management experience, primarily in National Environmental Policy Act (NEPA) compliance and natural resources. She has managed one Environmental Impact Statement (EIS), over 40 Environmental Assessments (EAs), and several Categorical Exclusions under NEPA for a variety of federal agencies and third parties. In addition to NEPA, she is proficient in variety of Federal environmental laws that are required in conjunction with most NEPA projects such as: the Clean Water Act, Endangered Species Act, National Historic Preservation Act, and Executive Order 12988 Environmental Justice. She can efficiently and effectively identify what level of NEPA documentation, public involvement, and agency coordination are appropriate for a project, and she is experienced in preparing NEPA documents that are easily readable by the public while being technically accurate and legally defensible.

Ms. Richert's relevant experience includes:

Landfill Impact Study for Phase V of Tazewell County Landfill Permit Application to Virginia Department of Environmental Quality – Tazewell, Virginia

Project Manager and QA reviewer of a Landfill Impact Study (LIS) that was prepared in accordance with the requirements of Virginia Code §10.1-1408.4, Landfill Siting Review, and VAC 20-81-460.H, Part A Permit Application for the Tazewell County Sanitary Landfill. The LIS was submitted to Department of Environmental Quality (DEQ) as part of a Landfill Permit Application to implement the final phase of the County's five-phase landfill development plan, which includes expanding the current landfill to meet the County's daily solid waste disposal needs.

Lonesome Pine Technology and Business Park Wetland Delineation and Agency Coordination, Wise County Industrial Development Authority (IDA) – Wise County, Virginia

Project Manager for environmental services to increase the Wise County IDA's ranking to attract prospective business at the Wise County Technology and Business Park on an approximate 400-acre parcel. WSSI completed a Waters of the U.S. (WOTUS) delineation on 350 acres and delineated isolated wetlands, U.S. Army Corps of Engineers (COE) jurisdictional wetlands, and streams. Obtained Jurisdictional Determinations (JD) from the COE and DEQ. Conducted endangered and threatened species (ETS) review that included 13 mussel species and prepared and submitted a determination of effects to the U.S. Fish and Wildlife Service (USFWS) and Virginia Department of Wildlife Resources for federally and state-listed species. Completed a review of cultural resources at the site and prepared a cultural resources report that was submitted to the Virginia Department of Historic Resources (DHR) for review.

Mineral Gap Solar Farm on Abandoned Mine Lands (AML) under AML Pilot Economic Development Program, Virginia Department of Mines, Minerals, and Energy – Wise, Virginia

Project Manager for a project to install solar panels over approximately 16 acres of AML in Wise, VA for Wise County IDA. Scope included delineation of WOTUS and obtaining a JD from the COE. The wetlands delineation was critical element in site planning for placement of solar panels and stormwater management Best Management Practices (BMPs); initial design was modified to avoid wetlands. Prepared an EA in compliance with the Office of Surface Mining, Regulation and Enforcement NEPA guidance, working closely with the Virginia Department of Mines, Minerals and Energy (now Virginia Department of Energy) which oversaw the project funding since project funding is overseen by DMME as part of the AML Pilot Program. Conducted cultural resources evaluation and coordination with the DHR under Section 106 of the National Historic Preservation Act, and evaluation of potential effects to ETS under Section 7 of the Endangered Species Act including coordination with the USFWS.

Russell County IDA Greenhouse – Russell County, Virginia

Project Manager preparing a NEPA EA for a proposed commercial greenhouse of up to 35,000-square-foot on approximately nine acres owned by the IDA. The project received federal funds from the Office of Surface Mining Reclamation and Enforcement's AML Economic Revitalization Program.

***Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.**

Firm Association
Wetland Studies and Solutions, Inc. (WSSI)

Project Assignment
Senior Associate
Regulatory Specialist

Years of Experience
With this firm: 18*
With other firms: 19

Education
BS - Environmental
Science, Lynchburg College

Registrations & Certifications
Professional Wetland
Delineator: VA

Certified Natural Resources
Professional

Professional Wetland
Scientist

Rosgen Levels I-II

USFWS Approved Surveyor
for Swamp Pink and Small
Whorled Pogonia

Intermittent and Perennial
Stream Identification for
Riparian Buffer Rules

Streambank Stabilization
and Restoration

Mr. Wright has completed many natural and biological resources surveys and studies in support of local government projects, including Locally-Administered Projects, and Virginia Department of Transportation projects. His specialized technical expertise includes biological and surface waters investigations, habitat and functional assessments, biota inventories, endangered and threatened species (ETS) investigations and surveys, federal/state/local regulatory permitting and compliance monitoring, reporting and corrective action implementation, Chesapeake Bay Preservation Act compliance and management, stream and wetland compensatory mitigation planning and restoration design, and National Environmental Policy Act (NEPA) and State Environmental Review Process (SERP) studies and documentation.

Mr. Wright's relevant experience includes:

New River Regional Authority Landfill – Pulaski County, Virginia

For T&L, completed a comprehensive field delineation and regulatory support document for the regional landfill authority in response to regulatory agency requests that followed up a site visit alleging unauthorized work. The deliverable was bifurcated into two phases to cover the 900+ acre site. An Approved Jurisdictional Determination was acquired to serve as a permitting platform for past and future work to construct landfill cells. A Nationwide Permit 32 was submitted to resolve unauthorized impacts and an offsite stream/wetland compensation site search was completed for two sites, resulting in delineations, impact assessments, cultural resources and threatened/endangered species coordination and permitting for one mitigation site.

Landfill Expansion Permitting Support – King and Queen County, Virginia

For Browning Ferris Industries, Inc., completed permitting feasibility for expansion of an existing landfill along a tidal freshwater creek and wetland complex. Required site assessment for anadromous fishery impact and habitat for small whorled pogonia and swamp pink. Permitting included an alternatives analysis of several cell configurations that pitted minor impacts to disturbed tidal wetlands against larger acreage of higher quality nontidal wetlands and a small perennial creek that supported an eel nursery.

Craney Island Landfill – Portsmouth, Virginia

As a subconsultant, completed a systematic engineering and environmental landfill expansion plan incorporating environmental documentation, economic and waste stream analyses, baseline studies, and detailed water resource planning, in situ investigations, permitting program, and monitoring plan. The work products were issued in a report that was reviewed by the US Army Corps of Engineers, municipal officials engineering team, and the U.S. Navy NEPA compliance directorate.

West Fork Mitigation Site – Floyd County, Virginia

For the New River Resource Authority, completed the development feasibility studies for a proposed stream and wetland mitigation site to offset after-the-fact impacts of a landfill in Pulaski County. Completed surface water delineations, USM assessments, assisted in mitigation plan development; verified planting plans, installed pre-construction piezometers, and completed IPaC coordination by performing a bog turtle and Mitchell's satyr butterfly habitat assessment and limited survey. Served as a task manager by performing technical resolutions with the permitting agencies to get the site approved as proposed for a Nationwide Permit 32 and VDEQ Section 401 WQ Certification.

Thornburg Industrial Park Feasibility Study – Spotsylvania County, Virginia

Performed a feasibility assessment, constraints analyses, and report for a proposed 450-acre tract planned for a County-operated rail access industrial park. Encountered problem-area wetlands (white oak-holly swamps), suspected freshwater mussel issues, and potential small whorled pogonia habitat. Fieldwork featured confirmed delineation of surface waters, utility access study, threatened species habitat survey and stream macrobenthics sampling.

*Years of experience with this firm includes years with EEE Consulting, Inc., which was acquired by Wetland Studies and Solutions, Inc. in November 2020.

Offeror's past work experience with feasibility of substantial landfill projects.



NRRA - Landfill Area A



NRRA - Landfill Area C

T&L's experience in solid waste management dates back to 1970. Since that time, T&L has provided professional services on various projects for over two dozen different solid waste disposal facilities. T&L has assisted each of these landfill clients on a multitude of projects arising from new state regulations and Environmental Protection Agency (EPA) regulations governing solid waste management.

T&L has been privileged to provide engineering services to the following clients on hundreds of solid waste management engineering and construction projects as noted herein:

- New River Resource Authority
- Cumberland Plateau Regional Waste Management Authority
- Montgomery County Regional Solid Waste Authority
- Wythe-Bland Service Authority
- City of Bedford
- City of Bristol, VA
- City of Galax
- Botetourt County
- Dickenson County
- Franklin County
- Giles County
- Grayson County
- Highland County
- Lee County
- Scott County
- Tazewell County
- Washington County
- Wise County
- Wythe County
- City of Bristol, TN (via Ecological Energy Systems)
- Letcher County, KY
- Mercer County, WV

T&L's solid waste management experience has included:

- New landfill design; vertical and lateral landfill expansions;
- Bidding/Construction administration/inspection;
- Groundwater monitoring programs for existing, new, and closed landfills;
- Variance requests; solid waste management plans (including recycling and financial evaluations);
- Closure and post closure design;
- Feasibility analyses
- Landfill siting studies;
- Regionalization studies;
- Solid waste management; and
- Solid waste transfer station siting studies and design.



NRRA - Landfill Expansion



Blackwood Landfill - Wise County, Virginia

03

Relevant experience in providing similar consulting services.

See examples of T&L's relevant experience in providing similar services on the following pages.



THOMPSON
& LITTON EST. 1956

New River Resource Authority Administration Engineering Services Term Contract

T&L has been providing engineering, surveying and solid waste management consulting services to the NRRA for the past decade having entered into our first Retainer Agreement with the NRRA in 2005. During this time we have assisted the NRRA with a variety of projects ranging from their annual VPDES stormwater sampling to conducting wetland delineation and permitting for the NRRA's entire 930+ acre Cloyd's Mountain Facility. While the majority of the work we have completed for the NRRA has been engineering and/or surveying, we have also assisted the NRRA with several architectural jobs including the reroofing of many of their existing buildings and conceptual planning for the future expansion of their administrative facilities. **The relationship T&L currently has with the NRRA is an excellent example of how we can not only serve as a consultant to our clients but can become their advocate and serve as an extension of their in-house staff.**



The following is a sampling of services T&L has provided the NRRA over the course of the past 17 years under the engineering services term contract:

- Phase I Area D Landfill Expansion
- Area D Landfill Expansion Design
- Partial Closure No. 3 Design
- Ingles Mountain Landfill Mapping
- Area D Carbonate Content Testing
- Area D Expansion Phase II
- Land Management Plan Step 3
- West Fork Mitigation and Monitoring
- Mulching Operations and Tire Pile
- Forrest Management Timber Plan
- Infrastructure Improvements Phases I & II
- Earthwork Evaluation
- Emergency Leachate Pond Design
- Downstream Watergate Replacement
- Tipping Fee Rate Study
- Land Management Plan
- Gas Remediation Plan for Area A of the Cloyd's Mountain Facility
- Annual VPDES Stormwater Management Pond Sampling
- Annual Aerial Survey and Volume Calculations
- Gas System Extraction Plan for Area A of the Cloyd's Mountain Facility
- Mulch Pad Relocation Project
- Wetland Delineation and Permitting for Cloyd's Mountain Facility
- Mulch Pad Construction Testing Services
- 50-Year Development and Waste Management Plan
- Basement Entry and Access Road
- Ingles Mountain Landfill Leachate System Evaluation
- Administrative Office Expansion Conceptual Design
- Existing Buildings – Reroofing and Maintenance
- Entrance Gate and Security System - Design and Construction
- Gas Collection Line Survey and As-built Drawings
- Cloyd's Mountain Facility Water and Sewer Systems Evaluation
- Sewer System Design for Future Gas-to-Energy Production Plant
- Update of Stormwater Pollution Prevention Plan -2014
- Annual Stormwater Sampling
- Mulch Pile Relocation
- Development Plan for Waste Management Facility
- Earthwork Evaluation and Letter Report
- Forest Management and Timber Plan
- Land Management Plan Phase II
- Infrastructure Improvements Phase I and II
- Year 1 Post Construction Monitoring Services - West Fork Stream
- Stormwater Pollution Prevention
- Emergency Leachate Pond Design
- Landfill Tipping Fee Rate Study
- Downstream Watergate Replacement



Wise County Landfill Blackwood Site

T&L has been working continuously with Wise County (County) on numerous solid waste management issues since the late 1980's. A very brief summary of T&L's assistance over the past twenty eight (28) years is as follows:

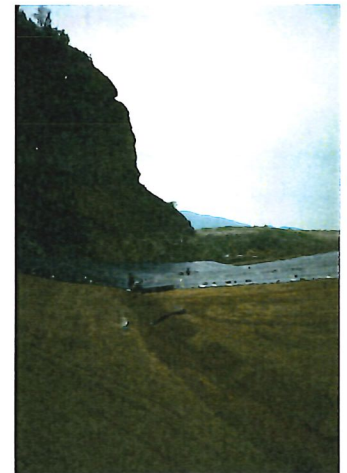
1. Solid Waste Master Planning Assistance (1988-present). Planning has been ongoing from the beginning and continues to the present, however, some of the notable planning efforts include:

a. Landfill Master Plan. In 1991, T&L developed a Master Plan for Landfill development. This Master Plan established a phasing plan that has been followed for the past twenty three (23) years. The Master Plan established a 48.7 acre footprint for the landfill developed in five (5) separate phases, some of which have been subdivided. The estimated costs and life expectancies associated with this Master Plan were projected. This Master Plan has been followed consistently as the landfill has been expanded through the years.

b. Development of Landfill Alternatives. On multiple occasions, but more specifically in 1998, 2004, and 2010, T&L evaluated many different solid waste disposal alternatives for the County as major decision points approached. This exercise typically occurred as the County was considering implementing another phase of landfill expansion. These alternatives generally included:

- i. Continuation of County Landfill Operations;
- ii. Development of a Transfer Station; and
- iii. Regionalizing the Landfill

c. Financial Analysis. Working in concert with the Landfill Committee and County Staff, T&L developed detailed financial models for each alternative under consideration. These models provided current and future costs for debt service, equipment capitalization, closure sinking fund, post closure sinking fund, and landfill operations. Revenues were projected to arrive at an annual net cost from which a cost per ton was calculated using the annual solid waste tonnages. The models were developed for the estimated life cycles of the landfill under each alternative.



Phase I Construction

2. Landfill Expansion Projects (1989-2014). T&L has provided design, permitting, bidding, construction contract administration services, resident project representation, quality assurance/quality control (QA/QC), and certification documentation for Wise County on five (5) separate landfill expansions. Each project consisted of the installation of a base landfill liner system (with leachate collection system), gravity sewer connection to the existing leachate collection and pumping system, gas probe wells, access road improvements, storm drainage improvements, erosion and sediment control, and other associated items. Some of the other notable features on each of these five (5) projects include:

a. Phase I

- i. Year: 1990
- ii. Size: 9.1 acres
- iii. Landfill Design: Double Synthetic
- iv. Notable Features: Working closely with Virginia Department of Environmental Quality (DEQ) (formerly Department of Waste Management) staff during the development of the state's new and more stringent solid waste regulations, T&L and Wise County successfully designed, permitted, constructed, and placed into operation (July 1, 1990) the first publicly owned and operated landfill in Virginia to receive such a permit under the 1988 DEQ Regulations. The construction phase of the project was completed in only 58 days, thereby enabling Wise County to meet a closure deadline at its old landfill site (Appalachia Landfill).



Wise County Landfill Blackwood Site (Continued)

b. Phase II

- i. Year: 1992
- ii. Size: 5.6 acres
- iii. Landfill Design: Double Synthetic
- iv. Notable Features: The project facilitated suitable landfill capacity until the year 2000. A variance was obtained from DEQ to allow continuation of the double synthetic liner system in lieu of the more expensive single composite system specified by the regulations.

c. Phase III

- i. Year: 1999-2000
- ii. Size: 9.6 acres
- iii. Landfill Design: Single Composite (approved EPA Subtitle D Liner System)
- iv. Notable Features: T&L has secured a Temporary Authorization to enable construction of Phase III while the Part A and Part B major permit modification is ongoing.

d. Phase IVA

- i. Year: 2011
- ii. Size: 5.5 acres
- iii. Landfill Design: Alternative Liner with Geosynthetic Clay Liner system (GCL) and a new leachate management system including an equalization tank, aeration system, pump station and force main
- iv. Cost: \$2.101 Million
- v. Notable Features: T&L secured an approved Alternative Liner Demonstration that facilitated use on the GCL liner system. Project completed well under budget.



Leachate Pump Station - 2011

e. Phase IVB

- i. Year: 2014
- ii. Size: 10.0 acres
- iii. Landfill Design: Alternative Liner with Geosynthetic Clay Liner system (GCL)
- iv. Cost: \$2.6 million
- v. Notable Features: Project provides fifteen (15) years of life until required construction of Phase vi. Project completed well under budget.

3. Vertical Landfill Expansions

a. Variance/Highwall Liner Design. Development of the Wise County Landfill hinged on the approval of a variance to the Solid Waste Management Regulations relative to landfill liner design. The variance resulted in Wise County being allowed to install a single synthetic liner adjacent to a near vertical (90 degree) highwall, which was created by previous surface coal mining at the landfill site. The variance was granted based on T&L's ability to design an acceptable innovative alternative that complies with the provisions of the DEQ Regulations for bottom and side slope surfaces with the exception of the near vertical highwall. The net result is a substantial monetary savings to Wise County as the life expectancy of the site has been significantly increased.



Wise County Landfill Blackwood Site (Continued)

b. Vertical Expansions. Throughout the life of the landfill, T&L has provided design, bidding, and construction contract administration for the several vertical expansions along the highwall in accordance with the approved variance and associated highwall liner design.

4. Landfill Engineering/Mining Demonstration for Landfill Stability.

T&L assisted Wise County with the development of an engineering demonstration to enable the full use of the landfill footprint theory setting the table to maximize the life expectancy of the site. During permitting of the landfill, DEQ imposed a 100 foot set back from the Clintwood Mine, which is located 400 feet beneath Phases IV and V of the landfill footprint. Adherence to this regulatory requirement would reduce the remaining life expectancy of the landfill by 12.5 years. Additionally, the cost of closure would be significantly higher due to an inability to reclaim adjacent surface mining highwalls. T&L, in conjunction with Schnabel Engineering and Dr. Michael Karmis, developed a surface deformation model that predicted resulting strains and settlement in the landfill under worst case earthquake conditions. This data was then assessed to develop an engineered solution for the liner system in the improved areas within Phases IV and V. Due to predicted strains, T&L recommended that the use of a Geocomposite Liner System (GCL) in central areas of the Phases IV and V. This cost effective solution enabled full use of the landfill footprint and eased closeout costs by accounting landfill development to provide highwall reclamation.



Phase IVB -Construction Complete - 2013

5. Other Services. In addition to the services listed above, T&L has provided engineering services including, but not limited to, the following:

- a. DEQ Regulatory Compliance with Ongoing Monitoring Programs involving Groundwater Monitoring, Gas Monitoring, and stormwater monitoring
- b. Evaluation and procurement of daily cover
- c. Minor Permit Modifications for alternative daily cover materials, tire shredder, and other matters as needed
- d. Closure cost estimates for use by Wise County for Financial Assurance documentation
- e. Life expectancy and compaction studies
- f. Many others



Phase IVA - Substantially Complete



Tazewell County Landfill Experience

T&L has been working with Tazewell County (County) on numerous solid waste management issues since 2005. By virtue of this experience, T&L has an extensive knowledge and understanding of the County's solid waste management facilities. This provides value added to the County, cost effectiveness as our services are provided, and uniquely qualifies T&L to provide planning and design services over the course of the next five (5) years. A brief summary of T&L's assistance over the past nine (9) years is as follows:



1. Solid Waste Master Planning Assistance (2005 – 2007)

- a. **Development of Landfill Alternatives.** T&L evaluated three (3) solid waste disposal alternatives for the County including:
 - i. Alternative 1 (Continuation of County Landfill Operations);
 - ii. Alternative 2 (Privatize the Landfill); and
 - iii. Alternative 3 (Regionalizing the Landfill with Cumberland Plateau)
- b. **Financial Analysis.** Working in concert with the Landfill Committee and County staff, T&L developed detailed financial models for each of the above alternatives. These models provided current and future costs for debt service, equipment capitalization, closure sinking fund, post closure sinking fund, and landfill operations. Revenues were projected to arrive at an annual net cost from which a cost per ton was calculated using the annual solid waste tonnages. The models were developed for the estimated life cycle of the landfill under each alternative.
- c. **Evaluation of Privatization Proposal (2005-2006).** Tazewell County received a proposal from a private company desiring to capitalize future landfill infrastructure and operate the landfill on a long term basis. In conjunction with the Landfill Committee and County staff, T&L provided input to assist the County as the proposal was considered. Numerous issues were considered such as disposal costs, annual CPI adjustments, host fees from approved outside



Tazewell County Landfill Expansion
Phase IVA - 2007



Tazewell County Landfill Experience (Continued)

waste streams, County rates (with and without approved outside waste streams), contractual terms (life of agreement), bonds and surety, environmental liabilities, insurance, staffing, etc.

- d. **Evaluation of Regional Partnerships with Localities (2006-2008).** In an effort to increase revenues, regionalize the landfill, and reduce overall costs, Tazewell County considered the possibility of developing a 'government to government' Agreement with the nearby local governments. T&L assisted the County with this process through meeting with the local government representatives, developing pricing structures and terms for transportation and disposal services, evaluating potential contractual arrangements, consideration of DEQ Permit Modifications, evaluation of special wastes, and other pertinent issues.

2. **Compliance with Virginia Department of Environmental Quality Regulations (2006-2014).** T&L has assisted the County on several matters involving landfill disposal and permitting issues with the Department of Environmental Quality (DEQ). In doing so, T&L has established an excellent working relationship with the Abingdon Regional Office of DEQ on the Tazewell County Landfill. Some of these issues include:

- a. **Letter Agreement between Tazewell County and DEQ (August 14, 2006).** T&L assisted Tazewell County with negotiations and the development of action plans in response to a Notice of Violation (NOV) from DEQ, dated May 16, 2006. This NOV had a significant impact on the future landfilling potential at the Tazewell County Landfill. The NOV involved alleged disposal of Municipal Solid Waste (MSW) and asbestos beyond permitted boundaries in the 1980's. Following weeks of negotiations, a Letter Agreement was reached between Tazewell County and DEQ that:

- Avoided fines;
- Avoided Consent Orders; and
- Resulted in a Letter Agreement with a Plan of Action

The Letter Agreement was reached because of research by T&L and Tazewell County, which revealed that MSW and asbestos disposal areas were in fact outside of permit #116 (original permit for the landfill), but within permitted areas covered by #488, which was issued in 1985. These MSW and asbestos areas had been previously closed prior to 1988 DEQ Solid Waste Regulations. However, this area was subsequently included for future landfilling areas under permit #564, which issued in the early 1990s.



Tazewell County Landfill Expansion
Phase IVA - 2007



Tazewell County Landfill Experience (Continued)

- The Letter of Agreement executed between DEQ and Tazewell County required significant revisions of the earlier closure plan and a permit modification for the reconfiguration of Landfill Phase IV. Development of Phase IV, as originally permitted under permit #564, necessitated setbacks from the closed MSW and asbestos disposal areas and removal of 150,000 cubic yards of unsuitable soil material previously placed in the disposal area (likely waste material from the excavation of Phases I, II, and III).
- b. **Revised Closure Plat (2006).** In response to the Letter Agreement, T&L developed a revised plat as required by DEQ for the actual landfill boundaries and location of the MSW and asbestos disposal areas.
 - c. **Phase IV Permit Modification (2007-2008).** T&L provided DEQ with the required permit modification documents for the reconfiguration of Phase IV. Through successful negotiation, this was accomplished by subdivision of the Phase IV landfill disposal area into Phase IVA and Phase IVB plus a reconfiguration of Phase IVB (excluding former MSW and asbestos areas). While development of Phase IVB was complicated by the presence of 150,000 cubic yards of unacceptable soil material, it was still covered by modified permit #564. Ultimately, T&L was able to successfully preserve most of the original Phase IV area and avoided the submission of a major permit modification (DEQ allowed the permit to be modified by a minor permit modification).
 - d. **Liner Tear (2012-2013).** T&L assisted the County in the identification of an inadvertent liner tear adjacent to an anchor trench, review and approval of the situation with DEQ, development of an alternative access point into the landfill, procurement of a Contractor, and inspection of the construction.
3. **Life Expectancy Study (2006-2007).** At the request of Tazewell County, T&L conducted a life expectancy study of the landfill to determine the remaining life expectancy of active landfill Phases I, II, and III and the projected life expectancy of reconfigured landfill Phase IVA. The study showed that while the existing landfill theoretically had five (5) years' worth of life remaining, Phase IVA needed to be constructed for operational, cost, and marketing reasons. Development of Phase IVA improved site access, improved leachate management, enhanced the marketability of the landfill for acceptance of local solid waste streams, and added an additional estimated seven (7) years to the life of the landfill.



Tazewell County Landfill Expansion
Phase IVA - 2007



Tazewell County Landfill Experience (Continued)

4. **Phase IVA Landfill Expansion (2007-2009).** At the request of Tazewell County, T&L provided updated designs, permitting, bidding, construction contract administration, construction testing, and certifications to DEQ for the construction of Phase IVA of the landfill. The 5.1 acre project was awarded to and constructed by A&A Energy, Inc., of Welch, West Virginia at a cost of \$1.193 Million, well within budget.
5. **Clay Liner Study (2007-2008).** Since area on and adjacent to the landfill property did not meet DEQ requirements for clay liner material, T&L assisted the County with the assessment of several alternative borrow sites for use as an acceptable source for clay liner material. An acceptable site was found and the clay material was used with the Phase IVA landfill construction.
6. **Phase V - Part A Permit (2009-2010).** Given the impact of the issues stemming from the Letter Agreement and permit modification as noted herein, and the likely presence of significant quantities of waste soil material in Phase IVB, T&L and Tazewell County determined that development of Phase IVB, while still under permit, presented certain challenges that warranted a shift in the developmental sequencing of the landfill. This shift involved the development of a new permitted area (Phase V) to the west of the active landfill area. T&L worked closely with the County to use the Phase V area as a source of daily cover material, with grading conducted in a controlled manner to match future anticipated grades for the Phase V landfill expansion area. T&L developed the necessary permit documents including notices of intent, key maps, vicinity maps depicting all required features, property control documentation, hydrologic and geotechnical reports developed by Schnabel Engineering Associates, and other required documentation.
7. **Tazewell County Landfill Gas Development, LLC, (2012-2014).** T&L provided Project Management, civil engineering design support, and construction contract administration, and periodic inspection on the recent landfill gas collection and blower flare station project at the landfill (Design of Gas System was by Draper Aden Associates as a subconsultant to T&L and the contractor was SCS). Construction is complete.



Tazewell County Landfill
Solid Waste Convenience Center



Tazewell County Landfill
Gas Collection



Tazewell County Landfill
Gas Collection



City of Bristol Integrated Solid Waste Management Program

Background: T&L provided engineering consulting services for the City of Bristol on many important solid waste management issues. T&L acted as the overall program manager for the City for a number of years, given the interrelationship between the program elements and the required engineering services necessary to keep the City in compliance with the Solid Waste Management Regulations as promulgated by DEQ and EPA. T&L has also provided services to help prolong the life of the facilities currently in use by the City. A basic summary of these services includes:

- **Project Team Approach.** T&L assembled a team of engineers to meet the City's needs on an immediate basis.
- **Landfill Closure Plan** for the existing landfill.
- **Groundwater Monitoring Plan** and statistical analysis for the existing landfill.
- **Leachate Management Program** including design and construction of a major pumping station.
- **Life Expectancy Enhancement Program.**
- **Permit Modifications** for minor operational changes.
- **Construction Management Services** for the development of leachate systems and other required facilities such as stability, berms, scales, etc. These services have consisted of advertising and bidding, construction administration, geotechnical testing, resident project inspection, and certification to the DEQ.

While many other levels of service had been provided over time to the City, the above listing generally covers the major areas of focus.

Innovative Approach: The City of Bristol was involved in the development of an integrated solid waste management program to address the City's needs for the next fifty years or more. One of the critical elements of the program involved the permitting of an abandoned rock quarry as a new landfill site. While the City was pursuing permitting of the quarry site with another engineering team, T&L assisted the City in developing methods to extend the life of the existing landfill (Permit #498) so disposal activities could continue while the quarry was permitted and constructed. This issue was especially important since the City was accepting solid waste from other jurisdictions to generate income and the existing landfill (Permit #498) had a limited spaced and footprint at the time.

T&L has made an impact on the life expectancy and capacity of the landfill site. Major areas of focus have included the following:

- The City's existing landfill consisted of sanitary and debris landfills that were permitted as separate facilities. The nature of the permitting prohibited any mixing of the waste types. Also, the two footprints were not allowed to overlap in any fashion. Therefore, the life expectancy of the site was very much limited. T&L was able to obtain a minor permit modification from the DEQ to consolidate the two landfills into a single and combined operation. This enabled the City to "bridge the gap" and take advantage of much air space that was otherwise unavailable.
- T&L obtained the necessary permits from the DEQ to enable the City to operate an incinerator for wood waste products thereby avoiding the burial of bulky, space consuming, and non-compatible wood wastes.
- T&L obtained the necessary regulatory permits to enable the City to integrate the utilization of a synthetic daily cover into the landfill operation in lieu of cover dirt. This saved the City space and the cost of hauling dirt.



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City of Bristol Integrated Solid Waste Management Program (Continued)

- T&L and the City worked together to develop an innovative landfill reclamation program at the existing site. This involved interaction with the DEQ, development of an Operation Plan, and securing the equipment necessary to conduct the operation. The City initiated landfill reclamation activities on the existing landfill site which includes the excavation or mining of solid waste, screening of the excavated waste to remove salvageable materials and cover soil, and placement of the remaining waste back into the landfill. This operation increased the landfill volume available for the disposal of solid waste, and subsequently, increased the life expectancy of the facility. Moreover, the removal of dirt from the facility avoided the need to bring in additional material for intermediate cover. Also, future closure costs were reduced since reclaimed soil could be integrated into the capping operations.





New River Resource Authority Major Part B Amendment

T&L provided design-build services for the permitting, design and construction of Area C, which was completed in January 2013. During the course of construction for Area C it became evident to the NRRA that a Development Plan for the Waste Management Facility should be prepared to assist them with their planning efforts for the next 40-50 years. In order to help facilitate this process, the NRRA retained T&L in April 2013 to prepare a Development Plan for the expansion of landfilling operations within the remaining 358.2 acres of the facility. Highlights of the Development Plan include the following:

- Developed a revised Base Grading design for the nearly 50 acres of disposal area, currently permitted as Area D.
- Developed a revised Closure Plan design for the areas currently permitted as Area C and D.
- Developed a preliminary Base Grade and Closure Plan design for a new waste disposal unit comprised of six (6) areas with a total area of 110.88 acres located to the southwest of the active disposal area.

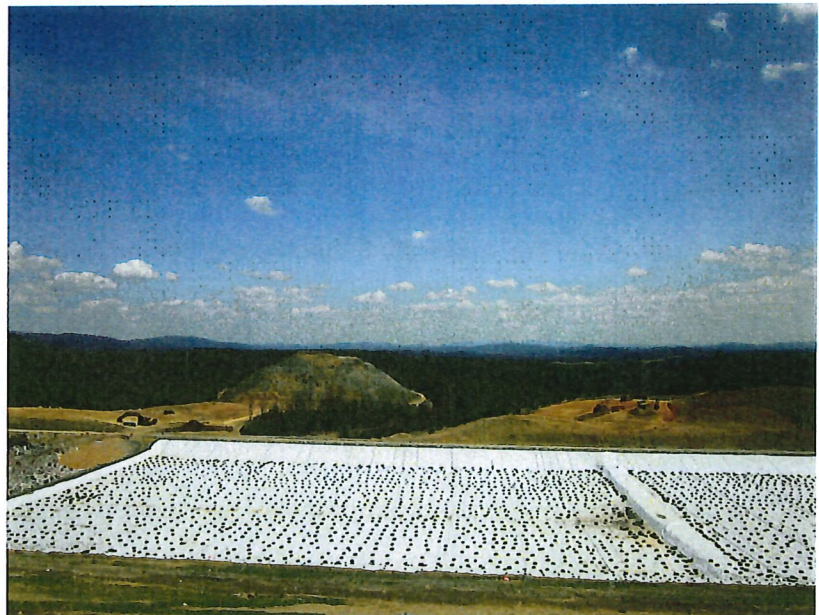
A project kick-off meeting for Part B Permit Amendment project was held in January 2014. In order to facilitate amendment process, the NRRA took a phased approach with the first phase of that work consisting of the performance of the necessary due diligence and coordination with the Department of Environmental Quality (DEQ) to determine their requirements to proceed with the amendment to the permitted design documents for the NRRA Solid Waste Management Facility. As part of the due diligence phase, T&L performed the following services:

T&L performed a site evaluation including the following:

- Subsurface exploration (borings, water observation wells, rock coring);
- Field services (site reconnaissance and logging the subsurface exploration) laboratory testing; and
- A geotechnical engineering analysis and preliminary report.

T&L prepared plans for transmittal to DEQ consisting of the following:

- Existing Site Plan
- Permitted Base Grade Plan for Area D
- Permitted Closure Plan for Area D
- Proposed Base Grade Plan for Area D
- Proposed Closure Plan for Area D
- Permitted/Proposed Base Grade Comparison Plan
- Existing / Base Grade Comparison Plan
- Cross Sections





New River Resource Authority Major Part B Amendment (Continued)

At the completion of the due diligence phase, T&L prepared a notice of intent letter and issued documents to DEQ for their review. In concert with the preliminary submittal, T&L attended a pre-application meeting with the NRRA and DEQ in June 2014 to discuss the proposed amendment and obtain DEQ guidance for the permit amendment requirements. At the conclusion of the pre-application meeting, the NRRA decided to move forward with modifying their existing Part B permit. The second phase of the permit modification process involved the development and submittal to VDEQ of the necessary components of the Part B permit modification, as outlined by VDEQ, and was completed in two (2) subsequent phases consisting of Phase IIA and Phase IIB. The Major Part B Amendment was submitted to DEQ in August of 2016.

The Following provides a summary of the proposed permit amendments:

Revision to Area D consisting of Revised Areas D, E and F with each area consisting of two (2) to three (3) cells. This revision allowed the NRRA to continue current operations in the most efficient manner consisting of the construction of solid waste disposal areas in a west to east pattern and filling of cells in a north to south direction. This revision also allowed the NRRA the most flexibility and consistent operations with regards to phased construction, stormwater management, cell closure and traffic control. The Revised Areas are summarized in the table below:

Proposed Areas	Proposed Area (Acreage)
Area D	16.15
Area E	16.23
Area F	12.27
Total (Areas D, E, and F)	48.65

Revision to the overall Area D waste disposal boundary to accommodate the aforementioned layout of Areas D, E and F. The intent of this proposed revision was to improve the perimeter access road by increasing the minimum turning radii from 0 to 300 and lowering the maximum percent grade from 7.22 to 4.00. The revision also allowed the continued construction of crossover roads which assist in operations at the facility.

A reduction of the base grades to the proposed Areas D, E and F from 1997 feet to 1989 feet.

The final grade for Areas D, E and F and the remaining portions of Areas A, B and C that have not been closed were revised to incorporate the use of tack on berms in lieu of the terrace system utilized in past partial closures. The tack on berms will divert runoff from the closure cap to a series of inlets and down chutes which will convey stormwater off of the cap in more efficient manner than the terrace system. Additionally the revision incorporated intermediate closure cap geocomposite discharge drains. This revision will reduce the potential for a cap failure by reducing the infiltration of stormwater into the closure cap soils and by allowing the closure cap geocomposite to drain more efficiently.

Revision to the Leachate Management Plan to utilize a side slope riser for Area F.

The aforementioned revisions resulted in a reduction of earthwork by approximately 830,219 cubic yards and an increase in capacity of approximately 2,120,333 cubic yards for the overall facility. Additionally, the aforementioned revisions will add approximately 8.57 years to the life of the facility based on current disposal rates.



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New River Resource Authority Partial Closure of Area A

T&L was selected by the NRRA in late 2006 to provide engineering services for the Regional Solid Waste Facility located in Pulaski County, Virginia along the lower slopes of Cloyd's Mountain to the north of Back Creek. The NRRA currently owns and operates the facility consisting of approximately 552 acres, 330 acres of which have been designated for landfilling purposes.



Services requested by the owner were for basic designs and documents to close and cap approximately 10 acres within the southern portion of the total 24.7 acres of Area A within the 552 Acre Regional Solid Waste Facility. The project design consisted of overall site plan, subgrade plan, final grade plan, cross sections, necessary design details (drainage facilities, cap system, and other miscellaneous details), technical specifications, bid documents, and other design information required for construction and regulatory compliance. In addition to basic designs, T&L also provided comprehensive construction administration services, including inspections, as well as related field surveys, record drawings, soil laboratory testing, geosynthetics laboratory testing, and other technical assistance as required.

Construction of the \$1.35 Million Partial Closure of Area A of the Regional Solid Waste Facility was completed in January 2008.



New River Resource Authority West Fork Stream Mitigation

The New River Resource Authority (NRRA) identified and entered into a purchase agreement for a property in Floyd County, Virginia, known as the Orr Property, consisting of approximately 108 acres located on Ambrose Park Road in Floyd County. Based upon communication with the United States Army Corps of Engineers (USACE) and the Virginia Department of Environmental Quality (VDEQ) the site was evaluated and affirmed as a compensatory mitigation site required to mitigate impacts at the NRRA Cloyd's Mountain Landfill Phase I site located in Dublin, Virginia. As a result, **the NRRA retained T&L in collaboration with 3e and River Works Restoration Inc., to move forward with the design and construction of the project via the designer-led design build delivery method.** T&L subsequently completed the following tasks:

- Boundary survey for purchase of the property;
- Conceptual design of the property for use as a compensatory wetland and stream mitigation site;
- Preparation of construction documents;
- Permitting of the project with the USACE and VDEQ;
- Project construction; and
- Preparation of as-built drawings.

The compensatory mitigation site consisted of the creation of approximately:

- 0.5 acres forested wetlands;
- 0.2 acres shrub scrub wetlands;
- 2.0 acres emergent wetlands;
- 3.2 acres of wetlands; and
- 10,140 stream credits including buffer enhancement and preservation.

The project was completed in February 2018 for a total cost of approximately \$1.07 Million. This project is a prime example of the benefits of the designer-led design build delivery method ultimately saving the NRRA significant time during construction (180-day construction phase) along with over \$1.0 Million from their original estimate for mitigation of the impacts at the Cloyd's Mountain Landfill Phase I site.



BEFORE

AFTER

Stream on NRRA Property - Floyd County, Virginia



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New River Resource Authority Administration Building Expansion

T&L partnered with the New River Resource Authority as the Design/Builder to design and construct an approximate 3,500 SF addition/renovation to their existing administration building.

The expansion/renovation to this building included:

- A new dedicated public entry;
- Waiting area/lobby and restrooms;
- Executive Director's Office, conference room, board room, outdoor deck, and kitchen;
- New parking lot, exterior lighting and emergency generator system; and
- Other interior modifications to including new flooring throughout the existing corridor.

The project was completed in 2017 at a cost of \$1,018,865.



Completed New River Resource Authority
Administration Building Generator



Completed New River Resource Authority
Administration Building Expansion



Completed New River Resource Authority
Administration Building Expansion



Completed New River Resource Authority
Administration Building Meeting Room



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New River Resource Authority Maintenance Building

T&L partnered with the New River Resource Authority under the PPEA procurement method to serve as the Design-Builder for the design and construction of a new 10,000 SF maintenance facility at the New River Resource Authority Landfill in Dublin, Virginia.

The work for the maintenance building project included:

- Design, permitting and construction of an approximate 10,000 SF maintenance building and all associated utilities, parking and roadway.

The approximately \$1.0 Million project was completed in the Fall 2013.





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City of Bristol Lateral Landfill Expansion (Permit #498)

T&L was employed by the City to prepare all required engineering plans and specifications for a lateral expansion of the existing sanitary landfill. A major permit modification was required to consolidate the existing sanitary and debris landfills into a single, combined sanitary landfill operation. This project involved the design of liners, leachate collection systems, access roads, groundwater monitoring systems, and other related facilities.

With the site situated in multiple geologic formations, i.e., shale and limestone, great care was given in the placement of groundwater monitoring wells. Since the quality of groundwater can inherently vary in multiple geologic settings, and hence impact future statistical analyses, a groundwater monitoring system was developed in both the shale and limestone formations. A total of six groundwater monitoring wells were installed. T&L's work included characterization of site soils, bedrock contours and groundwater contours, as well as a groundwater monitoring plan.



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City of Bristol Vertical Expansion of Existing Site

Project consisted of the design of a vertical extension of the City's existing landfill in order to increase the capacity, and therefore, the life of the facility. The work involved the revision of the City's existing plans, including the revision of final contours, finish grades, and projected landfill volumes. The DEQ approved T&L's design as a "minor permit modification" thereby reducing the potential permitting cost to the City.



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City of Bristol Landfill Part A & B Applications



T&L began permitting of an expansion to the existing City landfill with development of a Part A Application which focused on siting issues, bedrock conditions, groundwater flows and directions, and other related issues. Also, T&L prepared all necessary engineering designs for a Part B Application.

In conjunction with development of a Part A and Part B Application for a new landfill site, a groundwater monitoring program was developed by T&L. The soils, bedrock contours, and groundwater contours were all characterized, and four groundwater monitoring wells were installed. Since the site will be regulated by the new federal standards for landfills, the groundwater monitoring program was structured around these new requirements. A groundwater monitoring plan which addresses sampling methods and techniques, sampling parameters, quality assurance, and procedures for evaluating collected groundwater data was also developed by T&L.



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City of Bristol Landfill Closure Plan/Groundwater Monitoring and Vertical Expansion



The landfill closure plan consisted of a site plan, closure narrative, schedule for closure, cap design, groundwater monitoring plan, vertical expansion, and site maintenance plan. Clays in the vicinity of the landfill were found to be unacceptable; therefore, a synthetic capping system was developed. Amendments to the DEQ Regulations provided for a relaxation of the capping requirements which enabled T&L to refocus on clays as a source of material for capping purposes. Following an analysis of potential borrow areas, coupled with analysis of soils beneath the landfill; clays were ultimately constructed in the cap. The project included construction documents and construction phase services.



As part of a landfill closure plan, T&L developed a hydrogeologic/geologic site assessment which included characterizations of soils, bedrock contours, and groundwater contours. Five groundwater monitoring wells were installed to facilitate monitoring during the remaining life of the landfill and the post-closure period. The groundwater monitoring plan addressed sampling methods and techniques, sampling parameters, quality assurance, and procedures for evaluating collected groundwater data.



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City of Bristol, Tennessee Landfill Solar Panels Project

T&L recently provided design and construction administration services for the design of solar energy facility composed of a total of 819 solar modules designed around the Mage brand of 240 watt solar modules for Ecological Energy Systems out of Abingdon, Virginia. The solar energy facility is positioned on the top of a closed landfill owned by the City of Bristol, Tennessee and was constructed in a manner to meet the applicable Tennessee Department of Environmental Quality specifications with zero ground penetrations. The project was completed in April 2012 and qualified for favorable revenue rates available from the Tennessee Valley Authority.

The modules were arranged on ballasted frames in groups of 13 modules to a string and three (3) strings paralleled to an 8 KW inverter. The modular inverters were then grouped in a set of six inverters per tower and further combined for a total of 48K W per inverter pad mounted tower unit. With a total of three 48 KW inverter pad mounted tower units, and an additional three 8 KW inverters on a single tower, the overall capacity of the facility was 168 KW of 480/277 volt, 3 phase, 4 wire power which was distributed to an 800 AMP distribution panel board. The panel board collected the power from the inverters and distributed it through an 800 AMP feeder circuit via 13" wide galvanized steel cable tray to the main circuit breaker and metering equipment near the boundary to the north of the site.





Bedford Landfill Closure/ Groundwater Monitoring Plan

Landfill Closure Plan

The landfill closure plan, which was submitted to DEQ in December 1990, consisted of a site plan, closure narrative, schedule for closure, cap design, groundwater monitoring plan, vertical expansion, and site maintenance plan. Clays in the vicinity of the landfill were found to be unacceptable; therefore, a synthetic capping system was developed. The project included construction documents and construction phase services.

As part of a landfill closure plan, T&L developed a hydro geologic/geologic site assessment which included characterizations of soils, bedrock contours, and groundwater contours. Five groundwater monitoring wells were installed to facilitate monitoring during the remaining life of the landfill and the post-closure period. The groundwater monitoring plan addressed sampling methods and techniques, sampling parameters, quality assurance, and procedures for evaluating collected groundwater data. T&L has been retained by the City to generate all required statistical analysis for the groundwater monitoring program.

Part A and B Applications

T&L began permitting of an expansion to the existing City landfill with development of a Part A Application which focused on siting issues, bedrock conditions, groundwater flows and directions, and other related issues. Also, T&L prepared all necessary engineering designs for a Part B Application.

In conjunction with the development of a Part A and Part B Application for a new landfill site, a groundwater monitoring program was developed by T&L. The soils, bedrock contours, and groundwater contours were all characterized, and four groundwater monitoring wells were installed. Since the site will be regulated by the new federal standards for landfills, the groundwater monitoring program was structured around these new requirements. A groundwater monitoring plan to address sampling methods and techniques, sampling parameters, quality assurance, and procedures for evaluating collected groundwater data was also developed by T&L.





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Bedford Landfill Phase II Development Hylton Site

T&L has acted as the overall program manager for the City since 1990, given the interrelationship between the program elements. T&L services have included project planning and management, a landfill closure plan, a groundwater monitoring plan, an evaluation of new landfill alternatives, preliminary engineering at potential new landfill sites, Part A and Part B permitting for a new landfill and construction management services for the new landfill and closure of the existing landfill. The City of Bedford landfill project consists of a new state-of-the-art landfill designed and permitted under the EPA's Subtitle D regulations and the DEQ's Solid Waste Regulations.

The landfill is designed and permitted for development in four lateral phases and associated vertical stacking. The project design consists of single composite landfill liner, access roads, scales, scale house, groundwater monitoring system, stormwater management facilities (ponds and ditches), gas management system, tub grinder for wood wastes, leachate collection and monitoring system, and other related elements.

Construction of the Phase II development of the City of Bedford Sanitary Landfill - Hylton Site including earthwork, approximately 3.5 acres of composite liner system, a leachate management system, a sanitary sewer system, and associated facilities. Construction development for \$1.2 Million project was completed in May 1997.





Botetourt County Solid Waste Transfer Station Retainer Agreement

T&L entered into a Retainer Agreement with Botetourt County Board of Supervisors to provide professional engineering, planning, and consulting services for the development of a Solid Waste Transfer Station within the County.

The County recognized that the existing landfill was reaching maximum capacity levels and that future disposal of solid waste would need to take place at an out-of-county landfill. This modification in the County's solid waste management program would necessitate that a solid waste transfer station be sited, designed, permitted, and constructed prior to the developing need.

T&L conducted field inspections for six potential sites to develop a site selection study, with preliminary statements of probable construction costs for the top two selections. This included an estimated total annual budget, estimated annualized debt service, projected operation cost of the transfer station, estimated annual cost of transportation and disposal costs, and funded depreciation. Once a site was selected that suited the budget and needs of the county, T&L project team members prepared a final design of the proposed solid waste transfer system. This included the basic design of the station, construction administration, Permits, geotechnical investigations, erosion and sediment controls, surveying, and other related engineering services.



Botetourt County Convenience and Recycling Center

The development of the estimated \$3 Million Botetourt County Solid Waste Transfer Station was completed in mid 2008. The following services were provided by T&L in relation to the project development:

- Phase I Site Selection Study
- Site Selection Study
- Transportation & Disposal RFP and Total Annual Budget
- Procurement of Transportation and Disposal services, comparative cost analysis of alternatives and Preliminary Conceptual Site planning
- RVRA Negotiations and Rader Property Cost Estimates
- Botetourt County Convenience Center
- Convenience Center Design



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Capability to meet landfill technical and environmental consulting services requirements.

04

In 1988, the Virginia Department of Waste Management (now known as the Department of Environmental Quality) promulgated a set of comprehensive Solid Waste Management Regulations that changed the face of solid waste management in Virginia. For the first time, Virginia imposed regulations on localities that required the installation of extensive landfill liner systems, leachate collection systems, groundwater monitoring systems, gas management systems and other costly features. EPA subsequently promulgated the 'Subtitle D' Solid Waste Management Regulations, which were similar to Virginia's 1988 Regulations (comprehensive and extensive). However, the EPA 'Subtitle D' Regulations were even more stringent than the Virginia Regulations. The Environmental Protection Agency (EPA) Regulations, which were subsequently adopted by DEQ, became effective on October 9, 1993. The cost impact of compliance with the 'Subtitle D' Regulations resulted in several Southwest Virginia localities deciding to initiate landfill closure and pursue development of solid waste transfer stations with transportation and disposal agreements with private waste companies. Due to these regulatory actions, and the decisions of various Southwest Virginia localities, T&L sited, designed, and permitted five (5) solid waste transfer stations for six (6) localities.

Since that time, Thompson & Litton has provided professional services on various projects for over two dozen different solid waste disposal facilities. T&L has assisted each of these landfill clients on a multitude of projects arising from new state regulations and EPA regulations governing solid waste management. T&L's solid waste management experience has included construction administration/ inspection; new landfill design; vertical and lateral landfill expansions; groundwater monitoring programs for existing, new, and closed landfills; variance requests; solid waste management plans (including recycling and financing); closure and post-closure design; feasibility analyses; landfill siting studies; regionalization studies; solid waste management financing; and solid waste transfer station siting studies and design.

T&L is prepared to begin work immediately on your projects so that the vision of the County may become reality as soon as possible. We have the manpower available to perform the work in an efficient and timely manner. We believe that we can determine a realistic schedule and provide for efficient completion of your projects.

T&L is currently capable of producing 11,024 man-hours per month. We expect this level of production capability to continue throughout 2022. **The overall resources of T&L indicate an availability of man-hours that can be expeditiously dedicated to your projects following the identification of the project scope and the type of A/E resources required to complete the task at hand.**

On a regular basis, our project managers and technical department managers review manpower availability and project demands. A formal review with Principal oversight is conducted monthly. The goal of these reviews is to determine where manpower is needed to keep projects on schedule and to meet client needs. These reviews also aid in anticipating future needs such that resources can be allocated accordingly.



05

Wise County Landfill

Experience in landfill technical and environmental consulting services referenced in RFP.

Listed below is a detailed narrative explaining T&L’s background and experience working on other specific projects similar to this RFP and comprehensive knowledge of a broad spectrum of solid waste management projects.

T&L has provided a multitude of planning, project management, engineering, architectural, design-build, bidding and construction services for solid waste management projects, most of which are located in southwest Virginia. A sampling of these services is included herein.

Routine solid waste operations analysis

T&L has been providing the services noted below to solid waste management clients to assist with evaluation of operational efficiencies:

- a. In-Situ Compaction Calculations.** T&L’s in-house surveying and engineering personnel have provided periodic topographic survey updates of the landfill cells and analysis of the waste stream and daily cover usage over time to provide estimates of in-situ compaction rates.
- b. Life Expectancy Calculations.** T&L routinely provides life expectancy estimates based on periodic topographic surveys and engineering analysis.
- c. Construction Stakeout Services.** When a client requires construction staking for various landfill operational purposes, i.e. grade staking to determine final slope compliance, temporary access roads, borrow areas, etc., T&L has promptly assisted on an as needed basis.

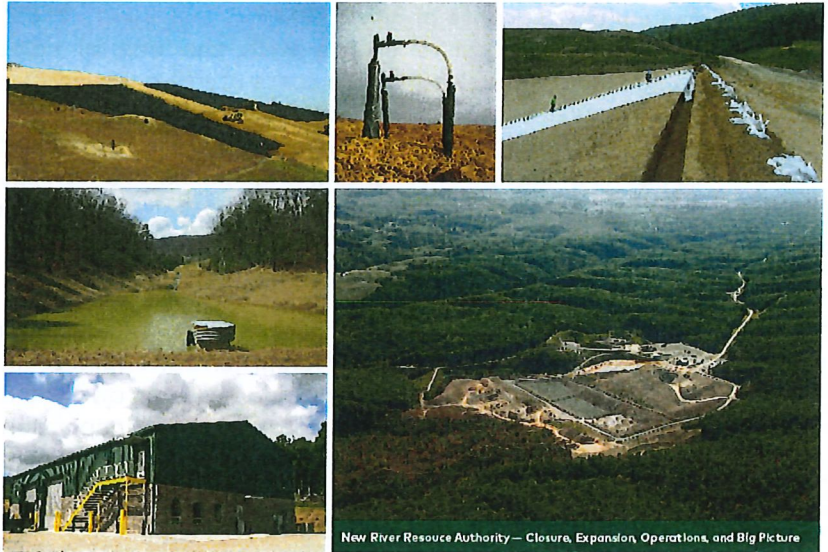


Experience in landfill technical and environmental consulting services referenced in RFP. (Continued)

d. Landfill Facility Repairs. In the event that a particular portion of the landfill facility has been damaged and/or requires attention or routine maintenance, T&L is in a position to respond quickly. T&L has assisted clients with the repair of an accidental liner tear by providing inspection of the liner welds and quality control testing of the repairs on very short notice.

Minor Solid Waste Permit Amendments

T&L has assisted our clients with many requests for Minor Permit Amendments. Some examples include integration of tire shredding operations into the landfill operations, utilization of alternative daily cover products and techniques, acceptance of special wastes, etc.



Leachate Management system analysis

As part of T&L's extensive experience with Part B's and/or Major Permit Modification designs, T&L has provided leachate management system analysis utilizing the HELP model to develop leachate flow estimates for design of the leachate collection and treatment systems. T&L has designed a number of leachate management systems including storage tanks, gravity collection lines, and pump stations/force mains. T&L also has designed a number of liner system configurations that minimize leachate generation, especially during the initial stages of operation where separation of stormwater from solid waste is critical.

Landfill gas management system analysis

T&L has been assisting clients with the development of gas remediation plans as required by DEQ when the regulatory thresholds are exceeded in gas monitoring probes. Whenever practical, T&L takes a systematic approach to these problems beginning with efforts for simple passive solutions prior to the implementation of more intensive remedies (such as extraction systems). T&L recently assisted a client with the development of a gas remediation plan due to high levels of methane in a gas probe adjacent to the landfill. Following attempts to intercept the flow of migrating gas from the landfill cell, the probe was purged and a stepped up weekly testing program implemented for a ninety (90) day period. Acceptable methane levels during the ninety (90) day period allow the client to return to normal quarterly testing and monitoring.



Experience in landfill technical and environmental consulting services referenced in RFP. (Continued)

Financial Assurance analysis

T&L routinely assists clients with the annual calculation of closure and post closure care costs utilizing the DEQ worksheet. This enables the client to determine the cost liability associated with closure and post closure for auditing purposes and to select a means of complying with the financial assurance requirements. T&L utilizes various construction cost indices to keep cost estimates current with present day market conditions.

Closure/Post Closure Care

T&L has developed numerous Closure/Post Closure Care Plans. T&L has assisted with the development of engineering plans for the construction of landfill capping systems and the associated bidding, construction administration, and inspection services. T&L has also provided required surveying plats that are required with the closure process.



Tazewell County Convenience and Recycling Center

Convenience Centers for recycling and solid waste collection

With respect to the collection of solid waste, T&L has designed several solid waste transfer stations and is quite familiar with the permitting, design, construction, and contracting issues associated with solid waste transfer stations. T&L has experience with the development of convenience centers for recycling and solid waste collection. Most notably, T&L designed convenience centers adjacent to active and inactive landfills in Tazewell and Botetourt Counties, respectively.

Fleet Management and Collection Services

T&L has assisted several clients with the procurement of solid waste transportation services in conjunction with transfer station projects.



Botetourt County Convenience and Recycling Center