July 19, 2019

Mr. David Odom, PE
Odom Engineering, PLLC
169 Oak Street
Forest City, North Carolina 28043

Re: Construction & Demolition Waste Landfill – Phase 2
Consulting Services
Rutherford County
Permit No. 81-03
Rutherford County, North Carolina

Dear Mr. Odom:

McGill Associates is pleased to submit our revised proposal to Rutherford County to assist in the development of the next phase of the construction & demolition waste landfill (CDLF). Our proposal is based on information provided in the Request for Qualifications, the preliminary site visit, and our research of the North Carolina Department of Environmental Quality (NCDEQ), Division of Waste Management (DWM), Solid Waste Section (SWS), documents portal regarding the Rutherford County Landfill. This revised proposal includes the following revisions to meet the County's budget:

Revisions:

Vertical Expansion

1. Removed this section, not required at this time. A vertical expansion of the existing Phase 1 waste area will be evaluated and included in the Permit to Construct.

Site Suitability Review and Facility Plan Update

1. Removed our involvement in coordinating the Local Government Approval including attending a Board of Commissioners meeting. We have assumed that the County and Odom Engineering can facilitate the approval process.
2. Reduced our effort for wetlands delineation to confirm jurisdictional determination to one field trip, a review of existing documentation, and providing recommendations to the County if additional actions are required.

Design Hydrogeologic Investigation and Report

1. Provided a revised proposal from Bunnell-Lammons Engineering that assumes that the proposed construction area will be 5.5 acres and that previously installed piezometers in the proposed area are intact and can be accessed for additional groundwater readings.

Permit to Construct

1. Reduced total meetings outside meeting to three (3).
2. Removed preparation of Pre-Qualification package for prospective contractors. This item was not requested in the Request for Qualifications.

Construction Administration and Permit to Operate

1. Removed preparation of Pre-Qualification package for prospective Construction Quality Assurance (CQA) firms. A proposal for CQA services is included.
2. Reduced our periodic visits during construction to observe progress and quality of work to an average of 12 hours per week.

Construction Quality Assurance

1. Provided a revised proposal from Bunnell-Lammons. The assumed construction was reduced to an approximate 5.5 acre waste area. This reduced the amount of testing required.

Introduction

As a result of our document research, we have determined the following key recent permitting events:

- March 24, 2004 – Site Suitability approved for a new MSW Landfill.
- December 12, 2007 – MSW Facility Plan Amendment and Permit to Construct for CDLF Phase 1A approved.
- July 17, 2013 – Permit to Operate (PTO) renewal for the CDLF and Transfer Station approved.
- November 1, 2017 – PTO renewal for CDLF and Transfer Station submitted.
- February 2, 2018 – Completeness review from NCDEQ.
- November 2, 2018 – Updated Landfill Gas Monitoring Plan approved.
- November 16, 2018 – Updated Water Quality Monitoring Plan approved.

Utilizing the above data, it appears that the area adjacent to and north of the current CDLF Phase 1A had previously received site study approval as a Municipal Solid Waste (MSW) Landfill in March 2004. In December 2007, this site study was amended and approved to change the configuration of the proposed MSW Landfill to allow construction of the CDLF Phase 1A. Based on the available data, we recommend that the County use the same strategy for the lateral expansion of the proposed CDLF and utilize historical data from the previous Site Study to expand the current CDLF waste area. This strategy will help to expedite the solid waste permitting process.

During our interview on June 12, 2019, we also discussed whether a vertical expansion could be permitted to extend the usable life of the current Phase 1A. We have reviewed both the 2013 and 2017 permit renewal documents and we have determined that the currently permitted waste fill grades for Phase 1A area were highly optimized, but the permitted final grades could be modified to increase the capacity of Phase 1A by approximately 10-12,000 cubic yards, assuming the longer slope lengths do not impact global stability of the landfill. We would propose delaying a

vertical expansion request for approximately 12 months, to allow another year of waste receipts to be evaluated. We are of the opinion that we can plan for this vertical expansion as part of our Phase 2 development and avoid the cost of preparing a separate submittal now. A vertical expansion submittal at this time would require revision of the original geotechnical report submitted with Phase 1A. The airspace increase realized by this vertical expansion will be captured via the horizontal and corresponding vertical expansion of Phase 2 anyway. We can always submit for a separate vertical expansion in the future, if landfill development plans are stalled for some reason outside of the development team's control.

We understand that the County desires our proposal to include all phases of development including Site Study update, design and permitting for a 10-year minimum capacity phase, a Permit to Construct from the SWS, preparing construction bid documents, construction advertising/bidding/award, construction administration, construction quality assurance, and a construction certification report to secure a Permit to Operate. Based on the above information we are proposing the following scope of Services.

Site Suitability Review & Facility Plan Update

Our research indicates that the proposed expansion area for the CDLF falls within an area that has already received site study approval as an MSW Landfill. The SWS rules regarding site study requirements for MSW landfills are equal to or more stringent than for CDLF projects. Therefore, the previously approved report can be used for the CDLF expansion. Our task for this item will include:

1. Detailed review of existing approved Site Suitability Report to determine impacts of the proposed CDLF waste area.

2. Prepare an updated Facility Plan narrative report that discusses location restrictions as described in Section .0536 of the Solid Waste Management Rules. The Proposed Facility Plan will also include discussion on proposed landfill units, landfill facilities, grading activities with proposed grades, phases of development, waste volumes, and landfill capacity with supporting volume calculations.

3. Prepare updated Facility Plan drawings that will include conceptual design drawings to locate the proposed CDLF waste area.

4. Conduct site visit for wetlands delineation to confirm jurisdiction determination from 2001 is still valid and will not require revision. A new jurisdictional determination with the Army Corps of Engineers is not anticipated.

5. Compile the above information and prepare an updated Facility Plan for submittal to the NCDEQ, DWM, SWS.

6. Respond to review comments from the Solid Waste Section, resubmit any changes and/or modifications, and receive final approval of the Facility Plan.

Design Hydrogeologic Investigations and Reports

1. Please refer to the attached revised proposal by Bunnell Lammons Engineering (BLE) dated July 19, 2019.

Supplemental Survey (Area 1)

1. It is our understanding that Associated Land Surveyors (ALS) provided aerial topographic information of the Phase 1A landfill area in March 2019. It is also our understanding that ALS will provide the balance of the topography for the areas shown as Area 1 and Area 2 on our attached Scope Map. McGill survey crew will locate monitoring wells / piezometers and storm pipe / structures to supplement ALS provided information. We have budgeted for two (2) days of drone / traditional survey time in the field and office time for compiling photogrammetry data and consolidating with ALS.

Permit to Construct

Prepare a Permit to Construct application package in accordance with Section .0535 of the Solid Waste Rules. Our task for the Permit to Construct will specifically include:

1. Meet with Rutherford County to review the updated Facility Plan and to confirm the extent of the Permit to Construct.

2. Meet with appropriate State agencies to discuss proposed plans and improvements and identify pertinent matters related to the project.

3. Prepare the Permit to Construct application package. McGill Associates will prepare and submit documentation, as outlined in Rule .0535, for the Permit to Construct application to the North Carolina Solid Waste Section for the construction of a minimum 10-year capacity waste cell. The following tasks and/or documents will be provided in the application for a Permit to Construct:

    a) Prepare Facility Plan with report and appropriate drawings in accordance with Rule .0537.
    b) Prepare Engineering Plan with report and appropriate drawings in accordance with Rule .0539.
    c) Update Operations Plan with report and appropriate drawings in accordance with Rule .0542.
    d) Prepare Construction Quality Assurance Plan in accordance with Rule .0541.
    e) Prepare Closure and Post Closure Plan in accordance with Rule .0543.

4. Prepare updated NPDES stormwater permit for the proposed expansion.

5. Develop an Erosion Control Plan with supporting calculations and prepare Grading Permit application to include temporary and permanent erosion control facilities. Submit Erosion Control Permit application and secure permit from the North Carolina Department of Environmental and Natural Resources, Land Quality Section.

6. Attend one (1) review meetings with NCDEQ, Solid Waste Section (SWS).

7. Address comments from the SWS necessary to secure a Permit to Construct.

Environmental Monitoring Plan

1. Please refer to the attached proposal by Bunnell Lammons Engineering (BLE) dated July 17, 2019.

Construction Bid Documents

1. Prepare construction bid documents for the construction of the proposed CDLF waste area. Construction documents will include construction drawings, technical specifications, and bidding documents.

2. Prepare construction cost estimate.

Bidding and Award

1. Assist the County in advertising and evaluating construction bids.

2. Address questions during the bidding process.

3. Attend Bid Opening on behalf of Rutherford County.

4. Consult with, and advise the County, as to the acceptability of contractors and subcontractors, and make recommendations as to the lowest responsible bidder.

5. Assist the County in the final preparation and execution of the Construction Contract and in verification of Performance and Payment Bonds and Insurance Certificates for proper limits and compliance.

Construction Administration and Permit to Operate

1. Schedule and conduct a Pre-Construction meeting with the County, Contractor, CQA Consultant, and major subcontractors.

2. Conduct monthly progress meetings to review construction progress, address any construction issues, and review proposed future work.

3. Make periodic visits to the site (average 12 hours per week) to observe the progress and quality of the executed work to determine if the work is proceeding in accordance with the plans and specifications.

4. Review and approve shop drawings, diagrams, illustrations, brochures, catalog data, schedules and samples, the results of tests and inspections and other data that the site Contractor is required to submit.

5. Address questions from the Contractor during the construction process.

6. Review monthly pay requests and any proposed change orders. Make recommendation of payment to County.

7. Coordinate with the selected CQA firm to address questions and insure required documentation is prepared.

8. Prepare a final set of record drawings for the completed construction, by combining the Contractor's drawing markups, McGill's drawing markups, and the CQA construction survey data.

9. Prepare documentation to support and submit the application for the Permit to Operate to the Division of Environmental Quality, Solid Waste Section.

Construction Quality Assurance

1. Please refer to the attached revised proposal by Bunnell Lammons Engineering (BLE) dated July 17, 2019.

Proposed Fees

We propose to perform the above outlined scope of work for the following fees.

Site Suitability Review & Facility Plan Update (Lump Sum)	**$24,100.00**
Design Hydro Investigations and Reports (Hourly)	**$121,600.00**
Supplemental Survey (Hourly)	
• **Area 1**	**$6,500.00**
Permit to Construct (Lump Sum)	**$67,850.00**
Environmental Monitoring Plan	**$13,750.00**
Construction Bid Documents (Lump Sum)	**$24,000.00**
Bidding and Award (Lump Sum)	**$9,400.00**
Construction Administration and Permit to Operate	**$70,200.00**
Construction Quality Assurance	**$72,600.00**

Work items indicated as hourly fees will be billed for actual time spent plus expenses in accordance with the attached Basic Fee Schedule. Work items provided by subconsultants include 10% markup per McGill Associates company policy.

Assumptions

Our scope of work and fees above are based on the following assumptions:

1. Construction Administration services and Construction Quality Assurance are based on construction of an approximate 5.5 acre waste and a construction period of **5** months. If a different schedule is desired or realized we will submit an amendment to our current scope of services.

2. Our fees do not include a soil borrow analysis of existing soil stockpiles or borrow areas. Rutherford County may wish to perform this analysis once the proposed construction limits and soil needs have been identified. This can be performed as a separate exercise for the purpose of identifying low permeability soils located on the entire facility.

3. Our scope does not include preparation of an Environmental Impact Statement in accordance with State Environmental Policy Act (SEPA). We have assumed that the Solid Waste Section will accept the study information that has been accumulated through the environmental due diligence process that has been performed over the past several months and issue a Finding of No Significant Impact (FONSI). We can provide a separate proposal for these services, once the Solid Waste Section makes an initial determination of the environmental information submitted with the proposed amended Site Study and provides input on which aspects of the property that the SWS and/or other regulatory agencies believe to be insufficient.

4. Topographic survey information will be provided by Rutherford County based on recent surveying at the landfill.

5. No impact will be made to existing streams or wetlands during development of permit to construct for Phase 2 expansion; therefore, 401/404 permitting is not included.

6. Previous drawings and narratives associated with the most recent permit renewal will be provided in a digital format (.doc, xls,.dwg, etc.) for use by McGill.

Sincerely,
McGILL ASSOCIATES, P.A.

Mark D. Cathey

MARK D. CATHEY, PE
Asheville Office Manager

Cc: Mr. Keith Webb, McGill Associates
Attachments: Consulting Services Agreement
Basic Fee Schedule

CQA Proposal by BLE dated July 17, 2019
DHR Proposal by BLE dated July 19, 2019
EMP Proposal by BLE dated July 17, 2019
Survey Scope Map

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CONSULTING SERVICES AGREEMENT

This contract entered into this 3rd day of September, 2019 by and between Rutherford County, hereinafter called the Client, and McGill Associates, PA;

Witnesseth that: Whereas, the Client desires to engage McGill Associates to provide consulting services; and,
Whereas, the Client finds that the attached Scope of Services and terms of this agreement are acceptable; and,
Whereas, McGill Associates desires to provide said services and agrees to do so for the compensation and upon the terms and conditions as hereinafter set forth. Now, therefore, the parties hereto do mutually agree as follows:

1. Scope of Services: McGill Associates shall provide the services attached hereto in the Contract Proposal "Scope of Services" of this Agreement, hereinafter called services. Fees for additional services will be negotiated with the Client prior to proceeding with the work.

2. Standard of Care: McGill Associates will perform its services using that degree of skill and diligence normally employed by professional engineers or consultants performing the same services at the time these services are rendered.

3. Authorization to Proceed: Execution of this Consulting Services Agreement will be considered authorization for McGill Associates to proceed unless otherwise provided for in this Agreement.

4. Changes in Scope: The Client may request changes in the Scope of Services provided in this Agreement. If such changes affect McGill Associates cost of or time required for performance of the services, an equitable adjustment will be made through an amendment to this Agreement.

5. Compensation: The Client shall pay the compensation to McGill Associates set forth in the Contract Proposal "Basis of Compensation" attached hereto. Unless otherwise provided in the Basis for Compensation, McGill Associates shall submit invoices to the Client monthly for work accomplished under this agreement and the Client agrees to make payment to McGill Associates within thirty (30) days of receipt of the invoices. It is also mutually agreed that should the Client fail to make prompt payments as described herein, McGill Associates reserves the right to immediately stop all work under this agreement until disputed amounts are resolved.

6. Personnel: McGill Associates represents that it has, or will secure at their own expense, all personnel required to perform the services under this agreement and that such personnel will be fully qualified and adequately supervised to perform such services. It is mutually understood that should the scope of services require outside subcontracted expertise McGill Associates may employ such services at their discretion.

7. Opinions or Estimates of Cost: Any costs estimates provided by McGill Associates shall be considered opinions of probable costs. These along with project economic evaluations provided by McGill Associates will be on a basis of experience and judgment, but, since McGill Associates has no control over market conditions or bidding procedures, McGill Associates cannot warrant that bids, ultimate construction cost, or project economics will not vary from these opinions.

8. Termination: This Agreement may be terminated for convenience by either the Client or McGill Associates with fifteen (15) days written notice or if either party fails substantially to perform through no fault of the other and does not commence correction of such non-performance within five (5) days of written notice and diligently complete the correction thereafter. On termination, McGill Associates will be paid for all authorized work performed up to the termination date plus reasonable project closeout costs.

9. Limitation of Liability: McGill Associates liability for Client's damages will, in aggregate, not exceed the total fees paid by the Client for the Scope of Services referenced herein or $50,000 whichever is greater. This provision takes precedence over any conflicting provision of this Agreement or any documents incorporated into it or referenced by it. This limitation of liability will apply whether McGill Associates liability arises under breach of contract or warranty; tort, including negligence; strict liability; statutory liability; or any other cause of action, and shall include McGill Associates' directors, officers, employees and subcontractors. At additional cost, Client may obtain a higher limit prior to commencement of services.

10. Assignability: This agreement shall not be assigned or otherwise transferred by either McGill Associates or the Client without the prior written consent of the other.

11. Severability: The provisions of this Consulting Services Agreement shall be deemed severable, and the invalidity or enforceability of any provision shall not affect the validity or enforceability of the other provisions hereof. If any provision of this consulting services agreement is deemed unenforceable for any reason whatsoever, such provision shall be appropriately limited, and given effect to the extent that it may be enforceable.

12. Ownership of Documents: All documents, calculations, drawings, maps and other items generated during the performance of services shall be considered intellectual property and remain the property of McGill Associates. Client agrees that the deliverables are intended for the exclusive use and benefit of and may be relied upon for this project only by the Client and will not be used otherwise. Client agrees that any prospective lender, buyer, seller or third party who wishes to rely on any deliverable must first sign McGill Associates' Secondary Client Agreement.

13. Excusable Delay: If performance of service is affected by causes beyond McGill Associates control, project schedule and compensation shall be equitably adjusted.

14. Indemnification: Client agrees to indemnify, defend and hold McGill Associates, its agents, employees, officers, directors and subcontractors harmless from any and all claims, and costs brought against McGill Associates which arise in whole or in part out of the failure by the Client to promptly and completely perform its obligations under this agreement, and as assigned in the Contract Proposal "Scope of Services" or from the inaccuracy or incompleteness of information supplied by the Client and reasonably relied upon by McGill Associates in performing its duties or for unauthorized use of the deliverables generated by McGill Associates. Furthermore, McGill agrees to indemnify, defend and hold the Client harmless from any claims brought against the Client as a result of McGill's work.

15. Choice of Law: This Agreement shall be governed by the internal laws of the State of North Carolina.

16. Entire Agreement: This Agreement contains all of the agreements, representations and understandings of the parties hereto and supersedes any previous understandings, commitments, proposals, or agreements, whether oral or written, and may only be modified or amended as herein provided; and as mutually agreed.

17. Attachments to this document:

1. Contract Proposal including Scope of Services and Basis of Compensation.

Client: Rutherford County

Authorized Signature:

_____

Print Name:

Title:

Address:

McGill Associates, P.A.

Mark D. Cathey

Print Name: Mark D. Cathey, PE

Title: Asheville Office Manager

Address: 55 Broad Street, Asheville, North Carolina 28801

BASIC FEE SCHEDULE

August 2018

PROFESSIONAL FEES	Current Rate
Firm Principal	$205.00
Program Services Manager I	$160.00
Program Services Manager II	$170.00
Senior Project Manager I	$170.00
Senior Project Manager II	$180.00
Senior Project Manager III	$185.00
Project Manager I	$150.00
Project Manager II	$160.00
Project Engineer I	$110.00
Project Engineer II	$120.00
Project Engineer III	$140.00
Engineering Associate I	$ 90.00
Engineering Associate II	$ 95.00
Engineering Technician I	$ 90.00
Engineering Technician II	$100.00
Engineering Technician III	$110.00
Environmental Specialist I	$ 85.00
Environmental Specialist II	$ 95.00
Electrical Engineer I	$110.00
Electrical Engineer II	$120.00
Electrical Engineer III	$140.00
Electrical Engineering Associate I	$ 90.00
Electrical Engineering Associate II	$ 95.00
Electrical Engineering Technician I	$ 90.00
Electrical Engineering Technician II	$100.00
Electrical Engineering Technician III	$110.00
Mechanical Engineer I	$110.00
Mechanical Engineer II	$120.00
Mechanical Engineer III	$140.00
Mechanical Engineering Associate I	$ 90.00
Mechanical Engineering Associate II	$ 95.00
Mechanical Engineering Technician I	$ 90.00
Mechanical Engineering Technician II	$100.00
Mechanical Engineering Technician III	$110.00

CADD Operator I	$ 80.00
CADD Operator II	$ 85.00
CADD Operator III	$ 90.00
Construction Services Manager I	$130.00
Construction Services Manager II	$145.00
Construction Administrator I	$ 95.00
Construction Administrator II	$105.00
Construction Administrator III	$115.00
Construction Field Representative I	$ 85.00
Construction Field Representative II	$ 90.00
Construction Field Representative III	$ 95.00
Construction Services Coordinator	$ 80.00
Planner I	$100.00
Planner II	$115.00
Planner III	$135.00
Planner IV	$145.00
Surveyor I	$ 80.00
Surveyor II	$ 90.00
Surveying Associate I	$ 70.00
Surveying Associate II	$ 75.00
Survey Technician I	$ 75.00
Survey Technician II	$ 82.00
Survey Field Technician I	$ 60.00
Survey Field Technician II	$ 65.00
Survey Field Technician III	$ 70.00
Administrative Assistant (I-II)	$ 70.00
Administrative Assistant III	$ 80.00
Accounting Assistant (I-II)	$ 80.00

1. EXPENSES

a. Mileage - $0.65/mile
b. Robotics/GPS Equipment - $25/hr.
c. Survey Drone - $100/hr.
d. Telephone, reproduction, postage, lodging, and other incidentals shall be a direct charge per receipt.

2. ASSOCIATED SERVICES -

a. Associated services required by the project such as soil analysis, materials testing, etc., shall be at cost plus ten (10) percent.

BUNNELL LAMMONS ENGINEERING

July 19, 2019

McGill Associates
55 Broad Street
Asheville, North Carolina 28801

Attention: Mr. Mark Cathey, P.E.

Subject: **Proposal for Design Hydrogeologic Investigation & Report (DHR)**
And Geotechnical Evaluation & Report
Phase 2 C&D Expansion Area
Rutherford County Landfill, Permit #8103-CDLF-2002
Rutherford County, North Carolina
BLE Proposal No. J19-13675-01

Dear Mr. Cathey:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to submit this proposal to McGill Associates (McGill) to provide geological, geotechnical, and hydrogeological services as part of the application for the permit to construct the proposed Phase 2 C&D expansion area at the Rutherford County Landfill. This proposal addresses relevant siting requirements for a construction and demolition (C&D) landfill as set forth by the North Carolina Division of Waste Management (NCDWM) for a Design Hydrogeologic Report (DHR), and for geotechnical engineering.

PROJECT INFORMATION

The project information below was obtained from a request for proposal issued by McGill Associates (McGill) via email and from data provided by Odom Engineering, PLLC (Odom). Additional information was obtained from a site visit on June 14, 2019 and from documents downloaded from the NCDWM portal and from discussions with McGill on July 16, 2019.

The subject landfill site is located in Rutherford County, North Carolina, between the cities of Rutherfordton and Spindale with a physical address of 656 Laurel Hill Dr, Rutherfordton, North Carolina. Rutherford County owns and operates a closed Subtitle D municipal solid waste (MSW) landfill and a C&D landfill consisting of one waste unit designated Phase 1. The county plans to expand the C&D landfill in an area designated Phase 2 which is approximately 17 acres and construct one new approximate 5.5-acre C&D waste unit in the expansion area.

Several hydrogeologic studies have been performed at the landfill property by various consultants. The team of GN Richardson & Associates., Inc. (GNRA) and David Garrett Engineering and Geology (DGEG) prepared a document titled *Permit Renewal Application Rutherford County C&D Landfill Expansion* as part of an application for a permit to construct the Phase 1 C&D area in August 2000. Additionally, David Garrett Engineering and Geology prepared a document titled *MSW Facility Plan Amendment and Permit to Construct Application Rutherford County CDLF Phase 1A* as a site suitability update in July 2007. We assume that the documents were subsequently approved by the

NCDWM. The specific lateral limit of the study area has not yet to be defined by Rutherford County or McGill, so we have based this proposal on our knowledge of similar projects and scopes.

McGill has requested that BLE prepare a proposal to prepare a DHR and geotechnical report for submittal to the NCDWM for a 5.5-acre Phase 2 C&D waste unit. We understand that the DHR and geotechnical report will be included as part of the application for a permit to construct which will be prepared by McGill. We also assume that the Phase 2 expansion area falls within the boundaries of the approved submittals and that the prior submittals by GNRA and DGEG have fulfilled the requirements of the Site Hydrogeologic Report (SHR).

PROPOSED SCOPE OF SERVICES

The objective of this project is to collect information from the site to prepare a DHR and geotechnical report for an approximate 5.5-acre waste unit. **It is assumed that existing piezometers B-13, B-17, and B-35 will be within design limits of the 5.5-acre waste unit and that these three piezometers will be viable during the entire hydrogeologic investigation.** These reports will be prepared in accordance with the North Carolina Department of Environmental Quality (DEQ) Solid Waste Management Rules, Title 15A Section 13B .0538(b)(1-2). To fulfill these requirements, our scope of services will include the following:

- Consulting services of a Senior Hydrogeologist will be provided to prepare a Boring Plan. This task includes a site visit to evaluate site access, a review of Phase 2 limits, selection of proposed boring locations, estimated depths to groundwater and bedrock at each location from historical site data provided by McGill and Rutherford County.

- Consulting services of a Geologist will be provided to mark locations for the piezometers based on the Boring Plan. The actual number of piezometers may be changed based on NCDWM requirements and/or field observations. Based on information reviewed to date, we anticipate that up to 2 borings and 3 piezometers will be required. A piezometer well-pair will be installed at one location, which will include a shallow and deep piezometer.

Rule .0538(b)(1)

- BLE will provide limited technical oversight for the drilling and piezometer installation. The drilling contractor will perform 2 (two) soil test borings and perform rock drilling at 1 (one) of the locations. Piezometers will be installed in each of the 3 (three) borings, one of the locations will have a two (2) piezometers (one shallow and one deep) to address vertical hydraulic gradients. **All three (3) piezometer depths and drilling footage will be dependent on site-specific conditions encountered when drilling.** For budgeting purposes, we have assumed: one drill rig mobilization, 70.5 feet hollow stem auger drilling, 34 feet of rock coring, 115 feet of air-hammer drilling, and 219.5 feet of piezometer installation. Drilling and piezometer installation will be performed by our crew in general accordance with the procedures in **Appendices A and B**, respectively. Each piezometer will include a surface completion consisting of a bentonite seal with 3-foot tall (approximate) PVC stickup riser with slip cap cover. The piezometer locations and elevations will be surveyed, and the data will be provided to BLE by others working under separate contact with Rutherford County.

Rule .0538(b)(2)

- Perform a field reconnaissance to observe springs, streams, drainage features, existing or abandoned wells, rock outcrops, and other geologic features that may affect site suitability or the ability to effectively monitor the site.

- Perform field permeability (slug) tests in 4 piezometers on site. Slug testing procedures are described in **Appendix C**.

- Select soil samples for laboratory analyses. The soil sampling and analysis will be performed in general accordance with standard ASTM procedures (**Appendix D**). The laboratory analyses for this phase will include:

    1. Up to three undisturbed samples (grain size with hydrometer, Atterberg limits, permeability, total porosity, moisture content), one sample will be tested for consolidation, and one sample will be tested for triaxial shear;

    2. Up to two bag samples (Standard Proctor, remolded permeability, grain size with hydrometer, Atterberg limits, moisture content);

    3. One bag sample (Standard Proctor, triaxial shear, grain size with hydrometer, Atterberg limits, moisture content); and

    4. Up to six split-spoon samples (grain size with hydrometer, moisture content, Atterberg limits).

- Prepare geologic cross-sections that depict the hydrogeologic conditions encountered at the site.

- Obtain 6 rounds of monthly water level measurements from the piezometers installed on site. Water level measurements will be obtained to identify the seasonal high water table (typically winter & spring).

- Provide soil boring logs, field logs, and field notes with the DHR.

- Prepare a groundwater elevation contour map to show the occurrence and direction of groundwater flow in the uppermost aquifer.

- A photogrammetric topographic map of the site will be prepared and supplied to BLE by McGill (working under separate contact with others).

- Attend one project meeting in Asheville.

- Conduct forensic investigations to obtain existing DHR data from facility records.

- Prepare written report (DHR) describing the geologic and hydrogeologic conditions observed at the site including geologic maps (water table, auger refusal, surficial geology) and cross-sections.

Rule .0538(b)(1)(A)

BLE will perform geotechnical analysis including settlement and slope stability calculations. Geotechnical analyses will include slope stability of the cap and conforming base layer configurations, settlement of the foundation soils and base layer stability. The slope stability analysis of the cap and base layer will include both circular and block analyses. A geotechnical report will be issued which will be certified by a professional engineer licensed to practice in the state of North Carolina.

FEE ESTIMATE

Our charges for the proposed Scope of Services will be computed from actual quantities of work performed at the unit rates shown on the attached Fee Schedule (**Appendix E**). We propose to complete this project on a time and materials basis. Our estimated fee for the scope outlined above is **$110,500**. A cost breakdown is summarized on the table below.

Boring plan and project setup	$4,850
Boring layout	$1,500
Drilling and piezometer installation	$31,700
Oversight of soil test borings, rock drilling, piezometer installation, including mileage and per diem	$6,075
Field permeability (slug) testing 4 wells	$3,250
Field observations	$3,225
Monthly water level measurements (6 months reduced from 12 required)	$7,475
Laboratory testing of soil samples	$6,125
Conduct forensic investigations to obtain existing SHR and DHR data from facility records	$6,000
Preparation of the DHR (text, boring logs, plan view maps, cross-sections, tables, appendices), project management, two meetings.	$28,500
Geotechnical evaluation and preparation of a Geotechnical Report	$11,800
COST ESTIMATE	**$110,500**

No contingency is included in this budget estimate to cover unexpected difficulties, difficult moving, clearing utilities, delays beyond our control, or scope changes, etc. Work that exceeds the previously defined Scope of Services will not be performed without written confirmation from McGill. Expanded or additional scopes of work will be billed on a time and material basis at the rates described of the attached Fee Schedule (**Appendix E**), or as provided by BLE's subcontractors.

We understand that all surveying will be performed by others under direct contract with Rutherford County. There is no provision is BLE's proposal budget for any of these services.

SCHEDULE

Based on our present schedule, we can begin work on this project within two weeks after we receive your authorization to proceed. The following completion schedule is anticipated:

Boring Plan	1 week
Forensic investigations to obtain existing SHR and DHR data from facility records	3 weeks
Field observations and boring layout	1 week
Drilling and oversight of soil test borings, rock drilling, piezometer installation	2 weeks
Field permeability (slug) testing wells and data reduction	1 week
Monthly water level measurements	1 day each (6 months)
Laboratory testing of soil samples	3 weeks
Survey of borings and/or piezometers (performed by others)	1 week
Preparation of DHR (text, boring logs, plan view maps, cross-sections, tables, appendices), project management, meetings	5 weeks
Geotechnical evaluation and reparation of a Geotechnical Report	3 weeks
APPROXIMATE DURATION	**20 weeks,** plus monthly water level measurements

To expedite the project, we may perform many of the aforementioned tasks concurrently, where practicable. The anticipated project duration can be completed as shown above assuming that the project does not have delays due to inclement weather, site access, survey data acquisition, or other delays beyond our control. This schedule does not include review time by McGill. Additionally, water level measurements will be performed for a 6-month period after piezometer installation. Please note that as specified by the solid waste rules, the DHR cannot be completed and submitted until after the final water level measurements have been obtained. Also note that we have assumed an expedited project schedule reducing the water level events from the required one year (12 events) to six months (6 events) with application of a correction factor for design. We will provide draft versions of text, tables, and figures for your use prior to collection of all 6 water levels, if requested.

ASSUMPTIONS

If BLE is provided complete electronic copies of the facility's existing hydrogeological investigations and geotechnical evaluations the forensic investigations fee may be reduced, depending on the completeness and quality of the documents provided. Furthermore, we assume that those documents will include all information required for the operation and monitoring of the subject site including, well locations, well construction information, facility drawings, and survey data, etc. **It is assumed that existing piezometers B-13, B-17, and B-35 will be within design limits of the 5.5-acre waste unit and that these three piezometers will be viable during the entire hydrogeologic investigation.** Additional work required to obtain missing or incomplete information will be performed at the unit rates shown on the attached Fee Schedule (**Appendix E**).

We have assumed that BLE will not be required to attend any meetings except as specified above. We have assumed that two rounds of revisions to the geotechnical report will be required as the result of up to two design changes by McGill.

AUTHORIZATION

As our written authorization, please sign below where indicated. The Terms & Conditions of our existing Consulting Services Agreement dated January 22, 2013 are hereby adopted.

We appreciate the opportunity to serve as your hydrogeological and geotechnical consultant at this site. If you have any questions, please do not hesitate to contact us at (864) 288-1265.

Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.

Andrew W. Alexander, P.G., RSM
Consultant / Senior Hydrogeologist

Mark S. Preddy, P.G.
Consultant / Senior Hydrogeologist

_____ _____
Mr. Mark Cathey, P.E. Date

_____
Authorizing Signature – McGill Associates, P.A.

cc: Jeff Helvey, P.E.

Attachments: Fee Schedule

https://blecorp.sharepoint.com/sites/sw/files/rutherford county nc landfill/13675-01 dhr/proposal dhr/proposal mcgill for rclf phase 2cdlf dhr rev4.docx

APPENDICES

APPENDIX A

DRILLING PROCEDURES

Soil Test Boring

Soil test borings will be advanced by mechanically twisting continuous flight steel hollow-stem augers into the soil. Soil sampling and penetration testing will be performed in general accordance with ASTM D 1586. At regular intervals, soil samples will be obtained using a standard 1.375-inch inside diameter (ID), 2-inch outside diameter (OD), steel split-tube sampler. The sampler will first be seated 6-inches to penetrate any loose cuttings, and then driven an additional 12 inches with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final 12 inches will be recorded and designated the *penetration resistance*.

Representative portions of the soil samples will be placed in glass jars. The samples will be examined by a geologist and soil test boring logs will be prepared.

Rock Coring

Core drilling will be required to determine the character and vertical continuity of refusal materials. Refusal to soil drilling equipment may result from hard cemented soil, soft weathered rock, coarse gravel or boulders, thin rock seams, or the upper surface of solid continuous rock.

Prior to coring, a permanent 3-inch diameter PVC casing may be grouted in place through the overburden soils. A cement/bentonite grout will be used. Refusal materials will then be cored in general accordance to ASTM D 2113 or other appropriate methodology using a diamond-studded bit fastened to the end of a hollow, double-tube core barrel. NQ or other appropriate size rock core will be collected. The NQ size designates a bit which obtains rock cores 1-7/8 inches in diameter. Upon completion of each drill run the core is recovered and measured, and the core samples are placed in boxes for storage.

The core samples will be returned to our laboratory where the refusal material will be identified and the percent core recovery and rock quality designation (RQD) will be determined by a geologist. The percent core recovery is the ratio of the core length obtained to the length cored, expressed as a percent. The RQD is obtained by summing only those pieces of recovered core which are 4 inches or longer and are at least moderately hard, and dividing by the total length cored. The percent core recovery and the RQD are related to soundness and continuity of the refusal material. Refusal-material descriptions, recoveries, and the bit size used will be shown on a test boring record.

Air Rotary Drilling

Air drilled borings will be advanced through the unconsolidated and consolidated materials using a 6-inch diameter downhole air hammer and compressed air to remove the soil and rock cuttings. The pneumatic drill hammer rapidly strikes the soil or rock while the drill pipe is slowly rotated. The drill hammers are typically constructed of alloy steel with tungsten-carbide inserts that provide the chipping or cutting surfaces. An in-line air filter is attached to the air compressor on the drill rig to remove oil from the air and to prevent oil contamination in the borehole.

APPENDIX B

PIEZOMETER CONSTRUCTION PROCEDURES

Type II Piezometer

Type II ground-water piezometers will consist of 2-inch polyvinyl chloride (PVC) Schedule 40 casing with flush-threaded joints installed in a 6 to 8-inch nominal diameter augered borehole. The bottom 5 to 10-foot section of each well will consist of a manufactured well screen with 0.01-inch wide machined slots. The well screen will be installed to the depth of the bedrock surface or to bracket the water table at the time of installation.

In the Type II piezometers, a washed sand filter pack will be placed around the outside of the casing from the bottom of the well casing to from one to two feet above the top of the well screen. The sand filter pack is used to stabilize the formation and to help yield a less turbid ground-water sample.

A bentonite seal will be installed to within 5 feet of the ground surface. The upper 5 feet will be filled with bentonite grout. A PVC cap will be placed over the PVC well stickup on each piezometer.

Type III Piezometer

In the Type III well installation, a 6 to 8-inch nominal diameter boring will be advanced through the overburden soils using air rotary, mud rotary, or auger drilling techniques to the depth of the bedrock surface. A 3-inch diameter (minimum) PVC casing may be installed to the termination depth of the borehole. The annular space between the hole and the casing will be tremie grouted with a cement/bentonite grout mixture to near ground surface. The grout will be allowed to set-up and cure for 24 hours. After the grout cures, the boring will be advanced into the underlying bedrock using rock coring or air rotary procedures described in Appendix A. A 2-inch PVC screen and riser will be installed in each borehole. The well materials will be sanded and sealed in place using the Type II well placement procedures. A PVC cap will be placed over the PVC well stickup on each piezometer.

APPENDIX C

SLUG TEST PROCEDURES

Slug tests will be performed in the field to estimate the average hydraulic conductivity of the upper formation material. Hydraulic conductivity is a constant of proportionality relating to the ease with which a fluid passes through a porous medium. These data will be used to estimate the groundwater flow velocities beneath the site. The field procedure was as follows:

- Measure the static groundwater elevation in the well to be tested;
- Affect an instantaneous change to the static water level in the well by removing a known volume of water; and
- Measure the rate at which the water level recovers to its original level.

The resulting slug test data (time versus water level) will be reduced and hydraulic conductivities will be calculated using the Bouwer and Rice Method for partially penetrating wells in unconfined aquifers, or other appropriate methods.

APPENDIX D

SOIL LABORATORY TEST PROCEDURES

MOISTURE CONTENT AND UNIT WEIGHT

An undisturbed sample is trimmed in the laboratory into a right circular cylinder approximately three to six inches long. The dimensions and weight of the specimen are determined and the total unit weight calculated. Moisture contents are determined from representative portions of the specimen. The soil is dried to a constant weight in an oven at 100 degrees C and the loss of moisture during the drying process is measured. From this data, the moisture content and dry unit weight are computed.

ATTERBERG LIMITS

The Atterberg Limits Tests, Liquid Limit (LL), and Plastic Limit (PL), are performed to aid in the classification of soils and to determine the plasticity and volume change characteristics of the materials. The Liquid Limit is the minimum moisture content at which a soil will flow as a heavy viscous fluid. The Plastic Limit is the minimum moisture content at which the solid behaves as a plastic material. The Plasticity Index (PI) is the numeric difference of Liquid Limit and the Plastic Limit and indicates the range of moisture content over which a soil remains plastic. These tests are performed in accordance with ASTM D 4318.

PARTICLE SIZE DISTRIBUTION

The distribution of soils coarser than the No. 200 (75-um) sieve is determined by passing a representative specimen through a standard set of nested sieves. The weight of material retained on each sieve is determined and the percentage retained (or passing) is calculated. A specimen may be washed through only the No. 200 sieve, if the full range of particle sizes is not required. The percentage of material passing the No. 200 sieve is reported. The distribution of materials finer than No. 200 sieve is determined by use of the hydrometer. The particle sizes and distribution are computed from the time rate of settlement of the different size particles while suspended in water. These tests are performed in accordance with ASTM D 421, D 422, and D 1140.

HYDRAULIC CONDUCTIVITY

The ease with which water flows through a soil is characterized by its hydraulic conductivity. Two general test methods are employed depending on the soil type.

The **Constant Head** method is used for coarse-grained materials (sands and gravels). The sample is confined in permeameter chamber while water is allowed to flow through it from a constant head level. The quantity of water flowing through the specimen in a given time period is used to calculate the hydraulic conductivity. See ASTM D 2434 for a complete description of this test.

Fine-grained materials (silts and clays) require the use of a **Flexible Wall Permeameter**. The sample is prepared in a similar manner as in the triaxial compression test. It is encased in a rubber membrane and placed inside a permeameter chamber. The specimen is back-pressure saturated and allowed to consolidate under a specified effective stress. Water is then forced through the specimen under a controlled hydraulic gradient. The quantity of water flowing into the sample in a given time period is used to calculate the hydraulic conductivity. This test is performed in general accordance with ASTM D 5084.

APPENDIX E

FEE SCHEDULE

2019 Schedule of Fees
Bunnell-Lammons Engineering, Inc.

Personnel	Hourly Rate
Staff Engineering Technician, per hour	$66.00
Senior Engineering Technician, per hour	$72.00
Chief Engineering Technician, per hour	$83.00
Land Development Drafting, per hour	$76.00
Support Staff, per hour	$61.00
Engineering Associate, per hour	$107.00
Asbestos Supervisor, per hour	$104.00
Asbestos Inspector, per hour	$119.00
Staff Engineering Intern, E.I.T. / Staff Geologist Intern G.I, per hour.	$119.00
Metals Inspector, technician. per hour	$119.00
ELL Technologist, per hour	$126.00
Metals Inspector, P.E. per hour	$160.00
Civil 3D Technologist, per hour	$147.00
Project Engineer, P.E/Geologist, P.G., per hour	$147.00
Senior Engineer, P.E/Geologist, P.G., per hour	$162.00
Chief Engineer, P.E., per hour	$188.00
ELL Engineer, P.E., per hour	$189.00
Principal Engineer, P.E., per hour	$204.00

Expense and Subcontract	Rate
Mileage, per mile	$0.68
Per Diem, per day	$150.00
Monitoring Well Sampling Kit (including bailer, rope & decontamination supplies), each	$25.00
PVC Bailer Sampling Kit, (including bailer, rope & decontamination supplies), each	$35.00
Gloves-Vinyl or Latex, pair	$0.50
Gloves-Nitrile, pair	$3.00
Water Level Meter, per day	$25.00
Turbidity Meter, per day	$35.00
pH Test Equipment / Supplies, per day	$25.00
Conductivity / Temperature Probe, per day	$25.00
Submersible Sump Pump, per day	$50.00
½ HP Well Pump, per day	$50.00
High Flow Well Development Pump, per day	$25.00
Low Flow Purge Pump with Battery, per day	$25.00
Product Interface Probe, per day	$50.00
Generator, per day	$65.00
Expendable Materials & Supplies	Cost +20%
Subcontracts	Cost +20%

Schedule (SW2019)

BUNNELL LAMMONS ENGINEERING

July 17, 2019

McGill Associates
55 Broad Street
Asheville, North Carolina 28801

Attention: Mr. Mark Cathey, P.E.

Subject: **Proposal for an Environmental Monitoring Plan (EMP)**
Phase 2 C&D Expansion Area
Rutherford County Landfill, Permit #8103-CDLF-2002
Rutherford County, North Carolina
BLE Proposal No. J19-13675-02

Dear Mr. Cathey:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to submit this proposal to McGill Associates (McGill) to prepare an Environmental Monitoring Plan (EMP) for the existing landfill phase areas and for the proposed C&D Phase 2 expansion area. The EMP will be prepared in general accordance with North Carolina Rules for Solid Waste Management, 15A NCAC 13B .0544(a), including 15A NCAC 13B .0544(b) [groundwater], including 15A NCAC 13B .0544(c) [surface water], and 15A NCAC 13B .0544(d) [landfill gas]. The EMP will be prepared as two stand-alone documents which include a Water Quality Monitoring Plan (WQMP) and Landfill Gas Monitoring Plan (LGMP). The EMP will include existing monitoring infrastructure and procedures performed at the facility in the past and incorporate infrastructure and procedures required for permitting of the future development of the landfill expansion area (Phase 2).

PROJECT INFORMATION

The project information below was obtained from a request for proposal issued by McGill Associates (McGill) via email, from data provided by Odom Engineering, PLLC (Odom), and from a meeting with McGill on July 16, 2019. Additional information was obtained from a site visit on June 14, 2019 and from documents downloaded from the NCDWM portal.

The subject landfill site is located in Rutherford County, North Carolina, between the cities of Rutherfordton and Spindale with a physical address of 656 Laurel Hill Dr, Rutherfordton, North Carolina. Rutherford County owns and operates a closed Subtitle D municipal solid waste (MSW) landfill and a C&D landfill consisting of one waste unit designated Phase 1. The county plans to expand the C&D landfill in an area designated Phase 2 which is approximately 17 acres and construct one new approximate 5.5-acre C&D waste unit in the expansion area.

Several hydrogeologic studies have been performed at the landfill property by various consultants. The team of GN Richardson & Associates., Inc. (GNRA) and David Garrett Engineering and Geology (DGEG) prepared a document titled *Permit Renewal Application Rutherford County C&D Landfill Expansion* as part of an application for a permit to construct the Phase 1 C&D area in August 2000.

Additionally, DGEG prepared a document titled *MSW Facility Plan Amendment and Permit to Construct Application Rutherford County CDLF Phase 1A* as a site suitability update in July 2007.

McGill has requested that BLE prepare a proposal to prepare a limited SHR (if needed) and conduct a design hydrogeologic investigation (DHR) for the Phase 2 expansion required under North Carolina's Solid Waste Management Rules, Title 15A Section 13B .0538(b)(1-2) for a DHR. That proposal will be submitted under separate cover.

McGill has also requested that BLE prepare a proposal to prepare a comprehensive EMP for submittal to the NCDWM which consolidates the monitoring plans for the existing landfill phases with those required for the Phase 2 expansion area. We understand that the EMP will be included as part of the application for a permit to construct Phase 2 which will be prepared by McGill.

PROPOSED SCOPE OF SERVICES

The objective of this project is to prepare an EMP which will include procedures and locations for groundwater, surface water, and landfill gas monitoring as required by the following NCDWM Solid Waste Management Rules:

- Groundwater – *North Carolina Rules for Solid Waste Management, 15A NCAC 13B Rules .0544(b).*
- Surface Water – *North Carolina Rules for Solid Waste Management, 15A NCAC 13B Rule .0544(c).*
- Landfill Gas – *North Carolina Rules for Solid Waste Management, 15A NCAC 13B Rule .0544(d).*

The EMP will be developed to detect and quantify contamination, as well as to measure the effectiveness of engineered disposal systems. The groundwater, surface water, and landfill gas monitoring networks for this site will be designed to provide an early warning of a potential disposal system failure. The locations of the groundwater, surface water, and landfill gas monitoring points will be specified in the EMP.

Groundwater -- NCAC 13B Rules .0544 (b)

BLE will prepare a water quality monitoring plan (WQMP) which will include the following elements for groundwater:

- Monitoring Well Network
- Changes in Groundwater Elevations
- Monitoring Well Construction
- Monitoring Well Development
- Maintenance and Recordkeeping
- Monitoring Well Abandonment

- Detection Monitoring Program
  1. Sampling Frequency
  2. Establishment of Background Data
  3. Evaluation of Detection Monitoring Data
- Assessment Monitoring Program
- Groundwater Sampling Methodology
  1. Sample Collection
     a) Sampling Frequency
     b) Static Water Elevations
     c) Well Evacuation
     d) Sample Collection
     e) Decontamination
  2. Sample Preservation and Handling
  3. Chain-of-Custody Program
     a) Sample Labels
     b) Sample Seal
     c) Field Logbook
     d) Chain-of-Custody Record
  4. Analytical Procedures
  5. Quality Assurance and Quality Control Program
- Statistical Methods

Surface Water -- NCAC 13B Rule .0544(c)

BLE will prepare a water quality monitoring plan (WQMP) which will include the following elements for surface water:

- Sampling Locations
- Monitoring Frequency
- Surface Water Sampling Methodology
  1. Sample Collection
     a) Dipper Method
     b) Direct Method
     c) Decontamination
  2. Sample Preservation and Handling
  3. Chain-of-Custody Program
     a) Sample Labels
     b) Sample Seal
     c) Field Logbook
     d) Chain-of-Custody Record
  4. Analytical Procedures
  5. Quality Assurance and Quality Control Program

Groundwater & Surface Water Reporting -- NCAC 13B Rules .0544

BLE will prepare a plan for reporting of water quality monitoring infrastructure changes and findings:

- Groundwater Monitoring Well Installation and Abandonment
- Water Quality Reports

Landfill Gas -- NCAC 13B Rules .0544(d)

BLE will prepare a landfill gas (methane) monitoring plan (LFGMP) which will include the following elements for landfill gas:

- Monitoring Network Design and Phasing of Installation
- Monitoring Probe Design and Construction
- Monitoring Schedule
- Quality Assurance and Quality Control Procedures
- Monitoring Procedures for Structures
- Monitoring Procedures for Landfill Gas Monitoring Wells
- Landfill Gas Safety Guidelines
- Reporting
    1. Landfill Gas Monitoring Well Installation Reports
    2. Evaluation and Reporting of Landfill Gas Monitoring Results

FEE ESTIMATE

Our charges for the proposed Scope of Services will be computed from actual quantities of work performed at the unit rates shown on the attached Fee Schedule. We propose to complete this project on a time and materials basis. Our estimated fee for the scope outlined above is **$12,500**.

No contingency is included in this budget estimate to cover unexpected difficulties, delays beyond our control, or scope changes, etc. Work that exceeds the previously defined Scope of Services will not be performed without written confirmation from McGill. Expanded or additional scopes of work will be billed on a time and material basis at the rates described of the attached Fee Schedule.

SCHEDULE

Based on our present schedule, we can begin work on this project within two weeks after we receive your authorization to proceed. The anticipated project can be completed in 6 weeks assuming that the project does not have delays due to incomplete or missing facility records, survey data acquisition, or other delays beyond our control. This schedule does not include review time by Rutherford County, McGill or the NCDEQ. Please note that the EMP cannot be completed and submitted until after design of the Phase 2 landfill waste units have been finalized and submitted to BLE. However, we will provide draft versions of text, tables, and figures as working documents prior to completion of a final EMP, if requested.

ASSUMPTIONS

If BLE is provided complete electronic copies of the facility's existing WQMP and LFGMP the forensic investigations fee may be significantly reduced, depending on the completeness and quality of the documents provided. Furthermore, we assume that those plans include all information required for the operation and monitoring of the subject site including, well locations, well construction information, facility drawings, survey data, and currently utilized sampling procedures, etc. Additional work required to obtain missing or incomplete information will be performed at the unit rates shown on the attached Fee Schedule. We have assumed that BLE will not be required to attend any meetings for this project.

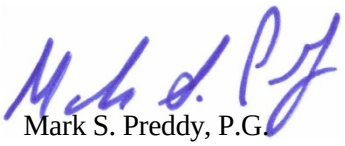
AUTHORIZATION

As our written authorization, please sign below where indicated. The Terms & Conditions of our existing Consulting Services Agreement dated January 22, 2013 are hereby adopted.

We appreciate the opportunity to serve as your hydrogeological and geotechnical consultant at this site. If you have any questions, please do not hesitate to contact us at (864) 288-1265.

Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.

Andrew W. Alexander, P.G., RSM
Consultant / Senior Hydrogeologist



Mark S. Preddy, P.G.
Consultant / Senior Hydrogeologist

_____ _____

Mr. Mark Cathey, P.E. Date

_____

Authorizing Signature – McGill Associates, P.A.

cc: Jeff Helvey, P.E.

Attachments: Fee Schedule

https://blecorp.sharepoint.com/sites/sw/files/rutherford county nc landfill/13675-02 emp/proposal emp/proposal mcgill for rclf phase 2cdlf emp rev1.docx

FEE SCHEDULE

2019 Schedule of Fees
Bunnell-Lammons Engineering, Inc.

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Chief Engineering Technician, per hour	$83.00
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Engineering Associate, per hour	$107.00
Asbestos Supervisor, per hour	$104.00
Asbestos Inspector, per hour	$119.00
Staff Engineering Intern, E.I.T. / Staff Geologist Intern G.I, per hour.	$119.00
Metals Inspector, technician. per hour	$119.00
ELL Technologist, per hour	$126.00
Metals Inspector, P.E. per hour	$160.00
Civil 3D Technologist, per hour	$147.00
Project Engineer, P.E/Geologist, P.G., per hour	$147.00
Senior Engineer, P.E/Geologist, P.G., per hour	$162.00
Chief Engineer, P.E., per hour	$188.00
ELL Engineer, P.E., per hour	$189.00
Principal Engineer, P.E., per hour	$204.00

Expense and Subcontract	Rate
Mileage, per mile	$0.68
Per Diem, per day	$150.00
Monitoring Well Sampling Kit (including bailer, rope & decontamination supplies), each	$25.00
PVC Bailer Sampling Kit, (including bailer, rope & decontamination supplies), each	$35.00
Gloves-Vinyl or Latex, pair	$0.50
Gloves-Nitrile, pair	$3.00
Water Level Meter, per day	$25.00
Turbidity Meter, per day	$35.00
pH Test Equipment / Supplies, per day	$25.00
Conductivity / Temperature Probe, per day	$25.00
Submersible Sump Pump, per day	$50.00
½ HP Well Pump, per day	$50.00
High Flow Well Development Pump, per day	$25.00
Low Flow Purge Pump with Battery, per day	$25.00
Product Interface Probe, per day	$50.00
Generator, per day	$65.00
Expendable Materials & Supplies	Cost +20%
Subcontracts	Cost +20%

Schedule (SW2019)

BUNNELL LAMMONS ENGINEERING

July 17, 2019

McGill Associates
55 Broad Street
Asheville, North Carolina 28801

Attention: Mr. Mark Cathey, P.E.

Subject: **Proposal to Provide Construction Quality Assurance (CQA) Services**
Rutherford County Landfill
Construction of Phase No. 2 C&D Landfill
Rutherford County, NC
BLE Project No. J19-13675-03

Dear Mr. Cathey:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to present this proposal to provide construction quality assurance (CQA) services for the construction of the Phase No. 2 C&D Landfill at the Rutherford County Landfill, North Carolina. This proposal presents our understanding of the proposed construction, the scope of CQA monitoring and testing services as outlined in the project documents, our proposed staffing, and our fee estimate.

PROJECT INFORMATION

The project information below was obtained from a request for proposal issued by McGill Associates (McGill) via email, from data provided by Odom Engineering, PLLC (Odom), and from a meeting with McGill on July 16, 2019. Additional information was obtained from a site visit on June 14, 2019 and from documents downloaded from the NCDWM portal.

The subject landfill site is located in Rutherford County, North Carolina, between the cities of Rutherfordton and Spindale with a physical address of 656 Laurel Hill Dr, Rutherfordton, North Carolina. Rutherford County owns and operates a closed Subtitle D municipal solid waste (MSW) landfill and a C&D landfill consisting of one waste unit designated Phase No. 1. The county plans to expand the C&D landfill in an area designated Phase 2 which is approximately 17 acres in size and construct one new approximately 5.5-acre C&D waste unit in the expansion area. The waste unit design and CQA Plan will be prepared by McGill.

We have not been furnished with construction drawings and our proposal is based on our experience at other similar sites. The constructed waste unit in the Phase No. 2 expansion area is assumed to occupy approximately 5.5 acres (239,580 sq. ft.) north of the existing Phase No. 1 waste unit. The proposed construction may include installing subsurface underdrains, connecting existing all-weather access roads with new 1,100 feet of proposed access road (assumed), and improving approximately 800 feet of an existing all-weather access road (assumed). We assume that earthwork cut and structural fill will be required to reach the design subgrade elevations.

PROPOSED SCOPE OF SERVICES

The required scope of work consists of monitoring and documenting of the Phase No. 2 earthwork grading and construction. We will prepare a CQA report at the end of our field operations as required by the rules of the North Carolina Department of Environmental Quality (NCDEQ), and as outlined in the project specifications and the CQA Plan (not yet prepared by McGill). The CQA report for Phase No. 2 will be submitted in one volume. The final CQA documentation will be compiled and formally submitted within one week following Phase No. 2 completion. The report will be submitted to Rutherford County and McGill for review and approval prior to finalization.

Geotechnical laboratory testing of samples for plasticity, particle size analysis, Standard Proctor compaction tests, and permeability will be performed by our in-house laboratory.

Field testing, sampling, and laboratory testing for the project will be as follows:

Subgrade Structural Fill:

The earthwork required to reach the design subgrade elevation in the phase is expected to require both excavation and structural fill. In-place density tests are required on the structural fill and subgrade needed to reach phase subgrade elevations. We estimate 32,000 cy of structural fill could be needed for the construction of Phase No. 2. The CQA personnel will perform the following:

--	• Monitor proofrolling and suitability of structural fill soils
7	• Standard Proctor, ASTM D 698 (1 per 5,000 cy)
7	• Natural moisture content, ASTM D 2216 (1 per 5,000 cy)
--	• In-place nuclear density or drive tube density, ASTM D 2937/ASTM D 6938 (one per 40,000 sf per lift)

Landfill Base Layer Testing:

For budgeting purposes, we have provided a fee estimate that assumes the maximum number of tests for both the Constructed and In-situ Landfill Base Layer.

Constructed Base Layer Testing:

11	• Grain size analysis, ASTM D422 (1 per 3,000 cy)
64	• Field Moisture Content ASTM D2216 (1 per 40,000 sf per lift)
64	• Field drive-tube Density test, ASTM D2937 (1 per 40,000 sf per lift)
3	• Standard Proctor, ASTM D698 (1 per 10,000 cy or change in material)
3	• Permeability on UD samples, ASTM D5084 (1 per 10,000 cy or change in material)
11	• Atterberg Limits, ASTM D4318 (1 per 3,000 cy)

In-situ Landfill Base Layer Testing:

8	• Field drive-tube Density test, ASTM D 2937 (1 per 200 ft x 200 ft grid)
7	• Atterberg Limits, ASTM D 4318 (1 per 200 ft x 200 ft grid)
7	• Grain site analysis, ASTM D 422 (1 per 200 ft x 200 ft grid)
6	• Permeability tests on UD samples (1 per 50,000 sf or change in material)

PROJECT STAFFING

We have assembled an experienced technical staff for on-site quality assurance monitoring teamed with our engineering staff.

We have assumed that one Senior Technician will be capable of monitoring the placement and compaction of structural fill, as well as the proof-rolling of the subgrade on a full-time basis. We recommend the utilization of one Senior Technician on-site for 48 days during the construction of the Landfill Base layer in Phase No. 2. The actual number of days will depend on the construction progress.

The CQA engineer, Mr. Jeff Helvey, P.E., will review all testing and inspection documents and present reports of construction observations by our technicians. The CQA engineer will also be available, as required, on an on-call basis. One engineering site visit is planned for project. Summaries of our observations of the site activities and testing will be prepared by the technicians, reviewed by the CQA engineer and submitted to the designated distribution list.

The CQA project manager, a professional engineer licensed in North Carolina, will coordinate project activities, review all testing and inspection documents, and attend monthly progress meetings. It is assumed that 6 meetings will be conducted over the 48-day project schedule. The geologic services manager, Mr. Andrew Alexander, P.G., RSM will coordinate geologic observations and will serve as client services manager and project director.

FEE ESTIMATE

The attached fee estimate, in the amount of **$65,960.00** for providing the Construction Quality Assurance services for the proposed C&D cell is based on information provided to us and an estimated maximum of 48 days required on site to perform testing for the proposed landfill phase, the one required geologic observation, and related infrastructure. The actual fee will be computed from the staff time and units expended in accordance with the unit rates shown on the attached fee estimate. Mobilization travel time charges for personnel will be initiated from Greenville, South Carolina and/or Asheville, North Carolina. Monthly invoices will be submitted for the work performed.

AUTHORIZATION

As our written authorization, please sign below where indicated. The Terms & Conditions of our existing Consulting Services Agreement dated January 22, 2013 are hereby adopted.

CLOSING

We appreciate the opportunity to be continuing assistance at Rutherford County and to provide the required CQA and geological services for this project. We hope that you find this proposal acceptable for your needs. If you have any questions regarding this proposal, please do not hesitate to contact us at (864) 288-1265.

Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.

Andrew W. Alexander, P.G., RSM
Consultant / Hydrogeologist

Jeffrey C. Helvey, P.E.
Principal Engineer

_____ _____
Mr. Mark Cathey, P.E. Date

_____
Authorizing Signature – McGill Associates, P.A.

CC: Dan Bunnell, P.E.-- BLE

Attachments: Fee Estimate

https://blecorp.sharepoint.com/sites/sw/files/rutherford county nc landfill/13675-03 cqa/proposal cqa/proposal mcgill rclf phase 2cdlf cqa r3.docx

FEE ESTIMATE

FEE ESTIMATE

RUTHERFORD COUNTY C&D LANDFILL
CONSTRUCTION OF PHASE NO. 2
RUTHERFORD COUNTY, NORTH CAROLINA

Bunnell-Lammons Engineering Job No. J19-13675-03

Item	Units	Rate	On-site Testing, PM, & Site Visits (48 days)	Summary Report	Estimated Fee Total
Engineering Services					
Principal Engineer	per hour	$204.00	6	6	$ 2,448.00
Senior Engineer	per hour	$162.00	20	15	$ 5,670.00
Consultant / Hydrogeologist	per hour	$188.00	34	9	$ 8,084.00
Staff Engineer	per hour	$119.00	34	36	$ 8,330.00
Senior Technician	per hour	$72.00	384	---	$ 27,648.00
Drafting	per hour	$76.00	6	3	$ 684.00
Administrative Support	per hour	$61.00	20	27	$ 2,867.00
					$ 55,731.00
Travel Expenses					
Mileage, per vehicle	per mile	$0.68	1,950		$ 1,326.00
					$ 1,326.00
Laboratory Testing					
Particle Size w/o hydrometer	each	$86.00	18		$ 1,548.00
Atterberg Limits	each	$86.00	18		$ 1,548.00
Natural Moisture Content	each	$14.00	7		$ 98.00
Hydraulic Conductivity	each	$273.00	9		$ 2,457.00
Standard Proctor Compaction	each	$147.00	10		$ 1,470.00
					$ 7,121.00
Shipping/ Handling Expenses					
Materials/ Supplies	per exp.	allow	$56.00	$280.00	$ 336.00
Shipping	per exp.	allow	$960.00	$480.00	$ 1,440.00
					$ 1,776.00
				ESTIMATED PROJECT TOTAL	**$ 65,960.00**