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SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE



December 30, 2009

Ms. Elizabeth S. Werner
Hydrogeologist
Solid Waste Section
Division of Waste Management
North Carolina Department of Environment and Natural Resources
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Fac/Perm/Co ID #	Date	Doc ID#
44-03	1,22,10	9358

RE: Groundwater Assessment Monitoring Plan
Francis Farm Landfill, Permit Number 44-03
Haywood County, North Carolina

Dear Ms. Werner:

On behalf of Haywood County, McGill Associates, in conjunction with Bunnell-Lammons, Inc (BLE, Inc.), is pleased to present to you this modification to the Groundwater Monitoring Assessment Plan for the Francis Farm Landfill. The attached BLE, Inc. letter, figure, and table shows the estimated groundwater elevations at the site, proposed monitoring well locations, and estimated depths of the proposed wells. McGill Associates and BLE, Inc. will continue to work with the North Carolina Department of Environment and Natural Resources (NCDENR) to finalize the Groundwater Monitoring Assessment Plan.

At the December 28, 2009, Haywood County Board of Commissioners meeting, the Commissioners discussed several items pertaining to the Francis Farm Landfill. The Commissioners unanimously agreed that the groundwater assessment work at the Francis Farm Landfill must continue as soon as possible. The following work items were discussed:

- 1) The Commissioners agreed to proceed with implementation of the Groundwater Assessment Plan upon receiving final approval of the plan from NCDENR. As noted in the attached BLE, Inc. letter, the assessment implementation schedule will be submitted to NCDENR within 60 days of approval of the modified plan.
- 2) The Commissioners agreed to proceed with the development of the gas collection and combustion project. Plans for this system were submitted to the NCDENR-Solid Waste Section, Permitting Branch on November 6, 2009. Upon NCDENR approval of the construction plans, the County will advertise for bids for the installation of 21 gas collection wells at the Francis Farm Landfill.

Engineering • Planning • Finance

McGill Associates, P.A. • P.O. Box 2259, Asheville, NC 28802 • 55 Broad Street, Asheville, NC 28801

828-252-0575 • Fax: 828-252-2518

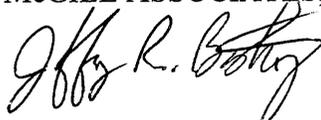
9358

Digital information is being transmitted to you via email and a hard copy of all items will be sent to you via U.S. Mail. Enclosed are a hard copy and a digital copy of the following:

- 1) McGill Associates letter
- 2) BLE, Inc. letter including Figure 1 and Well Depth Table.

We look forward to continuing to work with you to address the concerns of NCDENR regarding implementation of the Groundwater Monitoring Assessment Plan at the Francis Farm Landfill in Haywood County. Please let us know if you have additional questions or if you require additional information.

Sincerely,
McGILL ASSOCIATES, P.A.



JEFFREY R. BISHOP, PE
Senior Project Manager

Enclosures

cc: David Cotton, Haywood County Manager, w/enc
Stephen King, Haywood County Solid Waste Director, w/enc
David Francis, Haywood County Tax Assessor, w/enc
Andrew Alexander, PG, BLE, Inc., w/enc
Mark Poindexter, NCDENR Solid Waste Section, w/enc
Ervin Lane, NCDENR Environmental Compliance Branch, w/enc
Allen Gaither, NCDENR Solid Waste Section, w/enc
Deb Aja, NCDENR Solid Waste Section, w/enc
Andrea Keller, NCDENR Solid Waste Section, w/enc

BLE
BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL, ENVIRONMENTAL AND CONSTRUCTION MATERIALS CONSULTANTS

December 30, 2009 (VIA Email)

North Carolina Department of Environment and Natural Resources
Division of Waste Management – Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Attention: Ms. Elizabeth S. Warner
Hydrogeologist

**Subject: Proposed Well Locations and Depths for the
Groundwater Assessment Monitoring Plan
Closed Francis Farm Landfill**
Haywood County, North Carolina
BLE Project Number J09-1957-11
Permit Number 44-03

Dear Ms. Warner:

As specified in our letter titled *Comments on the Proposed 2004 Groundwater Assessment Monitoring Plan Closed Francis Farm Landfill* dated November 9, 2009 [submitted by McGill Associates (McGill)]; Bunnell-Lammons Engineering, Inc. (BLE) has prepared the attached assessment map and table for NCDENR review and comment. We would prefer to discuss the project with you verbally prior to issuance of a NCDENR letter. It may be preferable to the NCDENR to conduct this assessment using a phased approach and possibly eliminate some of the proposed wells from the plan.

As described in our letter we have prepared the attached map and table by merging the on-site and off-site survey/GIS data from multiple sources. It now appears that the groundwater flow at the site is radial with the center of the radius near the monitoring well MW-5 location (Figure 1).

Based on our analysis, we have relocated several of the proposed on- and off-site well locations and eliminated some of the proposed wells. The proposed groundwater monitoring wells are now designated MW-6 through MW-15 (Figure 1). As requested by the NCDENR, we have prepared a table of proposed well depths (Table 1) as part of this submittal. Please note that these data are approximate, actual depths will be determined in the field based on the occurrence of groundwater. Actual well locations may be changed based on factors such as drill rig accessibility, etc.

We have provided a sample property access and well installation agreement to Haywood County and they are currently drafting site-specific agreements to facilitate off-site access. We understand that Haywood County has contacted the subject private property owners and that property access negotiations are in progress.

With concurrence of the NCDENR, we propose to prepare a schedule for implementation of the proposed plan after revised plan elements herein are approved by the NCDENR. As previously stated, we would



Proposed Well Locations & Depths for the Groundwater Assessment Plan
Francis Farm Landfill - Haywood County, North Carolina

December 30, 2009
BLE Project Number J09-1957-11

prefer to discuss the project with you verbally prior to issuance of a NCDENR letter. We propose to submit an implementation schedule to the NCDENR within 60 days of receiving NCDENR approval of the revised plan elements.

We appreciate the opportunity to work with Haywood County, McGill, and the NCDENR on this project. Please contact us at (864) 288-1265 to discuss this project or if you have any questions or comments regarding this letter.

Sincerely,

BUNNELL-LAMMONS ENGINEERING, INC.

Andrew W. Alexander, P.G., RSM
Senior Hydrogeologist
Geological Services Manager



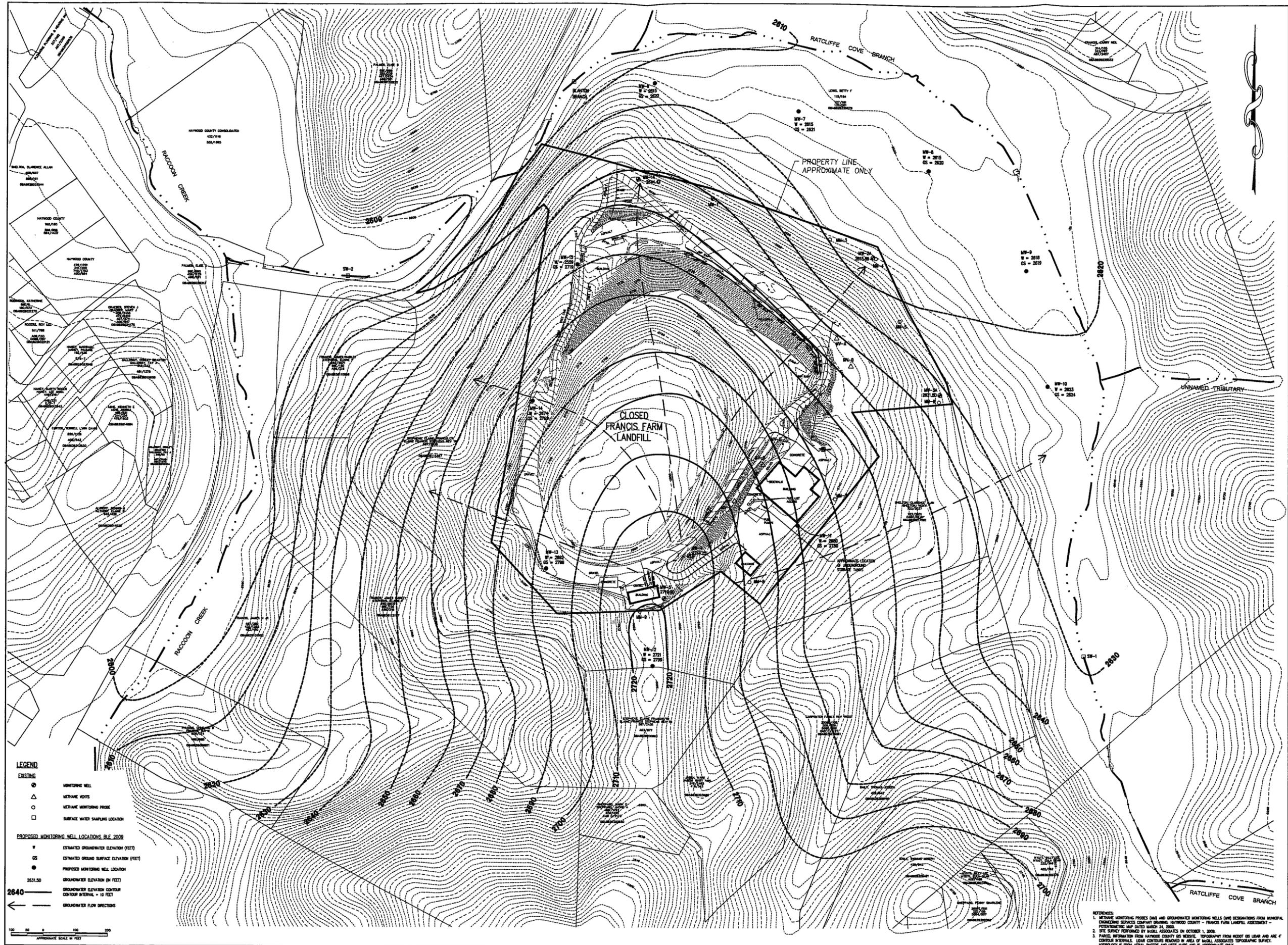
Trevor J. Benton, P.G.
Project Hydrogeologist



cc: Mr. Stephen King – Haywood County
Mr. Jeff Bishop, P.E. – McGill Associates
Ms. Andrea Keller – NCDENR Asheville

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FIGURE



LEGEND

EXISTING

- MONITORING WELL
- △ METHANE VENTS
- METHANE MONITORING PROBE
- SURFACE WATER SAMPLING LOCATION

PROPOSED MONITORING WELL LOCATIONS BLE 2009

- ▽ ESTIMATED GROUNDWATER ELEVATION (FEET)
- OS ESTIMATED GROUND SURFACE ELEVATION (FEET)
- PROPOSED MONITORING WELL LOCATION
- 2631.50 GROUNDWATER ELEVATION (IN FEET)
- GROUNDWATER ELEVATION CONTOUR INTERVAL = 10 FEET
- ← GROUNDWATER FLOW DIRECTIONS

2640

APPROXIMATE SCALE IN FEET

REFERENCES:

1. METHANE MONITORING PROBES (MM) AND GROUNDWATER MONITORING WELLS (MW) DESIGNATIONS FROM MUNICIPAL ENGINEERING SERVICES COMPANY DRAWING: HAYWOOD COUNTY - FRANCIS FARM LANDFILL ASSESSMENT - PRELIMINARY MAP DATED MARCH 14, 2008.
2. SITE SURVEY PERFORMED BY HUSALL ASSOCIATES ON OCTOBER 1, 2008.
3. FINISH INFORMATION FROM HAYWOOD COUNTY GIS SERVICES. TOPOGRAPHY FROM MOBILE GIS LEAS AND ARE 4' CONTOUR INTERVALS. LEAS CONTOURS DERIVED IN AREA OF WELLS ASSOCIATED TOPOGRAPHIC SURVEY. HYDROLOGY IS FROM AERIAL PHOTOS AND USGS MAPS AND IS APPROXIMATE ONLY.

NO.	REVISIONS DESCRIPTION	BY	DATE

DRAWN: ACE	DATE: 12-15-08
CHECKED: ANA	CAD FILE: HCFPL-11PWL
APPROVED: [Signature]	JOB NO: P08-0816

BLE ENGINEERING, INC.

BUNNELL-LAMBSON ENGINEERING, INC.

1000 WEST GARDNER ROAD
 FAYETTEVILLE, NC 28404
 PHONE: 704-335-1111 FAX: 704-335-1112

ESTIMATED GROUNDWATER ELEVATION MAP ON AUGUST 24, 2009 WITH PROPOSED MONITORING WELL LOCATIONS
 BLE ASSESSMENT PLAN - DECEMBER 2009
 CLOSED FRANCIS FARM LANDFILL
 HAYWOOD COUNTY, NORTH CAROLINA

TABLE

Table 1
Well Construction and Groundwater Elevation Data
 Closed Francis Farm Landfill
 Haywood County, North Carolina
 Permit Number 44-03
 BLE Project No. J09-1957-11

Well	Existing or Proposed	Well Location	Northing (feet)	Easting (feet)	Meas. Pt. Elevation	*Gnd. Surface Elevation	*Depth to Water (bgs)	Depth to Water (bmp)	*Water Elevation	*Total Borehole Depth (bgs)	Screen		Well Type	Well Monitors	Top of Rock Depth (bgs)	Top of Rock Elev.
											Depth (bgs)	Elevation				
MW-1	Existing	On-Site	662,529.13	822,317.13	2,664.49	2,663.52	NM	NM	2640.00	UK	UK	UK	UK	UK	UK	UK
MW-1A	Existing	On-Site	662,590.93	822,083.22	2,689.45	2,687.81	43.39	45.03	2644.42	UK	UK	UK	UK	UK	UK	UK
MW-2A	Existing	On-Site	662,347.09	822,815.02	2,643.71	2,641.13	25.27	27.85	2615.86	27.0	2629.1	2614.1	II	PWR/BR	18.0	2623.1
MW-3A	Existing	On-Site	661,899.08	823,023.40	2,672.73	2,671.57	40.07	41.23	2631.50	UK	UK	UK	UK	UK	UK	UK
MW-4	Existing	On-Site	661,420.16	822,245.64	2,789.12	2,787.59	70.34	71.87	2717.25	UK	UK	UK	UK	UK	UK	UK
MW-5	Existing	On-Site	661,286.37	822,167.96	2,799.37	2,797.42	77.52	79.47	2719.90	94.0	2724.3	2709.3	II	PWR	89.0	2708.4
MW-6	Proposed	Off-Site	TBD	TBD	TBD	2,622.00	7.00	TBD	2615.00	17.0	2620.0	2605.0	TBD	TBD	TBD	TBD
MW-7	Proposed	Off-Site	TBD	TBD	TBD	2,621.00	6.00	TBD	2615.00	16.0	2619.0	2605.0	TBD	TBD	TBD	TBD
MW-8	Proposed	Off-Site	TBD	TBD	TBD	2,620.00	5.00	TBD	2615.00	15.0	2618.0	2605.0	TBD	TBD	TBD	TBD
MW-9	Proposed	Off-Site	TBD	TBD	TBD	2,619.00	1.00	TBD	2618.00	11.0	2617.0	2608.0	TBD	TBD	TBD	TBD
MW-10	Proposed	Off-Site	TBD	TBD	TBD	2,624.00	1.00	TBD	2623.00	11.0	2622.0	2613.0	TBD	TBD	TBD	TBD
MW-11	Proposed	Off-Site	TBD	TBD	TBD	2,750.00	70.00	TBD	2680.00	80.0	65.0	80.0	2685.0	TBD	TBD	TBD
MW-12	Proposed	Off-Site	TBD	TBD	TBD	2,799.00	78.00	TBD	2721.00	88.0	73.0	88.0	2726.0	TBD	TBD	TBD
MW-13	Proposed	On-Site	TBD	TBD	TBD	2,799.00	107.00	TBD	2692.00	117.0	102.0	117.0	2697.0	TBD	TBD	TBD
MW-14	Proposed	On-Site	TBD	TBD	TBD	2,769.00	95.00	TBD	2674.00	105.0	90.0	105.0	2679.0	TBD	TBD	TBD
MW-15	Proposed	On-Site	TBD	TBD	TBD	2,719.00	160.00	TBD	2559.00	170.0	155.0	170.0	2564.0	TBD	TBD	TBD

August 24, 2009

Notes:
 *Values estimated for Proposed wells.
 **Estimated depths for proposed wells - will be determined in the field.
 All values shown to the nearest 0.1-ft have been rounded.
 bgs = below ground surface.
 bmp = below measuring point.

Water levels measured on 8/24/09 by Pace.
 Measuring Point Elevation is top of casing.
 NM = Not measured
 UK = Unknown

BR & PWR = Bedrock & Partially Weathered Rock
 SAP = Saprolite
 II = Type II well