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Solid Waste Section
Asheville Regional Office

APPROVED DOCUMENT
June 10, 2011
Division of Waste Management
Solid Waste Section

Date **June 13, 2011** By CY Frost Department of Environment and Natural Resources
Division of Waste Management - Solid Waste Section
2090 U.S. Highway 70
Swannanoa, North Carolina 28778

Attention: Mr. Larry Frost
Larry.Frost@ncdenr.gov

Reference: Operations Plan Permit Modification – Chimney Drain Letter
Retired Ash Basin (RAB) Ash Landfill
Duke Energy - Allen Steam Station, Belmont, North Carolina
S&ME Project No. 1356-10-009A, Task 05
S&ME Engineering License No. F-0176

Dear Mr. Frost:

On behalf of Duke Energy (Duke), S&ME Inc., (S&ME) is submitting this letter to the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Waste Management providing a description and a typical detail of a chimney drain to be considered as an addition to the Permit Modification submitted on May 23, 2011. We prepared this letter based on correspondence between Mr. Larry Frost of NCDENR and Mr. Chris Ussery of Duke on Wednesday June 1, 2011.

The intent of the chimney drain addition is to improve contact water management within the landfill by providing a more direct drainage path from the landfill deck and active face areas to the leachate collection system (LCS). A general chimney drain plan is provided in the attached Figures 1 and 2 to illustrate the chimney drain concept.

The proposed chimney drains will generally consist of horizontal perforated HDPE pipes surrounded by a drainage aggregate media at the chimney drain base functioning as an infiltration zone over the LCS system. As operations progress, vertical perforated pipe will be connected to extend the chimney drain upward to the top deck and active face. Pipe extensions will be surrounded with a drainage aggregate media. Pipe fittings may be utilized to extend chimney drains to the active face.

The proposed chimney drains will be located and installed directly over the existing LCS laterals or center corridors to provide a more direct drainage path to the LCS. However, chimney drain pipes shall not be directly connected to LCS lateral or header pipes. We note that the proposed chimney drains will be placed on top of the existing liner system LCS header, corridors, and protective soil layer adjacent to the LCS header and corridors.

Chimney drain installation will not encroach on the existing liner system and geosynthetics, which will remain protected by the overlying LCS and protective soil cover materials. As the location and position of landfill operations within each cell and the landfill influence the degree of contact water management necessary, we propose that chimney drains will be installed to fit field conditions. Specifically, we propose that chimney drain dimensions and locations will be established by the landfill owner/operator in the field with the following considerations:

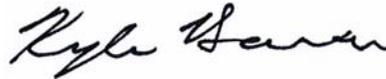
- chimney drains shall be positioned only directly over LCS system corridor and lateral locations;
- chimney drain piping shall not be directly connected to the LCS piping;
- chimney drains shall be positioned no closer than 50 feet from an exterior slope, with the exception of sump area drainage features; and
- drainage media and/or interfaces between drainage media shall be designed to provide filtration and limit clogging.

Please contact us at your convenience if you have any questions or need additional information.

Sincerely,
S&ME, Inc.



Ken Daly, P.E.
Senior Project Engineer

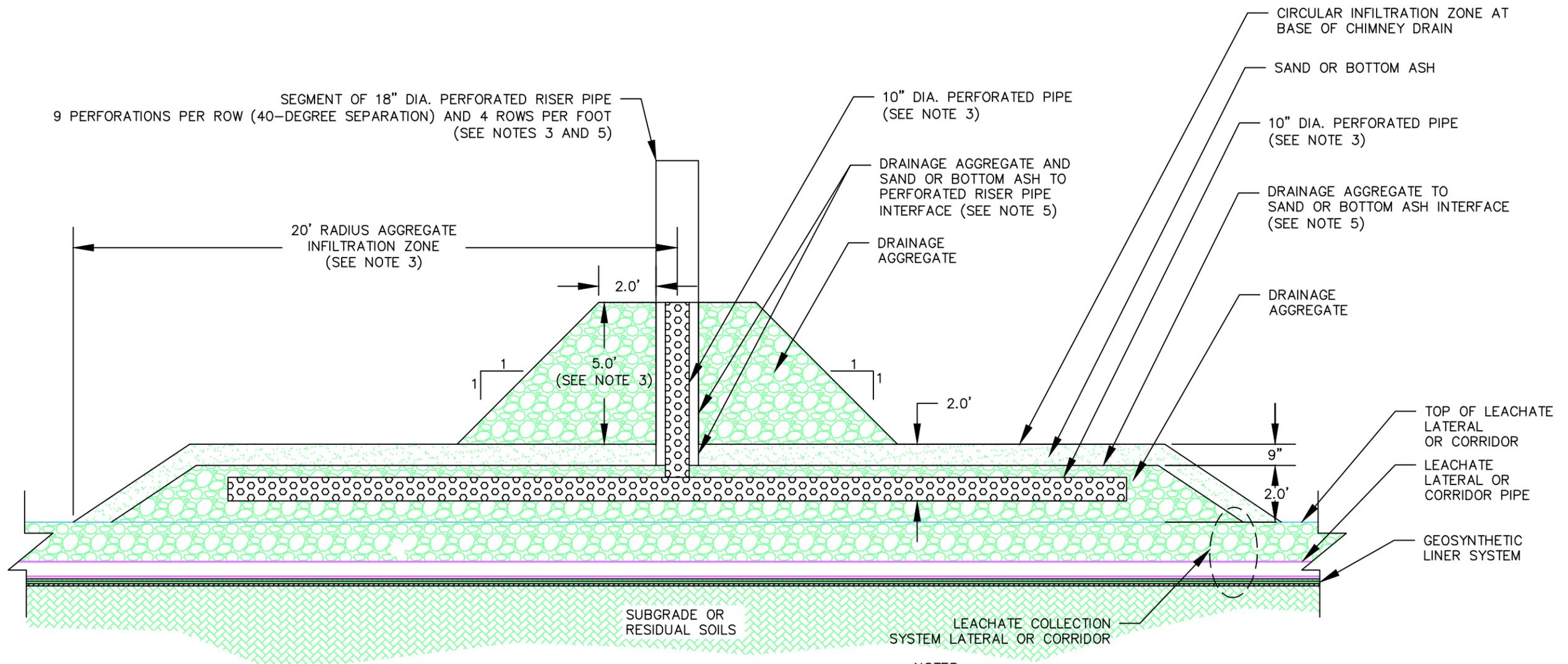


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Chris Ussery, Duke Energy (Chris.Ussery@duke-energy.com)

Attachments: Figures 1 and 2



NOTES:

1. CHIMNEY DRAIN SHALL BE LOCATED DIRECTLY OVER LCS LATERALS AND/OR CORRIDORS. THE CHIMNEY DRAIN LOCATION MAY BE ESTABLISHED BY THE OPERATOR.
2. CHIMNEY DRAIN PIPES SHALL NOT BE DIRECTLY CONNECTED TO LCS LATERAL OR HEADER PIPES.
3. DETAIL ILLUSTRATES THE TYPICAL CHIMNEY DRAIN CONCEPT ONLY. DIMENSIONS AND MATERIALS MAY BE VARIED AND ADJUSTED TO FIT FIELD CONDITIONS AND ADAPT TO FIELD PERFORMANCE.
4. CHIMNEY DRAIN SHALL BE POSITIONED NO CLOSER THAN 50 FEET FROM AN EXTERIOR SLOPE, WITH THE EXCEPTION OF SUMP AREA DRAINAGE FEATURES.
5. DRAINAGE MEDIA AND/OR INTERFACES BETWEEN DRAINAGE MEDIA SHALL BE DESIGNED TO PROVIDE FILTRATION AND LIMIT CLOGGING.

DATE: 6-9-11
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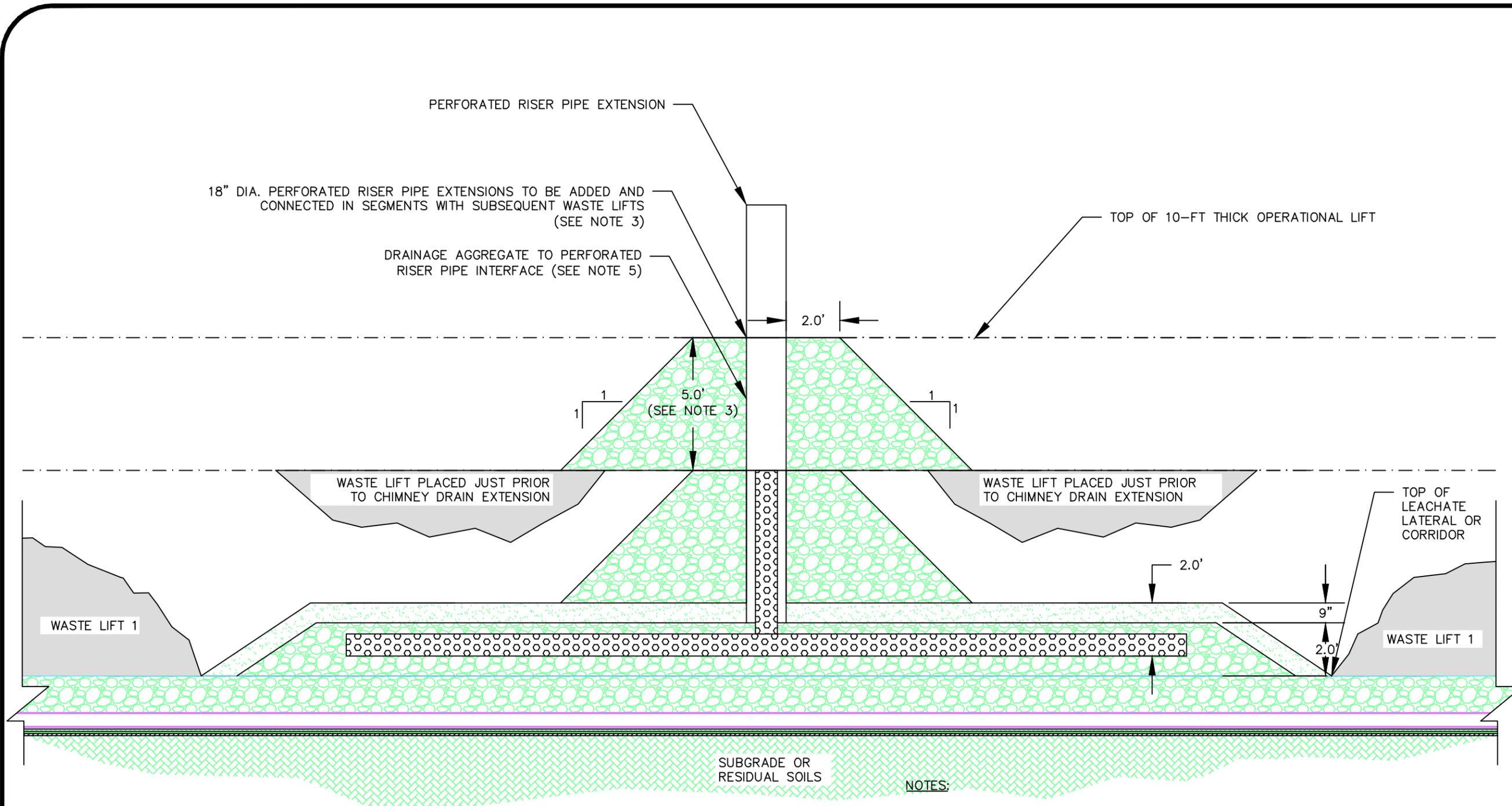
9751 SOUTHERN PINE BLVD.
 CHARLOTTE, N.C. 28273
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CHIMNEY DRAIN - STAGE 1
RAB ASH LANDFILL
 ALLEN STEAM STATION
 BELMONT, NORTH CAROLINA

FIGURE NO.

1



PERFORATED RISER PIPE EXTENSION

18" DIA. PERFORATED RISER PIPE EXTENSIONS TO BE ADDED AND CONNECTED IN SEGMENTS WITH SUBSEQUENT WASTE LIFTS (SEE NOTE 3)

DRAINAGE AGGREGATE TO PERFORATED RISER PIPE INTERFACE (SEE NOTE 5)

TOP OF 10-FT THICK OPERATIONAL LIFT

5.0'
(SEE NOTE 3)

WASTE LIFT PLACED JUST PRIOR TO CHIMNEY DRAIN EXTENSION

WASTE LIFT PLACED JUST PRIOR TO CHIMNEY DRAIN EXTENSION

TOP OF LEACHATE LATERAL OR CORRIDOR

WASTE LIFT 1

WASTE LIFT 1

SUBGRADE OR RESIDUAL SOILS

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SCALE: N.T.S. PROJECT NO. 1356-10-009A ENGINEERING LICENSE NO. F-0176	DATE: 6-9-11 DRAWN BY: KB CHECKED BY:	 9751 SOUTHERN PINE BLVD. CHARLOTTE, N.C. 28273 (704)523-4726 WWW.SMEINC.COM	CHIMNEY DRAIN - STAGE 2 RAB ASH LANDFILL ALLEN STEAM STATION BELMONT, NORTH CAROLINA
FIGURE NO.		2	