15A NCAC 13B .1601 is proposed for readoption with substantive changes as follows:

SECTION .1600 - REQUIREMENTS FOR MUNICIPAL SOLID WASTE LANDFILL FACILITIES
(MSWLFs)

15A NCAC 13B .1601 PURPOSE, SCOPE, PURPOSE AND APPLICABILITY

(a) Purpose. The purpose Rules of this Section is to regulate shall govern the permitting procedures, siting, design, construction, performance standards, operation, closure closure, and post-closure of all municipal solid waste landfill (MSWLFs) facilities and units. MSWLFs.

(b) Scope. This Section describes the performance standards, application requirements, and permitting procedures for all municipal solid waste landfill facilities. The requirements of this Section are intended to:

(1) Establish the State standards for MSWLFs to provide for effective disposal practices and protect the public health and environment.

(2) Coordinate other State Rules applicable to landfills.

(3) Facilitate the transition for existing landfill facilities which continue to operate MSWLF units.

(c) Applicability. Owners and operators of new and existing landfill facilities that include including a MSWLF unit(s) shall conform to the requirements of this Section as follows:

(1) Municipal solid waste landfill MSWLF units which did not receive solid waste after October 9, 1991 are exempt from this Section and shall comply with the Conditions of the Solid Waste Permit, the Conditions of Permit, and Rule .0510 of this Subchapter .0510.

(2) MSWLF units that received solid waste after October 9, 1991 but stopped receiving waste before October 9, 1993 are exempt from the Rules of this Section with the exception of Rule .1627(c)(1) of this Section, and shall comply with the Solid Waste Permit, the Conditions of Permit, and Rule .0510 of this Subchapter .0510. The cap system shall be installed by October 9, 1994 and shall meet the criteria set forth in Subparagraph (c)(1) of Rule .1627 of this Section. Owners or operators of MSWLF units that fail to complete cover installation by this date will be subject to all of the requirements applicable to existing MSWLFs.

(3) Effective dates.

(A) All MSWLF units that receive waste on or after October 9, 1993, except those units that qualify for an exemption as specified in Part (c)(3)(B) of this Rule shall comply with the requirements of this Section. MSWLF units that received waste on or after October 9, 1993, and have been permitted by the Division after August 1, 2007 are subject to the requirements of this Section and the requirements for horizontal and vertical separation from waste, wetland and floodplain restrictions, liner and leachate collection system design, and maximum capacity, maximum disposal area, and maximum height pursuant to G.S. 130A-295.6 and S.L. 2007-550.

(B) A MSWLF unit that meets the conditions in Subparts (i) through (vi) of this Subparagraph is exempt from the requirements of Section .1600 other than Rule .1627. This exemption
shall not be effective unless the amendment to the federal rule 40 CFR Part 258.1 (e)(1)
and (2) extending the effective dates is published in the Federal Register as a final rule.

(i) The MSWLF unit disposed of 100 tons per day or less of solid waste between October 9,

(ii) The MSWLF unit does not dispose of more than an average of 100 TPD of solid waste
each month between October 9, 1993 and April 9, 1994.

(iii) The MSWLF unit is not on the National Priorities List (NPL) as found in Appendix B to
40 CFR Part 300, which is hereby incorporated by reference including any subsequent
amendments and editions. Copies of this material are available for inspection and may be
obtained at the Department of Environment, Health, and Natural Resources, Division of
Solid Waste Management, 401 Oberlin Road, Raleigh, N.C. at no cost.

(iv) The MSWLF unit owner and operator shall notify the Division by November 1, 1993, that
they shall stop receiving waste at their MSWLF unit before April 9, 1994. Notification to
the Division shall include a statement of compliance with all conditions specified in Part
(c)(3)(B) of this Rule.

(I) If the MSWLF unit is owned or operated by a unit of local government, notification shall
be in the form of a Resolution adopted by the Governing Board.

(II) If the MSWLF unit is privately owned or operated, the notification shall be executed by
the owner and operator or in the case of a corporation, by a corporate officer with legal
authority to bind the corporation. All signatures shall be properly attested and notarized.

(v) Waste received at the MSWLF unit shall cease prior to April 9, 1994.

(vi) MSWLF units which meet all conditions of exemption required within Subparagraph (c)(3)
of this Rule shall complete installation of the cap system in accordance with Subparagraph
(e)(1) of Rule 1627 of this Section by October 9, 1994.

MSWLF units failing to satisfy the requirements of this Section constitute open dumps, which are
prohibited under Section 4005 of RCRA. Closure of open dumps that receive household waste shall
meet the requirements of this Section.

The owner or operator Owners and operators of a MSWLF facility shall comply with any other applicable
federal, State, and local laws, rules, regulations, or other requirements.

Incorporation by Reference. References to the U.S. Code of Federal Regulations (CFR) and to U.S. Environmental
Protection Agency (EPA) Test Methods in this Section are incorporated by reference including subsequent
amendments or editions, and can be obtained free of charge at the US Government Publishing Office website at
www.gpo.gov, or the US EPA website at www.epa.gov, respectively.

History Note: Filed as a Temporary Amendment Eff. October 9, 1993, for a period of 180 days or until the
permanent rule becomes effective, whichever is sooner;
Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. April 1, 1994;

15A NCAC 13B .1602 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1602 DEFINITIONS

This Rule contains definitions for terms that appear throughout this Section; additional definitions appear in the specific Rules to which they apply. The following definitions shall apply to the Rules of this Section.

1. "Active life" means the period of operation beginning with the initial receipt of solid waste and ending at completion of closure activities in accordance with Rule .1627 of this Section.
2. "Active portion" means that part of a facility or unit that has received or is receiving wastes and that has not been closed in accordance with Rule .1627 of this Section.
3. "Aquifer" means a geological formation, group of formations, or portion of a formation capable of yielding groundwater, significant quantities of ground water to wells or springs.
4. "Areas susceptible to mass movement" means those areas characterized as having an active or substantial possibility of mass movement where the movement of earth material at, beneath, or adjacent to the MSWLF unit(s), because of natural or man-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement may include landslides, avalanches, debris slides and flows, soil fluctuation, block sliding, and rock fall.
5. "Base liner system" means the liner system installed on the MSWLF unit's foundation to control the flow of leachate.
6. "Cap system" means a liner system installed over the MSWLF unit to minimize infiltration of precipitation and contain the wastes.
7. "Environmental Professional" means a person who has received a baccalaureate or post-graduate degree from a university and has sufficient training and experience in or related to the field of study requiring investigation that enables that person to make sound professional judgements, and may include professional engineers, professional land surveyors, and licensed geologists.
8. "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.
9. "Existing MSWLF unit" means any municipal solid waste landfill unit that is receiving solid waste as of October 9, 1993 and is not a new MSWLF unit. Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management.
10. "Ground water" "Groundwater" means water below the land surface in a zone of saturation.
"Household waste" means any solid waste derived from households including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas.

"Industrial solid waste" means the term defined in G.S. 130A-290(a)(13b), solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under Subtitle C of RCRA. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/ foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste.

"Karst terranes" means areas where karst topography, with its characteristic surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind valleys.

"Landfill facility" means all contiguous land and structures, waste management unit(s), other appurtenances, and improvements on the land within the legal description of the site included in or proposed for the permit issued in accordance with this Section. Existing facilities are those facilities which were permitted by the Division prior to October 9, 1993. Facilities permitted on or after October 9, 1993 are new facilities.

"Landfill unit" means a discrete area of land or an excavation that receives a particular type of waste such as construction and demolition, industrial, or municipal solid waste, and is not a land application unit, surface impoundment, injection well, or waste pile, as defined under 40 CFR Part 257.2. Such a landfill may be publicly or privately owned, and may be located at a construction and demolition solid waste landfill facility, a MSWLF, an industrial landfill facility, or other waste management facility.

"Lateral expansion" means a horizontal expansion of the waste boundaries of an existing MSWLF unit.

"Leachate" means a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

"Liner system" means an engineered environmental control system which can incorporate filters, drainage layers, compacted soil liners, geomembrane liners, piping systems, and connected structures.

"Liquid waste" means any waste material that is determined to contain "free liquids" as defined by EPA SW 846 Test Method 9095 (Paint Filter Liquids Test).

"Licensed geologist" means licensed geologist as defined in G.S. 89E.
"Municipal solid waste landfill unit" means a discrete area of land or an excavation that receives household waste, and is not a land application unit, surface impoundment, injection well, or waste pile, as defined under 40 CFR Part 257.2. Such a landfill may be publicly or privately owned. A MSWLF unit may also be permitted to receive other types of non-hazardous solid waste. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion.

"New MSWLF unit" means any municipal solid waste landfill unit that has not received waste prior to October 9, 1993.

"Open burning" means the combustion of solid waste without:
(a) Control of combustion air to maintain adequate temperature for efficient combustion;
(b) Containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and
(c) Control of the emission of the combustion products.

"Poor foundation conditions" means those areas where features exist that indicate that a natural or man-induced event may result in a loss or reduction of foundation support for the structural components of a MSWLF unit(s).

"Professional engineer" means professional engineer as defined in G.S. 89C.

"Professional land surveyor" means professional land surveyor as defined in G.S. 89C.

"Project engineer" means the official representative of the permittee who is licensed to practice engineering in the State of North Carolina, who a professional engineer that represents the permittee and is responsible for observing, documenting, and certifying that activities related to the quality assurance of the construction of the solid waste management facility conforms to the Division approved plan, the permit to construct and associated plans and the Rules specified in of this Section. All certifications must shall bear the seal and signature of the a professional engineer and the date of certification.

"Run-off" means any rainwater that drains over land from any part of a facility.

"Run-on" means any rainwater that drains over land onto any part of a facility.

"Seasonal High Water Table" or "SHWT" means the highest level of the uppermost aquifer during a year with normal rainfall. SHWT may be determined in the field through identification of redoximorphic features in the soil profile, monitoring of the water table elevation, or modeling of predicted groundwater elevations.

"Structural components" means liners, leachate collection systems, final covers, systems to control that manage rainwater that drains over land from or onto any part of the facility or unit, and any other component used in the construction and operation of the MSWLF facility.

"Unstable area" means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill. Unstable areas may include poor foundation conditions, areas susceptible to mass movements, and Karst terranes.
"Uppermost aquifer" means the geologic formation nearest the natural ground surface that is an aquifer as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

"Waste management unit boundary" means a vertical surface located at the hydraulically downgradient limit of the unit. This vertical surface extends down into the uppermost aquifer.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1603 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1603  GENERAL APPLICATION REQUIREMENTS AND PROCESSING

(a) Applicability. An owner and operator of a MSWLF proposed or existing facility shall submit an application document as detailed in Rule .1617 of this Section according to the following criteria and scheduling requirements set forth in this Paragraph.

(1) New permit facility. An applicant for a new permit owner and operator proposing to establish a MSWLF facility according to as defined by G.S. 130A-294(a3)(1) the following criteria shall submit a Site Study and subsequently, an application for a permit to construct as set forth in Rule .1617(a) of this Section Paragraph (a) of Rule .1617. The Division shall review all permit applications in accordance with Rule .0203 of this Subchapter. An application for new permit is subject to the application fees set forth in G.S. 130A-295.8(d2).

(A) The owner and operator proposes to establish a new facility not previously permitted by the Division.

(B) The owner or operator proposes expanding the landfill facility in order to expand the MSWLF unit boundary approved in accordance with Subparagraph (a)(1) of Rule .1618.

(C) The owner or operator of an existing facility is scheduled to close an existing MSWLF unit not constructed with a base liner system and proposes to establish a new MSWLF unit.

(D) A transfer of facility ownership is proposed.

(E) A substantial change to the waste stream defined in the effective permit.

(2) Amendment to the permit. The owner and operator shall submit an application to amend the permit to construct in accordance with Rule .1617(c) of this Section for the following circumstances:

(A) A subsequent stage of landfill development. A permit to construct issued in accordance with Paragraph (c) of this Rule approves a facility plan for the life of the MSWLF facility and a set of plans for the initial phase of landfill development area development. For any subsequent stage of landfill development, the owner and operator shall prepare an application to amend the permit to construct for any subsequent phase of landfill development in accordance with Paragraph (b) of Rule .1617 and submit the amended application no less than 180 days prior to the date scheduled for commencing construction.

(B) A change in ownership or corporate structure of a permitted MSWLF facility. The owner and operator shall notify the Division in writing 30 days prior to change in ownership or corporate structure in accordance with G.S. 130A-295.2(g).

(A) At least 180 days prior to the date scheduled for commencing construction; or

(B) Five years from the issuance date of the initial permit to construct or the most recent amendment, whichever occurs first.
(3) Modifications to the permit. An owner or operator proposing changes to the plans approved in the permit shall request prior approval from the Division in accordance with Rule 1.1617(d) of this Section Paragraph (c) of Rule 1.1617.

(4) Permit for Closure and Post-Closure. The owner and operator shall prepare a permit application for closure and post-closure prior to final closure of an MSWLF unit in accordance with Rule 1.1617(e) of this Section. The closure and post-closure permit shall be subject to review every five years.

(4) Transition for existing facilities.

(A) Existing MSWLF units. The owner and operator of an existing MSWLF unit shall submit an application for continuing operation and closing the MSWLF unit. The application shall be prepared in accordance with Paragraph (d) of Rule 1.1617 and shall be submitted on or before April 9, 1994. The operation plan required in the transition application shall be prepared and submitted according to Rule 1.1625 of this Section.

(B) Lateral expansion and new MSWLF units. Construction of a lateral expansion of an existing MSWLF unit or a new MSWLF unit is subject to the application requirements for permit renewal set forth in Subparagraph (5) of this Paragraph, unless the criteria set forth in Part (1)(C) of this Paragraph is applicable.

(5) Permit renewal. The owner and operator shall prepare and submit an application for permit renewal in accordance with Paragraph (e) of Rule 1.1617 and the following:

(A) The following criteria is established for the scheduling permit renewal:

(i) Location of the MSWLF unit conforms to the requirements set forth in Items (1), (2), (3), (4), (5), and (6) of Rule 1.1622;

(ii) Construction of the MSWLF unit is approved by the effective permit and conforms to the requirements of Subparagraph (b)(1) of Rule 1.1624; and

(iii) Updated operation, closure and post-closure, and monitoring plans meet the requirements set forth in this Section.

(B) An owner or operator that demonstrates compliance with the criteria set forth in Part (A) of this Subparagraph shall submit an application five years from the issuance date of the original permit to construct or at least 180 days prior to the date scheduled for constructing a phase of landfill development not approved in the effective permit to construct, whichever occurs first.

(C) An owner or operator that cannot demonstrate compliance with the criteria set forth in Part (A) of this Subparagraph shall submit an application at least 180 days prior to the date scheduled for commencing construction of the base liner system.

(b) Application format requirements, guidelines. All applications and plans required by this Section shall be prepared in accordance with the following guidelines:

(1) The initial application shall:
(A) Contain a cover sheet, stating the project title and location, the applicant's name, and the engineer's name, address, signature, date of signature, and seal; and

(B) Contain a statement defining the purpose of the submittal signed and dated by the applicant.

(2) The text of the application shall:

(A) Be submitted in a three-ring binder;

(B) Contain a table of contents or index outlining the body of the application and the appendices;

(C) Be paginated consecutively; and

(D) Identify any revised text by noting the date of revision on the page.

(2)(3) Drawings. The engineering drawings for all landfill facilities shall be submitted using the following format:

(A) The sheet size with title blocks shall be at least 22 inches by 34 inches;

(B) The cover sheet shall include the project title, applicant's name, sheet index, legend of symbols, and the engineer's name, address, signature, date of signature, and seal; and

(C) Where the requirements do not explicitly specify a minimum scale, maps and drawings shall be prepared at a scale which adequately illustrates the subject requirements.

(3)(4) Number of copies. An applicant shall submit a minimum of one electronic copy to the Division in portable document format (pdf). Five copies of each original application document and any revisions shall be submitted to the Division. The Division may request additional copies as necessary.

(c) Permitting and public information procedures.

(1) Purpose, Scope and Applicability.

(A) Purpose. The Division shall provide for public review of and input to permit documents containing the applicable design and operating conditions. The Division shall provide for consideration of comments received and notification to the public of the final permit design.

(B) Scope. Public participation in the permitting process shall ensure that the public is informed regarding decisions affecting the management of MSWLFs located in their community. Public comments regarding permit renewals for existing facilities shall be limited to new information pertinent to the permit to construct a lateral expansion or a new MSWLF unit.

(B)(C) Applicability. Applications for a new permit to construct a new facility as defined in G.S. 130A-294(a3)(1), or permit renewals for an existing facility or for a modification to the permit involving corrective remedy selection required by Rule 1636 of this Section shall be subject to the requirements of this Paragraph. Applications submitted in
accordance with Subparagraphs (a)(2), (3)(a)(3), and (4)(a)(4)(A) of this Rule are not subject to the requirements of this Paragraph.

(2) Draft Permits.

(A) The Division shall review all permit applications for compliance with this Section and Rule .0203 of this Subchapter. Once an application is complete, the Division shall either issue a notice of intent to deny the permit to the applicant or prepare a draft permit, tentatively decide whether the permit should be issued or denied.

(B) If the Division decides the permit should be denied, issues a notice of intent to deny the permit shall be sent to the applicant. Reasons applicant, the notice shall include the reasons for permit denial shall be in accordance with Rule .0203(e) of this Subchapter and G.S. 130A-294(a)(4)c.Subchapter.

(C) If the Division tentatively decides the permit should be issued, a draft permit shall be prepared.

(D)(E) If the Division prepares a draft permit, the draft permit shall contain (either expressly or by reference) all applicable terms and conditions for the permit.

(E)(F) All draft permits shall be subject to the procedures of Subparagraphs (3) through (9)(3), (4), (5), (6), (7) and (8) of this Paragraph, unless otherwise specified in those Subparagraphs.

(3) Fact Sheets. The Division shall prepare a fact sheet for every draft permit, and shall send this fact sheet to the applicant and post the fact sheet on the Division website. The fact sheet shall include:

(A) a brief description of the type of facility or activity that is the subject of the draft permit;

(B) a description of the area to be served, the volume and characteristics of the waste stream, and a projection of the useful life of the landfill;

(C) a brief summary of the basis for the draft permit conditions, including references to statutory or regulatory provisions and supporting references to the permit application;

(D) the beginning and ending dates of the comment period under Subparagraph (4) of this Paragraph;

(E) the address where comments will be received;

(F) the name, phone number, and e-mail address of a person to contact for additional information;

(G) the procedures for requesting a public hearing; and

(H) other procedures by which the public may participate in the decision.

(A) A fact sheet shall be prepared for every draft permit or notice to deny the permit.

(B) The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit to include, when applicable:
(i) A brief description of the type of facility or activity which is the subject of the draft permit;

(ii) The type and quantity of wastes which are proposed to be or are being disposed of;

(iii) A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the permit application;

(iv) A description of the procedures for reaching a final decision on the draft permit, including:

(I) The beginning and ending dates of the comment period under Subparagraph (4) of this Paragraph and the address where comments will be received;

(II) Procedures for requesting a public hearing; and

(III) Any other procedures by which the public may participate in the final decision; and

(v) Name and telephone number of a person to contact for additional information.

(C) The Division shall send this fact sheet to the applicant and, upon request to any other person.


(A) The Division shall give public notice of each of the following: a draft permit has been prepared; a public hearing has been scheduled under Subparagraph (6) of this Paragraph; or a notice of intent to deny a permit has been prepared under Part (2)(B) of this Paragraph.

(B) No public notice is required when a request for a permit modification is denied.

(C) Public notices may describe more than one permit or permit action.

(D) Public notice of the preparation of a draft permit or a notice of intent to deny a permit shall allow at least 45 days for public comment.

(E) The Division shall give public notice of a public hearing at least 15 days before the hearing; and the notice shall contain the date, time, and place of the public hearing; a brief description of the nature and purpose of the public hearing, including the applicable rules and procedures; and a concise statement of the issues raised by the persons requesting the hearing. Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.

(F) Public notice of activities described in Part (A) of this Subparagraph shall be given by publication on the Division website; by posting in the post office and public places of the municipalities nearest the site under consideration; or by publication in a daily or weekly local newspaper of general circulation; and by any other method deemed necessary or
appropriate by the Division to give actual notice of the activities to persons potentially affected.

(A) Scope.

(i) The Division shall give public notice that the following actions have occurred:
   (I) A draft permit has been prepared; or
   (II) A public hearing has been scheduled under Subparagraph (6) of this Paragraph; or
   (III) A notice of intent to deny a permit has been prepared under Part (2)(B) of this Paragraph.

(ii) No public notice is required when a request for a permit modification is denied.

(iii) Written notice of denial shall be given to the permittee.

(iv) Public notices may describe more than one permit or permit action.

(B) Timing.

(i) Public notice of the preparation of a draft permit or a notice of intent to deny a permit shall allow at least 45 days for public comment.

(ii) Public notice of a public hearing shall be given at least 15 days before the hearing.
   (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)

(C) Methods. Public notice of activities described in Subpart (A)(i) of this Subparagraph shall be given by the following:

(i) By posting in the post office and public places of the municipalities nearest the site under consideration; or

(ii) By publication of a notice in a daily or weekly local newspaper of general circulation; and

(iii) By any other method deemed necessary or appropriate by the Division to give actual notice of the activities to persons potentially affected.

(D) Contents.

(G) General Public Notices. All public notices issued under this Part shall contain the following minimum information:

(I) Name, address and phone number of the office processing the permit action for which notice is being given;

(II) Name and address of the owner and operator applying for the permit, permittee or permit applicant and, if different, of the facility or activity regulated by the permit;

(III) A brief description of the business conducted at the facility or activity described in the permit application including the size and location of the facility and type of waste accepted;
(IV) A brief description of the comment procedures required by Subparagraphs (5) and (6) of this Paragraph, including a statement of procedures to request a public hearing (unless a hearing has already been scheduled), and other procedures by which the public may participate in the final permit decision;

(V) Name, the name, address, and telephone number of a Division contact person from whom interested persons may obtain further information; and information, including copies of draft permits and fact sheets;

(VI) A description of the time frame and procedure for making an approval or disapproval decision of the application, a final determination on this facility application approval or disapproval;

(VII) Any additional information considered necessary or proper as required by the Division.

(ii) Public Notices for Public Hearing. In addition to the general public notice described in Subpart (i) of this Part, the public notice of a public hearing shall contain the following information:

(I) Reference to the dates of previous public notices relating to the permit action;

(II) Date, time, and place of the public hearing; and

(III) A brief description of the nature and purpose of the public hearing, including the applicable rules and procedures; and

(IV) A concise statement of the issues raised by the persons requesting the hearing.

(5) Public Comments and Requests for Public Hearings. During the public comment period provided, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Division shall consider all comments in making a final permit decision. The Division shall respond to all comments as provided in Subparagraph (9) of this Paragraph. All comments shall be considered in making the final decision and shall be answered as provided in Subparagraph (9) of this Paragraph.

(6) Public Hearings.

(A) Public Hearing Criteria.

(i) The Division shall hold a public hearing on a draft permit(s) when a hearing is requested, whenever on the basis of requests, a significant degree of public interest in a draft permit(s) is determined.

(ii) The Division may also hold a public hearing at its discretion whenever such a hearing might clarify one or more issues involved in the permit decision.
(iii) Public hearings held pursuant to this Rule shall be at a location convenient to the nearest population center to the subject facility.

(iv) Public notice of the hearing shall be given as specified in Subparagraph (4) of this Paragraph.

(B) Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits The Division may be set upon the time allowed for oral statements; and may require the submission of statements in writing writing may be required. The Division shall extend the public comment period under Subparagraph (4) of this Paragraph shall automatically be extended to the close of any public hearing under this Subparagraph. The hearing officer may also extend the comment period by so stating at the hearing, when information is presented at the hearing which indicates the importance of extending the period to receive additional comments, to allow potential commentors to gather more information, to allow time for submission of written versions of oral comments made at the hearing, or to allow time for rebuttals of comments made during the hearing. The Division shall publish the end date of the extended comment period on the Division’s website.

(C) A tape the Division shall make available to the public a recording or written transcript of the hearing shall be made available to the public upon request.

(7) Reopening of the Public Comment Period.

(A) If any In response to data, information, or arguments submitted during the public comment period, appear to raise substantial new questions concerning a permit action, the Division may take one or more of the following actions:

(i) Prepare prepare a new revised draft permit, appropriately modified, under Subparagraph (2) of this Paragraph;

(ii) Prepare prepare a fact sheet or revised fact sheet under Subparagraph (3) of this Paragraph, and reopen or extend the comment period under Subparagraph (4) of this Paragraph;

(iii) Reopen or extend the comment period under Subparagraph (4) of this Paragraph to give interested persons an opportunity to comment on the information or arguments submitted.

(B) Comments filed during the reopened comment period shall be limited to the information that was revised in the draft permit following the original comment period. substantial new questions that caused its reopening. The public notice shall be in accordance with under Subparagraph (4) of this Paragraph and shall define the scope of the reopening.

(C) Public notice of any of the actions of this Subparagraph shall be issued under Subparagraph (4) of this Paragraph.

(8) Final Permit Decision.
(A) After the close of the public comment period under Subparagraph (4) of this Paragraph on a draft permit or a notice of intent to deny a permit, the Division shall issue a final permit decision. The Division shall notify the applicant and each person who has submitted a written request for notice of the final permit decision. For the purposes of this Subparagraph, a final permit decision means a final decision to issue, deny, or modify a permit.

(B) A final permit decision shall become effective upon the date of the service of notice of the decision unless a later date is specified in the decision.

(9) Response to Comments.

(A) At the time that a final permit decision is issued under Subparagraph (8) of this Paragraph, the Division shall issue a response to comments. This response shall:

(i) Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change;

(ii) Briefly describe and respond to all significant comments pertaining to the requirements in the draft permit raised during the public comment period, or during any public hearing.

(B) The Division shall publish the response to comments on the Division website upon request.

(d) Permit approval or denial.

(1) The Division shall review all permit applications in accordance with Rule .0203 of Section .0200.

(2) Transition for existing facilities. The Division shall review applications submitted in accordance with Paragraph (d) of Rule .1617 according to the following schedule and criteria.

(A) The Division shall establish a review schedule for the plans which determines the adequacy of 50 percent of the plans by October 9, 1994 and 100 percent of the plans by October 9, 1996.

(B) The Division may issue partial approval for specific parts of an application.

(C) The Division shall determine the schedule for closing an existing MSWLF unit based on its review of the complete transition application and the following factors:

(i) Proximity of human and environmental receptors;

(ii) Design of the MSWLF unit;

(iii) Age of the MSWLF unit;

(iv) The size of the MSWLF unit;

(v) Type and quantities of waste disposed including sewage sludge;

(vi) Compliance record of the owner and operator;

(vii) A schedule for fulfilling the intent of the landfill design standards set forth in Rule .1624 of this Section; and
(viii) Resource value of the underlying aquifer, including: current and future uses; proximity and withdrawal rate of users; and ground-water quality and quantity.

History Note: Authority G.S. 130A-294;
15A NCAC 13B .1604 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1604  GENERAL REQUIREMENTS FOR MSWLF FACILITIES

(a) Applicability. Permits issued by the Division for new and existing MSWLF facilities are subject to the general requirements set forth in this Rule.

(b) Terms of the Permit. The Solid Waste Management Permit shall incorporate requirements necessary to comply with this Subchapter and the North Carolina Solid Waste Management Act including the provisions of this Paragraph.

1  (1) Division Approved Plan. Permits issued subsequent to March 9, 1993 shall incorporate a Division approved plan.

(A) The scope of the Division approved plan shall be limited to include the information necessary to comply with the requirements set forth in Rule .1617 of this Section.

(B) The Division approved plans are subject to and may be limited by the conditions of the permit.

(C) The Division approved plans for a MSWLF new facility or permit renewal of an existing facility shall be described in the permit and shall include the following:

(i) the Facility Plan, Rule .1619 of this Section;

(ii) the Engineering Plan, Rule .1620 of this Section; plan and the Construction Quality Assurance Plan, Rule .1621 of this Section; Plan;

(iii) the Operation Plan, Rule .1625 of this Section; plan, the Closure and Post-Closure Plan, Rule .1629 of this Section; and

(iv) the Monitoring Plans, Rules .1630 through .1637 of this Section; plan; and

(v) Closure and post-closure plan.

(2) Permit provisions. All disposal MSWLF facilities shall conform to the specific conditions set forth in the permit and the following general provisions. Nothing in this Subparagraph shall be construed to limit the conditions the Division may otherwise impose on a permit:

(A) Duty to Comply. The permittee shall comply with all conditions of the permit.

(B) Duty to Mitigate. In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment; and shall carry out such measures as are reasonable to prevent adverse impacts on human health or the environment.

(C) Duty to Provide Information. The permittee shall furnish to the Division any relevant information which the Division may request to determine whether cause exists for modifying or revoking suspending the permit, or to determine compliance with the permit. The permittee shall also furnish to the Division, upon request, copies of records required to be kept under the conditions of this permit.

(D) Recordation Procedures. The permittee shall comply with the requirements of Rule .0204 of this Subchapter in order for a new permit to be effective.
(E) Need to Halt or Reduce Activity. It is not a defense for a permittee in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

(F) Permit Actions. A permit may be modified, revoked and reissued, revoked, suspended, or terminated for cause in accordance with G.S. 130A-23. The filing of a request by the permittee for a permit modification, or a notification of planned changes or anticipated noncompliance, does not stay any existing permit condition.

(G) No Property Rights. The Commission Division does not intend for a permit to convey any property rights of any sort or any exclusive privilege. A permit for a solid waste management facility is not transferable only with prior approval of the Department in accordance with G.S. 130A-294(a1).

(H) Construction. If construction does not commence within 18 months from the issuance date of the permit to construct, or an amendment to the permit, then the permittee shall obtain written approval from the Division prior to construction and comply with any conditions of the approval. In determining whether to approve construction, the division shall consider length of time elapsed since issuance of permit, any changes in applicable state and federal statutes and rules since issuance of the permit, and any changes in financial qualifications or environmental compliance status of the holder of the permit in accordance with G.S. 130A-295.2 and G.S. 130A-295.3.

(I) Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

(J) Inspection and Entry. The permittee shall allow the Division, or an authorized representative, to:

(i) Enter the permittee's premises where a regulated facility unit(s) or activity is located or conducted, or where records are kept under the conditions of the permit.

(ii) Have access to a copy of any records required to be kept under the conditions of the permit.

(iii) Inspect any facilities, equipment and control
(iv) Sample. For the purposes of assuring permit compliance or as otherwise authorized by G.S. 130A Article 9, the permittee shall allow the Division or its authorized representative to sample or monitor, at any location under the operation or control of the permittee, any materials, substances, parameters, soil, groundwater, surface water, gases, or ambient air or monitor for the purposes of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location; and

(v) Make. The permittee shall allow the Division or its authorized representative to take photographs for the purpose of documenting items of compliance or noncompliance at permitted facilities, waste management units, or where appropriate to protect legitimate proprietary interests. At the request of the Division, the permittee shall take such photographs and submit them to the Division require the permittee to make such photos for the Division.

(K) Monitoring and Records.

(i) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall split any required samples with the Division upon request.

(ii) The permittee shall retain records of all monitoring information required by the permit for the active life of the facility and for the post-closure care period.

(iii) Records of monitoring information shall include:

(I) The date, place, and time of sampling or measurements;

(II) The individual(s) who performed the sampling or measurements;

(III) The date(s) analyses were performed;

(IV) The individual(s) who performed the analyses;

(V) The analytical, techniques, methods, and equipment used; analytical techniques or methods used (including equipment used); and

(VI) The results of such analyses.

(L) Reporting Requirements.

(i) The permittee shall give notice to the Division as soon as possible of any planned physical alterations or additions to the permitted facility.

(ii) Monitoring results. Results of environmental monitoring required in accordance with this Subchapter shall be reported at the intervals specified in the permit.

(iii) The permittee shall report orally give notice to the Division via telephone or e-mail within 24 hours from the time the permittee becomes aware of the circumstances of any release or discharge outside the liner, collection system or
other containment component, any fire, or explosion from the permitted landfill facility. Such reports shall be made to the Division representative at the appropriate regional office of the Department of Environment and Natural Resources.

(iv) Where the permittee becomes aware that it failed to submit all relevant facts and corrected information in a permit application, or submitted incorrect information in a permit application or in any report to the Division, the permittee shall submit the corrected such facts or information to the Division.

(M) Survey for Compliance.

(i) Within 60 days of the permittee's receipt of the Division's written request, the permittee shall cause to be conducted a survey of active or closed portions of their facility in order to determine if operations (e.g., cut and fill boundaries, grades) are being conducted in accordance with the approved design and operational plans. The permittee shall report the results of such survey to the Division within 90 days of receipt of the Division's request.

(ii) A survey may be required by the Division:

(I) If there is reason to believe that operations are being conducted in a manner that deviates from the Division approved plans; or

(II) As a periodic verification (but no more than annual) that operations are being conducted in accordance with the Division approved plans.

(iii) If required by G.S. 89C, any survey performed pursuant to this Part shall be performed by a registered land surveyor duly authorized under North Carolina law to conduct such activities. [Note: The North Carolina Board of Examiners for Engineers and Surveyors has determined, by resolution dated March 31, 2011 that preparation of survey pursuant to this Paragraph constitutes practicing surveying under G.S. 89C.]

(N) Additional Solid Waste Management Facilities. Construction and operation of additional solid waste management facilities at the landfill facility shall not impede operation or monitoring of the MSWLF unit(s) and shall be approved by the Division. Any proposed additional activities shall be submitted to the Division for review, approval, and permitting, as applicable, before construction and operation.

(O) Existing Facilities. Permits issued by the Division prior to October 9, 1993 for the construction of a lateral expansion or a new MSWLF unit are subject to the requirements for permit renewal set forth in Subparagraph (a)(5) of Rule .1603. The owner or operator shall establish a schedule for permit renewal that demonstrates compliance with Rule .1603 of this Section.
The owner or operator shall place the demonstration in the operating record and submit a copy to the Division for approval.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. May 1, 2011;
B-23

15A NCAC 13B .1617 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1617 APPLICATION REQUIREMENTS FOR MSWLF FACILITIES

(a) New permit as defined in G.S. 130A-294(a3)(1)a, c, d and e. Permit for a new facility. An applicant for a new MSWLF permit as defined in G.S. 130A-294(a3)(1)a, c, d and e. The owner and operator of a new facility shall meet the requirements of Rule .1618 of this Section prior to submitting an application for a permit to construct.

(1) Permit to Construct. A complete application for a permit to construct shall meet the General Site Conditions and Design Requirements set forth by the Division and shall contain the following:

(A) A facility plan that describes comprehensive development of the MSWLF facility prepared in accordance with Rule .1619 of this Section;

(B) An engineering plan that is prepared for the initial phase of landfill development prepared in accordance with Rule .1620 of this Section;

(C) A construction quality assurance plan prepared in accordance with Rule .1621 of this Section;

(D) An operation plan prepared in accordance with Rule .1625 of this Section;

(E) A closure and post-closure plan prepared in accordance with Rule .1629 of this Section; and

(F) A water quality monitoring plan prepared as set forth in Paragraph (b) of in accordance with Rule .1623(b)(3) of this Section; and

(G) an organizational chart and environmental compliance history for the owner and operator in accordance with G.S. 130A-295.3.

(2) Permit to Operate. The owner of and operator shall meet the pre-operative requirements of the permit to construct in order to qualify the constructed MSWLF unit for a permit to operate. Construction documentation shall be submitted in a timely and organized manner in order to facilitate the Division's review.

(b) New permit as defined in G.S. 130A-294(a3)(1)b. A complete application for a new MSWLF permit as defined in G.S. 130A-294(a3)(1)b shall contain:

(1) a facility plan that describes the comprehensive development of the MSWLF facility prepared in accordance with Rule .1619 of this Section;

(2) local government approval in accordance with Rule .1618(c)(5) of this Section; and

(3) an organizational chart and environmental compliance history for the owner and operator in accordance with G.S. 130A-295.3.

(c)(b) Amendment to the permit. A complete application for an amendment to the permit shall contain:

(1) An updated engineering plan prepared in accordance with Rule .1620 of this Section;

(2) An updated construction quality assurance plan prepared in accordance with Rule .1621 of this Section;

(3) An updated operation plan prepared in accordance with Rule .1625 of this Section;
(4) An updated closure and post-closure plan prepared in accordance with Rule 1629 of this Section; and

(5) An updated water quality monitoring plan prepared in accordance with Rule 1623(b)(3) of this Section; and as set forth in Paragraph (b) of Rule 1623.

(6) An organizational chart and environmental compliance history for the owner and operator in accordance with G.S. 130A-295.3.

(d)(c) Modifications to the permit. The owner and operator may propose to modify plans that were prepared and approved in accordance with the requirements set forth in this Section. A complete application shall identify the requirement(s) proposed for modification and provide complete information in order to demonstrate that demonstrates compliance with the applicable requirements Rules of this Section.

(e) A permit for closure and post-closure. An application for closure and post-closure shall contain:

(1) An updated engineering plan prepared in accordance with Rule 1620 of this Section;

(2) An updated construction quality assurance plan prepared in accordance with Rule 1621 of this Section;

(3) An updated closure plan and updated post-closure plan prepared in accordance with Rule 1629 of this Section.

(4) An updated organizational chart and environmental compliance history for the owner and operator in accordance with G.S. 130A-295.3.

(d) Transition plan for existing MSWLF units. Owners or operators of existing MSWLF units shall submit a transition plan on or before April 9, 1994 that contains:

(1) An operation plan prepared in accordance with Rule 1625 of this Section;

(2) A closure and post-closure plan prepared in accordance with Rule 1629 of this Section;

(3) A water quality monitoring plan prepared as set forth in Subparagraph (b)(3) of Rule 1623; and

(4) A report that defines the owner's or operator's plans for continued operation of the existing facility or a new facility for a minimum five year period and incorporates:

(A) A closure date for the existing MSWLF unit; and

(B) A schedule for submitting the required permit applications for a new facility, permit renewal or planned use of any MSWLF facility which meets the requirements of Subparagraph (b)(1) of Rule 1624.

(c) Permit renewal. A complete application for a permit to construct a lateral expansion or a new MSWLF unit shall contain the following:

(1) A facility plan that describes comprehensive development of the MSWLF facility prepared in accordance with Rule 1619 of this Section;

(2) An engineering plan that is prepared for the initial phase of landfill development prepared in accordance with Rule 1620 of this Section;

(3) A construction quality assurance plan prepared in accordance with Rule 1621 of this Section;

(4) An operation plan prepared in accordance with Rule 1625 of this Section;
(5) A closure and post-closure plan prepared in accordance with Rule .1629 of this Section; and

(6) A water quality monitoring plan prepared as set forth in Paragraph (b) of Rule .1623.

History Note: Authority G.S. 130A-294;


 SITE STUDY FOR MSWLF FACILITIES

(a) Purpose. As required under Rule .1617 of this Section, the owner and operator shall prepare a site study that meets the requirements of this Rule. The Division shall review the site study for a proposed new facility prior to consideration of an application for a permit to construct. Following review of the site study, the Division shall notify the applicant that either:

(1) The site is deemed suitable for establishing a MSWLF unit and the applicant is authorized to prepare an application for a permit to construct in accordance with Rule .1617 of this Section; and the General Site Conditions and Design Requirements prescribed by the Division; or

(2) The site is deemed unsuitable for establishing a MSWLF unit and shall specify the reasons which would prevent the MSWLF facility from being operated in accordance with G.S. 130A, Article 9, this Subchapter, and the Federal Act.

(b) Scope. The site shall be the land which is proposed for the landfill facility. The site study shall present a characterization of the land, incorporating various investigations and requirements pertinent to suitability of a MSWLF facility. The scope of the site study shall include criteria associated with the public health and welfare, and the environment. The economic feasibility of a proposed site is not within the scope of this study, and instead, should be evaluated by the owner or operator prior to submitting a permit application to the Division. The information in the site study shall accurately represent site characteristics and must be prepared by qualified environmental professionals. A qualified environmental professional is a person who has received a baccalaureate or post-graduate degree from a university and has sufficient training and experience in or related to the field of study requiring investigation that enables that person to make sound professional judgements. MSWLF unit(s) shall comply with the location restrictions set forth in Subparagraphs (c)(4) through (c)(6) of this Rule. To demonstrate compliance with specific criteria for each of the respective location restrictions, documentation or approval by agencies other than the Division of Waste Management, Solid Waste Section may be required. The scope of demonstrations including design and construction performance shall be addressed in the site study.

(c) The site study prepared for a MSWLF facility shall include the information required by this Paragraph unless as noted in Paragraphs (d) and (e) of this Rule.

(1) Regional characterization study. The regional study area includes the landfill facility and a two-mile perimeter measured from the proposed boundary of the landfill facility. The study shall include a report and a regional map identifying the following:

(A) General topography and features as illustrated on the most recent U.S.G.S. Topographic map, 7.5 Minute Series, horizontal scale of at least one inch equals 2000 feet;

(B) Proposed landfill facility location;

(C) Public water supply wells, surface water intakes, and service areas;

(D) Residential subdivisions;
(2) Local characterization study. The local study area includes the landfill facility and a 2,000-foot perimeter measured from the proposed boundary of the landfill facility. The study shall include an aerial photograph taken within one year of the original submittal date, a report, and a local map. The map and photograph shall be at a scale of at least one inch equals 400 feet. The study must identify the following:

(A) The entire property proposed for the disposal site and any on-site easements;
(B) Existing land use and zoning;
(C) The location of private residences and schools;
(D) The location of commercial and industrial buildings, and other potential sources of contamination;
(E) The location of potable wells and available documentation regarding well completion and production rate;
(F) Historic sites; and
(G) The existing topography and features of the disposal site including: general surface water drainage patterns and watersheds, 100-year floodplains, perennial and intermittent streams, rivers, and lakes.

(3) Site Hydrogeologic Report. The study shall be prepared in accordance with the requirements set forth in Rule .1623(a) of this Section.

(4) Location Restrictions. A report shall be prepared demonstrating compliance with the criteria in Rule .1622 of this Section; and the report shall incorporate the proposed facility plan and applicable, discuss planned compliance with design and construction standards referenced in Rule .1622(2)(a), (3)(a)(iii), (4)(a), (5)(a), and (6)(a) of this Section.

(5) Local government approvals for MSWLFs. If the proposed municipal solid waste landfill site is located within an incorporated city or town, or within the extraterritorial jurisdiction of an incorporated city or town, the approval of the governing board of the city or town shall be required. Otherwise, the approval of the Board of Commissioners having authority in the county which the site is located shall be required. Approval may be in the form of either a resolution or a vote on a motion. A copy of the resolution, or the minutes of the meeting where the vote was taken shall be submitted to the Division as part of the site study.
(B) A permit applicant other than the unit of local government with jurisdiction over the
proposed MSWLF site shall obtain a franchise in accordance with G.S 130A-294(b)(3)
from each unit of local government in whose jurisdiction the site is located. A copy of the
franchise shall be submitted to the Division as part of the site study.

(C)(i) Prior to issuance of approval or franchise approval, the jurisdictional local government
where the landfill is to be located shall hold at least one public meeting to inform the
community of the proposed waste management activities as described in the proposed
facility plan prepared in accordance with Subparagraph (6) of this Paragraph. The local
government where the MSWLF is to be located shall provide a public notice of the meeting
at least 30 days prior to the meeting.

(ii) For the purposes of this Subpart, Part, public notice shall include: a legal advertisement
placed in a newspaper or newspapers serving the county; and provision of a news release
to at least one newspaper, one radio station, and one TV station serving the county. Public
notice shall include time, place, and purpose of the meetings required by this Subpart, Part.

(D)(iii) The local government where the landfill is to be located shall provide a public notice of the
meeting at least 30 days prior to the meeting. Public notice shall be documented in the site
study. A tape recording or a written transcript of the meeting, all written material submitted
representing community concerns, and all other relevant written material distributed or
used at the meeting shall be submitted as part of the site study.

(E)(iv) The complete permit application, written transcripts of all public meetings and any
additional material submitted or used at the meetings, and any additions or corrections to
the applications, including any responses to notices of deficiencies shall be submitted to
the closest local library in the county of the proposed site, with the request that the
information be made available to the public until the permit decision is concluded.

(F)(B) A letter from the unit of local government having zoning jurisdiction over the site which
states that the proposal meets all the requirements of the local zoning ordinance, or that the
site is not zoned shall be submitted to the Division as part of with the site study.

(C) A letter from the unit of local government responsible for the implementation of a
comprehensive solid waste management plan approved by the Division [in accordance with
G.S. 130A-309.04(e)] setting forth a determination that the operation of the proposed
municipal solid waste landfill is consistent with the approved solid waste management plan
shall be submitted with the site study.

(6) Proposed Facility Plan. A conceptual plan for the development of the facility including drawings
and a report must shall be prepared which incorporates the summary findings of the geologic and
hydrogeologic report as set forth in Subparagraph (a)(13) of Rule .1623(a)(13) of this
Section and includes the drawings and reports described in Rule .1619 (d)(1), (d)(2), (e)(1), (e)(2),
(e)(3), and (e)(5), (e)(5), (e)(6), and (e)(7) of this Section.
(d) An existing facility proposed for designation as a new facility is exempt from the requirements of Subparagraph (c)(5) of this Rule if the site study meets the following criteria:

(1) The facility boundary delineated in accordance with Subparagraph (c)(6) of this Rule is the same boundary described in the current permit; and

(2) The areal limits of the proposed MSWLF unit(s) is within the approved disposal area approved by the current permit.

(e) New facility applications in transition. Site plan applications for a new facility submitted in accordance with Rule 0504 (1) of this Section after January 15, 1992 and prior to April 9, 1993 and approved by the Division consistent with Subparagraph (a)(1) of this Rule are not subject to the requirements of this Rule.

History Note: Authority G.S. 130A-294;

Eff. October 9, 1993;

15A NCAC 13B .1619 is proposed for readoption with substantive changes as follows:

**15A NCAC 13B .1619  FACILITY PLAN**

(a) **Purpose.** As required under Rule .1617 of this Section, a permit applicant shall prepare a facility plan which meets the requirements of this Rule.

(b) **Scope.**

(1) The facility plan shall define the comprehensive development of the property proposed for permit or described in the permit of an existing facility. The plan shall include a set of drawings and a report which present the long-term, general design concepts related to construction, operation, and closure of the MSWLF unit(s), including leachate management. The scope of the plan shall span the active life of the MSWLF unit(s). Additional solid waste management facilities located at the MSWLF facility shall be identified in the plan and shall meet the requirements of this Subchapter. The facility plan shall define the waste stream proposed for management at the MSWLF facility. If different types of landfill units or non-disposal activities facilities are included in the facility design, the plan must describe general waste acceptance procedures.

(2) The areal limits of the MSWLF unit(s), total capacity of the MSWLF unit(s), and the proposed waste stream shall be consistent with the Division's approval set forth:

(A) in accordance with Rule .1618(a)(1) of this Section for a new facility; or

(B) in accordance with the current permit for an existing facility applying for permit renewal.

(c) **Use of Terms.** The terminology used in describing areas of the landfill unit shall be defined in the facility plan and shall be used consistently throughout a permit application. The Division recommends the use of the following terms:

(1) A "phase" is an area constructed with a base liner system that describes provides no more than approximately five years of operating capacity. An applicant may request a permit to construct for the desired number of phases up to the entire extent of the disposal boundary.

(2) A "cell" is a subdivision of a phase which describes modular or partial construction.

(3) A "subcell" is a subdivision of a cell which describes leachate and stormwater management for active or inactive areas of the constructed MSWLF.

(d) **Facility Drawings.** The facility plan shall include the following drawings:

(1) **Site Development.** The two drawings that plot site development shall be prepared on a topographic map representative of existing site conditions; and the map shall locate or delineate the physical features referenced in Rule .1622 of this Section and shall incorporate a survey locating all property boundaries for the proposed landfill facility certified by a professional land surveyor an individual licensed to practice land surveying in the State of North Carolina.

(A) Landfill units and leachate facilities. This drawing shall delineate the areal limits of all landfill units and leachate facilities and incorporate the buffer requirements set forth in...
Subparagraph (b)(3) of Rule .1624, Rule .1624(b)(3) of this Section and the maximum allowed disposal area set forth in Rule .1624(b)(17) of this Section.

(B) All facilities. This drawing shall locate all solid waste management facilities and facility infrastructure, including landfill units and leachate facilities.

(2) Landfill Construction. All on-site grading activities related to the construction and operation of the MSWLF unit(s) shall be illustrated in facility drawings which:

(A) Delineate the limits of grading, including borrow and stockpile areas;

(B) Define phases of development which do not exceed approximately five years of operating capacity each;

(C) Propose base grades for the MSWLF unit(s);

(D) Delineate the location of access roads, sedimentation basins, leachate pipeline and storage or treatment facilities and other structures related to the operation of the MSWLF unit; and

(E) Propose final contours for the MSWLF unit(s) and facility features for closure that comply with the maximum allowed height requirement of Rule .1624(b)(17) of this Section.

(3) Landfill Operation. The following information related to the long-term operation of the MSWLF units shall be included in facility drawings:

(A) General grade and flow direction for the drainage layer component of the leachate collection system;

(B) Size, location, and general grade for the leachate piping system, including on-site pipelines to leachate management facilities;

(C) Proposed transitional contours for each phase of development, including operational grades for existing phase(s) and construction grading for the new phase; and

(D) If included in the design, stormwater segregation features and details for inactive landfill subcells.

(e) Facility Report. The facility plan shall include the following information:

(1) Waste stream. A discussion of the characteristics of the wastes received at the facility and facility specific management plans shall incorporate:

(A) The types of waste specified for disposal;

(B) Average monthly disposal rates and estimated variance;

(C) The area served by the facility;

(D) Procedures for segregated management at different on-site facilities; and

(E) Equipment requirements for operation of the MSWLF unit.

(2) Landfill Capacity. An analysis of landfill capacity and soil resources shall be performed.

(A) The data and assumptions used in the analysis shall be
(i) Consistent with the facility drawings and disposal rates specified in the facility plan; and

(ii) Representative of operational requirements and conditions.

(B) The conclusions shall provide accurate volumetric estimates of:

(i) Total operating capacity that does not exceed the maximum allowed capacity defined in Rule 1624(b)(17) of this Section;

(ii) Operating capacity for each stage of development;

(iii) In-place ratio of waste to soil;

(iv) Available soil resources from on-site or specific off-site sources;

(v) Required quantities of soil for landfill construction, operation, and closure; and

(vi) The estimated operating life of all MSWLF units in years.

(3) Containment and environmental control systems. A general description of the systems designed for proper landfill operation, system components, and corresponding functions shall be provided.

(4) Leachate Management. An analysis of the leachate management requirements and plans for the MSWLF facility shall incorporate the information required under this Subparagraph.

(A) The performance of and design concepts for the leachate collection system within active areas of the MSWLF unit and any storm water segregation included in the engineering design shall be described.

(B) Normal operating conditions. Normal operating conditions shall be defined and must consider:

(i) Average monthly values for leachate generation representative of the landfill's environment and operation using empirically derived estimates, or

(I) Empirically derived estimates; or

(II) For landfill expansions, actual leachate generation data from the existing landfill.

(ii) Surge volumes generated by storm events.

(C) Leachate management system. A description of the leachate management system components and their engineered function shall be provided, and shall include:

(i) Leachate pipeline operating capacity;

(ii) Capacity of the storage and if applicable, the treatment facilities; and

(iii) Final disposal plans and applicable discharge limits, including documented prior approval of the waste water treatment plant which may be designated in the plan.

(D) A contingency plan shall be prepared for storm surges or other considerations exceeding design parameters for the storage or treatment facilities.
(5) Special engineering features. A description of any special engineering features specific to the landfill that the applicant is proposing shall be provided.

(6) Traffic study. A traffic study and NC Department of Transportation certification shall be prepared as required by G.S. 130A-295.5 and in accordance with the effective date and applicability set forth in S.L. 2007-550.

(7) Study of Environmental Impacts. A study of environmental impacts shall be conducted as required by G.S. 130A-295.6(a).

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1620 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1620 ENGINEERING PLAN

(a) Purpose. The engineering plan shall incorporate the detailed plans and specifications relative to the design and performance of the landfill’s MSWLF’s containment and environmental control systems. The engineering plan shall set forth the design parameters and construction requirements for the components of the landfill’s MSWLF’s systems and establish the responsibilities of the design engineer. The engineered components are described in Rule .1624 of this Section. As required under Rule .1617 of this Section, the owner or operator shall submit an engineering plan which meets the requirements of this Rule.

(b) Responsibilities of the design engineer. The engineering plan shall be prepared by a professional engineer and Professional Engineer licensed to practice engineering in accordance with G.S. 89C and the Administrative Rules developed thereunder. The plan shall meet the requirements of this Rule; the design engineer shall incorporate a statement certifying this fact and bearing his or her seal of registration.

(c) Scope. An engineering plan shall be prepared for the proposed area of development a phase of development not to exceed that provides no less than approximately five years of operating capacity and no more than the total facility capacity, consistent with the development phases and design criteria defined in the facility plan. The original and subsequent plans must incorporate the design of leachate management and other environmental control facilities. The engineering plan shall contain a report and a set of drawings which consistently represent the engineering design in accordance with Paragraph (d) of this Rule.

(d) An engineering report must contain:

1. An analysis of the facility design that conforms to:
   (1) The standards for the foundation and the base liner system set forth in Rule .1624 of this Section;
   (2) The standards for the cap system set forth in Paragraph (c) of Rule .1627(c) of this Section; and
   (3) The standards for the leachate storage facilities set forth in Rule .1680 of this Section.

2. A summary of the facility design that includes:
   (A) A discussion of the analytical methods used to evaluate the design;
   (B) Definition of the critical conditions evaluated and assumptions made;
   (C) A list of technical references used in the evaluation; and
   (D) Completion of any applicable location restriction demonstrations in accordance with Rule .1622 of this Section.

3. A description of the materials and construction practices that conforms to the requirements set forth in Rule .1624 of this Section, and is consistent with the analysis of the facility design prepared in accordance with this Paragraph.

4. A copy of the Design Hydrogeologic Report prepared in accordance with Paragraph (b) of Rule .1623(b) of this Section.
(e) Engineering drawings must clearly illustrate:

1. Existing conditions: site topography, features, existing disposal areas, roads, and buildings;
2. Grading plans: proposed limits of excavation, subgrade elevations, boring locations, and intermediate grading for partial construction;
3. Base liner system: grades for top of composite liner, slopes, anchor configuration, and liner penetration locations and details;
4. Leachate collection system: base elevations, piping system grade and inverts, cleanouts, valves, sumps, top of protective cover elevations, and details;
5. Stormwater segregation system: location and detail of features;
6. Cap system: base and top elevations, landfill gas devices collection, infiltration barrier, surface water removal, protective and vegetative cover, and details;
7. Temporary and permanent sedimentation and erosion control plans;
8. Vertical separation requirements incorporating boring locations, cross sections, the maps prepared in accordance with Rule .1623(b)(2)(E) and (F) of this Section, and the grading plans; and
9. Additional engineering features and details if present.

History Note: Authority G.S., 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1621 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1621 CONSTRUCTION QUALITY ASSURANCE PLAN

(a) Purpose. The construction quality control and quality assurance (CQA) plan must describe the observations and tests that will be used before, during, and upon completion of construction to ensure that the construction and materials meet the design specifications and the construction and certification requirements set forth in Rule .1624 of this Section. The CQA plan must also describe the procedures to ensure that the integrity of the landfill systems will be maintained prior to waste placement.

(b) For construction of each cell, the CQA plan shall include, but not be limited to:

(1) Responsibilities and authorities. The plan shall establish responsibilities and authorities for the construction management organization. A pre-construction meeting shall be conducted prior to beginning construction of the base liner system for a new cell. The meeting shall include a discussion of the construction management organization, respective duties during construction, and periodic reporting requirements for test results and construction activities.

(2) Inspection activities. A description of all field observations, tests, equipment, and calibration procedures for field testing equipment that will be used to ensure that the construction and installation meets or exceeds all design criteria established in accordance with Rules .1620 and .1624 of this Section must be presented in the CQA plan.

(3) Sampling strategies. A description of all sampling protocols, sample size, methods for determining sample locations, and frequency of sampling must be presented in the CQA plan.

(4) Documentation. Reporting requirements for CQA activities must be described in detail in the CQA plan.

(5) Daily and monthly progress and troubleshooting meetings, daily and monthly, must be addressed in the plan and the contents of the meetings must be documented.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1622 is proposed for readoption with substantive changes as follows:

**15A NCAC 13B .1622  LOCATION RESTRICTIONS FOR MSWLF FACILITY SITING**

MSWLF units shall comply with the siting criteria set forth in this Rule. In order to demonstrate compliance with specific criteria, documentation of approval by agencies other than the Division of Solid Waste Management may be required to demonstrate compliance with specific criteria. The scope of demonstrations including design and construction performance shall be discussed in a site study and completed in the permit application.

(1) Airport Safety. For purposes of this Item, “airport” means a public-use airport open to the public without prior permission and without restrictions within the physical capacities of the available facilities.

(a) A new MSWLF unit shall be located no closer than 5,000 feet from any airport runway used only by piston-powered aircraft and no closer than 10,000 feet from any runway used by turbine-powered aircraft.

(b) Owners or operators proposing to site a new MSWLF unit or lateral expansion within a five-mile radius of any airport runway used by turbine-powered or piston-powered aircraft shall notify the affected airport and the Federal Aviation Administration prior to submitting a permit application to the Division.

(c) The permittee of any existing MSWLF unit or a lateral expansion located within 5,000 feet from any airport runway used by only piston-powered aircraft or within 10,000 feet from any runway used by turbine-powered aircraft shall demonstrate that the existing MSWLF unit does not pose a bird hazard to aircraft. The owner or operator shall place the demonstration in the operating record and notify the Division that it has been placed in the operating record.

(d) For purposes of this Paragraph:

(i) Airport means a public use airport open to the public without prior permission and without restrictions within the physical capacities of the available facilities.

(ii) Bird hazard means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

(2) Floodplains.

(a) Landfill units at facilities with permit or facility plan approval by the Division prior to June 1, 2006 New MSWLF units, existing MSWLF units, and lateral expansions shall not be located in 100-year floodplains unless the owners or operators demonstrate that the unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in the carrying away of solid waste by flood waters so as to pose a hazard to human health and the environment.
(b) Landfill units permitted after August 1, 2007 shall meet the requirements of G.S. 130A-295.6(c)(1) in accordance with the effective date and applicability requirements of S.L. 2007-550. For purposes of this Paragraph:

(i) "Floodplain" means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, that are inundated by the 100-year flood.

(ii) "100-year flood" means a flood that has a 1-percent or greater chance of recurring in any given year or a flood of a magnitude equalled or exceeded once in 100 years on the average over a significantly long period.

(iii) "Washout" means the carrying away of solid waste by waters of the base flood.

(3) Wetlands. For purposes of this Rule, “wetland” or “wetlands” mean those areas that are defined in 40 CFR 232.2(r). MSWLF units permitted after August 1, 2007 shall meet the requirements of G.S. 130A-295.6(c)(2) in accordance with the effective date and applicability requirements of S.L. 2007-550.

(a) Landfill facilities permitted by the Division prior to June 1, 2006. New MSWLF units and lateral expansions shall not be located in wetlands, unless the owner or operator demonstrates the following for Division approval:

(a)(i) Where applicable under Section 404 of the Clean Water Act or applicable State wetlands laws, the presumption that a practicable alternative to the proposed landfill facility is available which does not involve wetlands is clearly rebutted.

(b)(ii) The construction and operation of the MSWLF unit will not:

(A) Cause or contribute to violations of any applicable State water quality standard; and
(B) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act; and

(c)(C) Jeopardize the construction and operation of the MSWLF unit will not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Federal Endangered Species Act of 1973, and will not; and

(D) Violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.

(d)(iii) The MSWLF unit will not cause or contribute to significant degradation of wetlands.

(e) The owner or operator shall demonstrate the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:

(i)(A) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the MSWLF unit;
Erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;

The volume and chemical nature of the waste managed in the MSWLF unit;

Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;

The potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment; and

Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are protected sufficiently protected.

To the extent required under Section 404 of the Clean Water Act or applicable State wetlands laws, the owner and operator shall demonstrate that steps have been taken to attempt to achieve no net loss of wetlands (as defined by acreage and function) by first avoiding impacts to wetlands to the maximum extent practicable as required by Sub-Items (a) through (d) of this Item, Subitem (3)(a)(i) of this Rule, then minimizing unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands); and

The owner and operator shall also demonstrate that sufficient information is available to make a reasonable determination with respect to each of the demonstrations required by this Rule.

For purposes of this Item, wetlands means those areas that are defined in 40 CFR 232.2(r).

Fault Areas.

New MSWLF units and lateral expansions shall not be located within 200 feet (60 meters) of a fault that has had displacement in Holocene time unless the owner and operator demonstrates to the Division that an alternative setback distance of less than 200 feet (60 meters) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment.

For the purposes of this Item:

"Fault" means a fracture or a zone of fractures in any material along which strata on one side have been displaced with respect to that on the other side.

"Displacement" means the relative movement of any two sides of a fault measured in any direction.

"Holocene" means the most recent epoch of the Quaternary period, extending from the end of the Pleistocene Epoch to the present.

Seismic Impact Zones.
(a) New MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the Division that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

(b) For the purposes of this Item:

(i) "Seismic impact zone" means an area with a ten percent or greater probability that the maximum horizontal acceleration in lithified earth material, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10g in 250 years.

(ii) "Maximum horizontal acceleration in lithified earth material" means the maximum expected horizontal acceleration depicted on a seismic hazard map, with a 90 percent or greater probability that the acceleration will not be exceeded in 250 years, or the maximum expected horizontal acceleration based on a site-specific seismic risk assessment.

(iii) "Lithified earth material" means all rock, including all naturally occurring and naturally formed aggregates or masses of minerals or small particles of older rock that formed by crystallization of magma or by induration of loose sediments. This term does not include man-made materials, such as fill, concrete, and asphalt, or unconsolidated earth materials, soil, or regolith lying at or near the earth surface.

(6) Unstable Areas.

(a) Owners or operators of new MSWLF units, existing MSWLF units, and lateral expansions located in an unstable area shall demonstrate that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components of the MSWLF unit will not be disrupted. The owner or operator shall consider the following factors, at a minimum, when determining whether an area is unstable:

(a)(i) On-site or local soil conditions that may result in significant differential settling;

(b)(ii) On-site or local geologic or geomorphologic features; and

(c)(iii) On-site or local human-made features or events (both surface and subsurface).

(b) For purposes of this Item:

(i) "Unstable area" means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill structural components responsible for preventing releases from a landfill. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and Karst terranes.
"Structural components" means liners, leachate collection systems, final covers, run-on or run-off systems, and any other component used in the construction and operation of the MSWLF that is necessary for protection of human health and the environment.

"Poor foundation conditions" means those areas where features exist which indicate that a natural or man-induced event may result in inadequate foundation support for the structural components of an MSWLF unit.

"Areas susceptible to mass movement" means those areas of influence (i.e., areas characterized as having an active or substantial possibility of mass movement) where the movement of earth material at, beneath, or adjacent to the MSWLF unit, because of natural or man-induced events, results in the downslope transport of soil and rock material by means of gravitational influence. Areas of mass movement include, but are not limited to, landslides, avalanches, debris slides and flows, soil slumps, block sliding, and rock fall.

"Karst terranes" means areas where karst topography, with its characteristic surface and subterranean features, is developed as the result of dissolution of limestone, dolomite, or other soluble rock. Characteristic physiographic features present in karst terranes include, but are not limited to, sinkholes, sinking streams, caves, large springs, and blind valleys.

Cultural Resources. A new MSWLF unit or lateral expansion shall not damage or destroy an archaeological or historical property of natural or historical significance that has been listed on the National Register of Historic Places or included on the Study List for the Register. The Department of Natural and Cultural Resources shall determine archeological or historical significance. To aid in making a determination as to whether the property is of archeological or historical significance, the Department of Natural and Cultural Resources may request the owner or operator to perform a site-specific survey which shall be included in the Site Study.

State Nature and Historic Preserve. A new MSWLF unit or lateral expansion shall not have an adverse impact, considering the purposes for designation of the Preserve lands and the location, access, size, and operation of the landfill, on any lands included in the State Nature and Historic Preserve.

Water Supply Watersheds.

(a) A new MSWLF unit or lateral expansion shall not be located in the critical area of a water supply watershed or in the watershed for a stream segment classified as WS-I, or in watersheds of other water bodies which indicate that no new landfills are allowed in accordance with the rules codified at 15A NCAC 02B .0200 2B .0200 - "Classifications and Water Quality Standards Applicable To Surface Waters Of North Carolina."
(b) Any new MSWLF unit or lateral expansion, which shall proposes to discharge leachate to surface waters at the landfill facility and must shall obtain a National Pollution Discharge Elimination System (NPDES) Permit from the Division of Environmental Management pursuant to Section 402 of the United States Clean Water Act, and shall not be located within watersheds classified as WS-II or WS-III, or in watersheds of other water bodies which indicate that no new discharging landfills are allowed, in accordance with the rules codified at 15A NCAC 02B .0200.2B .0200 - “Classifications and Water Quality Standards Applicable To Surface Waters Of North Carolina.”

(10) Endangered and Threatened Species. A new MSWLF unit or lateral expansion shall not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Federal Endangered Species Act of 1973.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1623 is proposed for readoption with substantive changes as follows:

**15A NCAC 13B .1623 GEOLeGIC AND HYDROGEOLOGIC INVESTIGATIONS FOR MSWLF FACILITIES**

(a) Site Hydrogeologic Report. In accordance with Rule .1618(c)(3) of this Section, a permit applicant shall conduct a hydrogeologic investigation and prepare a report. An investigation is required to assess the geologic and hydrogeologic characteristics of the proposed site to determine the suitability of the site for solid waste management activities; which areas of the site are most suitable for MSWLF units; and the general groundwater flow paths and rates for the uppermost aquifer. The report shall provide an understanding of the relationship of the site groundwater flow regime to local and regional hydrogeologic features, with special emphasis on the relationship of MSWLF units to groundwater receptors (especially drinking water wells) and to groundwater discharge features. Additionally, the scope of the investigation shall include the general geologic information necessary to address compliance with the pertinent location restrictions described in Rule .1622 of this Section. The Site Hydrogeologic Report shall provide, at a minimum, the following information:

1. A report on local and regional geology and hydrogeology based on research of available literature for the area. This information is to be used in planning the field investigation. For sites located in piedmont or mountain regions, this report shall include a fracture trace analysis and Rose Diagram, based on an evaluation of structurally controlled features identified on a topographic map of the area.

2. A report on field observations of the site that includes information on the following:

   (A) Topographic setting, springs, streams, drainage features, existing or abandoned wells, rock outcrops, including trends in strike and dip, and other features that may affect site suitability or the ability to effectively monitor the site; and

   (B) Groundwater discharge features. For a proposed site where the owner or operator does not control the property from any landfill unit boundary to the controlling, downgradient, groundwater discharge feature(s), additional borings, geophysical surveys, or other hydrogeological investigations shall be required to characterize the nature and extent of groundwater flow; and a more extensive hydrogeologic investigation may be required for a proposed site where the owner or operator does not control the property from any landfill unit boundary to the controlling, downgradient, groundwater discharge feature(s).

   (C) The hydrogeological properties of the bedrock, if the uppermost groundwater aquifer is predominately in the bedrock. For the purpose of this Rule, bedrock is defined as material below auger refusal.
(3) Borings for which the numbers, locations, and depths are sufficient to provide an adequate understanding of the subsurface conditions and groundwater flow regime of the uppermost aquifer at the site. The number and depths of borings required will depend on the hydrogeologic characteristics of the site. At a minimum, there shall be no less than an average of one boring for each ten [10] acres of the proposed landfill facility, unless otherwise authorized by the Division. All borings intersecting the water table shall be converted to piezometers or monitoring wells in accordance with 15A NCAC 02C .0108. Boring logs, field logs and notes, and well construction records for all onsite borings, wells, and piezometers shall be placed in the operating record, and shall also be provided to the Division upon request.

(4) A testing program for the borings that describes the frequency, distribution, and type of samples taken and the methods of analysis, such as ASTM Standards at https://www.astm.org, (ASTM Standards or test methods approved by the Division) used to obtain, at a minimum, the following information:

(A) Standard penetration resistance; resistance using a method such as ASTM D 1586;

(B) Particle size analysis; analysis using a method such as ASTM D 6913;

(C) Soil classification; Unified Soil Classification System using a method such as ASTM D 2487;

(D) Formation descriptions; and

(E) Saturated hydraulic conductivity, porosity, and effective porosity, and dispersive characteristics for each lithologic unit of the uppermost aquifer, including the vadose zone.

(5) In addition to borings, other investigation techniques may be used to investigate the subsurface conditions at the site, including but not limited to: geophysical well logs, surface geophysical surveys, and tracer studies.

(6) Stratigraphic cross-sections identifying hydrogeologic and lithologic units, and stabilized water table elevations.

(7) Water table information, including:

(A) Tabulations of water table elevations measured at the time of boring, 24 hours, and stabilized readings for all borings measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow direction and rate;

(B) Tabulations of stabilized water table elevations over time in order to develop an understanding of seasonal fluctuations in the water table;

(C) An estimation of the long-term seasonal high water table based on stabilized water table readings, hydrographs of wells in the area, precipitation and other meteorological and climatological data, and any other information available; and
A discussion of any natural or man-made activities that have the potential for causing water table fluctuations, including tidal variations, river stage changes, flood pool changes of reservoirs, high volume production wells, and injection wells, etc.

The horizontal and vertical dimensions of groundwater flow, including flow directions, rates, and gradients.

Groundwater contour map(s) to show the occurrence and direction of groundwater flow in the uppermost aquifer, and any other aquifers identified in the hydrogeologic investigation. The groundwater contours shall be superimposed on a topographic map. The location of all borings and rock cores, and the water table elevations or potentiometric data at each location used to generate the groundwater contours shall be shown on the groundwater contour map(s).

A topographic map of the site locating soil borings with accurate horizontal and vertical control which are tied to a permanent onsite bench mark.

Boring logs, field logs and notes, well construction records, and piezometer construction records.

Information for public potable wells and public water supply surface water intakes, within the local study area in accordance with Rule .1618(c)(2) of this Section, including:

(A) construction records, number and location served by wells, and production rates for public potable water wells; and

(B) available information for all surface water intakes, including location, use, and production rate.

Identification of other geologic and hydrologic considerations, including but not limited to: slopes, streams, springs, gullies, trenches, solution features, karst terranes, sinkholes, dikes, sills, faults, mines, groundwater discharge features, and groundwater recharge/discharge areas.

A report summarizing the geological and hydrogeological evaluation of the site that includes the following:

(A) A description of the relationship between the uppermost aquifer of the site to local and regional geologic and hydrogeologic features;

(B) A discussion of the groundwater flow regime of the site focusing on the relationship of MSWLF units to groundwater receptors and to groundwater discharge features;

(C) A discussion of the overall suitability of the proposed site for solid waste management activities and which areas of the site are most suitable for MSWLF units; and

(D) A discussion of the groundwater flow regime of the uppermost aquifer at the site and the ability to effectively monitor the MSWLF units in order to ensure early detection of any release of hazardous constituents of concern to the uppermost aquifer.
(b) Design Hydrogeologic Report. A geological and hydrogeological report shall be submitted in the application for the Permit to Construct in accordance with Rule .1617(a)(1) of this Section.

(1) A geological and hydrogeological report shall be submitted in the application for the Permit to Construct. This report shall contain the information required by Subparagraphs (2) and (3) of this Paragraph. The number and depths of borings required to characterize the geologic and hydrogeologic conditions of the landfill facility shall be based on the geologic and hydrogeologic characteristics of the landfill facility. At a minimum, and there shall be no less than an average of one boring for each acre of the area of investigation, unless otherwise authorized by the Division, where the area of investigation shall be defined by the Division's review of the Site Study.

The scope and purpose of the investigation shall be as follows:

(A) The investigation shall provide adequate information to demonstrate compliance with the vertical separation and foundation standards set forth in Subparagraphs (b)(4) and (b)(7) of Rule .1624, and Paragraph (e) of Rule .1680 of this Section.

(B) The investigation shall provide detailed and localized data on the hydrogeologic characteristics of the uppermost aquifer for the proposed phase of landfill development and any leachate surface impoundment or leachate disposal facility. The purpose of this investigation is to provide more detailed and localized data on the hydrogeologic regime for this area in order to design an effective water quality monitoring system.

(2) The Design Hydrogeologic Report shall provide, at a minimum, the following information:

(A) The information required in Subparagraphs (a)(4) through (a)(12) of this Rule.

(B) All technical information necessary to determine the design of the monitoring system as required by Rule .1631(c) of this Section.

(C) All technical information necessary to determine the relevant point of compliance as required by Rule .1631(a)(2)(B) of this Section.

(D) For sites located in the piedmont or mountain regions, rock cores of no less than the upper 10 feet of the bedrock for which the numbers, locations, and depths are adequate to provide an understanding of the fractured bedrock conditions and groundwater flow characteristics of at least the upper 10 feet of the bedrock. Testing for the rock corings shall provide, at a minimum, the following information:

(i) Rock types;
(ii) Recovery values;
(iii) Rock Quality Designation (RQD) values;
(iv) Saturated hydraulic conductivity and secondary porosity values; and
(v) Rock descriptions, including fracturing and jointing patterns, etc.
A ground-water contour map based on the estimated long-term seasonal high water table that is superimposed on a topographic map and includes the location of all borings and rock cores and the water table elevations or potentiometric data at each location used to generate the ground-water contours.

For sites located in piedmont or mountain regions, a bedrock contour map illustrating the contours of the upper surface of the bedrock that is superimposed on a topographic map and includes the location of all borings and rock cores and the top of rock elevations used to generate the upper surface of bedrock contours.

A three-dimensional groundwater flow net or several hydrogeologic cross-sections that characterize the vertical groundwater flow regime for this area.

A report on the groundwater flow regime for the area including groundwater flow paths for both horizontal and vertical components of groundwater flow, horizontal and vertical gradients, flow rates, and groundwater recharge areas and discharge areas, etc.

A certification by a Licensed Geologist that all borings at the site that have not been converted to permanent monitoring wells will be properly abandoned in accordance with the procedures for permanent abandonment of wells, as delineated in 15A NCAC 02C 0113(a)(2), that intersect the water table at the site have been constructed and maintained as permanent monitoring wells in accordance with 15A NCAC 02C 0108, or that the borings and temporary piezometers will be abandoned prior to landfill construction in accordance with the procedures for permanent abandonment of wells as delineated in 15A NCAC 02C 0113. All piezometers within the landfill unit footprint area shall be overdrilled to the full depth of the boring, prior to cement or bentonite grout placement, and the level of the grout within the boring shall not exceed in height the elevation of the proposed base grade.

A Water Quality Monitoring Plan shall be submitted and shall include the following information.

(A) A groundwater monitoring plan including information on the proposed groundwater monitoring system(s), sampling and analysis requirements, and detection monitoring requirements that fulfills the requirements of Rules .1630 through .1637 of this Section, and information on the surface water monitoring in accordance with Rule .0602 of this Subchapter.

(A)(4) The Division may require the use of alternative monitoring systems in addition to groundwater monitoring wells at sites; in addition to groundwater monitoring wells, the use of alternative monitoring systems may be:
(I) required by the Division at sites where the owner and or operator does not control the property from any landfill unit to the groundwater discharge feature(s); or

(II) allowed by the Division at sites with hydrogeologic conditions favorable to detection monitoring by alternative methods.

(B)(ii) The groundwater monitoring plan shall provide a detailed discussion of the geologic and hydrogeologic criteria used to determine the number, spacing, location, and screen depths of proposed monitoring wells. The number, spacing, and depths of monitoring points shall be determined based upon site-specific technical information that shall include an investigation of aquifer thickness, groundwater flow rate, and groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow; and unsaturated and saturated geologic units, including fill materials, overlying and comprising the uppermost aquifer, including thickness, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

(B) A surface water monitoring plan in accordance with Rule .0602 of Section .0600.

(C) The final water quality monitoring plan shall be certified by a licensed geologist or professional engineer to be effective in providing early detection of any release of hazardous constituents of concern (from any point in a MSWLF unit or leachate surface impoundment) to the uppermost aquifer or surface waters, so as to be protective of public health and the environment.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1624 is proposed for readoption with substantive changes as follows:

CONSTRUCTION REQUIREMENTS FOR MSWLF FACILITIES

(a) This Rule shall establish the performance standards and minimum criteria for designing and constructing a new MSWLF unit or lateral expansion of existing MSWLF units. Additional standards for the cap system are described in Rule .1627 of this Section.

(b) New MSWLF units and lateral expansions shall comply with the following design and construction criteria:

(1) Base liner system description. The base liner system is constructed on the landfill subgrade and shall be designed to efficiently contain, collect and remove leachate generated by the MSWLF unit. At a minimum, the components of the liner system shall consist of the following.

(A) A Base Liner. The base liner shall consist of one of the following designs. The design described in Subpart (b)(1)(A)(i) of this Rule is the standard composite liner. If a landfill owner and operator proposes to utilize one of the alternative composite liner designs described in Subparts (b)(1)(A)(ii) and (iii) of this Rule, the owner and operator shall demonstrate through a model that the proposed design will ensure that maximum concentration levels (MCLs) promulgated under Section 1412 of the Safe Drinking Water Act codified under 40 CFR 141 (MCLs) listed in Table 1 will not be exceeded in the uppermost aquifer at the relevant point of compliance as established in Rule .1631(a)(2) of this Section. For these two designs, the Division may waive the site-specific modeling requirement if it can be demonstrated that a previous site for which a model was approved had similar hydrogeologic characteristics, climatic factors and volume and physical and chemical leachate characteristics. If an alternative liner design other than Subparts (b)(1)(A)(ii) and (iii) of this Rule is proposed, the Division shall require site-specific, two-phase modeling as described in Subpart (b)(1)(A)(iv) of this Rule.

(i) A composite liner utilizing a compacted clay liner (CCL). The composite liner is one liner that consists of two components; a geomembrane liner installed above and in direct and uniform contact with a compacted clay liner with a minimum thickness of 24 inches (0.61 m) and a permeability of no more than 1.0 X 10^-7 cm/sec. The composite liner shall be designed and constructed in accordance with Subparagraphs (b)(8), (9) and (10) of this Paragraph Rule.

(ii) A composite liner utilizing a geosynthetic clay liner (GCL). The composite liner is one liner that consists of three components: a geomembrane liner installed above and in uniform contact with a GCL overlying a compacted clay liner with a minimum thickness of 18 inches (0.46 m) and a permeability of no more than 1.0 X 10^-5 cm/sec. The composite liner shall be designed and constructed in accordance with Subparagraphs (b)(8), (9), and (10) of this Paragraph Rule.
(iii) A composite liner utilizing two geomembrane liners. The composite liner consists of three components; two geomembrane liners each with an overlying leachate drainage system designed to reduce the maximum predicted head acting on the lower membrane liner to less than one inch. The lower membrane liner shall overlie a compacted clay liner with a minimum thickness of 12 inches (0.31m) and a permeability of no more than 1.0 X 10^-5 cm/sec. The composite liner system shall be designed and constructed in accordance with Subparagraphs (b)(8) and (10) of this Paragraph Rule.

(iv) An alternative base liner. An alternative base liner system may be approved by the Division if the owner or operator demonstrates through a two-phase modeling approach that the alternative liner design meets the following criteria:

(I) the rate of leakage through the alternative liner system will be less than or equal to the composite liner system defined in Subparts (b)(1)(A)(i) of this Rule; and

(II) the design will ensure that concentration values listed in Table 1 will not be exceeded in the uppermost aquifer at the relevant point of compliance as established in Rule .1631(a)(2) of this Section.

(B) A leachate collection system (LCS). The LCS is constructed directly above the base liner and shall be designed to effectively collect and remove leachate from the MSWLF unit. The secondary function of the LCS is to establish a zone of protection between the base liner and the waste. The LCS shall be designed and constructed in accordance with Subparagraphs (b)(2), (2), (11), (12) and (13) of this Paragraph.

(2) Leachate collection system design and operation.

(A) The leachate collection system shall be hydraulically designed to remove leachate from the landfill and ensure that the leachate head on the composite liner does not exceed one foot. A means of quantitatively assessing the performance of the leachate collection system must be provided in the engineering plan. The performance analysis must evaluate the flow capacities of the drainage network necessary to convey leachate to the storage facility or off-site transport location. The engineering evaluation shall incorporate the following criteria:

(i) At a minimum, the geometry of the landfill and the leachate collection system shall be designed to control and contain the volume of leachate generated by the 24-hour, 25-year storm.

(ii) The performance analysis shall evaluate the leachate collection system for the flow capacities during conditions when the maximum impingement rate occurs on the LCS. The LCS flow capacity shall be designed to reduce the head on the
liner system generated by the 24-hour, 25-year storm to less than one foot within
72 hours after the storm event.

(B) The leachate collection system shall be designed to provide a zone of protection at least 24
inches separating the composite liner from landfiling activities, or shall be subject to
approval from the division upon a demonstration of equivalent protection for the liner
system.

(C) The leachate collection system shall be designed to resist clogging and promote leachate
collection and removal from the landfill.

(D) The leachate collection system shall be operated to remove leachate from the landfill in
such a way as to ensure that the leachate head on the composite liner does not exceed one
foot under normal operating conditions.

(3) Horizontal separation requirements.

(A) Property line buffer. New MSWLF units shall have a buffer of no less than 300 feet at a
new facility shall establish a minimum 300-foot buffer between the MSWLF unit and all
property lines.

(B) Private residences and wells. All MSWLF units shall have a buffer of no less than 500 feet
at a new facility shall establish a minimum 500-foot buffer between the MSWLF unit and
existing private residences and wells.

(C) Surface waters. All MSWLF units at new facilities shall establish a minimum 50-foot shall
have a buffer of no less than 50 feet between the MSWLF unit and any stream, river, or
lake, pond, or other waters of the state as defined in G.S. 143.212 unless the owner or and
operator can demonstrate:

(i) To the Division that the alternative management of the water and any discharge
will adequately protect the public health and environment; and

(ii) That the construction activities will conform to the requirements of Sections
404 and 401 of the Clean Water Act.

(D) Existing Other landfill units. An adequate buffer distance shall be established
between a proposed new MSWLF unit and any existing landfill units to establish a groundwater
monitoring system to allow monitoring of each unit separately as set
forth in Rule .1631 of this Section.

(E) Existing facility buffers. At a minimum, a lateral expansion or new MSWLF unit at an
existing facility shall conform to the requirements of the effective permit.

(E) Additional requirements for landfills permitted after August 1, 2007. MSWLF units
permitted after August 1, 2007 shall also comply with the additional horizontal separation
requirements of G.S. 130A-295.6(b) and (d) in accordance with S.L. 2007-550.

(4) Vertical separation requirements. A MSWLF unit shall be constructed so that the post settlement
bottom elevation of the base liner system is a minimum of no less than four feet above the seasonal
high ground-water table and the bedrock datum plane contours established in the Design Hydrogeological Report prepared in accordance with Rule .1623(b) of this Section. For MSWLF units at a landfill facility permitted by the Division after August 1, 2007, the vertical separation requirements of G.S. 130A-295.6(f) apply in accordance with S.L. 2007-550.

(5) Survey control. One permanent benchmark of known elevation measured from a U.S. Geological Survey benchmark shall be established and maintained for each 50 acres of developed landfill, or part thereof, at the landfill facility. This benchmark shall be the reference point for establishing vertical elevation control.

(6) Location coordinates. The North Carolina State Plane (NCSP) coordinates shall be established and one of its points shall be the benchmark of known NCSP coordinates.

(7) Landfill subgrade. The landfill subgrade is the in-situ soil layer(s), constructed embankments, and select fill providing the foundation for construction of the unit. A foundation analysis shall be performed to determine the structural integrity of the subgrade to support the loads and stresses imposed by the weight of the landfill and to support overlying facility components and maintain their integrity of the components. Minimum post-settlement slope for the subgrade shall be two percent. Safety factors shall be specified for facilities located in a Seismic Impact Zones.

(A) Materials required. The landfill subgrade shall be adequately free of organic material and consist of in-situ soils or a select fill approved by the Division in accordance with the performance standards contained in this Subparagraph. Subparagraph (b)(7) of this Rule.

(B) Construction requirements.

(i) The landfill subgrade shall be graded in accordance with the approved plans and specifications are incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.

(ii) The owner or operator of the MSWLF units shall may be required by the Division via e-mail no less than 24 hours before subgrade inspection. Division's hydrogeologist and inspect the subgrade when excavation is completed or if bedrock or other unpredicted subsurface conditions are encountered during excavation.

(C) Certification requirements. At a minimum, the subgrade surface shall be inspected in accordance with the following requirements:

(i) Before beginning construction of the base liner system, the project engineer shall visually inspect the exposed surface to evaluate the suitability of the subgrade and document that the surface is properly prepared and that the elevations are consistent with the approved engineering plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section;

(ii) The subgrade shall be proof-rolled using procedures and equipment specified by the design or project engineer; and
(iii) The subgrade shall be tested for density and moisture content at a minimum frequency as specified in the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.

(8) Compacted clay liners. Compacted clay liners are low permeability barriers designed to control fluid migration in a cap liner system or base liner system.

(A) Materials required. The soil materials used in constructing a compacted clay liner may consist of on-site or off-site sources, or a combination of sources; sources may possess adequate native properties or may require bentonite conditioning to meet the permeability requirement. The soil material shall be free of particles greater than three inches in any dimension.

(B) Construction requirements. Construction methods for the compacted clay liner shall be based upon the type and quality of the borrow source and shall be verified in the field by constructing test pad(s). The project engineer shall ensure that the compacted clay liner installation conforms with the Division approved plans including the following minimum requirements:

(i) A test pad shall be constructed prior to beginning installation of the compacted clay liner and whenever there is a significant change in soil material properties. The area and equipment, liner thickness, and subgrade slope and conditions shall be representative of full-scale construction. Acceptance and rejection criteria shall be verified for the tests specified in accordance with Part (C) of this Subparagraph. For each lift, a minimum of three test locations shall be established for testing moisture content, density, and a composite sample for recompacted lab permeability. At least one shelry tube sample for lab permeability testing, or another in-situ test that is approved by the Division as equivalent for permeability determination shall be obtained per lift.

(ii) Soil conditioning, placement, and compaction shall be maintained within the range identified in the moisture-density-permeability relation developed in accordance with Part (C) of this Subparagraph. Subparagraph (C) of this Paragraph.

(iii) The final compacted thickness of each lift shall be a maximum of six inches.

(iv) Prior to placement of successive lifts, the surface of the lift in place shall be scarified or otherwise conditioned to eliminate lift interfaces.

(v) The final lift shall be protected from environmental degradation.

(C) Certification requirements. The project engineer shall include in the construction quality assurance report a discussion of all quality assurance and quality control testing required in this Subparagraph. The testing procedures and protocols shall be submitted in accordance with Rule .1621 of this Section and approved by the Division. The results of
all testing shall be included in the construction quality assurance report including
documentation of any failed test results, descriptions of the procedures used to correct the
improperly installed material, and statements of all retesting performed in accordance with
the Division approved plans including the following requirements:

(i) At a minimum, the quality control testing for accepting materials prior to and
during construction of a compacted clay liner shall include: particle size
distribution analysis, Atterberg limits, triaxial cell laboratory permeability,
mobility content, percent bentonite admixed with soil, and the moisture-density-
permeability relation. The project engineer shall certify that the materials used in
construction were tested according to the Division approved plans.

(ii) At a minimum, the quality assurance testing for evaluating each lift of the
compacted clay liner shall include: moisture content and density, and
permeability testing. For each location the moisture content and density shall be
compared to the appropriate moisture-density-permeability relation. The project
engineer shall certify that the liner was constructed using the methods and
acceptance criteria consistent with test pad construction and tested in accordance
with the plans incorporated into the permit to construct in accordance with Rule
.1604(b) of this Section.

(iii) Any tests resulting in the penetration of the compacted clay liner shall be repaired
using bentonite or as approved by the Division.

(9) Geosynthetic Clay liners. Geosynthetic clay liners are geosynthetic hydraulic barriers manufactured
in sheets and installed by field seaming techniques.

(A) Materials required. Geosynthetic clay liners shall consist of natural sodium bentonite clay
or equivalent, encapsulated between two geotextiles or adhered to a geomembrane. The
liner material and any seaming materials shall have chemical and physical resistance not
adversely affected by environmental exposure, waste placement, leachate generation and
subgrade moisture composition. Accessory bentonite, used for seaming, repairs and
penetration seaming shall be made from the same sodium bentonite as used in the
geosynthetic clay liner or as recommended by the manufacturer. The type of geosynthetic
clay liner shall be approved by the Division according to the criteria set forth in this Part.

(i) Reinforced geosynthetic clay liners shall be used on all slopes greater than
10H:IV.

(ii) The geosynthetic clay liner material shall have a demonstrated hydraulic
conductivity of not more than 5 X 10-9 cm/sec under the anticipated confining
pressure.

(B) Design and Construction requirements. The design engineer shall ensure that the design
of the geosynthetic clay liner installation conforms to the requirements of the
manufacturer's recommendations and the Division approved plans shall provide for and include the following provisions:

(i) The surface of the supporting soil upon which the geosynthetic clay liner will be installed shall be reasonably free of stones, organic matter, protrusions, loose soil, and any abrupt changes in grade that could damage the geosynthetic clay liner;

(ii) Materials placed on top of the GCL shall be placed in accordance with the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section. Equipment used to install additional geosynthetics shall be specified by the design engineer and as recommended by the manufacturer. A minimum of 12 inches of separation between the application equipment and the geosynthetic clay liner shall be provided when applying soil materials;

(iii) Materials that become prematurely hydrated shall be removed, repaired, or replaced, as specified by the project engineer and in accordance with the plans incorporated into the permit to construct prepared in accordance with Rule .1604(b) of this Section;

(iv) Field seaming preparation and methods, general orientation criteria, and restrictive weather conditions;

(v) Anchor trench design;

(vi) Critical tensile forces and slope stability, including seismic design;

(vii) Protection from environmental damage; and

(viii) Physical protection from the materials installed directly above the geosynthetic clay liner.

(C) Certification requirements.

(i) Before beginning installation of the geosynthetic clay liner, the project engineer shall visually inspect the exposed surface to evaluate the suitability of the subgrade and document that the surface is properly prepared and that the elevations are consistent with the approved engineering plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.

(ii) The project engineer shall ensure that the geosynthetic clay installation conforms to the requirements of the manufacturer's recommendations and the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.

(iii) The project engineer shall include in the construction quality assurance report a discussion of quality assurance and quality control testing to document that material is placed in accordance with plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.
The project engineer shall include in the construction quality assurance report a discussion of the approved data resulting from the quality assurance and quality control testing required in this Subparagraph.

The testing procedures and protocols for field installation shall be submitted in accordance with Rule .1621 of this Section and approved by the Division.

The results of all testing shall be included in the construction quality assurance report, including documentation of any failed test results, descriptions of the procedures used to correct the improperly installed material, and performance documentation of all retesting, in accordance with the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section, including the following:

(I) Quality control testing of the raw materials and manufactured product;

(II) Field and independent laboratory destructive testing of geosynthetic clay liner samples; and

(III) Documentation prepared by the project engineer in accordance with Subpart (b)(9)(C)(i) of this Part of this Rule.

(10) Geomembrane liners. Geomembrane liners are geosynthetic hydraulic barriers manufactured in sheets and installed by field seaming techniques.

(A) Materials required. The liner material and any seaming materials shall have chemical and physical resistance not adversely affected by environmental exposure, waste placement and leachate generation. The type of geomembrane shall be approved by the Division according to the criteria set forth in this Part.

(i) High density polyethylene geomembrane liners shall have a minimum thickness of 60 mils.

(ii) The minimum thickness of any geomembrane approved by the Division shall be greater than 30 mils.

(B) Construction requirements. The project engineer shall ensure that the geomembrane installation conforms to the requirements of the manufacturer's recommendations and the Division approved plans including the following:

(i) The surface of the supporting soil upon which the geomembrane will be installed shall be reasonably free of stones, organic matter, protrusions, loose soil, and any abrupt changes in grade that could damage the geomembrane;

(ii) Field seaming preparation and methods, general orientation criteria, and restrictive weather conditions;

(iii) Anchor trench design;

(iv) Critical tensile forces and slope stability;
(v) Protection from environmental damage; and
(vi) Physical protection from the materials installed directly above the geomembrane.

(C) Certification requirements. The project engineer shall include in the construction quality assurance report a discussion of the approved data resulting from the quality assurance and quality control testing required in this Subparagraph. The testing procedures and protocols for field installation shall be submitted in accordance with Rule .1621 of this Section and approved by the Division. The results of all testing shall be included in the construction quality assurance report including documentation of any failed test results, descriptions of the procedures used to correct the improperly installed material, and statements of all retesting performed in accordance with the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section, including the following:

(i) Quality control testing of the raw materials and manufactured product;

(ii) At a minimum, test seams shall be made upon each start of work for each seaming crew, upon every four hours of continuous seaming, every time seaming equipment is changed or if significant changes in geomembrane temperature and weather conditions are observed;

(iii) Nondestructive testing of all seams; and

(iv) Field and independent laboratory destructive testing of seam samples;

(v) Evaluation of the entire liner for leaks as required by G.S.130A-295.6(h)(1).

(11) Leachate collection pipes. A leachate collection pipe network shall be a component of the leachate collection system and shall be hydraulically designed to convey leachate from the MSWLF unit to an appropriately sized leachate storage or treatment facility or a point of off-site transport. Leachate collection piping shall comply with the following:

(A) Materials required.

(i) The leachate collection piping shall have a minimum nominal diameter of six inches.

(ii) The chemical properties of the pipe and any materials used in installation shall not be adversely affected by waste placement or leachate generated by the landfill.

(iii) The physical properties of the pipe shall provide adequate structural strength to support the maximum static and dynamic loads and stresses imposed by the overlying materials and any equipment used in construction and operation of the landfill. Specifications for the pipe shall be submitted in the engineering report.

(B) Construction requirements.

(i) Leachate collection piping shall be installed according to the plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section.
(ii) The location and grade of the piping network shall provide access for periodic cleaning and inspection in accordance with G.S. 130A-295.6(h)(3).

(iii) The bedding material for the leachate collection pipe shall consist of a coarse aggregate installed in direct contact with the pipe. The aggregate shall be chemically compatible with the leachate generated and shall be placed to provide adequate support to the pipe. The bedding material for main collector lines shall be extended to and in direct contact with the waste layer or a graded soil or granular filter.

(C) Certification requirements. The project engineer shall include in the construction quality assurance report a discussion of the quality assurance and quality control testing to ensure that the material is placed according to the approved plans. The testing procedures and protocols for field installation shall be submitted in accordance with Rule .1621 of this Section and approved by the Division. The results of all testing shall be included in the construction quality assurance report including documentation of any failed test results, descriptions of the procedures used to correct the improperly installed material, and statements of all retesting performed in accordance with plans incorporated into the permit to construct in accordance with Rule .1604(b) of this Section, including the following:

(i) All leachate piping installed from the MSWLF unit to the leachate storage or treatment facility shall be watertight or provide dual containment in accordance with G.S. 130-295.6(h)(4) at landfill facilities permitted by the Division after August 1, 2007.

(ii) The seal where the piping system penetrates the geomembrane shall be inspected and non-destructively tested for leakage.

(12) Drainage layers. Any soil, granular, or geosynthetic drainage nets used in the leachate collection system shall conform to the following requirements:

(A) Materials required.

(i) The chemical properties of the drainage layer materials shall not be adversely affected by waste placement or leachate generated by the landfill.

(ii) The physical and hydraulic properties of the drainage layer materials shall promote lateral drainage of leachate through a zone of relatively high permeability or transmissivity under the predicted loads imposed by overlying materials.

(B) Construction requirements.

(i) The drainage layer materials shall be placed in accordance with the approved plans prepared in accordance with Rule .1604(b) of this Section and in a manner that prevents equipment from working directly on the geomembrane.

(ii) The drainage layer materials shall be stable on the slopes specified on the engineering drawings.
(C) Certification requirements. The project engineer shall include in the construction quality assurance report a discussion of the quality assurance and quality control testing to ensure that the drainage layer material is placed according to the approved plans. The testing procedures and protocols for field installation shall be submitted in accordance with Rule .1621 of this Section and approved by the Division. The results of all testing shall be included in the construction quality assurance report including documentation of any failed test results, descriptions of the procedures used to correct the improperly installed material, and statements of all retesting performed in accordance with the approved plans prepared in accordance with Rule .1604(b) of this Section.

(13) Filter layer criteria. All filter collection layers used in the leachate collection system shall be designed to prevent the migration of fine soil particles into a coarser grained material, and permit water or gases to freely enter a drainage medium (pipe or drainage layer) without clogging.

(A) Materials required.

(i) Graded cohesionless soil filters. The granular soil material used as a filter shall have no more than five percent by weight passing the No. 200 sieve and no soil particles larger than three inches in any dimension.

(ii) Geosynthetic filters. Geosynthetic filter materials shall demonstrate adequate permeability and soil particle retention, and chemical and physical resistance which is not adversely affected by waste placement, any overlying material or leachate generated by the landfill.

(B) Construction requirements. All filter layers shall be installed in accordance with the engineering plan and specifications incorporated into the permit to construct prepared in accordance with Rule .1604(b) of this Section. Geosynthetic filter materials shall not be wrapped directly around leachate collection piping.

(C) Certification requirements. The project engineer shall include in the construction quality assurance report a discussion of the quality assurance and quality control testing to ensure that the filter layer material is placed according to the approved plans. The testing procedures and protocols for field installation shall be submitted in accordance with Rule .1621 of this Section and approved by the Division. The results of all testing shall be included in the construction quality assurance report including documentation of any failed test results, descriptions of the procedures used to correct the improperly installed material, and statements of all retesting performed in accordance with the approved plans prepared in accordance with Rule .1604(b) of this Section.

(14) Special engineering structures. Engineering structures incorporated in the design and necessary to comply with the requirements of this Section shall be specified in the engineering plan. Material, construction, and certification requirements necessary to ensure that the structure is constructed
according to the design and acceptable engineering practices shall be included in the Division approved plan.

(15) Sedimentation and erosion control. Adequate structures and measures shall be designed and maintained to manage the rainwater that drains over land from or onto any part of the facility or unit run-off generated by the 24-hour, 25-year storm event, and conform to the requirements of the Sedimentation Pollution Control Law (15A NCAC 04C).

(16) Construction quality assurance (CQA) report.

(A) A CQA report shall be submitted:

(i) After completing landfill construction in order to qualify the constructed MSWLF unit for a permit to operate;

(ii) After completing construction of the cap system in accordance with the requirements of Rule .1629; and

(iii) According to the reporting schedule developed in accordance with Rule .1621 of this Section.

(B) The CQA report shall include, at a minimum, the information prepared in accordance with the requirements of Rule .1621 of this Section containing results of all construction quality assurance and construction quality control testing required in this Rule including documentation of any failed test results, descriptions of procedures used to correct the improperly installed material and results of all retesting performed. The CQA report shall contain as-built drawings noting any deviation from the approved engineering plans, and shall also contain a comprehensive narrative including but not limited to daily reports from the project engineer, a series of color photographs of major project features, and documentation of proceedings of all progress and troubleshooting meetings.

(C) The CQA report shall bear the seal of the project engineer and a certification that construction was completed in accordance with:

(i) The CQA plan;

(ii) The conditions of the permit to construct; and

(iii) The requirements of this Rule.

(iv) Acceptable engineering practices.

(D) The Division shall review the CQA report within 30 days of a complete submittal to ensure that the report meets the requirements of this Subparagraph.

(17) Maximum capacity, disposal area, and height for landfills permitted after August 2007. MSWLF units shall meet the requirements of G.S. 130A-295.6(i) regarding maximum allowed capacity, disposal area and height in accordance with the effective date and applicability of S.L. 2007-550.

Table 1
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<th>Chemical</th>
<th>MCL (mg/l)</th>
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<td>Arsenic</td>
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1. History Note: Authority G.S. 130A-294;
2. Eff. October 9, 1993;
3. Temporary Amendment Eff. July 8, 1998;
15A NCAC 13B .1625 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1625  OPERATION PLAN FOR MSWLF FACILITIES

(a) The owner and operator of a MSWLF unit shall maintain and operate the facility according to the operation plan prepared in accordance with this Rule.

   (1) Existing MSWLF units. The operator of an existing MSWLF unit shall meet the following requirements.

      (A) The operation plan shall be prepared as the information becomes available.

      (B) The operation plan shall be completed and submitted on or before April 9, 1994.

      (C) The operation plan shall describe the existing phase of landfill development through the final receipt of wastes established in accordance with Subparagraph (c)(10) of the Rule .1627.

      (D) The operator of an existing MSWLF unit which will reach permitted capacity prior to October 9, 1996 as set forth in the effective permit shall:

         (i) Complete the operation plan and submit five copies to the Division at least 60 days prior to reaching permitted capacity; and

         (ii) Receive at least partial approval from the Division as set forth in Part (d)(2)(B) of Rule .1603 in order to continue operation of the existing MSWLF unit.

   (2) New MSWLF units and lateral expansions. The operation plan shall be submitted in accordance with Rules .1617 and .1604(b)(2)(P) of this Section. Each phase of operation shall be defined by an area which will contain approximately five years of disposal capacity.

(b) Operation Plan. The owner and operator of a MSWLF unit shall prepare an operation plan for each phase proposed area of landfill development consistent with the engineering plan submitted in accordance with Rule .1620 of this Section. The operation plan shall be submitted in accordance with Rule .1617 of this Section and the plan shall include the following: drawings and a report clearly defining the information proposed for the Division approved plan.

   (1) Operation drawings. Drawings shall be prepared for each proposed area phase of landfill development. The drawings shall be consistent with the engineering plan and prepared in a format which is usable for the landfill operator. The operation drawings shall illustrate the following:

      (A) Existing conditions, including the known limits of existing disposal areas;

      (B) Progression of construction cells for incremental or modular construction;

      (C) Progression of operation, including initial waste placement, daily operations, transition contours, and final contours;

      (D) Leachate and stormwater controls for active and inactive subcells;

      (E) Special waste areas within the MSWLF unit;

      (F) Buffer zones, noting restricted use; and

      (G) Stockpile and borrow operations.
(H) other solid waste activities, such as tire disposal or storage, yard waste storage, white goods storage, and recycling pads.

(2) Operation report. The report shall provide a narrative discussion of the operation drawings and contain a description of the facility operation that conforms to the requirements of Rule .1626 of this Section.

(3) The operation plan for an existing MSWLF unit shall include:

(A) The facility's programs set forth in Parts (1)(f), (2)(b), and (4)(b) of Rule .1626;

(B) A Sedimentation and Erosion Control plan which incorporates adequate measures to control surface water run-off and run-on generated from the 24 hour, 25 year storm event;

(C) Operation drawings that illustrate annual phases of development which are consistent with the minimum and maximum slope requirements set forth in Subparagraph (c)(3) of Rule .1627;

(D) The remaining permitted capacity approved by the Division prior to October 9, 1993, and calculated from October 9, 1993 using reasonable methods, data, and assumptions; and

(E) Documented closure of the landfill unit(s) which stopped receiving waste before October 9, 1991.

History Note: Authority G.S. 130A-294;

Eff. October 9, 1993;

15A NCAC 13B .1626 OPERATIONAL REQUIREMENTS FOR MSWLF FACILITIES

The owner or operator of any MSWLF unit must maintain and operate the facility in accordance with the requirements set forth in this Rule and the operation plan as described in Rule .1625 of this Section.

(1) Waste Acceptance and Disposal Requirements.

(a) A MSWLF shall only accept those solid wastes that it is permitted to receive. The landfill owner or operator shall notify the Division within 24 hours of attempted disposal of any waste the landfill is not permitted to receive, including waste from outside the area the landfill is permitted to serve.

(b) The following wastes are prohibited from disposal at a MSWLF unit:

(i) Hazardous waste as defined within 15A NCAC 13A, including hazardous waste from conditionally exempt very small quantity generators.

(ii) Polychlorinated biphenyls (PCB) wastes as defined in 40 CFR 761.

(iii) Liquid wastes unless they are managed in accordance with Item (9) of this Rule.

(c) Spoiled foods, animal carcasses, abattoir waste, hatchery waste, and other animal waste delivered to the disposal site shall be covered upon receipt.

(d) Asbestos waste shall be managed in accordance with 40 CFR 61(M), which is hereby incorporated by reference including any subsequent amendments and additions. Copies of 40 CFR 61 are available for inspection at the Department of Environment, Health, and Natural Resources, Division of Solid Waste, 401 Oberlin Road, Raleigh, N.C. at no cost. The asbestos waste shall be covered upon receipt, with soil or waste, in a manner that will not cause airborne conditions and must be disposed of separate and apart from other solid wastes, as shown on operation drawings:

(i) At the bottom of the working face; or

(ii) In an area not contiguous with other disposal areas. Separate areas shall be designated, with signage, so that asbestos is not exposed by future land-disturbing activities.

(e) Wastewater treatment sludges may only be accepted for disposal in accordance with the following conditions:

(i) Utilized if it is used as a soil conditioner and incorporated into or applied onto the vegetative growth layer but, in no case greater at no more than six inches in depth; or
(ii) Co-disposed if it is being co-disposed if the facility meets all design requirements contained within Rule 1624 of this Section, 1624, and approved within the permit, or has been previously approved as a permit condition.

(f) Owners or operators of all MSWLF units must implement a program at the facility for detecting and preventing the disposal of hazardous and liquid wastes. This program must include, in accordance with 40 CFR 258.20:

(i) Random inspections of incoming loads or other comparable procedures;

(ii) Records of any inspections;

(iii) Training of facility personnel to recognize hazardous and liquid wastes; and

(iv) Development of a contingency plan to properly manage any identified hazardous and liquid wastes. The plan must address identification, removal, storage and final disposition of the waste.

(g) Waste placement at existing MSWLF units shall be within the areal limits of the base liner system and in compliance with the effective permit meet the following criteria:

(i) Waste placement at existing MSWLF units not designed and constructed with a base liner system approved by the Division shall be within the areal limits of the actual waste boundary established prior to October 9, 1993 and in a manner consistent with the effective permit.

(ii) Waste placement at existing MSWLF units designed and constructed with a base liner system permitted by the Division prior to October 9, 1993 and approved for operation by the Division shall be within the areal limits of the base liner system and in manner consistent with the effective permit.

(h) Owners and operators of all MSWLF units shall develop and implement a waste screening plan as required by G.S 130A-295.6(g) in accordance with the effective date and applicability requirements of S.L. 2007-550.

(2) Cover material requirements.

(a) Except as provided in Sub-Item (b) of this Item, the owners or operators of all MSWLF units must cover disposed solid waste with six inches of earthen material at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging.

(b) Alternative materials of or an alternative thickness of cover (other than at least six inches of earthen material) are allowed with prior approval of the Division if the owner demonstrates that the alternative material and thickness control disease vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment, in accordance with 40 CFR Part 258.21. Alternative materials that have been approved for use at any MSWLF by the Division may be used at
all MSWLFs in accordance with G.S. 130A-295.6(h1). A MSWLF owner or operator may apply for a generic approval of an alternative cover material, which would extend to all MSWLF units.

(c) Areas which will not have additional wastes placed on them for 12 months or more, but where final termination of disposal operations has not occurred, shall be covered with a minimum of no less than one foot of intermediate cover.

(3) Disease vector control. 

(a) Owners or operators of all MSWLF units must prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.

(b) For purposes of this Item, “disease vectors” means any rodents, flies, mosquitoes, or other animals, including insects, capable of transmitting disease to humans.

(4) Explosive gases control.

(a) Owners or operators of all MSWLF units must ensure that:

(i) The concentration of methane gas or hydrogen sulfide generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components); and

(ii) The concentration of methane gas or hydrogen sulfide does not exceed the lower explosive limit for methane or hydrogen sulfide at the facility property boundary; and

(iii) The facility does not release methane gas or hydrogen sulfide in any concentration that can be detected in offsite structures.

(b) Owners of all MSWLF units must implement a routine methane landfill gas monitoring program to ensure that the standards of Sub-item (4)(a) of this Rule are met. The type and frequency of monitoring must be determined based on the following factors:

(i) The type of monitoring shall be determined based on soil conditions.

(ii) The hydrogeologic conditions surrounding the facility.

(iii) The hydraulic conditions surrounding the facility; and

(iv) The location of facility structures and property boundaries.

(ii) The minimum frequency of routine monitoring shall be no less than quarterly.

(c) If methane or hydrogen sulfide gas levels exceeding the limits specified in Sub-item (4)(a) of this Rule are detected, the owner or operator must:

(i) Immediately upon discovery of detection, take all necessary steps to ensure protection of human health and notify the Division, as provided in 40 CFR Part 258.23;
Within seven days of detection, place in the operating record the methane or hydrogen sulfide gas levels detected and a description of the steps taken to protect human health; and

Within 60 days of detection, implement a remediation plan for the methane or hydrogen sulfide gas releases, place a copy of the plan in the operating record, and notify the Division that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.

Based on the need for an extension demonstrated by the operator, the Division may establish alternative schedules for demonstrating compliance with Sub-item (4)(c)(ii) and (iii) of this Rule.

For purposes of this Item, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25°C and atmospheric pressure.

Air Criteria.

Owners or operators of all MSWLFs must ensure that the units do not violate any applicable requirements developed under a State Implementation Plan (SIP) approved or promulgated by the U.S. EPA Administrator pursuant to Section 110 of the Clean Air Act, as amended.

Open burning of solid waste, except for the infrequent approved burning of land clearing debris generated on site or debris from emergency clean-up operations, as provided for in 40 CFR Part 258.24, is prohibited at all MSWLF units. Any such infrequent burning must be approved by the Division. Prior to any burning, a request shall be sent to the Division for review. The Division shall approve the burning if the Division determines that the burning is one of the two types of burning described in this Subparagraph. A notation of the date of approval and the name of the Division personnel who approved the burning shall be included in the operating record.

MSWLF units shall maintain equipment on site. Equipment shall be provided to control accidental fires and arrangements shall be made with the local fire protection agency to provide fire-fighting services as soon as needed.

Fires and explosions that occur at a MSWLF require verbal notice to the Division within 24 hours and written notification shall be submitted within 15 days. Written notification shall include the suspected cause of fire or explosion, the response taken to manage the incident, and the action(s) to be taken to prevent the future occurrence of fire or explosion.

Access and safety requirements.

The MSWLF shall be secured to prevent unauthorized entry by means of such as gates, chains, berms, or fences and other security measures approved by the Division to prevent unauthorized entry.
In accordance with G.S. 130A-309.25, an individual trained in landfill operations, an attendant shall be on duty at the site at all times while the facility is open for public use and at all times during active waste management operations to ensure compliance with operational requirements.

The access road to the MSWLF site and access roads to monitoring locations shall be of all-weather construction and maintained to allow access in good condition.

Dust control measures shall be implemented.

Signs providing information on dumping disposal procedures, the hours during which the site is open for public use, the permit number, and any information specified in the permit conditions to be included on the sign shall be posted at the site entrance.

Signs shall be posted stating the types of waste that shall not be accepted at the MSWLF unit, such as that no hazardous waste or liquid waste can be received.

Traffic signs or markers shall be provided as necessary to promote an orderly traffic pattern to direct traffic to and from the discharge area and to maintain efficient operating conditions.

The removal of solid waste from a MSWLF is prohibited unless the owner or operator approves and the removal is not performed on the working face.

Barrels and drums shall not be disposed of unless they are empty and perforated sufficiently to ensure that no liquid or hazardous waste is can be contained therein, except fiber drums containing asbestos.

Erosion and sedimentation control requirements.

- Adequate sediment control measures (structures or devices), consisting of vegetative cover, materials, structures, or devices shall be utilized to prevent sediment from leaving the MSWLF facility.
- Adequate sediment control measures (structures or devices), consisting of vegetative cover, materials, structures, or devices shall be utilized to prevent on-site erosion of the MSWLF facility or unit.
- Provisions for a vegetative ground cover sufficient to restrain erosion must shall be accomplished within 30 working days or 120 calendar days upon completion of any phase of MSWLF development.

Drainage control and water protection requirements.

- Surface water shall be diverted from the operational area.
- Surface water shall not be impounded over or in waste.
- Solid waste shall not be disposed of in water.
- Leachate shall be contained within a lined disposal cell or leachate collection and storage system. All leachate shall be treated, as required by the receiving facility, prior to discharge.

An NPDES A National Pollutant Discharge Elimination System (NPDES) permit may be
required prior to the discharge of leachate to surface waters, as provided by 40 CFR Parts 258.26 and 258.27.

(e) MSWLF units shall not:

(i) Cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act, including the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to Section 402 of the Clean Water Act.

(ii) Cause the discharge of a nonpoint source of pollution to waters of the United States, including wetlands, that violates any requirement of an area-wide or State-wide water quality management plan that has been approved under Section 208 or 319 of the Clean Water Act, as amended.

(9) Liquids restrictions.

(a) Bulk or non-containerized liquid waste may not be placed in MSWLF units unless:

(i) The waste is household waste other than septic waste and waste oil; or

(ii) The waste is leachate or gas condensate derived from the MSWLF unit, whether it is a new or existing MSWLF unit or lateral expansion of the unit, the MSWLF unit is designed with a composite liner and leachate collection system as described within Rule .1624 of this Section, and the owner and operator obtains prior approval from the Division.

(b) Containers holding liquid wastes may not be placed in the MSWLF unit unless:

(i) The container is a small container similar in size to that normally found in household waste;

(ii) The container is designed to hold liquids for use other than storage; or

(iii) The waste is household waste.

(c) For the purpose of this Paragraph:

(i) Liquid waste “liquid waste” means any waste material that is determined to contain "free liquids" as defined by Method 9095 (Paint Filter Liquids Test), S.W. 846.846; and

(ii) Gas Condensate “gas condensate” means the liquid generated as a result of gas recovery processes at the MSWLF unit.

(10) Recordkeeping requirements.

(a) The owner or operator of a MSWLF unit must record and retain at the facility an operating record that shall contain the following information:

(i) Inspection records, waste determination records, certifications of training, and training procedures required by Item (1) of this Rule;
(ii) Amounts of solid waste received at the facility including source of generation; to include, consistent with G.S. 130A-309.09D, county of generation;

(iii) Gas monitoring results and any remediation plans required by Item (4) of this Rule;

(iv) Any demonstration, certification, finding, monitoring, testing, or analytical data required by Rules .1630 thru .1637 of this Section;

(v) Any monitoring, testing, or analytical data as required by Rule .1627 of this Section; and

(vi) Any cost estimates and financial assurance documentation required by Rule .1628 of this Section and Section .1800 of this Subchapter. Section.

(b) All information contained in the operating record must be furnished to the Division according to the permit, upon request to the Division or shall be made available for review by the Division at the time and place of an inspection of the MSWLF or upon request at all reasonable times for inspection by the Division.

(c) The owner and operator must maintain a copy of the operation plan required by Rule .1625 of this Section at the facility.

(11) Spreading and Compacting requirements.

(a) MSWLF units shall restrict solid waste into the smallest area feasible. Solid waste shall be compacted as densely as practical into cells.

(c) Methods such as fencing and diking shall be provided within the area to confine solid waste that is subject to be blown by the wind. At the conclusion of each operating day, all windblown material resulting from the operation shall be collected and returned to the area disposed of by the owner and operator.

(12) Leachate management plan. The owner and operator of a MSWLF unit designed with a leachate collection system must establish and maintain a leachate management plan which includes the following:

(a) Periodic maintenance of the leachate collection system;

(b) Maintaining records for the amounts of leachate generated;

(c) Semi-annual leachate quality sampling;

(d) Approval for final leachate disposal; and

(e) A contingency plan for extreme operational conditions.

History Note: Authority G.S. 130A-294;

Eff. October 9, 1993;

Amended Eff. May 1, 2011;

15A NCAC 13B .1627 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1627 CLOSURE AND POST-CLOSURE REQUIREMENTS FOR MSWLF FACILITIES

(a) Purpose. This Rule establishes criteria for the closure of all MSWLF units and subsequent requirements for post-closure compliance. The owner or operator is required to develop specific plans for the closure and post-closure of the MSWLF facility or units under Rule .1629 of this Section, and submit them to the Division for review and approval.

(b) Scope.

1. Closure—This Rule shall establish standards for the scheduling and documenting closure of all MSWLF units, and designing the cap system. Construction requirements for the cap system shall incorporate specific requirements from Rule .1624 of this Section.

2. Post-closure—This Rule shall establish standards for the monitoring and maintenance of the MSWLF unit(s) following closure.

(c) Closure criteria.

1. New and existing MSWLF units and lateral expansions shall install a cap system that is designed and constructed to minimize infiltration and erosion. The cap system shall be designed and constructed to:

   (A) Have a permeability less than or equal to the permeability of any base liner system or the in-situ subsoils underlaying the landfill, or the permeability specified for the final cover in the effective permit, or a permeability no greater than 1 x 10^-5 cm/sec, whichever is less;

   (B) Minimize infiltration through the closed MSWLF by the use of a low-permeability barrier that contains a minimum 18 inches of earthen material; and

   (C) Minimize erosion of the cap system and protect the low-permeability barrier from root penetration by use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

2. The Division may approve an alternative cap system if the owner or operator can adequately demonstrate the following:

   (A) The alternative cap system will achieve an equivalent or greater reduction in infiltration equivalent to or greater than as the low-permeability barrier specified in Subparagraph (1) of this Paragraph; and

   (B) The erosion layer will provide equivalent or improved protection equivalent to or greater than as the erosion layer specified in Subparagraph (3) of this Paragraph.

3. Construction of the cap system for all MSWLF units shall conform to the requirements set forth in Rule .1624(b)(8), (9), (10), (14), and (15) of this Section, and the following requirements:

   (A) Post-settlement surface slopes shall be a minimum of five percent and a maximum of 25 percent; and
(B) A gas venting or collection system shall be installed below the low-permeability barrier to minimize pressures exerted on the barrier.

(4) Prior to beginning closure of each MSWLF unit as specified in Subparagraph (5) of this Paragraph, an owner or operator shall notify the Division in writing that a notice of the intent to close the unit has been placed in the operating record.

(5) The owner or operator shall begin closure activities of each MSWLF unit no later than 30 days after the date on which the MSWLF unit receives the known final receipt of wastes or, if the MSWLF unit has remaining capacity and there is a reasonable likelihood that the MSWLF unit will receive additional wastes, no later than one year after the most recent receipt of wastes. Extensions beyond the one-year deadline for beginning closure may be granted by the Division if the owner or operator demonstrates that the MSWLF unit has the capacity to receive additional wastes and the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed MSWLF unit.

(6) The owner or operator of all MSWLF units shall complete closure activities of each MSWLF unit in accordance with the closure plan within 180 days following the beginning of closure as specified in Subparagraph (5) of this Paragraph. Extensions of the closure period may be granted by the Division if the owner or operator demonstrates that closure will, of necessity, take longer than 180 days and they have taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed MSWLF unit.

(7) Following closure of each MSWLF unit, the owner or operator shall notify the Division that a certification, signed by the project engineer verifying that closure has been completed in accordance with the closure plan, has been placed in the operating record.

(8) Recordation.

(A) Following closure of all MSWLF units, the owner or operator shall record a notice for the landfill facility property at the local county Register of Deeds office; and notify the Division that the notice has been recorded and a copy has been placed in the operating record. The notice may be a notation on the deed to the landfill facility property, or may be some other instrument such as a declaration of restrictions on the property that is normally examined discoverable during a title search for the landfill facility property. Search, and notify the Division that the notation has been recorded and a copy has been placed in the operating record.

(B) The notation on the deed notice shall in perpetuity notify any potential purchaser of the property that:

(i) The land has been used as a landfill facility; and

(ii) future use is restricted under the closure plan approved by the Division.
(9) The owner or operator may request permission to remove the notice notation from the deed. The Division shall approve removal of the notice if all wastes are removed from the facility landfill facility property.

(10) Existing MSWLF units. The following criteria shall apply to existing MSWLF units not designed and constructed with a base liner system permitted by the Division.

(A) The existing MSWLF unit shall cease receiving solid waste on or before January 1, 1998.

(B) The Division shall schedule closure of the existing MSWLF unit based on its review of the application submitted in accordance with Paragraph (d) of Rule .1617 and reviewed in accordance with Subparagraph (d) of Rule .1603.

(C) Final contours for the existing MSWLF unit shall be consistent with the capacity requirements necessary to close the unit in accordance with the requirements of this Subparagraph.

(d) Post-closure criteria.

(1) Following closure of each MSWLF unit, the owner or operator shall conduct post-closure care. Post-closure care shall be conducted for 30 years, except as provided under Subparagraph (2) of this Paragraph, and consist of at least the following:

(A) Maintaining the integrity and effectiveness of any cap system, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing rainwater that drains over land from or onto any part of the facility or unit run-on and run-off from eroding or otherwise damaging the cap system;

(B) Maintaining and operating the leachate collection system in accordance with the requirements in Rules .1624 and .1626 of this Section. The Division may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

(C) Monitoring the groundwater and surface water in accordance with the requirements of Rules .1631 through .1637 of this Section, and maintaining the groundwater monitoring system, if applicable; and monitoring the surface water in accordance with the requirements of Rule .0602 of this Subchapter; and

(D) Maintaining and operating the gas monitoring system in accordance with the requirements of Rule .1626 of this Section.

(2) The length of the post-closure care period may be:

(A) Decreased by the Division if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment; or

(B) Increased by the Division if the Division determines that the lengthened period is necessary to protect human health and the environment.
Every five years during the post-closure care period and following completion of the post-closure care period for each MSWLF unit, the owner or operator shall notify the Division that a certification, signed by a registered professional engineer, verifying that post-closure care has been conducted in accordance with the post-closure plan, has been placed in the operating record.

History Note: Authority G.S. 130A-294;
15A NCAC 13B .1629 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1629  CLOSURE AND POST-CLOSURE PLAN

(a) Purpose. As required under Rule .1617 of this Section, the owner or and operator shall submit to the Division a closure and post-closure plan which meets the requirements of this Rule.

(b) Closure plan contents.

(i) General content of the plan. The owner or and operator shall prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during their active life in accordance with the cap system requirements in Paragraph (c) of this Rule, as applicable. The closure plan shall include the following information:

(A) A description of the cap system and the methods and procedures to be used to install the cap that conforms to the requirements set forth in Rule .1627(c) of this Section Paragraph (c) of Rule .1627.

(B) An estimate of the largest area of the MSWLF unit requiring the specified cap system at any time during the active life that is consistent with the drawings prepared for:

(i) The operation plan, for an existing MSWLF unit; or

(ii) The engineering plan or facility plan, for a lateral expansion or new MSWLF unit;

(C) An estimate of the maximum inventory of wastes ever on-site over the active life of the landfill facility; and

(D) A schedule for completing all activities necessary to satisfy the closure criteria set forth in Rule .1627(c) of this Section Paragraph (c) of Rule .1627.

(2) Existing MSWLF units. The owner or operator of an existing MSWLF unit not designed and constructed with a base liner system permitted by the Division shall provide the following information:

(A) Local characterization study. The local study area includes the landfill facility and a 2000-foot perimeter measured from the permitted facility boundary. A topography map shall be prepared at a scale of at least one inch equals 400 feet and shall:

(i) Provide current topographic information for the permitted facility;

(ii) Identify all waste supply intakes (ground and surface water);

(iii) Identify underground utility lines;

(iv) Identify private residences; and

(v) Identify any known or potential sources of contamination.

(B) Capacity. The proposed final capacity of the existing MSWLF unit must be calculated from October 9, 1993 and shall be consistent with the criteria set forth in Subparagraph (c)(10) of Rule .1627. The method, data, and assumptions used to calculate the remaining capacity shall be clearly stated.
(C) Compliance Report. The owner or operator shall submit a report that:

(i) Demonstrates compliance with Paragraphs (1), (2), and (6) of Rule .1622;

(ii) Contains a summary of the facility’s compliance record for the past five years; and

(iii) Contains water quality and explosive gas monitoring data for the past five years.

(3) Financial Assurance. The owner or operator shall submit the cost estimate for closure required under Rule .1628 of this Section as a component of the plan.

(c) Post-closure plan contents. The owner or operator of all MSWLF units must prepare a written post-closure plan to the Division that includes, at a minimum, includes the following information:

(1) A description of the monitoring and maintenance activities required in Rule .1627(d) of this Section for each MSWLF unit, and the frequency at which these activities shall be performed;

(2) Name, address, and telephone number of the person or office to contact about responsible for the facility during the post-closure period; and

(3) A description of the planned uses of the property during the post-closure period. Post-closure use of the property shall not disturb the integrity of the cap system, base liner system, or any other components of the containment system, or the function of the monitoring systems unless necessary to comply with the requirements in this Section. The Division may approve any other disturbance if the owner or operator demonstrates that disturbance of the cap system, base liner system, or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment; and

(4) Financial Assurance. The owner or operator shall submit the cost estimate for post-closure activities required under Rule .1628 of this Section and Section .1800 of this Subchapter as a component of the plan.

History Note: Authority 130A-294;

Eff. October 9, 1993; 1993;

15A NCAC 13B .1630 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1630  APPLICABILITY OF GROUND-WATER MONITORING REQUIREMENTS

(a) The ground-water monitoring, assessment, and corrective action requirements under Rules .1630 through .1637 of this Section apply to all MSWLF units.

(b) Owners or operators of MSWLF units shall comply with the ground-water monitoring, assessment, and corrective action requirements under Rules .1630 through .1637 of this Section according to the following schedule: before waste can be placed in the unit.

   (1) New MSWLF units shall be in compliance with the requirements before waste can be placed in the unit.

   (2) Lateral expansions to existing MSWLF units shall be in compliance with the requirements before waste can be placed in the expansion area.

   (3) For existing MSWLF units, compliance with the requirements shall be demonstrated to the Division on or before October 9, 1994.

(c) Once established at a MSWLF unit, ground-water monitoring shall be conducted throughout the active life and post-closure care period of that MSWLF unit.

(d) Ground-water monitoring plans, assessment plans, and corrective action plans (Water Quality Monitoring Plans, Assessment Plans, and Corrective Action Plans) shall be prepared under the responsible charge of and bear the seal of a Licensed Geologist or Professional Engineer licensed geologist or professional engineer. (in accordance with G.S. 89E and 89C, respectively).

(e) The groundwater protection requirements of 15A NCAC 02L shall apply to MSWLFs. The North Carolina Groundwater Classifications and Standards (15A NCAC 2L) are incorporated by reference including subsequent amendments and editions. Copies of this material may be inspected or obtained at the Department of Environment, Health, and Natural Resources, Division of Solid Waste Management, 401 Oberlin Road, Raleigh, North Carolina at no cost.

History Note:  Authority G.S. 130A-294;
Eff. October 9, 1993; 1993;
15A NCAC 13B .1631 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1631 GROUND-WATER MONITORING SYSTEMS

(a) A ground-water monitoring system shall be installed that consists of a sufficient number of wells, no less than one background and three downgradient wells installed at appropriate locations and depths that yield ground-water samples from the uppermost aquifer that:

(1) Represent the quality of the background ground-water that has not been affected by leakage from the unit. Normally, determination of background water quality will be based on sampling of a well or wells that are hydraulically upgradient of the waste management area. However, the determination of background water quality may include sampling of wells that are not hydraulically upgradient of the waste management area where:

(A) Hydrogeologic conditions do not allow the owner or operator to determine which wells are hydraulically upgradient; or

(B) Hydrogeologic conditions do not allow the owner or operator to place a well in a hydraulically upgradient location; or

(C) Sampling at other wells will provide an indication of background ground-water quality that is as representative as that provided by the upgradient well(s); and

(2) Represent the quality of ground-water passing the relevant point of compliance as approved by the Division. The downgradient monitoring system shall be installed at the relevant point of compliance to ensure detection of ground-water contamination in the uppermost aquifer.

(A) The relevant point of compliance shall be established no more than 250 feet from a waste boundary, and shall be at least 50 feet within the facility property boundary.

(B) In determining the relevant point of compliance, the Division shall consider recommendations made by the owner or operator based upon consideration of at least the following factors:

(i)(A) The hydrogeologic characteristics of the facility and surrounding land;

(ii)(B) The volume and physical and chemical characteristics of the leachate;

(iii)(C) The quantity, quality, and direction of flow of ground-water;

(iv)(D) The proximity and withdrawal rate of the ground-water users;

(v)(E) The availability of alternative drinking water supplies;

(vi)(F) The existing quality of the ground-water, including other sources of contamination and their cumulative impacts on the ground-water, and whether the ground-water is currently used or reasonably expected to be used for drinking water;

(vii)(G) Public health, safety, and welfare effects; and
(viii)(H) Practicable capability of the owner or operator.

(b) Monitoring wells shall be designed and constructed in accordance with 15A NCAC 02C, the applicable North Carolina Well Construction Standards as codified in 15A NCAC 2C.

1. Owner or and operators shall obtain approval from the Division for the design, installation, development, and decommission of any monitoring well or piezometer. Documentation shall be placed in the operating record and provided to the Division in a timely manner.

2. The monitoring wells and piezometers shall be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.

(c) The number, spacing, and depths of monitoring systems shall be determined based upon site-specific technical information that shall include investigation of:

1. Aquifer thickness, groundwater flow rate, and groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow; and

2. Unsaturated and saturated geologic units (including fill materials) overlying and comprising the uppermost aquifer; including but not limited to: thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

(d) The proposed monitoring system and the water quality monitoring plan required in Paragraph (f) of this Rule plan shall be:

1. Certified by a Licensed Geologist or Professional Engineer to be effective in providing early detection of any release of hazardous constituents of concern (from any point in a disposal cell or leachate surface impoundment) to the uppermost aquifer, so as to be protective of public health and the environment; and

2. Approved by the Division. Upon approval by the Division, a copy of the approved monitoring plan shall be placed in the operating record.

(e) The Division may require the use of alternative monitoring systems in addition to ground-water monitoring wells at sites. In addition to ground-water monitoring wells, the use of alternative monitoring systems may be:

1. Where required by the Division at sites where the owner or operator does not control the property from any landfill unit to the ground-water discharge feature(s); or

2. Sites allowed by the Division at sites where hydrogeologic conditions are favorable for detection monitoring by alternative methods.

(f) The owner or and operator shall submit a monitoring system water quality monitoring plan for review and approval by the Division as required by Rules .1603 and .1617 of this Section. The Water Quality Monitoring Plan shall contain information on the groundwater monitoring system(s) and locations, surface water sampling locations, sampling and analysis requirements, and monitoring required under Rules .1630 through .1637 of this Section. The Division shall date and stamp the Water Quality Monitoring Plan "approved" if the plan meets the conditions of this Rule. Upon approval by the Division, a copy of the approved Water Quality Monitoring Plan shall be placed in the operating record.
(g) Groundwater standards established under 15A NCAC 02L or groundwater protection standards established in accordance with Rule 1.634(b)(4) and (5) of this Section shall not be exceeded in the uppermost aquifer at the compliance boundary.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
15A NCAC 13B .1632 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1632 GROUND-WATER GROUNDWATER SAMPLING AND ANALYSIS REQUIREMENTS

(a) A ground-water monitoring program shall include consistent sampling and analysis procedures that are designed to ensure monitoring results that provide an accurate representation of ground-water quality at the background and downgradient wells. Wells shall be described in the water quality monitoring plan approved in accordance with Rule .1632(f) of this Section. The ground-water sampling and analysis plan shall be approved by the Division and the owner or operator shall place a copy of the approved plan in the operating record. The plan shall include procedures and techniques for:

1. Sample collection;
2. Sample preservation and shipment;
3. Analytical procedures;
4. Chain of custody control; and
5. Quality assurance and quality control.

(b) The ground-water monitoring program shall include sampling and analytical methods that are appropriate for ground-water sampling and that accurately measure hazardous constituents of concern and other monitoring parameters in ground-water samples.

(c) The sampling procedures and frequency shall be protective of human health and the environment.

(d) Groundwater. Each time groundwater is sampled, groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of ground-water flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a 24-hour period of time short enough to avoid temporal variations in ground-water flow which could preclude accurate determination of flow rate and direction. The owner or operator shall determine groundwater elevation and flow as follows:

1. In order to accurately determine groundwater elevations for each monitoring well, the wells shall have been surveyed. If required by G.S. 89C, a professional land surveyor shall survey the wells. [Note: The North Carolina Board of Examiners for Engineers and Surveyors has determined, via a letter dated July 16, 2010, that the surveying pursuant to this Paragraph constitutes practicing surveying under G.S. 89C.] The survey of the wells shall conform to at least the following levels of accuracy:

   A. The horizontal location to the nearest 0.1 foot;
   B. The vertical control for the ground surface elevation to the nearest 0.01 foot; and
   C. The vertical control for the measuring reference point on the top of the inner well casing to the nearest 0.01 foot.
In order to determine the rate of ground-water flow, the owner or operator shall provide data for hydraulic conductivity and porosity for the formation materials at each of the well locations.

(e) The owner or operator shall establish Division-approved background ground-water quality in accordance with rules Rule 1631(a)(1) of this Section and Paragraphs (f) through (h) of this Section for each of the monitoring parameters or constituents required in the particular ground-water monitoring program that applies to the MSWLF unit.

(f) The number of samples collected to establish ground-water quality data shall be consistent with the appropriate statistical procedures to be used, as provided for in 40 CFR 258.

(g) Should the owner or operator choose to perform statistical analysis of groundwater quality data whether for purposes of establishing background concentrations or to determine if there is an exceedance of the groundwater protection standard as defined in Rule 1634(b)(4) and (5) of this Section, the owner or operator shall select one of the following statistical methods to be used in evaluating ground-water monitoring data for each constituent of concern, hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent of concern in each well. The statistical analysis shall be prepared under the responsible charge of and bear the seal of a licensed geologist or professional engineer.

(1) A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) A parametric analysis of variance (ANOVA) based on ranks followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method shall include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of this Rule. The owner or and operator shall submit a justification for an alternative test method to the Division for approval. The justification shall demonstrate that the alternative statistical test method meets the performance standards of this Rule. If approved, the owner or operator shall place a copy of the justification for an alternative test method in the operating record.

(h) Any statistical method chosen to evaluate ground-water monitoring data shall comply with the following performance standards, as appropriate:

(1) The statistical method used to evaluate ground-water monitoring data shall be appropriate for the distribution of chemical parameters or constituents of concern, hazardous.
constituents. If the distribution of the chemical parameters or hazardous constituents of concern is shown by the owner or operator (or the Division) to be inappropriate for a normal theory test, then the data shall be transformed or a distribution-free theory test shall be used. If the distributions for the constituents differ, more than one statistical method shall be considered.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparisons procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparisons shall be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts.

(3) If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be protective of human health and the environment. The parameters shall be determined by the analyst after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

(4) If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval shall contain, shall be protective of human health and the environment. These parameters shall be determined by the analyst after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern.

(5) The statistical method shall account for data below the limit of detection with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit (pql) that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility.

(6) If necessary, as provided for in 40 CFR 258, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) Within 120 days from the date of sampling or as specified in the facility permit, whichever is less, the owner or operator shall submit to the Division a monitoring report in electronic format that includes all information from the sampling event, including field observations relating to the condition of the monitoring wells, field data, a summary of the laboratory data, statistical analysis (if utilized), sampling methodologies, field sampling methods and quality assurance and quality control data, information on groundwater flow direction, calculations of groundwater and the groundwater flow rate, rate for each well with any constituents that exceed groundwater protection standards, as defined in Rule 1634(b)(4) and (5) 1634(g) through (h) of this Section.
History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. April 1, 2011;
15A NCAC 13B .1633 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1633 DETECTION MONITORING PROGRAM

(a) Detection monitoring shall be conducted as required at MSWLF units at all groundwater monitoring wells that are part of the detection monitoring system as established in the approved water quality monitoring plan. At a minimum, as provided for in 40 CFR 258, the detection monitoring program shall include monitoring for the constituents listed in Appendix I of 40 CFR Part 258. "Appendix I Constituents for Detection Monitoring" (Appendix I), is incorporated by reference including subsequent amendments and editions. Copies of this material may be inspected or obtained at the Department of Environment and Natural Resources, Division of Waste Management, Raleigh, North Carolina at no cost.

(b) The monitoring frequency for all Appendix I detection monitoring constituents shall be at least no less than semiannual during the active life of the facility (including closure) and during closure and the post-closure period. To establish baseline, a minimum of no less than four independent samples from each background and downgradient monitoring well (background and downgradient) shall be collected within a six-month period and analyzed for the Appendix I constituents listed in Appendix I of 40 CFR 258, with no less than one sample collected from each new monitoring well before waste placement in each new cell or phase during the first semiannual sampling event. At least one sample from each background and downgradient monitoring well (background and downgradient) shall be collected and analyzed during subsequent semiannual sampling events.

(c) If the owner or operator determines that there is an exceedance of the groundwater protection standards, as defined in Paragraph (g) or (h) of Rule 1634(b)(4) and (5) of this Section for one or more of the constituents listed in Appendix I required in Paragraph (a) of this Rule at any monitoring well at the relevant point of compliance, the owner or operator:

(1) Shall, within 14 days of this finding, report to the Division and place a notice in the operating record indicating which constituents have exceeded groundwater protection standards;

(2) Shall establish an assessment monitoring program meeting the requirements of this Section within 90 days except as provided for in Subparagraph (3) of this Paragraph; and

(3) May demonstrate that a source other than a MSWLF unit caused the exceedance, or the exceedance resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. A report documenting this demonstration shall be approved by the Division for approval. If required by G.S. 89C or G.S. 89E, a professional engineer or licensed geologist shall prepare these documents. [Note: The North Carolina Board of Examiners for Engineers and Surveyors and the Board of Licensing of Geologist has determined, via letters dated July 16, 2010 and November 30, 2010 respectively, that preparation of documents pursuant to this Paragraph constitutes practicing engineering or geology under G.S. 89C and G.S. 89E.] A copy of this report shall also be placed in the operating record. If a successful demonstration is made, documented, and approved by the Division, the owner or operator may continue detection monitoring. If after 90 days, a successful demonstration is not made, the owner
or and operator shall initiate an assessment monitoring program as required by Rule .1634 of this Section.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. April 1, 2011;
15A NCAC 13B .1634 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1634  ASSESSMENT MONITORING PROGRAM

(a) Assessment monitoring shall be required whenever if, in any sampling event, one or more of the constituents listed in 40 CFR 258 Appendix I is detected above in exceedance of the groundwater protection standards, groundwater quality standards or Interim Maximum Allowable Concentration (IMAC) established in accordance with 15A NCAC 02L .0202, or the groundwater protection standards established in accordance with Subparagraphs (b)(3) through (b)(5) as defined in Paragraph (g) or (h) of this Rule.

(b) Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator shall sample and analyze the groundwater for all constituents identified in Appendix II of 40 CFR Part 258. 40 CFR Part 258—"Appendix II List of Hazardous Inorganic and Organic Constituents" (Appendix II), is incorporated by reference including subsequent amendments and editions. Copies of this material may be inspected or obtained at the Department of Environment and Natural Resources, Division of Waste Management, Raleigh, North Carolina at no cost.

(b) Assessment Monitoring Work Plan. The owner and operator shall submit an Assessment Monitoring Work Plan that shall describe the plan for assessment monitoring at the MSWLF unit. The plan shall be in accordance with the following:

1. Install no less than one additional groundwater monitoring well at the facility’s property boundary or the compliance boundary, as defined in 15A NCAC 02L .0102, in the direction of contaminant migration most likely to show impact based on the established geology and hydrogeology.

2. The additional monitoring wells shall characterize the nature and extent of the contamination by determining the following:
   (A) lithology of the aquifer and unsaturated zone;
   (B) hydraulic conductivity of the aquifer and unsaturated zone;
   (C) groundwater flow rates;
   (D) minimum distance of travel;
   (E) resource value of the aquifer; and
   (F) nature, fate, and transport of any detected constituents.

3. A minimum of No less than one sample from each downgradient monitoring well shall be collected and analyzed for the constituents listed in 40 CFR 258 Appendix II during each initial sampling event for assessment monitoring event. For the initial sampling event, for any constituent detected in the downgradient wells as a result of the Appendix II analysis, a minimum of four no less than three additional independent samples from each background and downgradient monitoring well (background and downgradient) shall be collected and analyzed to establish background a baseline for the new detected constituents. After the initial sampling event, The Division may specify, as provided for in 40 CFR 258, an appropriate a subset of wells to be sampled and analyzed for Appendix II constituents during assessment monitoring. After the initial sampling event,
The Division may delete, as provided for in 40 CFR 258, any of the Appendix II constituents for a MSWLF unit if it can be shown that the removed constituents proposed for deletion are not reasonably expected to be in or derived from the waste contained in the unit.

(4) For constituents that do not have a groundwater quality standard or IMAC established in accordance with 15A NCAC 02L.0202, the Division shall establish a groundwater protection standard for each constituent detected in groundwater. The groundwater protection standard shall be the most protective of the following:

(A) for constituents for which a maximum contamination level (MCL) has been promulgated under the Section 1412 of the Safe Drinking Water Act codified under 40 CFR 141, the MCL for that constituent;

(B) for constituents for which a public water quality standard has been established under the North Carolina Rules Governing Public Water Supplies, 15A NCAC 18C, the public water quality standard for that constituent;

(C) for constituents for which no MCLs or public water quality standards have been promulgated, the background concentration for the constituent established from the monitoring wells required in accordance with Rules .1631(a)(1) and .1632 of this Section; or

(D) for constituents for which the background level is higher than the MCL or public water quality standard or health-based levels identified under Subparagraph (5) of this Paragraph, the background concentration.

(5) The Division may establish an alternative groundwater protection standard for constituents for which no MCL or public water quality standard have been established. These groundwater protection standards shall be appropriate health-based levels that satisfy the following criteria:

(A) the level is derived in a manner consistent with EPA guidelines for assessing the health risks of environmental pollutants;

(B) the level is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act Good Laboratory Practice Standards, 40 CFR Part 792, or equivalent;

(C) for carcinogens, the level represents a concentration associated with an excess lifetime cancer risk level due to continuous lifetime exposure of 1 x 10-6; and

(D) for systemic toxicants, the level represents a concentration to which the human population, including sensitive subgroups, could be exposed on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime. For the purposes of this Rule, systemic toxicants include toxic chemicals that cause effects other than cancer or mutation.

(6) In establishing groundwater protection standards under this Paragraph, the Division may consider the following:
(A) multiple contaminants in the groundwater;
(B) exposure threats to sensitive environmental receptors; and
(C) other site-specific exposure or potential exposure to groundwater.

(c) Assessment Monitoring Report. The Assessment Monitoring Report shall be in accordance with the following:
(1) After obtaining the results from the initial and subsequent sampling events, the owner and operator shall submit an assessment monitoring report to the Division that shall be certified by a licensed geologist.
(2) The owner and operator shall notify all persons who own land or reside on land that directly overlies any part of the plume of contamination if contaminants have migrated off-site.
(3) Within 14 days of receipt of the analytical results, the owner and operator shall submit a report to the Division and place a notice in the operating record identifying the 40 CFR 258 Appendix II constituents that have been detected.
(4) Within 90 days, and no less than semiannually thereafter until the Division approves a return to detection monitoring in accordance with Paragraphs (d) or (e) of this Rule, the owner and operator shall sample all of the monitoring wells for the unit in the detection monitoring system established in Rule .1633 of this Section for all constituents listed in 40 CFR 258 Appendix I and for those constituents in Appendix II that have been detected. A report from each sampling event shall be submitted to the Division and placed in the facility operating record. No less than one sample from each background and downgradient monitoring well shall be collected and analyzed during each of these sampling events.
(5) The owner and operator shall establish and report to the Division the background or baseline concentrations for any constituents detected.
(6) The Division shall establish groundwater protection standards in accordance with Subparagraphs (b)(3) through (b)(5) of this Rule for all 40 CFR 258 Appendix II constituents detected.
(e)(7) The Division may specify approve an alternate frequency or subset of wells for repeated sampling and analysis for 40 CFR 258 Appendix II constituents required by Paragraph (b) of this Rule during the active life and post-closure care of the unit considering the following factors:
(A) Lithology of the aquifer and unsaturated zone;
(B) Hydraulic conductivity of the aquifer and unsaturated zone;
(C) Groundwater flow rates;
(D) Minimum distance of travel;
(E) Resource value of the aquifer; and
(F) Nature, fate, and transport of any detected constituents.
(d) The owner and operator may demonstrate, in accordance with Rule .1633(c)(3) of this Section, that a source other than a MSWLF unit caused the exceedance of the groundwater standards or groundwater protection standards, or the exceedance resulted from error in sampling, analysis, or natural variation in groundwater quality. If a successful demonstration is made, the owner and operator may discontinue assessment monitoring, and may return to detection monitoring.
monitoring in accordance with Rule .1633 of this Section when approval is given by the Division in writing. Until a successful demonstration is made, the owner and operator shall comply with Paragraph (b) of this Rule including initiating an assessment of corrective measures in accordance with Paragraph (f) of this Rule.

(e) The Division shall give approval to the owner and operator to return to detection monitoring in accordance with Rule .1633 of this Section if all of the following are met:

(1) the concentrations of the constituents are shown to be at or below background values and groundwater standards established in 15A NCAC 02L.0202, or groundwater protection standards established in accordance with Subparagraphs (b)(3) through (b)(5) of this Rule, for two consecutive sampling events;

(2) the plume is not migrating horizontally or vertically; and

(3) the plume has not exceeded the compliance boundary.

(f) If one or more constituents are detected for two consecutive semiannual sampling events above background, the groundwater standards established in 15A NCAC 02L.0202, or the groundwater protection standards established in accordance with Subparagraphs (b)(3) through (b)(5) of this Rule, the owner and operator shall initiate Assessment of Corrective Measures in accordance with Rule .1635 of this Section within 90 days.

(d) After obtaining the results from the initial or subsequent sampling events required in Paragraph (b) of this Rule, the owner or operator shall:

(1) Within 14 days, submit a report to the Division and place a notice in the operating record identifying the Appendix II constituents that have been detected;

(2) Within 90 days, and on at least a semiannual basis thereafter, resample all wells of the approved detection monitoring system for the unit for all constituents listed in Appendix I and for those constituents in Appendix II that have been detected in response to Paragraph (b) of this Rule. A report from each sampling event shall be submitted to the Division and placed in the facility operating record. At least one sample from each well (background and downgradient) shall be collected and analyzed during each of these sampling events;

(3) Establish and report to the Division background concentrations for any constituents detected pursuant to Paragraph (b) or (d)(2) of this Rule; and

(4) Obtain a determination from the Division to establish groundwater protection standards for all constituents detected pursuant to Paragraph (b) or (d) of this Rule. The groundwater protection standards shall be established in accordance with Paragraph (g) or (h) of this Rule.

(e) If the concentrations of all Appendix II constituents are shown to be at or below the approved groundwater protection standards, for two consecutive sampling events, the owner or operator shall report this information to the Division, and the Division shall give approval to the owner or operator to return to detection monitoring.

(f) If one or more Appendix II constituents are detected above the approved groundwater protection standards in any sampling event, the owner or operator, shall within 14 days of this finding, submit a report to the Division, place a notice in the operating record, and notify local government officials. The owner or operator:

(1) shall;
(A) Characterize the nature and extent of the release by installing additional monitoring wells, as necessary;

(B) Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well in accordance with Paragraph (d)(2) of this Rule;

(C) Notify all persons who own land or reside on land that directly overlies any part of the plume of contamination if contaminants have migrated off-site; and

(D) Within 90 days, initiate an assessment of corrective measures as required under Rule .1635 of this Section; or

(2) may demonstrate that a source other than a MSWLF unit caused the exceedance of the ground-water protection standards, or the exceedance resulted from error in sampling, analysis, or natural variation in ground-water quality. A report documenting this demonstration shall be approved by the Division. If required by G.S. 89C or G.S. 89E, a professional engineer or licensed geologist shall prepare these documents. [Note: The North Carolina Board of Examiners for Engineers and Surveyors and the Board of Licensing of Geologist has determined, via letters dated July 16, 2010 and November 30, 2010 respectively, that preparation of documents pursuant to this Paragraph constitutes practicing engineering or geology under G.S. 89C and G.S. 89E.] A copy of the approved report shall also be placed in the operating record. If a successful demonstration is made, the owner or operator may discontinue assessment monitoring, and may return to detection monitoring when approval is given by the Division. Until a successful demonstration is made, the owner or operator shall comply with Paragraph (f)(1) of this Rule including initiating an assessment of corrective measures.

(g) The owner or operator shall obtain a determination from the Division on establishing a ground-water protection standard for each Appendix II constituent detected in the ground-water. The ground-water protection standard shall be the most protective of Subparagraphs (1) through (4) or Subparagraph (5);

(1) For constituents for which a maximum contamination level (MCL) has been promulgated under the Section 1412 of the Safe Drinking Water Act codified under 40 CFR Part 141, the MCL for that constituent;

(2) For constituents for which a water quality standard has been established under the North Carolina Rules Governing Public Water Systems, 15A NCAC 18C, the water quality standard for that constituent;

(3) For constituents for which a water quality standard has been established under the North Carolina Groundwater Classifications And Standards, 15A NCAC 02L.0202, the water quality standard for that constituent;

(4) For constituents for which MCLs or water quality standards have not been promulgated, the background concentration for the constituent established from wells in accordance with Rule .1631(a)(1) and Rule .1632 of this Section; or
(5) The owner or operator may request the Division approve a background level that is higher than the standard established in Subparagraphs (1) through (3) of this Paragraph or health-based levels identified under Paragraph (h) of this Rule. The background level shall be established in accordance with Rule .1631(a)(1) and Rule .1632. The approved background level shall be the established ground-water protection standard.

(h) The Division may establish an alternative ground-water protection standard for constituents for which neither an MCL or water quality standard has not been established. These ground-water protection standards shall be health based levels that satisfy the following criteria:

(1) The level is derived in a manner consistent with E.P.A. guidelines for assessing the health risks of environmental pollutants;

(2) The level is based on scientifically valid studies conducted in accordance with the Toxic Substances Control Act Good Laboratory Practice Standards (40 CFR Part 792) or equivalent standards;

(3) For carcinogens, the level represents a concentration associated with an excess lifetime cancer risk level (due to continuous lifetime exposure) of $1 \times 10^{-6}$ and;

(4) For systemic toxicants, the level represents a concentration to which the human population (including sensitive subgroups) could be exposed to on a daily basis that is likely to be without appreciable risk of deleterious effects during a lifetime. For the purposes of this Rule, systemic toxicants include toxic chemicals that cause effects other than cancer or mutation.

(i) In establishing ground-water protection standards under Paragraph (h) of this Rule the Division shall consider the following:

(1) Multiple contaminants in the ground water;

(2) Exposure threats to sensitive environmental receptors; and

(3) Other site-specific exposure or potential exposure to ground water.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. April 1, 2011;
15A NCAC 13B .1635 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1635 ASSESSMENT OF CORRECTIVE MEASURES

(a) Within 90 days of finding that any of the constituents listed in Appendix II exceeded the groundwater protection standards, the owner or operator shall initiate assessment of corrective action measures. Such an assessment must be completed within 120 days or as approved by the Division.

(b) The owner or operator shall continue to monitor in accordance with the approved assessment monitoring program.

(c) The assessment of corrective measures shall include an analysis of the effectiveness of potential corrective measures in meeting all of the requirements and objectives of the remedy as described under Rule .1636 of this Section. The assessment of corrective measures shall address at least the following, as provided for in 40 CFR 258:

(1) The performance, reliability, ease of implementation, and potential impacts of potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(2) The time required to begin and complete the remedy;

(3) The costs of remedy implementation; and

(4) The institutional requirements such as State and Local permit requirements or other environmental or public health requirements that may affect implementation of the remedy(s).

(d) Within 120 days of completion of the assessment of corrective measures, the owner or operator shall discuss the results of the assessment of corrective measures, prior to the selection of remedy, in a public meeting with interested and affected parties. The owner or operator shall provide a public notice of the meeting at least 30 days prior to the meeting. The notice shall include the time, place, date, and purpose of the public meeting required by this Paragraph. A copy of the public notice shall be forwarded to the Division at least five days prior to publication. The owner or operator shall mail a copy of the public notice to those persons requesting notification. Public notice shall include:

(1) a legal advertisement placed in a newspaper or newspapers serving the county; and

(2) provision of a news release to at least one newspaper, one radio station, and one television station serving the county.

History Note: Authority G.S. 130A-294;

Eff. October 9, 1993;

Amended Eff. May 1, 2011;

15A NCAC 13B .1636 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1636  SELECTION OF REMEDY

(a) Based on the results of the assessment of corrective measures in accordance with Rule .1635 of this Section, assessment, the owner or operator shall select a remedy that, at a minimum, meets the standards listed in Paragraph (b) of this Rule .1636(b). Within 14 days of selecting a remedy, the permittee shall submit an application to modify the permit describing the selected remedy to the Division for evaluation and approval. The application shall be subject to the processing requirements set forth in Rule .1604(c) of this Section. The application shall include the demonstrations necessary to comply with the financial assurance requirements set forth in Paragraph (d) of Rule .1628 of this Section and Section .1800 of this Subchapter.

(b) Remedies shall:

(1) Be protective of human health and the environment;

(2) Attain the approved groundwater protection standards; standards in accordance with Rule .1634(b)(3) through (b)(5) of this Section;

(3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of 40 CFR 258 Appendix II constituents into the environment that may pose a threat to human health or the environment; and

(4) Comply with standards for management of wastes as specified in Rule .1637(e) of this Section.

(c) In selecting a remedy that meets the standards of Paragraph (b) of this Rule .1636(b), the owner or operator shall consider the following evaluation factors:

(1) The long-term and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

(A) Magnitude of reduction of existing risks;

(B) Magnitude of residual risks in terms of likelihood of further releases due to wastes remaining following implementation of a remedy;

(C) The type and degree of long-term management required, including monitoring, operation, and maintenance;

(D) Short-term risks that might be posed to the community, to workers, or to the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and disposal or containment;

(E) Time until full protection is achieved;

(F) Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, disposal, or containment;
(G) Long-term reliability of the engineering and institutional controls; and

(H) Potential need for replacement of the remedy.

(2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:
   (A) The extent to which containment practices will reduce further releases, and
   (B) The extent to which treatment technologies may be used.

(3) The ease or difficulty of implementing a potential remedy based on consideration of the following types of factors:
   (A) Degree of difficulty associated with constructing the technology;
   (B) Expected operational reliability of the technologies;
   (C) Need to coordinate with and obtain necessary approvals and permits from other agencies;
   (D) Availability of necessary equipment and specialists; and
   (E) Available capacity and location of needed treatment, storage, and disposal services.

(4) Practicable capability of the owner or operator, including a consideration of the technical and economic capability.

(5) The degree to which community concerns are addressed by a potential remedy.

(d) The owner shall specify as part of the selected remedy a schedule for initiating and completing remedial activities. This schedule shall be submitted to the Division for review and approval. Such a schedule shall require the initiation of remedial activities within a reasonable period of time taking into consideration the factors set forth in this Rule. The owner shall consider the following factors in determining the schedule of remedial activities:

(1) Extent and nature of contamination;

(2) Practical capabilities of remedial technologies in achieving compliance with the approved ground-water protection standards and other objectives of the remedy;

(3) Availability of treatment or disposal capacity for wastes managed during implementation of the remedy;

(4) Desirability of utilizing technologies that are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;

(5) Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;

(6) Resource value of the aquifer including:
   (A) Current and future uses;
   (B) Proximity and withdrawal rate of users;
   (C) Ground-water quantity and quality;
(D) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to contaminants;

(E) The hydrogeologic characteristics of the facility and surrounding land;

(F) Groundwater removal and treatment costs; and

(G) The costs and availability of alternative water supplies; and

(7) Practical capability of the owner or operator; and

(8) Other relevant factors.

(e) The Division may determine that active remediation of a release of an Appendix II constituent from a MSWLF unit is not necessary if the owner or operator demonstrates to the satisfaction of the Division that:

(1) The groundwater is additionally contaminated by substances that have originated from a source other than a MSWLF unit and those substances are present in concentrations such that active cleanup of the release from the MSWLF unit would provide no significant reduction in risk to actual or potential receptors; or

(2) The constituent or constituents are present in groundwater that:

   (A) is not currently or reasonably expected to be a source of drinking water; and

   (B) is not hydraulically connected with water to which the hazardous constituents of concern are migrating or are likely to migrate in concentrations that would exceed the approved groundwater protection standards; or

(3) Remediation of the releases is technically impracticable; or

(4) Remediation results in unacceptable cross-media impacts.

(f) A determination by the Division pursuant to Paragraph (e) of this Rule shall not affect the authority of the State to require the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to groundwater, to prevent exposure to groundwater, or to remediate groundwater to concentrations that are technically practicable and significantly reduce threats to human health or the environment.

History Note: Authority G.S. 130A-294;

Eff. October 9, 1993;

15A NCAC 13B .1637 is proposed for readoption with substantive changes as follows:

**IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM**

(a) Based on the approved schedule for initiation and completion of remedial activities, the owner or operator shall:

1. **within 120 days** after the approval of the selected remedy or as approved by the Division, submit a Corrective Action Plan that establishes and implements a corrective action groundwater monitoring program that:
   
   (A) At a minimum, as provided for in 40 CFR 258, meets the requirements of an assessment monitoring program under Rule .1634 of this Section;
   
   (B) Indicates the effectiveness of the corrective action remedy; and
   
   (C) Demonstrates compliance with groundwater standards or IMACS established in accordance with 15A NCAC 02L .0202 and groundwater protection standards established in accordance with Rule .1634(b)(3) through (b)(5) of this Section pursuant to Paragraph (f)(e) of this Rule.

2. Implement the approved corrective action remedy; and

3. Take any interim measures necessary to ensure the protection of human health and the environment. Interim measures shall, to the greatest extent practicable, be consistent with the objectives of and contribute to the performance of any remedy that may be required. The following factors shall be considered by an owner or operator in determining whether interim measures are necessary:

   (A) Time required to develop and implement a final remedy;
   
   (B) Actual or potential exposure of nearby populations or environmental receptors to constituents of concern; hazardous constituents;
   
   (C) Actual or potential contamination of drinking water supplies or sensitive ecosystems;
   
   (D) Further degradation of the groundwater that may occur if remedial action is not initiated expeditiously;
   
   (E) Weather conditions that may cause hazardous constituents of concern to migrate or be released;
   
   (F) Risks of fire or explosion, or potential for exposure to hazardous constituents of concern as a result of an accident or failure of a container or handling system; and
   
   (G) Other situations that may pose threats to human health or the environment.

(b) The owner and operator shall submit a Corrective Action Evaluation Report to the Division in electronic portable document format no less than once every five calendar years until the owner and operator are released from the corrective action program in accordance with Paragraph (g) of this Rule. The report shall contain:
(1) a description of the corrective measure remedies that have been implemented or completed since
the initiation of the corrective action program;
(2) an evaluation of the effectiveness of the corrective action program;
(3) the information required in Rule .1804(a)(1) of this Subchapter.

(b)(c) The owner or operator or the Division may determine, based on information developed after
implementation of the remedy has begun or other information, that compliance with requirements of Rule .1636(b) of
this Section are not being achieved through the remedy selected. In such cases, the owner or operator shall
implement other methods or techniques to comply with Rule .1636 of this Section techniques, as approved by the
Division, that could practically achieve compliance with the requirements, unless the owner or operator makes the
determination under Division determines that active remediation is not necessary in accordance with Rule .1636(e) of
this Section. Paragraph (c) of this Rule.

(c)(d) If the owner or operator or the Division determines that compliance with requirements under Rule .1636(b)
of this Section cannot be practically achieved with any currently available methods, the owner or operator shall:

(1) submit a written report that documents that compliance with the requirements under Rule
.1636(b) of this Section cannot be practically achieved with any currently available methods and
gain approval from the Division. If required by G.S. 89C or G.S. 89E, a professional engineer or
licensed geologist shall prepare these documents. [Note: The North Carolina Board of Examiners
for Engineers and Surveyors and the Board of Licensing of Geologist has determined, via letters
dated July 16, 2010 and November 30, 2010, that preparation of documents pursuant to this
Paragraph constitutes practicing engineering or geology under G.S. 89C and G.S. 89E.];

(2) implement alternate measures to control exposure of humans or the environment to
residual contamination, as necessary to protect human health and the environment; and

(3) implement alternate measures for control of the sources of contamination, or for removal
or decontamination of equipment, units, devices, or structures that are:
(A) technically practicable;
(B) consistent with the overall objective of the remedy; and

(4) submit a report justifying the alternative measures to the Division for review. The Division
shall date and stamp the report "approved" if the conditions of this Paragraph are satisfied. The
approved report shall be placed in the operating record prior to implementing the alternative
measures. approval prior to implementing the alternative measures. Upon approval by the Division,
this report shall be placed in the operating record.

(d)(e) All solid wastes that are managed pursuant to a remedy required under Rule .1636 of this Section, or an interim
measure required under Paragraph (a) of this Rule, shall be managed in a manner:

(1) protective of human health and the environment; and

(2) that complies with applicable RCRA Resource Conservation and Recovery Act requirements.

(e)(f) Remedies selected pursuant to Rule .1636 of this Section are shall be considered complete when:
The owner or operator complies with the approved groundwater quality and groundwater protection standards at all points within the plume of contamination that lie beyond the relevant point of compliance;

Compliance with the approved groundwater quality and groundwater protection standards has been achieved by demonstrating that concentrations of 40 CFR 258 Appendix II constituents have not exceeded these standards for a period of three consecutive years, consistent with performance standards in Rule 1636(b) of this Section; and

All actions required to complete the remedy have been satisfied.

Upon completion of the remedy, the owner or operator shall submit a report to the Division documenting that the remedy has been completed in compliance with Paragraph (d) of this Rule. This report shall be signed by the owner or operator and by the preparer of the report. If required by G.S. 89C or G.S. 89E, a professional engineer or licensed geologist shall prepare these documents. [Note: The North Carolina Board of Examiners for Engineers and Surveyors and the Board of Licensing of Geologist has determined, via letters dated July 16, 2010 and November 30, 2010, that preparation of documents pursuant to this Paragraph constitutes practicing engineering or geology under G.S. 89C and G.S. 89E.] Upon approval by the Division, this report shall be placed in the operating record.

When, upon completion of the certification, the Division determines that the corrective action remedy has been completed in accordance with Paragraph (f) of this Rule, the owner or operator shall be released from the requirements for financial assurance for the corrective action program under Rule .1628(d) of this Section. Rule .1628 of this Section and Section .1800 of this Subchapter. Nothing in this Paragraph shall release the owner or operator from the requirements for financial assurance for closure, post-closure care, or potential assessment and corrective action in accordance with Rule .1628 of this Section and Section .1800 of this Subchapter.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;
Amended Eff. April 1, 2011;
15A NCAC 13B .1680 is proposed for readoption with substantive changes as follows:

15A NCAC 13B .1680 LEACHATE STORAGE REQUIREMENTS

(a) Applicability.

(1) Construction of leachate storage tanks and surface impoundments located at solid waste landfill management facilities after October 9, 1993 shall meet the requirements set forth in this Rule.

(2) Liquid treatment and disposal at a solid waste landfill facility is subject to the requirements of this Subchapter.

(3) Operation and closure of all leachate storage tanks and surface impoundments shall meet the requirements of this Rule.

(b) Application requirements. An application for a permit to construct a landfill facility which includes leachate storage facilities shall contain the following:

(1) A description of the liquid to be stored;

(2) The estimated volume of liquid generated and a proposed recordkeeping system to record actual quantities stored;

(3) A schedule for liquid removal;

(4) A description of the final treatment and disposal of the liquid stored;

(5) A description of the liquid storage facility design;

(6) A contingency plan for managing unexpected surges in liquid quantities; and

(7) A closure plan prepared in accordance with Paragraph (f) of this Rule.

(c) Aboveground or onground tank requirements.

(1) Tanks may be constructed of concrete, steel, or other material approved by the Division. Tanks shall be supported on a well-drained stable foundation which prevents movement, rolling, or settling of the tank.

(A) The exterior surfaces of all aboveground and onground steel storage tanks shall be protected by a primer coat, a bond coat, and two or more final coats of paint or have at least an equivalent surface coating system designed to prevent corrosion and deterioration.

(B) The interior of all aboveground and onground tanks shall consist of or be lined with a material, or shall be lined with a material resistant to the liquid being stored.

(2) All aboveground and onground tanks shall have a secondary containment system which may consist of dikes, liners, pads, ponds, impoundments, curbs, ditches, sumps, or other systems capable of containing the liquid stored.

(A) The design volume for the secondary containment system shall be 110 percent of the volume of either the largest tank within the containment system or the total volume of all interconnected tanks, whichever is greater.
The secondary containment system shall be constructed of a material compatible with the liquid being stored.

A system shall be designed to contain and remove storm water from the secondary containment area. Provisions shall be included for the removal of any accumulated precipitation and be initiated within 24 hours or when 10 percent of the storage capacity is reached, whichever occurs first. Disposal shall be in compliance with all applicable federal and State regulations.

All aboveground and onground tanks shall be equipped with an overfill prevention system which may include, but not be limited to, that shall include level sensors and gauges, high level alarms, or automatic shutoff controls. The overfill control equipment shall be inspected weekly by the facility operator to ensure it is in good working order.

The operator of the facility shall inspect the exterior of all tanks for leaks, corrosion, and maintenance deficiencies weekly. Interior inspection of tanks shall be performed according to the Division approved plan. If the inspection reveals a tank or equipment deficiency which could result in failure of the tank to contain the liquid, remedial measures shall be taken immediately to eliminate the leak or correct the deficiency. Inspection reports shall be maintained and made available to the Division upon request for the lifetime of the liquid storage system.

All uncovered tanks shall have a minimum two feet of freeboard. Odor and vector control shall be practiced when necessary.

Underground tank requirements.

Underground tanks shall be placed a minimum of two feet above the seasonal high ground-water table and a minimum of two feet vertical separation shall be maintained between bedrock and the lowest point of the tank.

Tanks may be constructed of fiberglass reinforced plastic, steel that is cathodically protected, steel that is clad with fiberglass, or any other materials approved by the Division.

The secondary containment and continuous leak detection system shall be installed in the form of a double-walled tank, designed as an integral structure so that any release from the inner tank is completely contained by the outer shell.

The leak detection system shall be monitored at least weekly using methods specified by the operator and approved by the Division.

Any tank system vulnerable to corrosion shall be protected from both corrosion of the primary tank interior and the external surface of the outer shell.

All resistant coatings applied to the primary tank interior shall be chemically compatible with the liquid to be stored.

Cathodic protection systems, where installed, shall be inspected at least weekly by the facility operator and any deficiencies shall be corrected when discovered.

All underground tanks shall be equipped with an overfill prevention system which may include, but not be limited to, that shall include level sensors and gauges, high level alarms, or automatic
shutoff controls. The overfill control equipment shall be inspected weekly by the facility operator
to ensure it is in good working order.

(5) Inspection and leak detection monitoring reports shall be maintained and made available upon
request for the lifetime of the liquid storage system.

(e) Surface impoundment requirements.

(1) Any surface impoundment shall be constructed so that the bottom elevation of liquid is a minimum
of four feet above the seasonal high ground-water table and bedrock.

(2) At a minimum, surface impoundments shall be designed and constructed with a liner system
equivalent to the liner system for the landfill unit generating the liquid.

   (A) A surface impoundment designed and constructed to store leachate from a new MSWLF
unit shall include a composite liner which conforms to the requirements of Rule 1624.1624 of this Section or
   
   (B) An alternative liner system which is designed and constructed to achieve at least an
equivalent containment efficiency may be used. An equivalence demonstration
   shall be included in the permit application and shall be approved by the Division.

(3) Construction of the liner system components shall be consistent with the pertinent requirements set
forth in Rule 1624(b)(8) and (9), 1624(b)(8), (9), and (10) of this Section; and a construction
quality assurance report shall be prepared by the project engineer.

(4) The top liner shall be protected from degradation and damage.

(5) A minimum of two feet of freeboard shall be maintained in the surface impoundment. Odor and
vector control shall be practiced when necessary.

(6) A ground-water monitoring system shall be installed and sampled in a manner
consistent with the ground-water monitoring requirements for MSWLF units as set
forth in Rules 1631 through 1637, 1637 of this Section, or using an alternative monitoring system
approved by the Division.

(7) An operation plan shall be prepared and followed for operation of the surface impoundment.

(f) Closure of leachate storage facilities.

(1) The owner or operator of the liquid storage facility shall prepare a written closure plan for the
liquid storage facility and submit the plan with the permit application for the solid waste
management facility.

(2) The owner or operator shall complete closure activities in accordance with the approved closure
plan and within 180 days after liquid collection has ceased.

(3) At closure, all solid waste shall be removed from the tank or surface impoundment, connecting lines,
and any associated secondary containment systems. All solid waste removed shall be properly
handled and disposed of according to federal and State requirements. All connecting lines shall be
disconnected and securely capped or plugged.
(A) Underground tanks shall be removed or thoroughly cleaned to remove traces of waste and all accumulated sediments and then filled to capacity with a solid inert material, such as clean sand or concrete slurry. If groundwater surrounding the tank is found to be contaminated, the tank and surrounding contaminated soil shall be removed and appropriately disposed. Other corrective actions to remediate the contaminant plume may be required by the Department.

(B) Accessways to aboveground and onground tanks shall be securely fastened in place to prevent unauthorized access. Tanks shall either be stenciled with the date of permanent closure or removed. The secondary containment system shall be perforated to provide for drainage.

(C) For surface impoundments, all waste residues, contaminated system components (liners, etc.), contaminated subsoils, structures and equipment contaminated with waste shall be removed and appropriately disposed. If the groundwater surrounding the impoundment is contaminated, other corrective actions to remediate a contaminant plume may be required by the Department. If the groundwater surrounding the impoundment is found not to be contaminated, the liner system may remain in place if drained, cleaned to remove all traces of waste, and both liners punctured so that drainage is allowed. The impoundment is to be backfilled and regraded to the surrounding topography.

History Note: Authority G.S. 130A-294;
Eff. October 9, 1993;