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

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

(a) Purpose. The purpose of this Section is to regulate the siting, design, construction, operation, closure and post-closure of all municipal solid waste landfill facilities, 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 including a MSWLF unit(s) shall conform to the requirements of this Section as follows:

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

(2) MSWLF units that received solid waste after October 9, 1991 but stopped receiving waste before October 9, 1993 shall comply with the Solid Waste Permit, the Conditions of Permit, and Rule .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.

(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, 1991 and October 9, 1992.

(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 (c)(1) of Rule .1627 of this Section by October 9, 1994.

(4) 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.

(d) The owner or operator of a MSWLF facility shall comply with any other applicable Federal and State laws, rules, regulations, or other requirements.

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 DEFINITIONS

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

(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 significant quantities of ground water to wells or springs.

(4) "Base liner system" means the liner system installed on the MSWLF unit's foundation to control the flow of leachate.

(5) "Cap system" means a liner system installed over the MSWLF unit to minimize infiltration of precipitation and contain the wastes.

(6) "Commercial solid waste" means all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

(7) "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.

(8) "Ground water" means water below the land surface in a zone of saturation.

(9) "Hazardous Waste" means a solid waste as defined in G.S. 130A-290 (a)(8). "Hazardous Waste" does not include those solid wastes excluded from regulation pursuant to 40 CFR 261.4, incorporated by reference in 15A NCAC 13A .0006. "Hazardous Waste" does include hazardous waste generated by conditionally exempt small quantity generators as defined in 40 CFR 261.5, incorporated by reference in 15A NCAC 13A .0006.

(10) "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.

(11) "Industrial solid waste" means 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.

(12) "Landfill facility" means all contiguous land and structures, other appurtenances, and improvements on the land within the legal description of the site included in or proposed for the Solid Waste Permit. 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.

(13) "Landfill unit" means a discrete area of land or an excavation that receives solid waste, and is not a land application unit, surface impoundment, injection well, or waste pile, as defined under 40 CFR Part 257. Such a landfill may be publicly or privately owned.

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

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

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

(17) "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. 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.

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

(19) "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.

(20) "Project engineer" means the official representative of the permittee who is licensed to practice engineering in the State of North Carolina, who 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 the Rules specified in this Section. All certifications must bear the seal and signature of the professional engineer and the date of certification.

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

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

(23) "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.

(24) "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 GENERAL APPLICATION REQUIREMENTS AND PROCESSING

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

(1) New facility. An owner and operator proposing to establish a MSWLF facility according to the following criteria shall submit a Site Study and subsequently, an application for a permit to construct as set forth in Paragraph (a) of Rule .1617.
   (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. 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. 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 application:
   (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 Paragraph (c) of Rule .1617.

(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 .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 .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 .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 .1622;
      (ii) Construction of the MSWLF unit is approved by the effective permit and conforms to the requirements of Subparagraph (b)(1) of Rule .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 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 revised text by noting the date of revision on the page.

(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.

(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 requirement(s).

(4) Number of copies. An applicant shall submit a minimum of five copies of each original application document and any revisions 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 permitting process shall provide for public review of and input to permit documents containing the applicable design and operating conditions and 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 comment 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.

(C) Applicability. Applications for Permit to Construct a new facility or permit renewals for an existing facility or 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), (a)(3), and (a)(4)(A) of this Rule are not subject to the requirements of this Paragraph.

(2) Draft Permits.

(A) Once an application is complete, the Division shall tentatively decide whether the permit should be issued or denied.

(B) If the Division decides the permit should be denied, a notice to deny shall be sent to the applicant. Reasons for permit denial shall be in accordance with Rule .0203(e) of this Subchapter.

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

(D) A draft permit shall contain (either expressly or by reference) all applicable terms and conditions for the permit.

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

(3) Fact Sheets.

(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.

(4) Public Notice of Permit Actions and Public Comment Period.

(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.

(i) 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 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, address, and telephone number of a person from whom interested persons may obtain further information, including copies of draft permits and fact sheets;

(VI) A description of the time frame and procedure for making 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. 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 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 may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. 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.

(C) A tape recording or written transcript of the hearing shall be made available to the public.

(7) Reopening of the Public Comment Period.

(A) If any 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 a new draft permit, appropriately modified, under Subparagraph (2) of this Paragraph;

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

(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 substantial new questions that caused its reopening. The public notice under Subparagraph (4) of this Paragraph 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; and

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

(B) The response to comments shall be made available to the public.

(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;*
Eff. October 9, 1993.

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

(a) Applicability. Permits issued by the Division for new and existing MSWLF facilities shall be 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, but not limited to, the provisions of this Paragraph.

(1) Division Approved Plan. Permits issued subsequent to the effective date of this Rule shall incorporate a Division approved plan.

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

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

(C) The Division approved plans for a new facility or permit renewal of an existing facility shall be described in the permit and shall include, but not be limited to, the following:

(i) Facility plan;

(ii) Engineering plan and Construction Quality Assurance Plan;

(iii) Operation plan;

(iv) Monitoring plan; and

(v) Closure and post-closure plan.

(D) The Division shall define the content of the Division approved plans for amendments or modifications to the permit, and for the transition plan of an existing MSWLF unit.

(2) Permit provisions. All disposal 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 impose on a permit.

(A) Duty to Comply. The permittee shall comply with all conditions of this permit, unless otherwise authorized by the Division. Any permit noncompliance, except as otherwise authorized by the Division, constitutes a violation of the Act and is grounds for enforcement action, or for permit revocation or modification.

(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 this permit, or to determine compliance with this permit. The permittee shall also furnish to the Division, upon request, copies of records required to be kept by this permit.

(D) Recordation Procedures. The permittee shall comply with the requirements of Rule .0204 in order for a new permit to be effective.

(E) Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

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

(G) No Property Rights. This permit does not convey any property rights of any sort, or any exclusive privilege. This permit is not transferable.

(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 said approval.

(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 this 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 or activity is located or conducted, or where records are kept under the conditions of this permit;

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

(iii) Inspect any facilities, equipment (including monitoring and control equipment), practices or operations regulated by the Division;

(iv) Sample 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 photographs for the purpose of documenting items of compliance or noncompliance at waste management units, or where appropriate to protect legitimate proprietary interests, 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. This period may be extended by the Division at any time.

(iii) Records of monitoring information shall include:

(I) The date, exact 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 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 shall be reported at the intervals specified in the permit.

(iii) The permittee shall report orally within 24 hours from the time the permittee becomes aware of the circumstances of any release, discharge, 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, Health, 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, it shall promptly submit such facts or information.

(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 requested by the Division:

(I) If there is reason to believe that operations are being conducted in a manner that significantly 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 approved plans.

(iii) 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.

(N) Waste Exclusions. The following wastes shall not be disposed of in a MSWLF unit:
  (i) White goods;
  (ii) Used oil, lead-acid batteries, whole tires; and
  (iii) Yard trash.

(O) Additional Solid Waste Management Facilities. Construction and operation of additional solid waste management facilities at the landfill facility shall not impede operation of the MSWLF unit and shall be approved by the Division.

(P) 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.
  (i) The owner or operator shall establish a schedule for permit renewal that demonstrates compliance with Rule .1603 of this Section.
  (ii) 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.

15A NCAC 13B .1605 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1606 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1607 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1608 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1609 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1610 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1611 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1612 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1613 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1614 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1615 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1616 RESERVED FOR FUTURE CODIFICATION

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

(a) Permit for a new facility. 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 Rule .1623.

(2) Permit to Operate. The owner or 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) 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) A updated water quality monitoring plan prepared as set forth in Paragraph (b) of Rule .1623.

(c) Modifications to the permit. The owner or operator may propose to modify plans 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 compliance with the applicable requirements of this Section.

(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.

(e) 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;*
Eff. October 9, 1993.

15A NCAC 13B .1618 SITE STUDY FOR MSWLF FACILITIES

(a) Purpose. As required under Rule .1617 of this Section, the owner and operator shall prepare a site study which 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 suitable and the applicant is authorized to prepare an application for a permit to construct in accordance with Rule .1617 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 is the land which is proposed for the landfill facility. The site study presents a characterization of the land, incorporating various investigations and requirements pertinent to suitability of a MSWLF facility. The scope of the site study includes 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.

(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;

(E) Waste transportation routes; and

(F) Public use airports and runways.

(2) Local characterization study. The local study area includes the landfill facility and a 2000 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; the report shall incorporate the proposed facility plan and if 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 municipal solid waste landfills.

(A) 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.

(i) Prior to 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.

(ii) For purposes of this Subpart, 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.

(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.

(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.

(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 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 be prepared which incorporates the summary findings of the geologic and hydrogeologic report as set forth in Subparagraph (a)(13) of Rule .1623 and includes the drawings and reports described in Rule .1619 (d)(1), (d)(2), (e)(1), (e)(2), (e)(3), and (e)(5).

(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 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 defines comprehensive development of the property proposed for permit or described in the permit of an existing facility. The plan includes 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 spans 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 defines the waste stream proposed for management at the MSWLF facility. If different types of landfill units or non-disposal 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 provides no more than approximately five years of operating capacity.

(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 which plot site development shall be prepared on a topographic map representative of existing site conditions; the map shall locate 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 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.

(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;

(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.

(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;
(ii) Operating capacity for each phase 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:
(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, including:
(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.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

15A NCAC 13B .1620 ENGINEERING PLAN

(a) Purpose. The engineering plan incorporates the detailed plans and specifications relative to the design and performance of the landfill's containment and environmental control systems. This plan sets forth the design parameters and construction requirements for the components of the landfill's systems and establishes 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 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 a phase of development not to exceed approximately five years of operating 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.

(d) An engineering report must contain:

(1) An analysis of the facility design that conforms to:
  (A) The standards for the foundation and the base liner system set forth in Rule .1624 of this Section;
  (B) The standards for the cap system set forth in Paragraph (c) of Rule .1627 of this Section; and
  (C) 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 Part.

(4) A copy of the Design Hydrogeologic Report prepared in accordance with Paragraph (b) of Rule .1623.

(e) Engineering drawings must clearly illustrate:

(1) Existing conditions: site topography, features, existing disposal areas, roads, buildings;

(2) Grading plans: proposed limits of excavation, subgrade elevations, boring locations, intermediate grading for partial construction;

(3) Base liner system: grades for top of composite liner, slopes, anchor configuration, 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 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.

History Note: *Authority G.S, 130A-294;*
Eff. October 9, 1993.

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 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, 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. 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 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 or approval by agencies other than the Division of Solid Waste Management may be required. 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.

(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) 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 washout of solid waste so as to pose a hazard to human health and the environment.

(b) 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.

(a) New MSWLF units and lateral expansions shall not be located in wetlands, unless the owner or operator can make the following demonstrations to the Division:

(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.

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

(A) Cause or contribute to violations of any applicable State water quality standard;

(B) Violate any applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act;

(C) 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

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

(iii) The MSWLF unit will not cause or contribute to significant degradation of wetlands. The owner or operator shall demonstrate the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:

(A) Erosion, stability, and migration potential of native wetland soils, muds and deposits used to support the MSWLF unit;
(B) Erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;
(C) The volume and chemical nature of the waste managed in the MSWLF unit;
(D) Impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;
(E) The potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment; and
(F) Any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.

(iv) To the extent required under Section 404 of the Clean Water Act or applicable State wetlands laws, 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 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

(v) Sufficient information is available to make a reasonable determination with respect to these demonstrations.

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

(4) Fault Areas.

(a) 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 or 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.

(b) For the purposes of this Item:

(i) "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.

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

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

(5) 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:
  (i) On-site or local soil conditions that may result in significant differential settling;
  (ii) On-site or local geologic or geomorphologic features; and
  (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.
  (ii) "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.
  (iii) "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.
  (iv) "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 fluction, block sliding, and rock fall.
  (v) "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.

(7) Cultural Resources. A new MSWLF unit or lateral expansion shall not damage or destroy an archaeological or historical property. The Department of 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 Cultural Resources may request the owner or operator to perform a site-specific survey which shall be included in the Site Study.

(8) State Nature and Historic Preserve. A new MSWLF unit or lateral expansion shall not have an adverse impact on any lands included in the State Nature and Historic Preserve.

(9) 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, in accordance with the rules codified at 15A NCAC 2B .0200 - "Classifications and Water Quality Standards Applicable To Surface Waters Of North Carolina."
  (b) Any new MSWLF unit or lateral expansion, which shall discharge leachate to surface waters at the landfill facility and must 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, shall not be located within watersheds classified as WS-II or WS-III, in accordance with the rules codified at 15A NCAC 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 GEOLOGIC AND HYDROGEOLOGIC INVESTIGATIONS FOR MSWLF FACILITIES

(a) Site Hydrogeologic 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 ground-water flow paths and rates for the uppermost aquifer. The report shall provide an understanding of the relationship of the site ground-water flow regime to local and regional hydrogeologic features, with special emphasis on the relationship of MSWLF units to ground-water receptors (especially drinking water wells) and to ground-water 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 at a minimum 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) Ground-water discharge features. 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, ground-water discharge feature(s).

(3) Borings for which the numbers, locations, and depths are sufficient to provide an adequate understanding of the subsurface conditions and ground-water 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 an average of one boring for each ten 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.

(4) A testing program for the borings which describes the frequency, distribution, and type of samples taken and the methods of analysis (standard ASTM test methods or methods approved by the Division) used to obtain, at a minimum, the following information:
   (A) Standard penetration - resistance;
   (B) Particle size analysis;
   (C) Soil classification: Unified Soil Classification System;
   (D) Formation descriptions; and
   (E) Saturated hydraulic conductivity, porosity, and effective porosity for each lithologic unit of the uppermost aquifer.

(5) In addition to borings, other 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 ground-water flow which could preclude accurate determination of ground-water 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, meteorological and climatological data, and any other information available; and
   (D) 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, injection wells, etc.

(8) The horizontal and vertical dimensions of ground-water flow, including flow directions, rates, and gradients.

(9) Ground-water contour map(s) to show the occurrence and direction of ground-water flow in the uppermost aquifer, and any other aquifers identified in the hydrogeologic investigation. The ground-water 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 ground-water contours shall be shown on the ground-water contour map(s).

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

(11) Boring logs, field logs and notes, well construction records, and piezometer construction records.

(12) 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, ground-water discharge features, and ground-water recharge/discharge areas.

(13) 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 ground-water flow regime of the site focussing on the relationship of MSWLF units to ground-water receptors and to ground-water 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.

(D) A discussion of the ground-water 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 to the uppermost aquifer.

(b) Design Hydrogeologic Report.

(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 shall be based on the geologic and hydrogeologic characteristics of the landfill facility. At a minimum, there shall be 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 and by the scope and purpose of the investigation 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 of this Section, and Paragraph (e) of Rule .1680 of this Section.

(B) The report shall include an investigation of 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) Rock corings (for sites located in the piedmont or mountain regions) for which the numbers, locations, and depths are adequate to provide an understanding of the fractured bedrock conditions and ground-water flow characteristics of at least the upper 10 feet of the bedrock. Testing for the 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.

(E) 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.

(F) A bedrock contour map (for sites located in piedmont or mountain regions) 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.

(G) A three dimensional ground-water flow net or several hydrogeologic cross-sections that characterize the vertical ground-water flow regime for this area.

(H) A report on the ground-water flow regime for the area including ground-water flow paths for both horizontal and vertical components of ground-water flow, horizontal and vertical gradients, flow rates, ground-water recharge areas and discharge areas, etc.

(I) 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 2C Rule .0113(a)(2).

(3) A Water Quality Monitoring Plan shall be submitted that contains the following information.

(A) A ground-water monitoring plan including information on the proposed ground-water monitoring system(s), sampling and analysis requirements, and detection monitoring requirements that fulfills the requirements of Rules .1630 through .1637 of this Section.

(i) The Division may require the use of alternative monitoring systems in addition to ground-water monitoring wells at sites:

(I) Where the owner or operator does not control the property from any landfill unit to the ground-water discharge feature(s); or

(II) Sites with hydrogeologic conditions favorable to detection monitoring by alternative methods.

(ii) The ground-water 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.

(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 to be effective in providing early detection of any release of hazardous constituents (from any point in a MSWLF unit or leachate surface impoundment) to the uppermost aquifer, 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 CONSTRUCTION REQUIREMENTS FOR MSWLF FACILITIES

(a) This Rule establishes 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 or 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 or operator shall demonstrate through a model that the proposed design will ensure that maximum concentration levels (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) and (10) of this 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 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 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), (11), (12) and (13) of this Rule.

(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 landfilling 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 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 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 buffer between the MSWLF unit and any stream, river, or lake, unless the owner or 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 landfill units. An adequate buffer distance shall be established between a new MSWLF unit and any existing landfill units to establish a ground-water monitoring system 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.

(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 four feet above the seasonal high ground-water table and bedrock datum plane contours established in the Design Hydrogeological Report prepared in accordance with Rule .1623(b) of this Section.

(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 Subparagraph (b)(7) of this Rule.

(B) Construction requirements.

(i) The landfill subgrade shall be graded in accordance with the approved plans and specifications, which 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 may be required by the permit to notify the 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 shelby 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 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, moisture 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. 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.

(iv) 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.

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

(vi) 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 incorported into the permit to consturct 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;

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

(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.

(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.

(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 of 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 courser 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 run-off generated by the 24-hour, 25-year storm event, and conform to the requirements of the Sedimentation Pollution Control Law (15A NCAC 4).

(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 and a series of color photographs of major project features.

(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;
  (iii) The requirements of this Rule; and
  (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.

Table 1

CHEMICAL	MCL(mg/l
Arsenic	0.05
Barium	1.0
Benzene	0.005
Cadmium	0.01
Carbon Tetrachloride	0.005
Chromium (hexavalent)	0.05
2,4-Dichlorophenoxy acetic acid	0.1
1,4-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
Endrin	0.0002
Fluoride	4
Lindane	0.004
Lead	0.05
Mercury	0.002
Methoxychlor	0.1
Nitrate	10.0
Selenium	0.01
Silver	0.05
Toxaphene	0.005
1,1,1-Trichloromethane	0.2
Trichloroethylene	0.005
2,4,5-Trichlorophenoxy acetic acid	0.01
Vinyl Chloride	0.002

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993;
Temporary Amendment Eff. July 8, 1998;
Amendment Eff. April 1, 1999.

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

(a) The 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 or operator of a MSWLF unit shall prepare an operation plan for each phase of landfill development. The plan shall include drawings and a report clearly defining the information proposed for the Division approved plan.

(1) Operation drawings. Drawings shall be prepared for each phase of landfill development. The drawings shall be consistent with the engineering plan and prepared in a format which is useable 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.

(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 which 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, to also include hazardous waste from conditionally exempt small quantity generators.

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

(iii) Liquid wastes unless they are managed in accordance with Rule .1626(9) of this Section.

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

(d) Asbestos waste shall be managed in accordance with 40 CFR 61, 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 waste shall be covered immediately with soil in a manner that will not cause airborne conditions and must be disposed of separate and apart from other solid wastes:

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

(ii) In an area not contiguous with other disposal areas. Separate areas shall be clearly designated 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 as a soil conditioner and incorporated into or applied onto the vegetative growth layer but, in no case greater than six inches in depth.

(ii) Co-disposed if the facility meets all design requirements contained within Rule .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, at a minimum:

(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 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.

(2) Cover material requirements.

(a) Except as provided in (2)(b) of this Paragraph, 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 an alternative thickness (other than at least six inches of earthen material) may be approved by the Division if the owner or operator 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. 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 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 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 does not exceed the lower explosive limit for methane at the facility property boundary.

(b) Owners or operators of all MSWLF units must implement a routine methane monitoring program to ensure that the standards of (4)(a) are met. A permanent monitoring system shall be constructed on or before October 9, 1994. A temporary monitoring system shall be used prior to construction of the permanent system.

(i) The type and frequency of monitoring must be determined based on the following factors:

(A) Soil conditions;

(B) The hydrogeologic conditions surrounding the facility;

(C) The hydraulic conditions surrounding the facility; and

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

(ii) The minimum frequency of monitoring shall be quarterly.

(c) If methane gas levels exceeding the limits specified in (4)(a) are detected, the owner or operator must:

(i) Immediately take all necessary steps to ensure protection of human health and notify the Division;

(ii) Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and

(iii) Within 60 days of detection, implement a remediation plan for the methane 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.

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

(d) 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.

(5) Air Criteria.

(a) 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.

(b) Open burning of solid waste, except for the infrequent burning of land clearing debris generated on site or debris from emergency clean-up operations, is prohibited at all MSWLF units. Any such infrequent burning must be approved by the Division.

(c) Equipment shall be provided to control accidental fires or arrangements shall be made with the local fire protection agency to immediately provide fire-fighting services when needed.

(d) Fires that occur at a MSWLF require verbal notice to the Division within 24 hours and written notification shall be submitted within 15 days.

(6) Access and safety requirements.

(a) The MSWLF shall be adequately secured by means of gates, chains, berms, fences and other security measures approved by the Division to prevent unauthorized entry.

(b) An attendant shall be on duty at the site at all times while it is open for public use to ensure compliance with operational requirements.

(c) The access road to the site shall be of all-weather construction and maintained in good condition.

(d) Dust control measures shall be implemented when necessary.

(e) Signs providing information on dumping procedures, the hours during which the site is open for public use, the permit number and other pertinent information specified in the permit conditions shall be posted at the site entrance.

(f) Signs shall be posted stating that no hazardous or liquid waste can be received.

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

(h) 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.

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

(7) Erosion and sedimentation control requirements.

(a) Adequate sediment control measures (structures or devices), shall be utilized to prevent silt from leaving the MSWLF facility.

(b) Adequate sediment control measures (structures or devices), shall be utilized to prevent excessive on-site erosion.

(c) Provisions for a vegetative ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of MSWLF development.

(8) Drainage control and water protection requirements.

(a) Surface water shall be diverted from the operational area.

(b) Surface water shall not be impounded over or in waste.

(c) Solid waste shall not be disposed of in water.

(d) Leachate shall be contained on site or properly treated prior to discharge. An NPDES permit may be required prior to the discharge of leachate to surface waters.

(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, but not limited to, the National Pollutant Discharge Elimination System (NPDES) requirements, pursuant to Section 402.

(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, is designed with a composite liner and leachate collection system as described within Rule .1624 of this Section.

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

(ii) 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, or an alternative location near the facility approved by the Division, in an operating record the following information as it becomes available:

(i) Inspection records, waste determination records, and training procedures required in Item (1) of this Rule;

(ii) Amounts by weight of solid waste received at the facility to include source 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.

(b) All information contained in the operating record must be furnished upon request to the Division or be made available at all reasonable times for inspection by the Division.

(c) The owner or 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.

(b) Solid waste shall be compacted as densely as practical into cells.

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

(12) Leachate management plan. The owner or operator of a MSWLF unit designed with a leachate collection system must establish and maintain a leachate management plan which, at a minimum, 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.

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 MSWLF facility under Rule .1629.

(b) Scope.

(1) Closure. Standards are established for the scheduling and documenting closure of all MSWLF units, and designing the cap system. Construction requirements for the cap system incorporate specific requirements from Rule .1624 of this Section.

(2) Post-closure. Standards are established 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 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 as the low-permeability barrier specified in Subparagraph (1) of this Paragraph; and

(B) The erosion layer will provide equivalent or improved protection 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 Subparagraphs (b)(8), (b)(9) and (b)(15) of Rule .1624 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 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 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 notation on the deed to the landfill facility property, or some other instrument that is normally examined during title

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 shall in perpetuity notify any potential purchaser of the property that:

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

(ii) Its use is restricted under the closure plan approved by the Division.

(9) The owner or operator may request permission from the Division to remove the notation from the deed if all wastes are removed from the facility.

(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 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. 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 ground water and surface water in accordance with the requirements of Rules .1631 through .1637 and maintaining the ground-water monitoring system, if applicable; and monitoring the surface water in accordance with the requirements of Rule .0602; 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 and this demonstration is approved by the Division; or

(B) Increased by the Division if the Division determines that the lengthened period is necessary to protect human health and the environment.

(3) 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 completed in accordance with the post-closure plan, has been placed in the operating record.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

15A NCAC 13B .1628 FINANCIAL ASSURANCE RULE

(a) Applicability and Effective Date.

(1) The requirements of this Rule apply to owners and operators of all MSWLF units that receive waste on or after October 9, 1993, except owners or operators who are State or Federal government entities whose debts and liabilities are the debts and liabilities of a State or the United States.

(2) The requirements of this Rule are effective April 9, 1994.

(3) MSWLF units owned and operated by units of local government or public authorities may elect to use a Capital Reserve Fund as described in Paragraph (e)(1)(I) of this Rule.

(4) Owners and operators of all MSWLF units shall submit detailed cost estimates for closure and post-closure in accordance with Rule .1629 of this Section and this Rule; and, if necessary, for corrective action programs in accordance with Rule .1637 of this Section and this Rule.

(5) Under this Rule, when documents are required to be placed in the operating record of a MSWLF unit, three copies shall be forwarded to the Division.

(6) When allowable mechanisms as specified in Paragraph (e) of this Rule are used in combination to provide financial assurance for closure, post-closure or corrective action, no more than one allowable mechanism shall be provided by the same financial institution or its corporate entities.

(b) Financial Assurance for Closure.

(1) The owner or operator shall have a detailed written estimate, in current dollars, of the cost of hiring a third party to close the largest area of all MSWLF units at any time during the active life in accordance with the closure plan required under Rule .1629 of this Section. A copy of the closure cost estimate shall be placed in the MSWLF's closure plan and the operating record.

(A) The cost estimate shall equal the cost of closing the largest area of all MSWLF units at any time during the active life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan as set forth in Rule .1629 of this Section.

(B) During the active life of the MSWLF unit, the owner or operator shall annually adjust the closure cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s). For owners and operators using the local government financial test, the closure cost estimate shall be updated for inflation within 30 days after the close of the local government's fiscal year and before submission of updated information to the Division.

(C) The owner or operator shall increase the closure cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if changes to the closure plan or MSWLF unit conditions increase the maximum cost of closure at any time during the remaining active life.

(D) The owner or operator may reduce the closure cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if the cost estimate exceeds the maximum cost of closure at any time during the remaining life of the MSWLF unit. Prior to any reduction of the closure cost estimate by the owner or operator, a written justification for the reduction shall be submitted to the Division. No reduction of the closure cost estimate shall be allowed without Division approval. The reduction justification and the Division approval shall be placed in the MSWLF's operating record.

(2) The owner or operator of each MSWLF unit shall establish financial assurance for closure of the MSWLF unit in compliance with Paragraph (e) of this Rule. The owner or operator shall provide continuous coverage for closure until released from financial assurance requirements by demonstrating compliance with Rule .1627(c) of this Section for final closure certification.

(c) Financial Assurance for Post-Closure Care.

(1) The owner or operator shall have a detailed written estimate, in current dollars, of the cost of hiring a third party to conduct post-closure care for the MSWLF unit in compliance with the post-closure plan developed under Rule .1629 of this Section. The post-closure cost estimate used to demonstrate financial assurance in Subparagraph (2) of this Paragraph shall account for the total costs of conducting post-closure care, including annual and periodic costs as described in the post-closure plan over the entire post-closure care period and be placed in the operating record.

(A) The cost estimate for post-closure care shall be based on the most expensive costs of post-closure care during the post-closure care period.

(B) During the active life of the MSWLF unit and during the post-closure care period, the owner or operator shall annually adjust the post-closure cost estimate for inflation within 60 days prior to

the anniversary date of the establishment of the financial instrument(s). For owners and operators using the local government financial test, the post-closure cost estimate shall be updated for inflation within 30 days after the close of the local government's fiscal year and before submission of updated information to the Division.

(C) The owner or operator shall increase the post-closure care cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if changes in the post-closure plan or MSWLF unit conditions increase the maximum costs of post-closure care.

(D) The owner or operator may reduce the post-closure cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if the cost estimate exceeds the maximum costs of post-closure care remaining over the post-closure care period. Prior to any reduction of the post-closure cost estimate by the owner or operator, a written justification for the reduction shall be submitted to the Division. No reduction of the post-closure cost estimate shall be allowed without Division approval. The reduction justification and the Division approval shall be placed in the MSWLF's operating record.

(2) The owner or operator of each MSWLF unit shall establish, in a manner in accordance with Paragraph (e) of this Rule, financial assurance for the costs of post-closure care as required under Rule .1629 (c) of this Section. The owner or operator shall provide continuous coverage for post-closure care until released from financial assurance requirements for post-closure care by demonstrating compliance with Rule .1627(d) of this Section.

(d) Financial Assurance for Corrective Action.

(1) An owner or operator of a MSWLF unit required to undertake a corrective action program under Rule .1637 of this Section shall have a detailed written estimate, in current dollars, of the cost of hiring a third party to perform the corrective action. The corrective action cost estimate shall account for the total costs of corrective action activities as described in the corrective action program for the entire corrective action period. The owner or operator shall notify the Division that the estimate has been placed in the operating record.

(A) The owner or operator shall annually adjust the estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) until the corrective action program is completed in accordance with Rule .1637(f) of this Section. For owners and operators using the local government financial test, the corrective action cost estimate shall be updated for inflation within 30 days after the close of the local government's fiscal year and before submission of updated information to the Division.

(B) The owner or operator shall increase the corrective action cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if changes in the corrective action program or MSWLF unit conditions increase the maximum costs of corrective action.

(C) The owner or operator may reduce the corrective action cost estimate and the amount of financial assurance provided under Subparagraph (2) of this Paragraph if the cost estimate exceeds the maximum remaining costs of corrective action. Prior to any reduction of the corrective action cost estimate by the owner or operator, a written justification for the reduction shall be submitted to the Division. No reduction of the corrective action cost estimate shall be allowed without Division approval. The reduction justification and the Division approval shall be placed in the MSWLF's operating record.

(2) The owner or operator of each MSWLF unit required to undertake a corrective action program under Rule .1637 of this Section shall establish, in a manner in accordance with Paragraph (e) of this Rule, financial assurance for the most recent corrective action program. The owner or operator shall provide continuous coverage for corrective action until released from financial assurance requirements for corrective action by demonstrating compliance with Rule .1637(f) and (g) of this Section.

(e) Allowable Mechanisms.

(1) The mechanisms used to demonstrate financial assurance under this Rule shall ensure that the funds necessary to meet the costs of closure, post-closure care, and corrective action for known releases shall be available whenever they are needed. Owners and operators shall choose from the options specified in Parts (A) through (I) of this Paragraph.

(A) Trust Fund.

(i) An owner or operator may satisfy the requirements of this Paragraph by establishing a trust fund which conforms to the requirements of this Part. The trustee shall be an entity

which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency. A copy of the trust agreement shall be placed in the facility's operating record.

(ii) Payments into the trust fund shall be made annually by the owner or operator over the term of the initial permit or over the remaining life of the MSWLF unit, in the case of a trust fund for closure or post-closure care, or over one-half of the estimated length of the corrective action program in the case of corrective action for known releases. This period is referred to as the pay-in period.

(iii) For a trust fund used to demonstrate financial assurance for closure and post-closure care, the first payment into the fund shall be at least equal to the current cost estimate for closure or post-closure care, except as provided in Part (J) of this Paragraph, divided by the number of years in the pay-in period as defined in Part (A)(ii) of this Paragraph. The amount of subsequent payments shall be determined by the following formula:

$$\text{Next Payment} = \frac{\text{CE-CV}}{\text{Y}}$$

where CE is the current cost estimate for closure or post-closure care (updated for inflation or other changes), CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(iv) For a trust fund used to demonstrate financial assurance for corrective action, the first payment into the trust fund shall be at least equal to one-half of the current cost estimate for corrective action, except as provided in Part (J) of this Paragraph. The amount of subsequent payments shall be determined by the following formula:

$$\text{Next Payment} = \frac{\text{CE-CV}}{\text{Y}}$$

where CE is the current cost estimate for corrective action (updated for inflation or other changes), CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(v) The initial payment into the trust fund shall be made before the initial receipt of waste or before the effective date of this Rule (April 9, 1994), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the corrective action remedy has been selected in accordance with the requirements of Rule .1636 of this Section. Subsequent payments shall be made no later than 30 days after each anniversary date of the first payment.

(vi) If the owner or operator establishes a trust fund after having used one or more alternate mechanisms specified in this Paragraph, the initial payment into the trust fund shall be at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to the specifications of this Part.

(vii) The owner or operator, or other person authorized to conduct closure, post-closure care, or corrective action activities may request reimbursement from the trustee and Division for these expenditures. Requests for reimbursement shall be granted only if sufficient funds are remaining in the trust fund to cover the remaining costs of closure, post-closure care, or corrective action, and if justification and documentation of the cost is placed in the operating record. The owner or operator shall document in the operating record that reimbursement has been received.

(viii) The trust fund may be terminated by the owner or operator only if the owner or operator substitutes alternate financial assurance as specified in this Rule or if no longer required to demonstrate financial responsibility in accordance with the requirements of Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(ix) The trust agreement shall be accompanied by a formal certification of acknowledgement. Schedule A of the trust agreement shall be updated within 60 days after any change in the amount of the current cost estimate covered by the agreement.

(B) Surety Bond Guaranteeing Payment or Performance.

(i) An owner or operator may demonstrate financial assurance for closure or post-closure care by obtaining a payment or performance surety bond which conforms to the requirements of this Part. An owner or operator may demonstrate financial assurance for corrective action by obtaining a performance bond which conforms to the requirements of this Part. The bond shall be effective before the initial receipt of waste or before the effective date of this Rule, (April 9, 1994), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the corrective action remedy has been selected in accordance with the requirements of Rule .1636 of this Section. The owner or operator shall place a copy of the bond in the operating record. The surety company issuing the bond shall, at a minimum, be among those listed as acceptable sureties on Federal bonds in Circular 570 of the U.S. Department of the Treasury which is 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.

(ii) The penal sum of the bond shall be in an amount at least equal to the current closure, post-closure care or corrective action cost estimate, whichever is applicable, except as provided in Paragraph (e)(1)(J) of this Rule.

(iii) Under the terms of the bond, the surety shall become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond.

(iv) The owner or operator shall establish a standby trust fund. The standby trust fund shall meet the requirements of Paragraph (e)(1) (A) of this Rule except the requirements for initial payment and subsequent annual payments specified in Paragraph (e)(1)(A)(ii), (iii), (iv) and (v) of this Rule.

(v) Payments made under the terms of the bond shall be deposited by the surety directly into the standby trust fund. Payments from the trust fund shall be approved by the trustee and Division.

(vi) Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner and operator and to the Division 120 days in advance of cancellation. If the surety cancels the bond, the owner or operator shall obtain alternate financial assurance as specified in this Rule.

(vii) The owner or operator may cancel the bond only if alternate financial assurance is substituted as specified in this Rule or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(C) Letter of Credit.

(i) An owner or operator may satisfy the requirements of this Paragraph by obtaining an irrevocable standby letter of credit which conforms to the requirements of this Part. The letter of credit shall be effective before the initial receipt of waste or before the effective date of this Rule (April 9, 1994), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the corrective action remedy has been selected in accordance with the requirements of Rule .1636 of this Section. The owner or operator shall place a copy of the letter of credit in the operating record. The issuing institution shall be an entity which has the authority to issue letters of credit and whose letter of credit operations are regulated and examined by a Federal or State agency.

(ii) A letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the following information: name and address of the facility, and the amount of funds assured, shall be included with the letter of credit in the operating record.

(iii) The letter of credit shall be irrevocable and issued for a period of at least one year in an amount at least equal to the current cost estimate for closure, post-closure care or corrective action, whichever is applicable, except as provided in Paragraph (e)(1)(J) of this Rule. The letter of credit shall provide that the expiration date shall be automatically extended for a period of at least one year unless the issuing institution has

canceled the letter of credit by sending notice of cancellation by certified mail to the owner and operator and to the Division 120 days in advance of cancellation. If the letter of credit is canceled by the issuing institution, the owner or operator shall obtain alternate financial assurance.

(iv) The owner or operator may cancel the letter of credit only if alternate financial assurance is substituted as specified in this Rule or if the owner or operator is released from the requirements of Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(v) The owner or operator shall establish a standby trust fund. The standby trust fund shall meet the requirements of Paragraph (e)(1)(A) of this Rule except the requirements for initial payment and subsequent annual payments specified in Paragraph (e)(1)(A)(ii), (iii), (iv) and (v) of this Rule.

(vi) Payments made under the terms of the letter of credit shall be deposited by the issuing institution directly into the standby trust fund. Payments from the trust fund shall be approved by the trustee and the Division.

(D) Insurance.

(i) An owner or operator may demonstrate financial assurance for closure and post-closure care by obtaining insurance which conforms to the requirements of this Part. The insurance shall be effective before the initial receipt of waste or before the effective date of this Rule, (April 9, 1994), whichever is later. At a minimum, the insurer shall be licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in North Carolina. The owner or operator shall place a copy of the insurance policy in the operating record.

(ii) The closure or post-closure care insurance policy shall guarantee that funds shall be available to close the MSWLF unit whenever final closure occurs or to provide post-closure care for the MSWLF unit whenever the post-closure care period begins, whichever is applicable. The policy shall also guarantee that once closure or post-closure care begins, the insurer shall be responsible for the paying out of funds to the owner or operator or other person authorized to conduct closure or post-closure care, up to an amount equal to the face amount of the policy.

(iii) The insurance policy shall be issued for a face amount at least equal to the current cost estimate for closure or post-closure care, whichever is applicable, except as provided in (e)(1)(J) of this Rule. The term "face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer shall not change the face amount, although the insurer's future liability shall be lowered by the amount of the payments.

(iv) An owner or operator, or any other person authorized to conduct closure or post-closure care, may receive reimbursements for closure or post-closure expenditures, whichever is applicable. Requests for reimbursement shall be granted by the insurer only if the remaining value of the policy is sufficient to cover the remaining costs of closure or post-closure care, and if justification and documentation of the cost is placed in the operating record. The owner or operator shall document in the operating record that reimbursement and Division approval has been received.

(v) Each policy shall contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided that such consent is not unreasonably refused.

(vi) The insurance policy shall provide that the insurer may not cancel, terminate or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy shall, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may cancel the policy by sending notice of cancellation by certified mail to the owner and operator and to the Division 120 days in advance of cancellation. If the insurer cancels the policy, the owner or operator shall obtain alternate financial assurance as specified in this Rule.

(vii) For insurance policies providing coverage for post-closure care, commencing on the date that liability to make payments pursuant to the policy accrues, the insurer shall thereafter

annually increase the face amount of the policy. Such increase shall be equivalent to the face amount of the policy, less any payments made, multiplied by an amount equivalent to 85 percent of the most recent investment rate or of the equivalent coupon-issue yield announced by the U.S. Treasury for 26-week Treasury securities.

(viii) The owner or operator may cancel the insurance policy only if alternate financial assurance is substituted as specified in this Rule or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with the requirements of Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(E) Corporate Financial Test.

[Reserved]

(F) Local Government Financial Test. An owner or operator of a MSWLF which is a unit of local government may satisfy the requirements of this Paragraph by demonstrating that it meets the requirements of the local government financial test as specified in this Part. Financial terms used in this Part are to be interpreted consistent with generally accepted accounting principles. The test consists of a financial component, a public notice component, and a record-keeping and reporting component. A unit of local government shall satisfy each of the three components annually to pass the test.

(i) Financial Component. In order to satisfy the financial component of the test, a unit of local government shall meet the criteria of either (I) or (II) of this Subpart and in addition shall meet the conditions outlined in (III) of this Subpart.

(I) A ratio of the current cost estimates for closure, post-closure, corrective action, or the sum of the combination of such costs to be covered, and any other environmental obligations assured by a financial test, to total revenue [as stated on the Local Government Commission's Annual Financial Information Report (AFIR) Part 2] less than or equal to 0.43; a ratio of operating cash plus investments (as stated on the AFIR Part 7) to total operating expenditures (as stated on the AFIR Part 4 Columns a and b and Part 5 for municipalities or Part 5 excluding educational capital outlays for counties) greater than or equal to 0.05; and a ratio of annual debt service (as stated on the AFIR Part 4 Section I) to total operating expenditures less than or equal to 0.20.

(II) A current bond rating of Baa or above as issued by Moody's, BBB or above as issued by Standard & Poor's, BBB or above as issued by Fitch's, or 75 or above as issued by the Municipal Council; a ratio of the current cost estimates for closure, post-closure, corrective action, or the sum of the combination of such costs to be covered, and any other environmental obligations assured by a financial test to total revenue less than or equal to 0.43.

(III) A unit of local government shall not have operated at a total operating fund deficit equal to five percent or more of total annual revenue in either of the past two fiscal years; it shall not currently be in default on any outstanding general obligation bonds or any other long-term obligations; and it shall not have any outstanding general obligation bonds rated lower than Baa as issued by Moody's, BBB as issued by Standard & Poor's, BBB as issued by Fitch's or lower than 75 as issued by the Municipal Council.

(ii) Public Notice Component. In order to satisfy the Public Notice Component of the test, a unit of local government shall disclose its closure, post-closure, and corrective action cost estimates and relevant information in accordance with generally accepted accounting principles.

(iii) Record-keeping and Reporting Component. To demonstrate that the unit of local government meets the requirements of this test, a letter signed by the unit of local government's chief financial officer (CFO) and worded as specified in Part (e)(2)(G) of this Rule shall be placed in the operating record in accordance with the deadlines of Subpart (iv) of this Part. The letter shall:

(I) List all the current cost estimates covered by a financial test, as described in Subpart (v) of this Part;

(II) Provide evidence and certify that the unit of local government meets the conditions of either Subpart (i)(I) or (i)(II) of this Part; and

(III) Certify that the unit of local government meets the conditions of Subpart (i)(III) of this Part.

(iv) In the case of closure and post-closure care, the Chief Financial Officer's letter shall be placed in the operating record before the initial receipt of waste or by April 9, 1994, whichever is later. In the case of corrective action, the CFO's letter shall be placed in the operating record no later than 120 days after the corrective action remedy has been selected in accordance with the requirements of Rule .1636.

(v) When calculating the "current cost estimates for closure, post-closure, corrective action, or the sum of the combination of such costs to be covered, and any other environmental obligations assured by a financial test" referred to in Part (F)(i) of this Paragraph, the unit of local government shall include cost estimates required for municipal solid waste management facilities under 15A NCAC 13B .1600, as well as cost estimates required for all other environmental obligations it assures through a financial test, including but not limited to those associated with hazardous waste treatment, storage, and disposal facilities under 15A NCAC 13A .0009 and .0010, petroleum underground storage tank facilities under 15A NCAC 2N .0100 through .0800, Underground Injection Control facilities under 15A NCAC 2D .0400 and 15A NCAC 2C .0200, and PCB storage facilities under 15A NCAC 2O .0100 and 15A NCAC 2N .0100.

(vi) Annual updates of the financial test letter shall be placed in the operating record within 120 days after the close of each succeeding fiscal year.

(vii) If the unit of local government no longer meets the requirements of Parts (i), (ii), and (iii) of this Paragraph, the unit of local government shall notify the Division of intent to establish alternate financial assurance within 120 days after the end of the fiscal year for which the year-end financial data show that the unit of local government no longer meets the requirements. The unit of local government shall provide alternate financial assurance within 150 days after the end of said fiscal year.

(viii) The unit of local government is no longer required to comply with the requirements of this Part if alternate financial assurance is substituted as specified in this Rule or if the unit of local government is no longer required to demonstrate financial responsibility in accordance with Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(G) Corporate Guarantee.

[Reserved]

(H) Local Government Guarantee.

[Reserved]

(I) Capital Reserve Fund.

(i) MSWLF units owned or operated by units of local government or public authority may satisfy the requirements of this Paragraph by establishing a capital reserve fund which conforms to the requirements of this Part. The unit of local government or public authority shall be an entity which has the authority to establish a capital reserve fund under authority of G.S. 159 and whose financial operations are regulated and examined by a State agency. The capital reserve fund shall be established consistent with auditing, budgeting and government accounting practices as prescribed in G.S. 159 and by the Local Government Commission. A copy of the capital reserve fund ordinance or resolution with a certified copy of the meeting minutes and a copy of documentation of initial and subsequent year's deposits shall be placed in the MSWLF's operating record.

(ii) Payments into the capital reserve fund shall be made annually by the unit of local government or public authority over the term of the initial permit or over the remaining life of the MSWLF unit, in the case of a capital reserve fund for closure or post-closure care, or over one-half of the estimated length of the corrective action program in the case of corrective action for known releases. This period is referred to as the pay-in period. The pay-in period shall not extend beyond December 31, 1997 for an existing MSWLF unit not designed and constructed with a base liner system approved by the Division.

(iii) For a capital reserve fund used to demonstrate financial assurance for closure and post-closure care, the first payment into the fund shall be at least equal to the current cost estimate for closure or post-closure care, divided by the number of years in the pay-in period as defined in Subpart (ii) of this Part. The amount of subsequent payments shall be determined by the following formula:

$$\text{Next Payment} = \frac{\text{CE-CV}}{\text{Y}}$$

where CE is the current cost estimate for closure or post-closure care (updated for inflation or other changes), CV is the current value of the capital reserve fund, and Y is the number of years remaining in the pay-in period.

(iv) For a capital reserve fund used to demonstrate financial assurance for corrective action, the first payment into the capital reserve fund shall be at least equal to one-half of the current cost estimate for corrective action. The amount of subsequent payments shall be determined by the following formula:

$$\text{Next Payment} = \frac{\text{CE-CV}}{\text{Y}}$$

where CE is the current cost estimate for corrective action (updated for inflation or other changes), CV is the current value of the capital reserve fund, and Y is the number of years remaining in the pay-in period.

(v) The initial payment into the capital reserve fund shall be made before the initial receipt of waste or before the effective date of this Rule (April 9, 1994), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the corrective action remedy has been selected in accordance with the requirements of Rule .1636 of this Section. Subsequent payments shall be made no later than 30 days after each anniversary date of the first payment.

(vi) If the unit of local government or public authority establishes a capital reserve fund after having used one or more alternate mechanisms specified in this Paragraph, the initial payment into the capital reserve fund shall be at least the amount that the fund would contain if the capital reserve fund were established initially and annual payments made according to the specifications of this Part.

(vii) The unit of local government or public authority authorized to conduct closure, post-closure care or corrective action activities may expend capital reserve funds to cover the remaining costs of closure, post-closure care, corrective action activities or for the debt service payments on financing arrangements for closure, post-closure care or corrective action activities. Monies in the capital reserve fund can only be used for these purposes unless the fund is terminated in accordance with Paragraph (e)(1)(I)(viii) of this Rule. The unit of local government or public authority shall document justifying expenditures and place a copy in the operating record.

(viii) The capital reserve fund may be terminated by the unit of local government or public authority only if it substitutes alternate financial assurance as specified in this Rule or if no longer required to demonstrate financial responsibility in accordance with the requirements of Paragraph (b)(2), (c)(2) or (d)(2) of this Rule.

(J) Use of Multiple Financial Mechanisms. An owner or operator may satisfy the requirements of this Paragraph by establishing more than one financial mechanism per facility. The mechanisms shall be as specified in Parts (A), (B), (C), (D), (E), (F), (G), (H) and (I) of this Paragraph, except that it is the combination of mechanisms, rather than the single mechanism, which shall provide financial assurance for an amount at least equal to the current cost estimate for closure, post-closure care or corrective action, whichever is applicable. The financial test and a guarantee provided by a corporate parent, sibling, or grandparent may not be combined if the financial statements of the two firms are consolidated. Mechanisms guaranteeing performance, rather than payment, may not be combined with other instruments.

(K) The wording of the instruments shall be identical to the wording specified in Paragraph (e)(2) of this Rule.

(2) Wording of Instruments.

(A) Trust Agreement.

(i) A trust agreement for a trust fund, as specified in Paragraph (e)(1)(A) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

TRUST AGREEMENT

Trust Agreement, the "Agreement," entered into as of[date] by and between [name of the owner or operator], a [name of State] [insert "corporation," "partnership," "association," or "proprietorship"], the "Grantor," and [name of corporate trustee], [insert "incorporated in the State of _____ " or "a national bank"], the "Trustee."

Whereas, the Division of Solid Waste Management, the "Division," an agency of the State of North Carolina, has established certain regulations applicable to the Grantor, requiring that an owner or operator of a solid waste management facility shall provide assurance that funds shall be available when needed for closure, post-closure care, or corrective action of the facility,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein,

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on Schedule A [on Schedule A, for each facility list the Solid Waste Section Permit Number, name, address, and the current closure, post-closure, or corrective action cost estimates, or portions thereof, for which financial assurance is demonstrated by this Agreement].

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of the Division. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B.Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the Division.

Section 4. Payment for Closure, Post-Closure Care, and Corrective Action. The Trustee shall make payments from the Fund as the Division of Solid Waste Management (the "Division") shall direct, in writing, to provide for the payment of the costs of closure, post-closure care, or corrective action of the facilities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the Division from the Fund for closure, post-closure, and corrective action expenditures in such amounts as the Division shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Division specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Division a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Division shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in

writing sent to the Grantor, the Division, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Division to the Trustee shall be in writing, signed by the Division, or his designee, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or Division hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor or Division, except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the Division by certified mail within 10 days following expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Division, or by the Trustee and the Division if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the Division, or by the Trustee and the Division, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Division issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of North Carolina.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is identical to the wording specified in Paragraph (e)(2)(A)(i) of 15A NCAC 13B .1628 as were constituted on the date first above written.

[Signature of Grantor]
[Title]

Attest:
[Title]
[Seal]

[Signature of Trustee]

Attest:
[Title]
[Seal]

(ii) The following is an example of the certification of acknowledgment which shall accompany the trust agreement for a trust fund.

State of

County of

On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

[Signature of Notary Public]

(B) A surety bond guaranteeing payment into a trust fund, as specified in Paragraph (e)(1)(B) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

FINANCIAL GUARANTEE BOND

Date bond executed:
Effective date:
Principal: [legal name and business address of owner or operator]
Type of organization: [insert "individual", "joint venture", "partnership", or "corporation"]
State of incorporation:
Surety(ies): [name(s) and business address(es)]
Solid Waste Section Permit Number, name, address, and closure or post-closure amount(s) for each facility guaranteed by this bond [indicate closure and post-closure amounts separately]:
Total penal sum of bond: $
Surety's bond number:

Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the North Carolina Division of Solid Waste Management (hereinafter called the Division), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.
Whereas, said Principal is required, under the Solid Waste Management Rule .0201 as amended, to have a permit in order to own or operate each solid waste management facility identified above, and
Whereas, said Principal is required to provide financial assurance for closure or post-closure care, as a condition of the permit, and
Whereas, said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;
Now, Therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of final closure and post-closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility,
Or, if the Principal shall fund the standby trust fund in such amount(s) within 15 days after a final order to begin closure and post-closure is issued by the Division or a U.S. district court or other court of competent jurisdiction,
Or, if the Principal shall provide alternate financial assurance and obtain the Division's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the Division from the Surety(ies), then this obligation shall be null and void; otherwise it is to remain in full force and effect.
The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the Division that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the Division.
The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the Division, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the Division, as evidenced by the return receipts.
The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Division.
[The following paragraph is an optional rider that may be included but is not required.]
Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new closure or post-closure amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the Division.
In Witness Whereof, the Principal and Surety(ies) have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above.
The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in Paragraph (e)(2)(B) of 15A NCAC 13B .1628 as were constituted on the date this bond was executed.

Principal

[Signature(s)]
[Name(s)]
[Title(s)]
[Corporate seal]

Corporate Surety(ies)

[Name and address]
State of incorporation:
Liability limit: $
[Signature(s)]
[Name(s) and title(s)]
[Corporate seal]
[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]
Bond premium: $

(C) A surety bond guaranteeing performance of closure, post-closure care, or corrective action, as specified in Paragraph (e)(1)(B) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

PERFORMANCE BOND

Date bond executed:
Effective date:
Principal: [legal name and business address of owner or operator]
Type of organization: [insert "individual", "joint venture", "partnership", or "corporation"]
State of incorporation:
Surety(ies): [name(s) and business address(es)]
Solid Waste Section Permit Number, name, address, and closure, post-closure, or corrective action amount(s) for each facility guaranteed by this bond [indicate closure, post-closure, and corrective action amounts separately]:
Total penal sum of bond: $
Surety's bond number:

Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the North Carolina Division of Solid Waste Management (hereinafter called the Division), in the above penal sum for the payment of which we

bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas, said Principal is required, under the Solid Waste Management Rule .0201 as amended, to have a permit in order to own or operate each solid waste management facility identified above, and

Whereas, said Principal is required to provide financial assurance for closure, post-closure care, or corrective action as a condition of the permit, and

Whereas, said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of this obligation are such that if the Principal shall faithfully perform closure, whenever required to do so, of each facility for which this bond guarantees closure, in accordance with the closure plan and other requirements of the permit, as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statutes, rules, and regulations may be amended,

And, if the Principal shall faithfully perform post-closure care of each facility for which this bond guarantees post-closure care, in accordance with the post-closure plan and other requirements of the permit, as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations as such laws, statutes, rules, and regulations may be amended,

And, if the Principal shall faithfully perform corrective action of each facility for which this bond guarantees corrective action, in accordance with the corrective action program and other requirements of the permit, as such program and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations as such laws, statutes, rules, and regulations may be amended,

Or, if the Principal shall provide alternate financial assurance and obtain the Division's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the Division from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by the Division that the Principal has been found in violation of the closure requirements for a facility for which this bond guarantees performance of closure, the Surety(ies) shall either perform closure in accordance with the closure plan and other permit requirements or place the closure amount guaranteed for the facility into the standby trust fund as directed by the Division.

Upon notification by the Division that the Principal has been found in violation of the post-closure requirements for a facility for which this bond guarantees performance of post-closure care, the Surety(ies) shall either perform post-closure care in accordance with the post-closure plan and other permit requirements or place the post-closure amount guaranteed for the facility into the standby trust fund as directed by the Division.

Upon notification by the Division that the Principal has been found in violation of the corrective action requirements for a facility for which this bond guarantees performance of corrective action, the Surety(ies) shall either perform corrective action in accordance with the corrective action program and other permit requirements or place the corrective action amount guaranteed for the facility into the standby trust fund as directed by the Division.

Upon notification by the Division that the Principal has failed to provide alternate financial assurance and obtain written approval of such assurance from the Division during the 90 days following receipt by both the Principal and the Division of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the Division.

The Surety(ies) hereby waive(s) notification of amendments to closure and post-closure plans, and corrective action programs, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the Division, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the Division, as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Division.

[The following paragraph is an optional rider that may be included but is not required.]
Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new closure, post-closure, or corrective action amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the Division.
In Witness Whereof, The Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.
The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in Paragraph (e)(2)(C) of 15A NCAC 13B .1628 as was constituted on the date this bond was executed.

Principal

[Signature(s)]
[Name(s)]
[Title(s)]
[Corporate seal]

Corporate Surety(ies)

[Names and address]
State of incorporation:
Liability limit: $
[Signature(s)]
[Names(s) and title(s)]
[Corporate seal]
[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]
Bond premium: $

(D) A letter of credit, as specified in Paragraph (e)(1)(C) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

IRREVOCABLE STANDBY LETTER OF CREDIT

North Carolina Department of Environment, Health, and Natural Resources
Solid Waste Management Division
Solid Waste Section
P.O. Box 27687
Raleigh, North Carolina 27611-7687

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit No._____ in your favor, at the request and for the account of [owner's or operator's name and address] up to the aggregate amount of [in words] U.S. dollars $_____, available upon presentation of

(1) your sight draft, bearing reference to this letter of credit No._____, and
(2) your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to requirements of 15A NCAC 13B .1628 as amended."

This letter of credit is effective as of [date] and shall expire on [date at least 1 year later], but such expiration date shall be automatically extended for a period of [at least 1 year] on [date] and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and [owner's or operator's name] by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused

portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and [owner's or operator's name], as shown on the signed return receipts.
Whenever this letter of credit is drawn on, under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of [owner's or operator's name] in accordance with your instructions.
We certify that the wording of this letter of credit is identical to the wording specified in Paragraph (e)(2)(D) of 15A NCAC 13B .1628 as were constituted on the date shown immediately below.
[Signature(s) and title(s) of official(s) of issuing institution], [Date]
This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published by the International Chamber of Commerce," or "the Uniform Commercial Code"].

(E) A certificate of insurance, as specified in Paragraph (e)(1)(D) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

CERTIFICATE OF INSURANCE FOR CLOSURE OR POST-CLOSURE CARE

Name and Address of Insurer
(herein called the "Insurer") :

Name and Address of Insured
(herein called the "Insured") :

Facilities Covered: [List for each facility: The Solid Waste Section Permit Number, name, address, and the amount of insurance for closure or the amount for post-closure care (these amounts for all facilities covered shall total the face amount shown below).]

Face Amount:
Policy Number:
Effective Date:

The Insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for [insert "closure" or "closure and post-closure care" or "post-closure care"] for the facilities identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of Paragraph (e)(1) of 15A NCAC 13B .1628, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.
Whenever requested by the North Carolina Division of Solid Waste Management (Division), the Insurer agrees to furnish to the Division a duplicate original of the policy listed above, including all endorsements thereon.
I hereby certify that the wording of this certificate is identical to the wording specified in Paragraph (e)(2)(E) of 15A NCAC 13B .1628 as were constituted on the date shown immediately below.

[Authorized signature for Insurer]
[Name of person signing]
[Title of person signing]
Signature of witness or notary:

[Date]

(F) A capital reserve fund, as specified in Paragraph (e)(1)(I) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

CAPITAL RESERVE FUND RESOLUTION

ESTABLISHMENT AND MAINTENANCE
OF THE MUNICIPAL SOLID WASTE LANDFILL
CAPITAL RESERVE FUND

WHEREAS, there is a need in [location of landfill site, (e.g. City of Raleigh, County of Wake)] to provide funds for [closure, post-closure, or corrective action] for the [permit number], [name] landfill; and

WHEREAS, the [location] shall bear the cost of [closure, post-closure, or corrective action] for the landfill at an estimated cost of [cost estimate].

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD THAT:

Section 1. The Governing Board hereby creates a Capital Reserve Fund for the purpose of [closure, post-closure, or corrective action] for the [permit number] landfill.

Section 2. This Fund shall remain operational during the life of the landfill and the post-closure care period beginning [date] and ending [date] as estimated at the time of annual update of this Resolution.

Section 3. The Board shall appropriate or transfer an amount of no less than [annual payment] each year to this Fund.

Section 4. This Resolution shall become effective and binding upon its adoption.

[Signature of County Commissioner]

[Signature of Chief Financial Officer]

[Date]

(G) A local government financial test, as specified in Part (e)(1)(F) of this Rule, shall be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

LETTER FROM CHIEF FINANCIAL OFFICER

[Address to the Department of Environment, Health, and Natural Resources, Solid Waste Section, Post Office Box 27687, Raleigh, North Carolina 27611-7687.]

I am the chief financial officer of [name and address of unit of local government]. This letter is in support of this unit of local government's use of the financial test to demonstrate financial assurance, as specified in 15A NCAC 13B .1628(e)(1)(F).

[Fill out the following paragraph regarding the municipal solid waste facilities and associated cost estimates. For each facility, include its permit number, name, address and current closure, post-closure, or corrective action cost estimates. Identify each cost estimate as to whether it is for closure, post-closure care, or corrective action.]

This unit of local government is the owner or operator of the following facilities for which financial assurance for closure, post-closure, or corrective action is demonstrated through the financial test specified in 15A NCAC 13B .1628(e)(1)(F). The current closure, post-closure, or corrective action cost estimates covered by the test are shown for each facility: _____.

The fiscal year of this unit of local government ends on [month, day, year]. The figures for the following items marked with an asterisk are derived from this unit of local government's Annual Financial Information Report (AFIR) for the latest completed fiscal year, ended [date].

[Fill in the Ratio Indicators of Financial Strength section if the criteria of 15A NCAC 13B .1628 (e)(1)(F)(i)(I) are used. Fill in Bond Rating Indicator of Financial Strength section if the criteria of 15A NCAC 13B .1628(e)(1)(F)(i)(II) are used.]

RATIO INDICATORS OF FINANCIAL STRENGTH

1. Sum of current closure, post-closure and corrective action cost estimates [total of all cost estimates shown in the paragraphs above] $.....

*2.	Sum of cash and investments (AFIR Part 7)	$.....
*3.	Total expenditures (AFIR Part 4 Columns a & b and Part 5 for municipalities or Part 5 excluding educational capital outlays for counties)	$.....
*4.	Annual debt service (AFIR Part 4 Section I)	$.....
5.	Assured environmental costs to demonstrate financial responsibility in the following amounts under Division rules:	
	MSWLF under 15A NCAC 13B .1600	$.....
	Hazardous waste treatment, storage and disposal facilities under 15A NCAC 13A .0009 and .0010	$.....
	Petroleum underground storage tanks under 15A NCAC 2N .0100 - .0800	$.....
	Underground Injection Control System facilities under 15A NCAC 2D .0400 and 15A NCAC 2C .0200	$.....
	PCB commercial storage facilities under 15A NCAC 2O .0100 and 15A NCAC 2N .0100	$.....
	Total assured environmental costs	$.....
*6.	Total Annual Revenue (AFIR Part 2)	$.....

Circle either "yes" or "no" to the following questions.

7.	Is line 5 divided by line 6 less than or equal to 0.43?	yes/no
8.	Is line 2 divided by line 3 greater than or equal to 0.05?	yes/no
9.	Is line 4 divided by line 3 less than or equal to 0.20?	yes/no

BOND RATING INDICATOR OF FINANCIAL STRENGTH

1.	Sum of current closure, post-closure and corrective action cost estimates [total of all cost estimates shown in the paragraphs above]	$.....
2.	Current bond rating of most recent issuance and name of rating service	.....
3.	Date of issuance bond	.....
4.	Date of maturity of bond	.....
5.	Assured environmental costs to demonstrate financial responsibility in the following amounts under Division rules:	
	MSWLF under 15A NCAC 13B .1600	$.....

	Hazardous waste treatment, storage and disposal facilities under 15A NCAC 13A .0009 and .0010	$.....
	Petroleum underground storage tanks under 15A NCAC 2N .0100 - .0800	$.....
	Underground Injection Control System facilities under 15A NCAC 2D .0400 and 15A NCAC 2C .0200	$.....
	PCB commercial storage facilities under 15A NCAC 2O .0100 and 15A NCAC 2N .0100	$.....
	Total assured environmental costs	$.....
*6.	Total Annual Revenue (AFIR Part 2)	$.....

Circle either "yes" or "no" to the following question.

7.	Is line 5 divided by line 6 less than or equal to 0.43?	yes/no

I hereby certify that the wording of this letter is identical to the wording specified in 15A NCAC 13B .1628(e)(2)(G) as such rules were constituted on the date shown immediately below. I further certify the following: (1) that the unit of local government has not operated at a total operating fund deficit equal to five percent or more of total annual revenue in either of the past two fiscal years, (2) that the unit of local government is not in default on any outstanding general obligations bonds or long-term obligations, and (3) does not have any outstanding general obligation bonds rated lower than Baa as issued by Moody's, BBB as issued by Standard & Poor's, BBB as issued by Fitch's, or 75 as issued by the Municipal Council.

[Signature]

[Name]

[Title]

[Date]

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

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

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

(b) Closure plan contents.

(1) General content of the plan. The owner or operator shall prepare a written closure plan that describes the steps necessary to close all MSWLF units at any point during its active life in accordance with the cap system requirements in Paragraph (c) of this Rule, as applicable. The closure plan, at a minimum, must 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 Paragraph (c) of Rule .1627.

(B) An estimate of the largest area of the MSWLF unit ever 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 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 that includes, at a minimum, the following information:

(1) A description of the monitoring and maintenance activities required in Paragraph (d) of Rule .1627 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 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.

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

History Note: *Authority 130A-294;*
Eff. October 9, 1993.

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:

(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 shall be prepared under the responsible charge of and bear the seal of a Licensed Geologist or Professional Engineer (in accordance with G.S. 89E and 89C, respectively).

(e) 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.

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, installed at appropriate locations and depths, to 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 so as 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) The hydrogeologic characteristics of the facility and surrounding land;

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

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

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

(v) The availability of alternative drinking water supplies;

(vi) 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) Public health, safety, and welfare effects; and

(viii) Practicable capability of the owner or operator.

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

(1) Owner or 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, ground-water flow rate, and ground-water flow direction, including seasonal and temporal fluctuations in ground-water 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 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 (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:

(1) Where the owner or operator does not control the property from any landfill unit to the ground-water discharge feature(s); or

(2) Sites with hydrogeologic conditions favorable to detection monitoring by alternative methods.

(f) The owner or operator shall submit a monitoring system plan for approval by the Division as required by Rules .1603 and .1617 of this Section.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

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

(a) The 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. 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 and other monitoring parameters in ground-water samples.

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

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

(1) In order to accurately determine ground-water elevations for each monitoring well, the wells shall have been accurately surveyed by a North Carolina Registered Land Surveyor. The survey of the wells shall conform to at least the following levels of accuracy:
    (A) The horizontal location to the nearest 0.1 ft.
    (B) The vertical control for the ground surface elevation to the nearest 0.01 ft.
    (C) The vertical control for the measuring reference point on the top of the inner well casing to the nearest 0.01 ft.
(2) 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 background ground-water quality in hydraulically upgradient or background well(s) 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.

(g) The owner or operator shall select one of the following statistical methods to be used in evaluating ground-water monitoring data for each hazardous constituent. The statistical test chosen shall be conducted separately for each hazardous constituent in each well.

(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 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 hazardous constituents. If the distribution of the chemical

parameters or hazardous constituents is shown by the owner or operator (or the Division) to be inappropriate for a normal theory test, then the data should be transformed or a distribution-free theory test should be used. If the distributions for the constituents differ, more than one statistical method may be needed.

(2) If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a ground-water 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 ground-water 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 after considering the number of samples in the background data base, 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 ground-water 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 after considering the number of samples in the background data base, 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, the statistical method shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(i) The owner or operator shall determine whether or not there is a statistically significant increase over background values for each parameter or constituent required in the particular ground-water monitoring program that applies to the MSWLF unit.

(1) In determining whether a statistically significant increase has occurred, the owner or operator shall compare the ground-water quality of each parameter or constituent at each monitoring well designated to monitor the quality of ground water passing the relevant point of compliance to the background value of that constituent, according to the statistical procedures and performance standards specified in this Rule.

(2) Within a reasonable period of time after completing sampling and analysis, the owner or operator shall determine whether there has been a statistically significant increase over background at each monitoring well.

(j) Within 14 days of completing the statistical analysis for the analytical data from ground-water samples, the owner or operator shall submit to the Division a report that includes all information from the sampling event; including field observations relating to the condition of the monitoring wells, field data, laboratory data, statistical analysis, sampling methodologies, quality assurance and quality control data, information on ground-water flow direction, calculations of ground-water flow rate, for each well any constituents that exceed ground-water standards or show a statistically significant increase over background levels, and any other pertinent information related to the sampling event.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

15A NCAC 13B .1633 DETECTION MONITORING PROGRAM

(a) Detection monitoring is required at MSWLF units at all ground-water monitoring wells that are part of the detection monitoring system as established in the approved monitoring plan. At a minimum, 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", is 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.

(b) The monitoring frequency for all Appendix I detection monitoring constituents shall be at least semiannual during the life of the facility (including closure) and the post-closure period. A minimum of four independent samples from each well (background and downgradient) shall be collected and analyzed for the Appendix I constituents during the first semiannual sampling event. At least one sample from each well (background and downgradient) shall be collected and analyzed during subsequent semiannual sampling events.

(c) If the owner or operator determines that there is a statistically significant increase over background for one or more of the constituents listed in Appendix I 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 shown statistically significant changes from background levels;

(2) Shall establish an assessment monitoring program meeting the requirements of this Section within 90 days except as provided for in Rule .1633(c)(3); and

(3) The owner or operator may demonstrate that a source other than a MSWLF unit caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground-water quality. A report documenting this demonstration shall be certified by a Licensed Geologist or Professional Engineer and approved by the Division. 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 operator shall initiate an assessment monitoring program as required by this Section.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

15A NCAC 13B .1634 ASSESSMENT MONITORING PROGRAM

(a) Assessment monitoring is required whenever a statistically significant increase over background has been detected for one or more of the constituents listed in Appendix I or whenever a violation of the North Carolina ground-water quality standards (15A NCAC 2L, .0202) has occurred.

(b) Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator shall sample and analyze the ground water 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", is 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. A minimum of one sample from each downgradient well shall be collected and analyzed during each sampling event. For any constituent detected in the downgradient wells as the result of the complete Appendix II analysis, a minimum of four independent samples from each well (background and downgradient) shall be collected and analyzed to establish background for the new constituents. The Division may specify an appropriate subset of wells to be sampled and analyzed for Appendix II constituents during assessment monitoring. The Division may delete any of the Appendix II monitoring parameters for a MSWLF unit if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit.

(c) The Division may specify an appropriate alternate frequency for repeated sampling and analysis for the full set of Appendix II constituents required by Rule .1634(b), during the active life and post-closure care of the unit considering the following factors:

(1) Lithology of the aquifer and unsaturated zone;
(2) Hydraulic conductivity of the aquifer and unsaturated zone;
(3) Ground-water flow rates;
(4) Minimum distance of travel;
(5) Resource value of the aquifer; and
(6) Nature, fate, and transport of any detected constituents.

(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 Rule .1634(b). 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 ground-water protection standards for all constituents detected pursuant to Paragraph (b) or (d) of this Rule. The ground-water protection standards shall be established in accordance with Paragraph (h) or (i) of this Rule.

(e) If the concentrations of all Appendix II constituents are shown to be at or below background values, using the approved statistical procedures, for two consecutive sampling events, the owner or operator shall report this information to the Division, and the Division may give approval to the owner or operator to return to detection monitoring.

(f) If the concentrations of any Appendix II constituents are above background values, but all concentrations are below the approved ground-water protection standards, using the approved statistical procedures, the owner or operator shall continue assessment monitoring.

(g) If one or more Appendix II constituents are detected at statistically significant levels above the approved ground-water 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 all appropriate local government officials.

(1) The owner or operator shall also:
    (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) The owner or operator may demonstrate that a source other than a MSWLF unit caused the contamination, or the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in ground-water quality. A report documenting this demonstration shall be certified by a Licensed Geologist or Professional Engineer and approved by the Division. A copy of the approved report shall also be placed in the operating record. If a successful demonstration is made, the owner or operator shall continue assessment monitoring, and may return to detection monitoring if the Appendix II constituents are at or below background and approval is given by the Division. Until a successful demonstration is made, the owner or operator shall comply with Paragraph (g) of this Rule including initiating an assessment of corrective measures.

(h) 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 the following:

(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 2L, .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) of this Section; or

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

(i) 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 appropriate 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;

(3) 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;

(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.

(j) In establishing ground-water protection standards under Paragraph (i) of this Rule the Division may 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.

15A NCAC 13B .1635 ASSESSMENT OF CORRECTIVE MEASURES

(a) Within 90 days of finding that any of the constituents listed in Appendix II have been detected at a statistically significant level exceeding the ground-water protection standards, the owner or operator shall initiate assessment of corrective action measures. Such an assessment shall be completed within a reasonable period of time.

(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, addressing at least the following:

(1) The performance, reliability, ease of implementation, and potential impacts of appropriate 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 substantially affect implementation of the remedy(s).

(d) The owner or operator shall discuss the results of the corrective measures assessment, 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 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: a legal advertisement placed in the newspaper or newspapers serving the county; and 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.

15A NCAC 13B .1636 SELECTION OF REMEDY

(a) Based on the results of the corrective measures assessment, the owner or operator shall select a remedy that, at a minimum, meets the standards listed in 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.

(b) Remedies shall:

(1) Be protective of human health and the environment;

(2) Attain the approved ground-water protection standards;

(3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of 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(d); and

(c) In selecting a remedy that meets the standards of 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, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal 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, redisposal, 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 or operator shall specify as part of the selected remedy a schedule for initiating and completing remedial activities. This schedule shall be approved by the Division. 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 or operator 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) Ground water removal and treatment costs; and
(G) The costs and availability of alternative water supplies.
(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 ground water 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 ground water 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 are migrating or are likely to migrate in concentrations that would exceed the approved ground-water 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 Rule. 1636(e) 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 the ground water, to prevent exposure to the ground water, or to remediate ground water 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 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) Establish and implement a corrective action ground-water monitoring program that:

(A) At a minimum, meets the requirements of an assessment monitoring program under Rule .1634;

(B) Indicates the effectiveness of the corrective action remedy; and

(C) Demonstrates compliance with ground-water protection standards pursuant to Rule .1637(e).

(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 should, 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 hazardous constituents;

(C) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

(D) Further degradation of the ground water that may occur if remedial action is not initiated expeditiously;

(E) Weather conditions that may cause hazardous constituents to migrate or be released;

(F) Risks of fire or explosion, or potential for exposure to hazardous constituents 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 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) are not being achieved through the remedy selected. In such cases, the owner or operator shall implement other methods or techniques, as approved by the Division, that could practicably achieve compliance with the requirements, unless the owner or operator makes the determination under Rule .1637(c).

(c) If the owner or operator or the Division determines that compliance with requirements under Rule .1636(b) cannot be practically achieved with any currently available methods, the owner or operator shall:

(1) Obtain certification of a Licensed Geologist or Professional Engineer and approval from the Division that compliance with the requirements under Rule .1636(b) cannot be practically achieved with any currently available methods;

(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; and

(B) Consistent with the overall objective of the remedy.

(4) Submit a report justifying the alternative measures to the Division for approval prior to implementing the alternative measures. Upon approval by the Division, this report shall be placed in the operating record.

(d) All solid wastes that are managed pursuant to a remedy required under Rule .1636, or an interim measure required under Rule .1637(a), shall be managed in a manner:

(1) That is protective of human health and the environment; and

(2) That complies with applicable RCRA requirements.

(e) Remedies selected pursuant to Rule .1636 shall be considered complete when:

(1) The owner or operator complies with the approved ground-water protection standards at all points within the plume of contamination that lie beyond the relevant point of compliance.

(2) Compliance with the approved ground-water protection standards has been achieved by demonstrating that concentrations of Appendix II constituents have not exceeded these standards for a period of three consecutive years using the statistical procedures and performance standards in Rule.1632.

(3) All actions required to complete the remedy have been satisfied.

(f) 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 Rule .1637(e). This report shall be signed by the owner or operator and by a Licensed Geologist or Professional Engineer. Upon approval by the Division, this report shall be placed in the operating record.
(g) When, upon completion of the certification, the Division determines that the corrective action remedy has been completed in accordance with Rule .1637(e), the owner or operator shall be released from the requirements for financial assurance for corrective action under Rule .1628(d) of this Section.

History Note: *Authority G.S. 130A-294;*
Eff. October 9, 1993.

15A NCAC 13B .1638 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1639 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1640 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1641 RESERVED FOR FUTURE CODIFICATION

15A NCAC 13B .1642 RESERVED FOR FUTURE CODIFICATION

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15A NCAC 13B .1680 LEACHATE STORAGE REQUIREMENTS

(a) Applicability.

(1) Construction of leachate storage tanks and surface impoundments located at solid waste landfill 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 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.

(B) The secondary containment system shall be constructed of a material compatible with the liquid being stored.

(3) 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.

(4) All aboveground and onground tanks shall be equipped with an overfill prevention system which may include, but not be limited to: 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) 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.

(6) All uncovered tanks shall have a minimum two feet of freeboard. Odor and vector control shall be practiced when necessary.

(d) Underground tank requirements.

(1) 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.

(2) 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.

(3) 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.

(A) The leak detection system shall be monitored at least weekly using methods specified by the operator and approved by the Division.

(B) 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.

(i) All resistant coatings applied to the primary tank interior shall be chemically compatible with the liquid to be stored.

(ii) Cathodic protection systems, where installed, shall be inspected at least weekly by the facility operator and any deficiencies shall be corrected when discovered.

(4) All underground tanks shall be equipped with an overfill prevention system which may include, but not be limited to: 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; or

(B) An alternative liner system which is designed and constructed to achieve at least an equivalent containment efficiency. 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); 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, 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 ground water 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 ground water surrounding the impoundment is contaminated, other corrective actions to remediate a contaminant plume may be required by the Department. If the ground water 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.