Effluent from an approved RWTS shall be grab or 24-hour composite sampled annually for all effluent standards listed in Table XXV of Rule .1201(a) of this Subchapter for NSF/ANSI 40 systems, unless adjusted sampling requirements have been requested and granted in accordance with Rules .1301 and .1709 of this Subchapter.

History Note: *Authority G.S. 130A-342.*

15A NCAC 18E .1505 RESIDENTIAL WASTEWATER TREATMENT SYSTEM APPROVAL RENEWAL

(a) All RWTS Approvals shall expire on December 31 of each year. RWTS manufacturers who wish to continue product approval shall submit annually a proprietary product renewal form provided by the Department no later than November 30 of each year.

(b) The renewal form shall include the following updated elements:

(1) manufacturers' name, mailing address, phone and fax numbers, email address, and manufacturer's point of contact;
(2) model number(s) approved;
(3) a notarized statement that the product has not changed from the previous year without prior approval from the Department; and
(4) verification of the manufacturer's continued certification and listing by a nationally recognized certification body, including compliance with NSF/ANSI Standard 40.

(c) The Department shall notify the manufacturer of the pending RWTS Approval expiration in writing no later than September 30 of each year. The notification shall include information on how to request RWTS Approval renewal.

(d) The RWTS approval shall be deemed renewed upon receipt of a renewal form that contains all of the elements set out in Paragraph (b) of this Rule.

(e) The Department shall suspend or revoke a system approval upon a finding that the system fails to perform in compliance with established effluent standards in Table XXV of Rule .1201(a) of this Subchapter or as provided for in Rule .1708(b) of this Subchapter.

History Note: *Authority G.S. 130A-342.*

SECTION .1600 – APPROVAL OF PRE-ENGINEERED PACKAGE DRIP DISPERSAL SYSTEMS

15A NCAC 18E .1601 GENERAL

(a) Drip dispersal systems for DDF less than or equal to 3,000 gpd shall be configured as a package and approved as a PIA System in accordance with Section .1700 of this Subchapter.

(b) The integrated system package shall be provided from a single source manufacturer or system integrator, comprised of catalogued standardized design components that have been coordinated and tested by the manufacturer or integrator. Components shall include:

(1) dispersal field pump(s) and floats;
(2) headworks assemblies;
(3) dispersal field piping network, drip tubing, and appurtenances; and
(4) system controls that provide for automatic filter cleaning, timed field dosing, field flushing, alarm notification, and recording of system operation.

(c) All components shall be integrated and designed to operate together. The system manufacturer or integrator shall provide system design information including:

(1) head loss charts, tables, or formulas for various drip tubing lateral lengths during a dosing and flushing cycle;
(2) minimum and maximum zone size and design;
(3) design plans and specifications for all components;
(4) installation specifications; and
(5) operation and maintenance manuals.

(d) The system manufacturer shall provide support to train and authorize designers, installers, Management Entities, regulators, and users.

(e) Drip dispersal system performance, siting, sizing, installation, operation, monitoring, maintenance and reporting requirements shall comply with Rules .0908, .1204, and Section .1300 of this Subchapter, as applicable, and the rules of this Section.

(f) Drip dispersal systems that are not pre-engineered packages approved in accordance with Section .1700 of this Subchapter shall be designed on a project specific basis by a PE and shall comply with Rules .0908, .1204, and Section .1300 of this Subchapter, as applicable, and the rules of this Section.

(g) Drip dispersal systems for DDF greater than 3,000 gpd shall comply with the design and performance requirements of this Section and shall be designed on a project specific basis by a PE. The system design shall be reviewed and approved by the Department in accordance with Rule .0302 of this Subchapter, unless the system is permitted in accordance with Rule .0207 of this Subchapter.

History Note: *Authority G.S. 130A-343.*

15A NCAC 18E .1602 DESIGN AND CONSTRUCTION STANDARDS

(a) Drip dispersal systems shall be preceded by pretreatment designed to comply with one of the following effluent standards: DSE, NSF/ANSI 40, TS-I, TS-II, or RCW as specified in Table III of Rule .0402(a), Table XXV of Rule .1201(a), or Rule .1002, of this Subchapter, as applicable.

(b) The pump tank shall meet one of the following conditions:

(1) a separate pump tank sized in accordance with Rule .0802 of this Subchapter; or

(2) a pump tank or compartment that is part of an advanced pretreatment system approved in accordance with Section .1700 of this Subchapter.

Pump tank operating levels shall not result in effluent backing up into a part of any pretreatment component designed for free gravity flow drainage. All pump submergence, dose volume, flow equalization, and emergency storage capacity requirements for the dosing system shall be met without interfering in the performance of the pretreatment components.

(c) Pumps shall meet the following conditions:

(1) have sufficient capacity to accommodate projected flow and total dynamic head conditions;

(2) deliver 15 to 60 psi of pressure during dosing events;

(3) provide minimum flow and pressure as required to backwash or forward flush headworks filter;

(4) maintain velocities of two feet per second at the distal end of each drip lateral line during automatic field flushing for DSE; and

(5) maintain velocities of one foot per second at the distal end of each drip lateral line during automatic field flushing for advanced pretreatment effluent. Valving shall be provided to achieve flushing velocities of two feet per second at the distal end of each dripline with manual flushing.

Pump manufacturer requirements shall be followed to protect the pump intake from solids that may accumulate in the pump tank and for pump cooling during operation.

(d) Headworks assemblies shall contain filtration, totalizing flow meter, provisions for filter cleaning, and field flushing valves. Zone and isolation valves may be located in the headworks assembly or in the drip dispersal field. The headworks assemblies shall meet the following conditions:

(1) filters shall remove particles greater than 115 microns at the peak operating flow rate, during network forward flushing. Filter number and size shall operate during both dosing and flushing conditions at a pump operating flow rate within the filter manufacturer's specified acceptable operating range;

(2) filters for drip dispersal systems receiving DSE shall be configured with two independently backwashed disk filters;

(3) for drip dispersal systems receiving advanced pretreatment effluent, single or multiple screens or disc filters may be used, designed to be cleaned by either backwashing or forward washing;

(4) filter cleaning and field flushing residuals shall be returned to the head of the septic tank or settling tank prior to being returned to the pretreatment unit;

(5) a totalizing flow meter shall be used to record total flow through the system. The meter shall also be used to monitor pump operating flow rates during dosing and flushing events; and

(6) the headworks and associated components shall be in a separate enclosure that is freeze protected, UV and corrosion resistant, and accessible for routine operation, maintenance, monitoring and servicing. Design shall facilitate access to all internal components.

(e) The drip dispersal field shall consist of one or more separately dosed zones comprised of a supply and return manifold, manifold to lateral connections, laterals containing drip tubing with emitters, blank sections of tubing, and associated field appurtenances. Drip emitter and associated field appurtenances design shall meet the following:

(1) drip emitters shall be designed and demonstrated to uniformly distribute wastewater effluent at a pre-determined rate when operated in accordance with manufacturer's specified pressure range for emitter operation. Emitter design coefficient of variation, Cv, shall be five percent or less. Emitters shall be designed to be self-cleaning and to resist root intrusion. Hydraulic design of a drip dispersal zone shall be based upon achieving no more than a 10 percent variation in flow from any emitter over the entire zone, regardless of emitter elevation or position along the lateral including any effluent redistribution due to drainback;

(2) drip emitters shall be pressure compensating unless the manufacturer and designer provide documentation and calculations that a maximum 10 percent flow variance allowance can otherwise be achieved with non-pressure compensating emitters in a PIA Approval or on a project-specific basis. Drip tubing shall be marked to identify the emitter type and flow rate;

(3) drip emitters shall be spaced at uniform intervals along the tubing on 24-inch centers or less, and drip tubing with emitters shall be spaced an average of 24 inches on centers or less, in accordance with the proposed system design. Spacing shall be chosen as needed to ensure a sufficient number and density of emitters are present to achieve uniform distribution and instantaneous emitter loading rates that do not exceed the hydraulic capacity of the receiving infiltrative surfaces;

(4) connections between supply and return manifolds, and between runs or drip lateral sections installed at varying elevations or locations shall be made with solvent welded solid Schedule 40 PVC or flexible PVC;

(5) blanking sections of tubing without drip emitters shall be used where unfavorable site conditions, such as rocks, trees, or roots, are encountered along a drip run. Blanking tubing shall be a different color from the drip tubing or marked tubing of the same material, specification, and diameter as the connecting dripline, or flexible PVC;

(6) the manufacturer shall specify methods for drainback prevention; and

(7) field appurtenances shall include the following:

(A) air or vacuum relief valve at the highest elevation of each zone;

(B) cleanout at both ends of the supply and return manifolds;

(C) pressure monitoring fittings at the zone inlet and outlet points;
(D) pressure regulating valve where needed;
(E) for two or more zones: solenoid valves for each zone in the headworks or at the field, with an isolation valve on the supply line side; and a check valve with an isolation valve for each zone between the return manifold and the common return line; and
(F) valves, vents, cleanouts, and pressure monitoring fittings shall be provided with protective vaults or boxes that are decay resistant, ultraviolet rated, and accessible to the Management Entity from the ground surface.

(f) An integrated controller shall be provided that meets the following conditions:
(1) enable each drip dispersal field or zone to be time-dosed at equal intervals throughout the day, at a projected average flow, and to accommodate the DDF. The controller shall allow for adjustable and variable dose volumes between or among zones;
(2) adjust pump dosing and resting cycles to comply with system design and the projected range of operating conditions;
(3) provide a minimum dose volume per zone that is a minimum of five times the liquid capacity of the drip laterals or so 80 percent of each dose is delivered when the minimum pressure in the field network is 10 psi;
(4) provide for automatic cleaning of headworks filter(s);
(5) provide for adjustable automatic forward flushing, or field flushing, of the drip laterals with filtered effluent, at designer and manufacturer-specified frequency and duration;
(6) provide for monitoring of pump cycles and run times;
(7) include telemetry, in accordance with Rule .1103(c) of this Subchapter, for systems with a DDF greater than 1,500 gpd or as required in conjunction with an advanced pretreatment system;
(8) for systems with a DDF greater than 3,000 gpd the controller shall monitor flow volume to each zone and provide a flow variance indication when flow is plus or minus 20 percent of design. The telemetry system and alarm shall be designed to be functional during power outages;
(9) for multi-zone systems, the system controller shall provide for a zone to be rested or taken out of service manually. The controller shall have the capability to bypass zones and dose the next available zone with the normal dosing sequence continuing; and
(10) controls and floats are to be configured to ensure the minimum dose is available prior to initiating a dosing cycle and to ensure that a full dose is delivered.

(g) Alternatives to the design criteria in this Rule may be proposed by the manufacturer during the PIA approval process or by a PE on a project-specific basis. These alternatives shall be reviewed and approved by the Department on a case-by-case basis when documentation is provided that the system will meet the performance standards of this Section.

History Note: *Authority G.S. 130A-343.*

15A NCAC 18E .1603 DRIP DISPERSAL SYSTEM TESTING

(a) The drip dispersal system field testing shall include system designer requirements and the following items:
(1) all leaks in the pipe network or from emitters exhibiting emission rates greater than 20 percent of the emitter design flow rate shall be repaired; and
(2) after the system is pressurized, dosing and flushing flow rates and pressures for each zone shall be measured and confirmed to be in accordance with the design parameters as follows:
(A) dosing pressure shall be measured at the lowest point in the supply manifold and highest point in the return manifold;
(B) minimum and maximum emitter pressure shall be verified to be within emitter design parameters;
(C) flushing pressures shall be measured at the ends of each supply and return manifold within each zone;
(D) dosing and flushing flow rates shall be measured with the flow meter after the system is pressurized; and
(E) all dosing and flushing flow rates and pressures shall be recorded.

(b) All components shall be demonstrated to be operable and in accordance with their design during the inspection by the LHD.

History Note: *Authority G.S. 130A-343.*

SECTION .1700 – APPROVAL AND PERMITTING OF WASTEWATER SYSTEMS, TECHNOLOGIES, COMPONENTS, OR DEVICES

15A NCAC 18E .1701 GENERAL

PIA Systems are any wastewater systems, system components, or devices as defined by G.S. 130-343(a) that are not described in other Sections of this Subchapter and systems for which any of the following are proposed:
(1) reduced setbacks;
(2) reduced depth to LC or vertical separation requirements; or
(3) increased LTAR.

This Section shall provide for the approval and permitting of PIA Systems.