(A) site has less than 18 inches of naturally occurring soil to any unsuitable LC;
(B) Group III soils are present and a groundwater lowering system is used to comply with the vertical separation requirements to a SWC;
(C) Group IV soils are encountered within 18 inches of the naturally occurring soil surface, the LTAR is proposed to exceed 0.05 gpd/ft^2, and the system is proposed to be installed in new fill; or
(D) LTAR is proposed to exceed 1.0 gpd/ft^2 for Group I soils, 0.6 gpd/ft^2 for Group II soils, 0.3 gpd/ft^2 for Group III soils, or 0.12 gpd/ft^2 for Group IV soils;

(8) TS-II and drip dispersal systems which meet the following criteria:
(A) Subparagraphs (7)(A), (B), or (C) of this Rule; or
(B) LTAR is proposed to exceed 1.2 gpd/ft^2 for Group I soils, 0.7 gpd/ft^2 for Group II soils, 0.4 gpd/ft^2 for Group III soils, or 0.15 gpd/ft^2 for Group IV soils;

(9) site-specific nitrogen migration analysis is required to verify that the nitrate-nitrogen concentration at the property line will not exceed groundwater standards;

(10) LHD or Department determines that the combination of soil conditions, site topography and landscape position, DDF, system layout, and proposed stormwater appurtenances will potentially result in hydraulic overload; or

(11) DDF greater than 3,000 gpd, unless the requirements of Rule .0302(f) of this Subchapter are met.

(d) The special site evaluation shall include hydrologic or hydraulic testing, as applicable, and analysis, in accordance with Rule .0304(2)(b) of this Subchapter.

(e) For wastewater systems with a DDF greater than 3,000 gpd, the special site evaluation shall include sufficient site-specific data to predict the height of the water table mound that will develop beneath the field on level sites and the rate of lateral and vertical flow away from the trenches on sloping sites, unless the conditions in Paragraph (f) of this Rule are met. The data submitted may include deep soil borings to an impermeable layer or to a depth to support the hydrologic testing and modeling, permeability, in-situ Ksat measurements, water level readings, and other information determined to be necessary by the LHD or the Department, such as the impact of projected wastewater constituents on the trench and receiving soil. The site shall be considered unsuitable if the data indicate any of the following:

(1) the groundwater mound that will develop beneath the site cannot be maintained two feet or more below the bottom of the trenches;

(2) effluent is likely to become exposed on the ground surface; or

(3) contaminant transport analysis indicates that groundwater standards established in accordance with 15A NCAC 02L are determined or projected to be violated at the property line.

(f) For wastewater systems with a DDF greater than 3,000 gpd and dispersal fields designed for less than or equal to 1,500 gpd, in-situ Ksat measurements and groundwater mounding or lateral flow analysis shall not be required if a special site evaluation demonstrates that the dispersal fields are in separate lateral flow windows or are shown to not be hydraulically connected.

(g) The Department shall review the special site evaluation if requested by the LHD or if required in accordance with Rule .0302(e) of this Subchapter.

History Note: *Authority G.S. 89E; 89F; 130A-335(a1), (e), and (f).*

SECTION .0600 – LOCATION OF WASTEWATER SYSTEMS

15A NCAC 18E .0601 LOCATION OF WASTEWATER SYSTEMS

(a) Every wastewater system shall be located the minimum setbacks from the site features specified in Table IX. The setback shall be measured on the ground surface, unless otherwise specified in this Rule, from the nearest wastewater system component sidewall or as otherwise specified in a system specific rule or PIA Approval.

TABLE IX. Minimum setbacks from all wastewater systems to site features

Site Features	Setback in feet
Any transient or non-transient non-community water supply well, community well, shared water supply well, well that complies with 15A NCAC 18A .1700, or water supply spring	100
A private drinking water well or upslope spring serving a single family dwelling unit	50
Any other well or source not listed in this table, excluding monitoring wells	50
Surface waters classified WS-I, from ordinary high-water mark	100
Waters classified SA, from mean high-water mark	100
Any Class I or Class II reservoir, from normal water level	100
Lake or pond, from normal water level	50
Any other stream, non-water supply spring, or other surface waters, from the ordinary high-water mark	50
Tidal influenced waters, such as marshes and coastal waters, from mean high-water mark	50

Permanent stormwater retention basin, from normal water level	50
Any water line, unless the requirements of Paragraph (i) have been met	10
Closed loop geothermal wells	15
Building foundation and deck supports	5
Patio, porch, stoop, lighting fixtures, or signage, including supporting structures such as posts or pilings	1
Any basement, cellar, or in-ground swimming pool	15
Buried storage tank or basin, except stormwater	10
Above ground swimming pool and appurtenances that require a building permit	5
Top of slope of embankment or cuts of two feet or more vertical height with a slope greater than 50 percent	15
Top of slope of embankment or cuts of two feet or more vertical height with a slope greater than 33 percent and less than or equal to 50 percent	15
	If the site has suitable soil depth that extends for a minimum horizontal distance of 15 feet from the edge of the dispersal field, no minimum setback is required.
Top of slope of embankment or cuts of two feet or more vertical height with a slope less than 33 percent	0
Groundwater lowering system, as measured on the ground surface from the edge of the feature	25
Downslope interceptor drains and surface water diversions with a vertical cut of more than two feet, as measured on the ground surface from the edge of the feature	15
Upslope and sideslope interceptor drains and surface water diversions with a vertical cut of more than two feet, as measured on the ground surface from the edge of the feature	10
A stormwater collection system as defined in 15A NCAC 02H .1002(48), excluding gutter drains that connect to a stormwater collection system, with a vertical cut of more than two feet as measured from the center of the collection system	10
Bio-retention area, injection well, infiltration system, or dry pond	25
Any other dispersal field, except designated dispersal field repair area for project site	20
Any property line	10
Burial plot or graveyard boundary	10
Above ground storage tank from dripline or foundation pad, whichever is more limiting	5
Utility transmission and distribution line poles and towers, including guy wires, unless a greater setback is required by the utility company	5
Utility transformer, ground-surface mounted	5
Underground utilities	5

(b) Wastewater systems may be located closer than 100 feet but never less than 50 feet from water supply wells or an upslope spring for repairs, space limitations, and other site-planning considerations when one of the following conditions is met:

(1) the well was constructed prior to July 1, 1993, in accordance with 15A NCAC 18A .1720; or

(2) a variance for a reduced well setback has been issued in accordance with one of the following:

(A) 15A NCAC 02C .0118 for a shared water supply well, a wastewater system permitted or installed in saprolite, or for a transient non-community public water supply well; or

(B) 15A NCAC 18C .0203(b) for a non-transient non-community public water system.

(c) Wastewater systems shall not be located closer than 100 feet to springs, uncased wells, and ungrouted wells used as a source of drinking water and located downslope from the dispersal field.

(d) Underground utilities maintain a five-foot setback and shall not encroach on the wastewater system and repair area.

(e) The reduced setbacks in Table X shall apply to septic tanks and pump tanks if a leak test has been performed at the job site on the septic tank and pump tank in accordance with Rule .0805 of this Subchapter that verifies the tank, pipe penetrations, and riser connections are watertight.

TABLE X. Reduced setbacks for tanks to some site features

Site Features	Setback in feet
Permanent stormwater retention basin, from normal water level	35
Bio-retention area, injection well, infiltration system, or dry pond	15
Groundwater lowering system, as measured on the ground surface from the edge of the feature	15
Any water line	5
A stormwater collection system as defined in 15A NCAC 02H .1002(48), excluding gutter drains that connect to a stormwater collection system, with a vertical cut of more than two feet as measured from the center of the collection system	5

(f) No minimum setback shall be required from a well that has been permanently abandoned in accordance with 15A NCAC 02C .0113 and for which a record of abandonment has been submitted in accordance with 15A NCAC 02C .0114.
(g) Initial and repair dispersal field systems shall not be located under impervious surfaces or areas subject to vehicular traffic unless approved in accordance with G.S. 130A-343 and Section .1700 of this Subchapter.
(h) If a collection sewer is installed under areas subject to vehicular traffic or areas subject to soil disturbance or compaction, one of the following pipe materials shall be used:

(1) DIP;
(2) a minimum of Schedule 40 PVC, Polyethylene, or ABS pipe sleeved in DIP;
(3) a minimum of Schedule 40 PVC, Polyethylene, or ABS pipe sleeved in DOT traffic rated culvert pipe;
(4) a minimum of Schedule 40 PVC, Polyethylene, or ABS pipe with 30 inches of compacted material provided over the crown of the pipe; or
(5) other pipe materials may be proposed when designed, inspected, and certified by a PE and approved by the LHD.

(i) In addition to the requirements of Paragraph (a) of this Rule, wastewater systems with a proposed DDF greater than 3,000 gpd, as determined in Rule .0401 of this Subchapter, shall be located the minimum setbacks from the site features in Table XI.

TABLE XI. Minimum setbacks from wastewater systems greater than 3,000 gpd to site features

Feature	Setback in feet
Any Class I or II reservoir or any public water supply source utilizing a shallow, under 50 feet, groundwater aquifer, from feature or normal water level	500
Any other public water supply source, unless a confined aquifer	200
Any private drinking water well or upslope spring, unless a confined aquifer	100
Surface water classified WS- I, from ordinary high-water mark	200
Surface waters classified WS-II, WS-III, B, or SB, from mean high-water mark or ordinary high-water mark	100
Waters classified SA, from mean high-water mark	200
Any property line	25

(j) Wastewater systems with a DDF greater than 3,000 gpd that meet the requirements of Rule .0510(f) of this Subchapter may use the setbacks identified in Table IX of this Rule.
(k) Collection sewers shall be located the minimum setbacks to site features shown in Table IX, unless a different minimum setback is specified in Table XII. When a reduced setback to a collection sewer is utilized, the piping requirements for the reduced setback shall be extended to comply with the unreduced setback. The distribution device shall receive the reduced setback when demonstrated to be watertight with an on-site leak test.

TABLE XII. Minimum setbacks from collection sewers to site features

Feature	Setback in feet
Any public water supply source, including wells, springs, and Class I or Class II reservoirs, from feature or normal water level	100
	50, if constructed of or sleeved in Schedule 80 PVC or DIP with mechanical joints equivalent to water main standards, and the collection sewer is leak tested and shown to be watertight*
Any water supply well excluding those regulated under 15A NCAC 18C	50
	25, if constructed of Schedule 40 pressure rated PVC or DIP with mechanical joints equivalent to

	water main standards, and the collection sewer is leak tested and shown to be watertight*
	15, if constructed of Schedule 80 PVC, sleeved in DIP or Schedule 80 PVC, and the collection sewer is leak tested and shown to be watertight*
Surface waters classified WS-I, WS-II, WS-III, B, SA, or SB, from mean high-water mark or ordinary high-water mark	50
	10, if constructed of or sleeved in Schedule 80 PVC or DIP with mechanical joints equivalent to water main standards, and the collection sewer is leak tested and shown to be watertight*
Any other stream, non-water supply spring, or other surface waters, from the ordinary high-water mark	10
Tidal influenced waters, such as marshes and coastal waters, from mean high-water mark	10
Closed loop geothermal wells	5
Any service connection as defined in 15A NCAC 18C .0102(c)(21)	5
Any basement, cellar, or in-ground swimming pool	10
Top of slope of embankment or cuts of two feet or more vertical height with a slope greater than 50 percent	5
Interceptor drains and surface water diversions, with a vertical cut of more than two feet as measured on the ground surface from the edge of the diversion	5
Permanent stormwater retention basin, from normal water level	10
Bio-retention area, injection well, infiltration system, or dry pond	5
Any other dispersal field, except designated dispersal field repair area for project site	5
Any property line	5
Burial plot or graveyard boundary	5

*Pipe materials other than DIP, Schedule 40 pressure rated PVC, or Schedule 80 PVC shall be acceptable when the materials conform to materials, testing methods, and acceptability standards meeting water main standards and when the line has been designed, installed, inspected, and certified by a PE and approved by the LHD.

(l) The minimum setback from water lines to collection sewers shall be 10 feet, except as follows:
- (1) the water line is laid in a separate trench with the elevation of the bottom of the water line 18 inches above the top of the collection sewer; or
- (2) the water line is laid in the same trench as the collection sewer with the water line located on one side of the trench, on a bench of undisturbed earth and with the elevation of the bottom of the water line 18 inches above the top of the collection sewer. The collection sewer shall be located the width of the trench from the water line.

(m) Collection sewers and water lines shall not cross, except as follows:
- (1) 18 inches clear vertical separation is maintained, with the collection sewer crossing under the water line; or
- (2) the water line crosses under the collection sewer or 18 inches clear vertical separation is not maintained and the following criteria are met:
  - (A) the collection sewer is constructed of DIP with joints equivalent to water main standards and extends 10 feet on each side of the point of crossing, with full sections of pipe centered at the point of crossing; and
  - (B) the water line is constructed of ferrous materials with joints equivalent to water main standards and extends a minimum of 10 feet on each side of the point of crossing, with full sections of pipe centered at the point of crossing.

(n) Collection sewers shall not cross storm drains, except as follows:
- (1) 12 inches clear vertical separation is maintained between the collection sewer and storm drain;
- (2) the collection sewer is constructed of DIP with mechanical joints or restrained push-on joints equal to water main standards; or

(3) the collection sewer is encased in concrete or DIP for a minimum of five feet on either side of the crossing.

(o) Collection sewers shall not cross under a stream, except as follows:

(1) a minimum of 36 inches of separation from the stream bottom is maintained;

(2) the collection sewer is constructed of DIP with mechanical joints or restrained push-on joints equal to water main standards; or

(3) the collection sewer is encased in concrete or DIP for a minimum of 10 feet on either side of the crossing and protected against the normal range of high and low water conditions, including the 100-year flood or wave action.

(p) Collection sewer aerial crossings shall be constructed of DIP with mechanical joints or restrained push-on joints equal to water main standards and freeze protected. Pipe shall be anchored for a minimum of 10 feet on either side of the crossing.

(q) If septic tanks, pump tanks, grease tanks, raw sewage lift stations, wastewater treatment plants, sand filters, and other advanced pretreatment systems are located in areas subject to flooding at a frequency greater than a 10-year storm, they shall be designed and installed to be watertight and to remain operable during all flooding events.

History Note: *Authority G.S. 130A-334; 130A-335(e) and (f); S.L. 2019-215, s.2.*

15A NCAC 18E .0602 APPLICABILITY OF SETBACKS

(a) The minimum setback requirements in Table IX of Rule .0601(a) of this Section for SA waters, basements, property lines, and cuts of two feet or more vertical height, shall not apply to the installation of a single wastewater system serving a single-family residence with a maximum DDF of 480 gpd on a lot or tract of land that meets the following requirements:

(1) on July 1, 1977, is described in a deed, contract, other instrument conveying fee title, or in a recorded plat;

(2) is of insufficient size to satisfy the minimum setback requirements in Table IX of Rule .0601(a) of this Section for SA waters, basements, property lines, and cuts of two feet or more vertical height of this Section on July 1, 1977; and

(3) cannot be served by a community or public sewerage system on the date system construction is proposed to begin.

(b) For those lots or tracts of land described in Paragraph (a) of this Rule, the maximum feasible setback shall be required, but shall not be less than the minimum setbacks in Table XIII.

TABLE XIII. Minimum setbacks from wastewater systems to specific site features on lots described in this Rule

Feature	Minimum setback in feet
SA waters from mean high-water mark	50
Basement	8
Property line	5
Cuts of two feet or more vertical height	5

(c) For wastewater systems installed in Group I soils on lots or tracts of land that meet the requirements of Paragraph (a) of this Rule, the wastewater system shall be located the maximum feasible distance but no less than 10 feet from any other wastewater system.

(d) For wastewater systems installed on lots or tracts of land which, on July 1, 1982, are specifically described in a deed or recorded plat, and the wastewater system cannot meet the minimum setbacks in Table IX of Rule .0601(a) of this Section for groundwater lowering systems, the wastewater system shall be located the maximum feasible horizontal distance but no less than 10 feet from the groundwater lowering system.

(e) Any local board of health ordinances in effect on June 30, 1977, which establish greater minimum setback requirements than those provided for in this Section, shall remain in effect and shall apply to a lot or tract of land to which Table IX of Rule .0601(a) of this Section does not apply.

History Note: *Authority G.S. 130A-335(e).*

SECTION .0700 – COLLECTION SEWERS, RAW SEWAGE LIFT STATIONS, SEPTIC TANK EFFLUENT PUMP SYSTEMS, AND PIPE MATERIALS

15A NCAC 18E .0701 COLLECTION SEWERS

(a) Collection sewers shall be designed and constructed in accordance with the following criteria:

(1) Building drains and building sewers shall be in accordance with the North Carolina Plumbing Code and approved by the local building inspector.

(2) Pipe material shall be specified to comply with the applicable ASTM standards based on pipe material.

(3) Gravity sewers shall be designed to maintain minimum scour velocities of two feet per second with the pipe half full and one foot per second at the peak projected instantaneous flow rate. Force mains shall be sized to obtain a minimum two-foot per second scour velocity at the projected pump operating flow rate.

(4) Infiltration and exfiltration shall not exceed 100 gpd per inch diameter per mile of gravity sewer pipe or 20 gpd per inch diameter per mile of pressure pipe in force mains and supply lines.

(5) Collection sewers shall be buried three feet deep, except as provided for in Rule .0601(h)(4) of this Subchapter.