Table NC6-2: Piedmont and Coastal Plain Soils with Irrigation Soil Management Groups (ISMG)			
Soil Series Name	**Hydrologic Soil Group**	**Limitations / Notes for use with Sprinkler Irrigation System**	**Group Index No.**
Troup	A	Low AWC, Seepage	16
Turbeville	C	Slope, Seepage, Water Erosion	8
Uchee	A	Seepage, Slope, Low AWC	7
Uwharrie	B	Slope, Large boulders, Too acid	3
Valhalla	A	Seepage, Low AWC	7
Vance	C	Slow Water Mvmt, Seepage, Slope	11
Varina	C	Slow Water Mvmt, Seepage, Low AWC	8
Vaucluse	C	Seepage, Slope, Low AWC	7
Wadesboro	B	Slope, Depth to bedrock, Excess salt and sodium	3
Wagram	A	Low AWC, Slope, Seepage	7
Wahee	C/D	Drained, Depth to Sat zone, Slow water Mvmt	14
Wake	D	Slope, Depth to bedrock, Low AWC	15
Wakulla	A	Seepage, Low AWC, Slope	16
Wando	A	Seepage, Low AWC, Slope	16
Wasda	B/D	Drained, Depth to Sat zone, Too acid	25
Wateree	B	Slope, Low AWC, Seepage	15
Wedowee	B	Slope, Seepage, Water Erosion	4
Weeksville	B/D	Drained, Depth to Sat zone	20
Wehadkee	D	Drained, Depth to Sat zone, Frequently Flooded	21
Westfield	B	Slope, Gravel	3
White Store	D	Depth to Sat zone, Slow water Mvmt, Slope	12
Wickham	B	Seepage, Slope	6
Wilbanks	D	Depth to Sat zone, Frequently Flooded, Slow water Mvmt	24
Wilkes	D	Depth to bedrock, Slope, Low AWC	15
Winnsboro	C	Slope, Slow water Mvmt	2
Winton	C	Slope, Depth to Sat zone, Too acid	NR
Woodington	B/D	Drained, Depth to Sat zone	19
Woolwine	B	Slope, Gravel & Cobbles, Depth to bedrock	3
Worsham	D	Drained, Depth to Sat zone, Slow water Mvmt	21
Wrightsboro	C	Depth to Sat zone, Seepage, Too Acid	6
Wynott	C	Depth to bedrock, Slope, Slow water Mvmt	12
Wysocking	B/D	Drained, Depth to Sat zone, Too acid	19
Yaupon	D	Slow Water Mvmt, Excess salt and sodium	NR
Yeopim	C	Depth to Sat zone, Too acid	13
Yonges	C/D	Drained, Depth to Sat zone, Some Flooding	19
Zion	C	Depth to bedrock, Slope, Slow water Mvmt	12

NR – this soil was not rated and may not be suitable for irrigation

Tables NC6-3 and NC6-4 present irrigation system General Design Parameters, given the Irrigation Soil Management Group (ISMG) and Crop, for the Mountain and Piedmont/Coastal Plains regions of North Carolina. These tables use average expected conditions to estimate the irrigation system needs for planning purposes. Assumptions are stated and should be adjusted to actual system parameters and on-site data for a final design. For example, the ISMG uses a representative soil profile to stand for the entire group with similar soils and landscape position. The irrigation system designer should use an actual field soil profile to determine the AWC in the final design. Note that there will be variations within a field of both soil types and soil layer thicknesses. The challenge to the designer is to identify the most restrictive features in each facet of the design so that crop needs are met without exceeding inflow and storage capacities of the field soils under irrigation. The columns presented in tables NC6-3 and NC6-4 are defined as follows:

Column 1 – Irrigation Soil Management Group (ISMG) Number: Soils having similar physical characteristics for irrigation are grouped together to simplify design and management. This grouping takes into account relevant soil irrigation properties such as depth, texture, water holding capacity, intakes rate, surface condition, and general landscape position. These data are of a general nature for this Soil Management Group. Therefore, data gathered during a site visit should be used to revise and refine the irrigation design.

Column 2 – Soil Type and Description: A brief description of the general soil profile in this group and some representative soil series names.

Column 3 – Average Soil Depth: The average soil depth through which plant roots can penetrate readily in search of sustaining nutrients and moisture. In cases where this depth is less than normal root zone depth for a crop, it becomes a limiting factor in determining the amount of available moisture that can be stored in the soil profile.

Column 4 – Available Water Capacity (AWC): The capacity of the soil profile to hold and store moisture for plant use in inches of water per depth of soil profile. The AWC is expressed as the total amount available at multiple depths in the soil profile beginning at 12 inches and then progressing in six inch increments (i.e. 12”, 18”, 24” …). Heavier clay soils may hold up to three times the amount of soil moisture per equal depth as compared to a light textured sandy soil. It is important to know the available moisture holding capacity within the rooting zone to determine the correct irrigation application amount. Irrigation efficiency is directly related to both over application and improper timing of irrigation applications. The AWC values used in the table are for a representative soil and are not field specific. Field specific AWC should be determined by soils testing for each irrigated field using a minimum of three sampling areas within the field. More samples would be required for larger fields or fields with multiple soil types and soil properties that vary by a large amount.

Columns 5 and 6 – Recommended Maximum Application Rate: Maximum recommended irrigation application rates are set to insure no surface runoff occurs during irrigation. This amount is based upon the soils group, field tests and observations. Runoff is usually a concern during the last portion of the irrigation cycle when soils are nearing saturation and intake rates are lowest, and thereby control maximum application rates.

Column 7 – Crop: Contains the crops that are most often associated with the soils group which includes landscape position. These crops are not being recommended for irrigation,

since this decision should be based on many factors. These are crops that have been found to be economically feasible to irrigate under certain favorable conditions.

Column 8 – Depth of Moisture Replacement: The depth of soil which contains the majority of plant roots that will consume moisture for plant use. This is the soil zone that will be recharged by irrigation and managed to insure the plant available water is adequate to meet the cropping demands.

Column 9 – Moisture to be Replaced by Each Irrigation Cycle: The moisture, in inches of water, which should be replaced into the crop root zone during each irrigation cycle. This amount is used for general planning purposes and is one half of the Plant Available Water (PAW). However, in practice, irrigation is often started at moisture levels different from one half PAW. Therefore, the actual application amount should be adjusted for field soil moisture levels to reduce under- and over-watering situations. Irrigation scheduling software can be used to determine the most appropriate amount of soil moisture to be replaced for any given day. Accuracy for PAW determinations can be improved by field specific soils testing data to determine AWC, as noted above.

Column 10 – Design Moisture Use Rate: The average maximum peak moisture use rate (10 to 14 day period, in inches per day) of transpiration by the crop plus evaporation from the soil surface. For most plants the maximum rate of transpiration occurs when the daylight hours are the longest, air temperature is greatest, wind movement is high, humidity is lowest, and the plant has developed a good root system and is in the rapid growth stage.

Column 11 – Irrigation Frequency for the Peak Use Period: The frequency, in days, between planned irrigation cycles for a specific location. This frequency period is derived from the Moisture to be Replaced by each Irrigation (column 9) divided by the Crop Design Moisture Use Rate (column 10). This would be the number of days the designer can allow for completion of one irrigation cycle over the entire design area.

Column 12 – Application Amount: The actual amount of water, in inches, applied by the irrigation system during each irrigation cycle. Sprinkler irrigation systems involve some unavoidable losses due to evaporation from the spray, unequal distribution, and deep percolation. Therefore, more water must be applied than actually becomes available for plant use. The efficiency of a sprinkler irrigation system can vary considerably depending on local conditions, but is considered to be 75 percent for planning purposes in this table. This application amount is derived from the Moisture to be Replaced by each Irrigation (column 9) divided by the irrigation efficiency of 0.75. This amount should be adjusted by the designer if the actual irrigation efficiency is significantly different from this 75 percent value.

Table NC6-3: Mountain Region of North Carolina – General Design Parameters

SOILS						CROPS			IRRIGATION PARAMETERS		
Irr. Soil Mgmt Group #	Soil Type and Description	Average Soil Depth (ft)	Available Water Capacity (in) [1]	Recommended maximum application rate: Bare (in/hr)	Recommended maximum application rate: Cover (in/hr)	Crop [2]	Depth of moisture replace-ment (ft)	Moisture to be replaced by each Irrigation (in)	Design peak moisture use rate for crop (in/day)	Irrigation frequency for peak use period (days)	Applica-tion amount (in) [3]
Col 1	Column 2	Col 3	Column 4	Col 5	Col 6	Column 7	Column 8	Column 9	Col 10	Column 11	Column 12
1	Well drained, first bottom soils with sandy surface layers and loose sandy subsoils.	3.0+	0.8 1.3 1.7 2.1 2.8	0.75	0.75	Corn Small Grain or Soybeans	2.5 2.0	1.05 0.85	0.20 0.16	5 5	1.40 1.13
2	Well drained upland soils with loamy surface layers and friable loamy subsoils	2.5	1.0 1.5 2.2 2.7	0.40	0.60	Corn Improved pasture or mixed hay Nursery Crops, 1st year Nursery Crops, 2nd year Small Grain or Soybeans Orchards, bare Orchards, cover Tobacco Vineyards, cultivated Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.5 1.5 1.0 2.0 2.0 2.5 2.5 1.5 2.5 1.0 1.5 1.5 2.0	1.35 0.75 0.50 1.10 1.10 1.35 1.35 0.75 1.35 0.50 0.75 0.75 1.10	0.20 0.22 0.14 0.16 0.16 0.18 0.22 0.16 0.16 0.12 0.12 0.16 0.16	6 3 3 7 7 7 6 4 8 4 6 4 7	1.80 1.00 0.67 1.47 1.47 1.80 1.80 1.00 1.80 0.67 1.00 1.00 1.47
3	Somewhat poorly drained first bottom soils with loamy surface layers and friable loamy subsoils	3.0+	1.3 2.0 2.7 3.3 4.0	0.35	0.45	Corn Gladioli Improved Pasture or mixed hay Small Grain or Soybeans Tobacco Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.5 1.0 1.5 2.0 1.5 1.0 1.5 1.5 2.0	1.65 0.65 1.00 1.35 1.00 0.65 1.00 1.00 1.35	0.20 0.12 0.22 0.16 0.16 0.12 0.12 0.16 0.16	8 5 4 8 6 5 8 6 8	2.20 0.87 1.33 1.80 1.33 0.87 1.33 1.33 1.80
4	Moderately well drained terrace soils with loamy surface layers and firm loamy subsoils.	3.0+	1.3 2.4 3.4 4.4 5.2	0.30	0.35	Corn Improved Pasture or mixed hay Small Grain or Soybeans Tobacco Vegetables, Group, 1 Vegetables, Group, 2 Vegetables, Group, 3 Vegetables, Group, 4	2.5 1.5 2.0 1.5 1.0 1.5 1.5 2.0	2.20 1.20 1.70 1.20 0.65 1.20 1.20 1.70	0.20 0.22 0.16 0.16 0.12 0.12 0.16 0.16	11 5 10 7 5 10 7 10	2.93 1.60 2.27 1.60 0.87 1.60 1.60 2.27

Table NC6-3: Mountain Region of North Carolina – General Design Parameters

5	Well drained terrace soils with loamy surface layers and friable loamy subsoils	3.0+	1.3 2.4 3.4 4.4 5.2	0.30	0.35	Alfalfa	2.5	2.20	0.22	10	2.93
						Corn	2.5	2.20	0.20	11	2.93
						Improved Pasture or mixed hay	1.5	1.20	0.22	5	1.60
						Small Grain or Soybeans	2.0	1.70	0.16	10	2.27
						Tobacco	1.5	1.20	0.16	7	1.60
						Vegetables, Group 1	1.0	0.65	0.12	5	0.87
						Vegetables, Group 2	1.5	1.20	0.12	10	1.60
						Vegetables, Group 3	1.5	1.20	0.16	7	1.60
						Vegetables, Group 4	2.0	1.70	0.16	10	2.27
6	Well drained first bottom soils with loamy surface layers and friable loamy subsoils	3.0+	1.3 2.0 2.7 3.3 4.0	0.35	0.45	Alfalfa	2.5	1.65	0.22	7	2.20
						Corn	2.5	1.65	0.20	8	2.20
						Gladioli	1.0	0.65	0.12	5	0.87
						Improved Pasture or mixed hay	1.5	1.00	0.22	4	1.33
						Small Grain or Soybeans	2.0	1.35	0.16	8	1.80
						Tobacco	1.5	1.00	0.16	6	1.33
						Vegetables, Group1	1.0	0.65	0.12	5	0.87
						Vegetables, Group 2	1.5	1.00	0.12	8	1.33
						Vegetables, Group 3	1.5	1.00	0.16	6	1.33
						Vegetables, Group 4	2.0	1.35	0.16	8	1.80
7	Well drained upland soils, with loamy surface layers and friable loamy subsoils.	2.0	1.5 2.2 2.9	0.40	0.60	Alfalfa	2.0	1.45	0.22	6	1.93
						Corn	2.0	1.45	0.20	7	1.93
						Improved Pasture or mixed hay	1.5	1.10	0.22	5	1.47
						Nursery Crops, 1st yr.	1.0	0.75	0.14	5	1.00
						Nursery Crops, 2nd yr.	2.0	1.45	0.16	9	1.93
						Orchards (bare)	2.0	1.45	0.18	8	1.93
						Orchards (cover)	2.0	1.45	0.22	6	1.93
						Irish Potatoes	1.5	1.10	0.18	6	1.47
						Small Grain or Soybeans	2.0	1.45	0.16	9	1.93
						Tobacco	1.5	1.10	0.16	7	1.47
						Vineyards, cultivated	2.0	1.45	0.16	9	1.93
						Vegetables, Group 1	1.0	0.75	0.12	6	1.00
						Vegetables, Group 2	1.5	1.10	0.12	9	1.47
						Vegetables, Group 3	1.5	1.10	0.16	7	1.47
						Vegetables, Group 4	2.0	1.45	0.16	9	1.93
8	Well drained upland and terrace soils, with loamy surface layers and friable to firm clayey subsoils	2.5	1.5 2.2 2.9 3.5	0.40	0.60	Alfalfa	2.5	1.75	0.22	8	2.33
						Corn	2.5	1.75	0.20	9	2.33
						Improved Pasture or mixed hay	1.5	1.10	0.22	5	1.47
						Nursery Crops, 1st yr.	1.0	0.75	0.14	5	1.00
						Nursery Crops, 2nd yr.	2.0	1.45	0.16	9	1.93
						Orchards (bare)	2.5	1.75	0.18	10	2.33
						Orchards (cover)	2.5	1.75	0.22	8	2.33
						Irish Potatoes	1.5	1.10	0.18	6	1.47
						Small Grain or Soybeans	2.0	1.45	0.16	9	1.93
						Tobacco	1.5	1.10	0.16	7	1.47
						Vineyards, cultivated	2.5	1.75	0.16	11	2.33
						Vegetables, Group 1	1.0	0.75	0.12	6	1.00
						Vegetables, Group 2	1.5	1.10	0.12	9	1.47
						Vegetables, Group 3	1.5	1.10	0.16	7	1.47
						Vegetables, Group 4	2.0	1.45	0.16	9	1.93

Table NC6-3: Mountain Region of North Carolina – General Design Parameters

9 [4]	Poorly drained terrace soils with loamy surface layers and firm plastic clayey subsoils.	3.0+	1.6 2.5 3.3 4.2 5.0	0.30	0.35	Improved Pasture or mixed hay Small Grain or Soybeans	1.5 2.0	1.25 1.65	0.22 0.16	6 10	1.67 2.20
10	Well drained upland and terrace soils with loamy surface layers and friable subsoil.	3.0+	1.8 2.6 3.4 4.2 5.0	0.50	0.60	Alfalfa Corn Improved Pasture or mixed hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Orchards (bare) Orchards (cover) Irish Potatoes Small Grain or Soybeans Tobacco Vegetables, Group 1 Vegetables, Group 2 Vegetables. Group 3 Vegetables. Group 4	2.5 2.5 1.5 1.0 2.0 3.0 3.0 1.5 2.0 1.5 1.0 1.5 1.5 2.0	2.10 2.10 1.30 0.90 1.70 2.50 2.50 1.30 1.70 1.30 0.90 1.30 1.30 1.70	0.22 0.20 0.22 0.14 0.16 0.18 0.22 0.18 0.16 0.16 0.12 0.12 0.16 0.16	9 10 6 6 10 14 11 7 10 8 7 11 8 10	2.80 2.80 1.73 1.20 2.27 3.33 3.33 1.73 2.27 1.73 1.20 1.73 1.73 2.27
11 [4]	Very poorly drained first bottom soils with loamy surface layers and friable loamy subsoils	3.0+	1.8 2.6 3.4 4.2 5.0	0.50	0.60	Corn Gladioli Improved Pasture or mixed hay Small Grain or Soybeans Vegetables, Group1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.5 1.0 1.5 2.0 1.0 1.5 1.5 2.0	2.10 0.90 1.30 1.70 0.90 1.30 1.30 1.70	0.20 0.12 0.22 0.16 0.12 0.12 0.16 0.16	10 7 6 10 7 10 8 10	2.80 1.20 1.73 2.27 1.20 1.73 1.73 2.27
12 [4]	Poorly drained first bottom soils with loamy surface layers and friable loamy subsoils.	3.0+	1.5 2.2 2.9 3.6 4.5	0.30	0.35	Improved Pasture or mixed hay	1.5	1.10	0.22	5	1.47

[1] Top figure indicates the available moisture (in inches) for the upper 12 inches of the soil profile. Each additional figure indicates the available moisture for the upper 18, 24, 30, and 36 inches of the soil profile.

[2] Crops are as shown. Vegetable groups are as follows: **Group 1** – kale, lettuce, mustard, onions, spinach, and strawberries; **Group 2** – Beans (snap), beets, broccoli, cabbage, cauliflower, carrots, collard, peas (garden), peppers, turnips, rutabagas**;** **Group 3** – Beans (lima), cucumbers, tomatoes; **Group 4** – asparagus, cantaloupes, corn (sweet), eggplant, okra, watermelon.

[3] Using a 75 percent irrigation efficiency

[4] For these soils adequate surface and subsurface drainage should be provided. Otherwise a heavy rainfall following an irrigation may cause crop damage.

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

SOILS						CROPS			IRRIGATION PARAMETERS		
Irr. Soil Mgmt Group #	Soil Type and Description	Average Soil Depth (ft)	Available Water Capacity (in) [1]	Recommended maximum application rate: Bare (in/hr)	Recommended maximum application rate: Cover (in/hr)	Crop [2]	Depth of moisture replace-ment (ft)	Moisture to be replaced by each Irrigation (in)	Design peak moisture use rate for crop (in/day)	Irrigation frequency for Peak use period (days)	Applica-tion amount (in) [3]
Col 1	Column 2	Col 3	Column 4	Col 5	Col 6	Column 7	Column 8	Column 9	Col 10	Column 11	Col 12
1	Well drained, loamy, alluvial or colluvial soils on first bottoms and upland depressions.	3.0+	1.5 2.2 2.9 3.6 4.5	0.30	0.35	Alfalfa	2.5	1.80	0.24	7	2.40
						Cotton	2.5	1.80	0.20	9	2.40
						Corn, field	2.5	1.80	0.22	8	2.40
						Gladioli	1.0	0.75	0.14	5	1.00
						Ladino clover and grass, Summer perennials or Mixed Hay	1.5	1.10	0.24	4	1.47
						Nursery Crops, 1st year	1.0	0.75	0.16	5	1.00
						Nursery Crops, 2nd year	2.0	1.45	0.18	8	1.93
						Peanuts	2.0	1.45	0.18	8	1.93
						Peas, field	1.5	1.10	0.18	6	1.47
						Irish Potatoes	1.5	1.10	0.20	5	1.47
						Small Grain or Soybeans	2.0	1.45	0.18	8	1.93
						Tobacco	1.5	1.10	0.18	6	1.47
						Vegetables, Group 1	1.0	0.75	0.14	5	1.00
						Vegetables, Group 2	1.5	1.10	0.14	8	1.47
						Vegetables, Group 3	1.5	1.10	0.18	6	1.47
						Vegetables, Group 4	2.0	1.45	0.18	8	1.93
2	Well drained soils of the Piedmont uplands that have loamy surface layers and clayey subsoils.	3.0+	1.7 2.7 3.7 4.7 5.5	0.25	0.30	Alfalfa	2.5	2.35	0.24	10	3.13
						Cotton	2.5	2.35	0.20	12	3.13
						Corn, field	2.5	2.35	0.22	11	3.13
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.35	0.24	6	1.80
						Nursery Crops, 1st yr.	1.0	0.85	0.16	5	1.13
						Nursery Crops, 2nd yr.	2.0	1.85	0.18	10	2.47
						Orchards (bare)	3.0	2.75	0.20	14	3.67
						Orchards (cover)	3.0	2.75	0.24	11	3.67
						Peas, field	1.5	1.35	0.18	7	1.80
						Small Grain or Soybeans	2.0	1.85	0.18	10	2.47
						Tobacco	1.5	1.35	0.18	7	1.80

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

3	Well drained soils of the Piedmont uplands with loamy surface layers and firm clayey subsoils.	3.0	1.4 2.3 3.3 4.2 5.0	0.30	0.40	Alfalfa	2.5	2.10	0.24	9	2.80
						Cotton	2.5	2.10	0.20	10	2.80
						Corn, field	2.5	2.10	0.22	9	2.80
						Gladioli	1.0	0.70	0.14	5	0.93
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.15	0.24	5	1.53
						Nursery Crops, 1st yr.	1.0	0.70	0.16	4	0.93
						Nursery Crops, 2nd yr.	2.0	1.65	0.18	9	2.20
						Orchards (bare)	3.0	2.50	0.20	12	3.33
						Orchards (cover)	3.0	2.50	0.24	10	3.33
						Peas, field	1.5	1.15	0.18	6	1.53
						Small Grain or Soybeans	2.0	1.65	0.18	9	2.20
						Vegetables, Group 1	1.0	0.70	0.14	5	0.93
						Tobacco	1.5	1.15	0.18	6	1.53
4	Well drained soils of the Piedmont uplands with sandy surface layers and firm clayey subsoils.	3.0	1.2 2.1 3.1 4.0 4.7	0.35	0.45	Alfalfa	2.5	2.00	0.24	8	2.67
						Cotton	2.5	2.00	0.20	10	2.67
						Corn, field	2.5	2.00	0.22	9	2.67
						Gladioli	1.0	0.60	0.14	4	0.80
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.05	0.24	4	1.40
						Nursery Crops, 1st yr.	1.0	0.60	0.16	4	0.80
						Nursery Crops, 2nd yr.	2.0	1.55	0.18	9	2.07
						Orchards (bare)	3.0	2.35	0.20	12	3.13
						Orchards (cover)	3.0	2.35	0.24	10	3.13
						Peanuts	2.0	1.55	0.18	9	2.07
						Peas, field	1.5	1.05	0.18	6	1.40
						Sweet Potatoes	2.0	1.55	0.22	7	2.07
						Small Grain or Soybeans	2.0	1.55	0.18	9	2.07
						Tobacco	1.5	1.05	0.18	6	1.40
						Vegetables, Group 1	1.0	0.60	0.14	4	0.80
						Vegetables, Group 2	1.5	1.05	0.14	7	1.40
						Vegetables, Group 3	1.5	1.05	0.18	6	1.40
						Vegetables, Group 4	2.0	1.55	0.18	9	2.07
5	Well drained soils of the Piedmont uplands with sandy surface layers and friable loamy subsoils.	3.0	1.3 2.1 2.9 3.7 4.4	0.40	0.45	Alfalfa	2.5	1.85	0.24	8	2.47
						Cotton	2.5	1.85	0.20	9	2.47
						Corn, field	2.5	1.85	0.22	8	2.47
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.05	0.24	4	1.40
						Nursery Crops, 1st yr.	1.0	0.65	0.16	4	0.87
						Nursery Crops, 2nd yr.	2.0	1.45	0.18	8	1.93
						Orchards (bare)	3.0	2.20	0.20	11	2.93
						Orchards (cover)	3.0	2.20	0.24	9	2.93
						Peas, field	1.5	1.05	0.18	6	1.40
						Small Grain or Soybeans	2.0	1.45	0.18	8	1.93
						Tobacco	1.5	1.05	0.18	6	1.40

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

6	Well to moderately well drained Coastal Plain and terrace soils with sandy surface layers and friable loamy subsoils.	3.0+	1.1 1.7 2.4 3.1 3.8	0.40	0.50	Alfalfa	2.5	1.55	0.24	6	2.07
						Annual & Perennial Flowers	1.0	0.55	0.14	4	0.73
						Cotton	2.5	1.55	0.20	8	2.07
						Gladioli	1.0	0.55	0.14	4	0.73
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	0.85	0.24	4	1.13
						Nursery Crops, 1st yr.	1.0	0.55	0.16	3	0.73
						Nursery Crops, 2nd yr.	2.0	1.20	0.18	7	1.60
						Orchards (bare)	3.0	1.90	0.20	9	2.53
						Orchards (cover)	3.0	1.90	0.24	8	2.53
						Peanuts	2.0	1.20	0.18	7	1.60
						Peas, field	1.5	0.85	0.18	5	1.13
						Sweet Potatoes	2.0	1.20	0.22	5	1.60
						Small Grain or Soybeans	2.0	1.20	0.18	7	1.60
						Tobacco	1.5	0.85	0.18	5	1.13
						Vineyards, cultivated	3.0	1.90	0.18	10	2.53
						Vegetables, Group 1	1.0	0.55	0.14	4	0.73
						Vegetables, Group 2	1.5	0.85	0.14	6	1.13
						Vegetables, Group 3	1.5	0.85	0.18	5	1.13
						Vegetables, Group 4	2.0	1.20	0.18	7	1.60
7	Well drained Coastal Plain and terrace soils, with thick sandy surface layers and friable loamy subsoils.	3.0+	0.9 1.3 1.8 2.4 3.0	0.50	0.60	Alfalfa	2.5	1.20	0.24	5	1.60
						Annual & Perennial Flowers	1.0	0.45	0.14	3	0.60
						Cotton	2.5	1.20	0.20	6	1.60
						Corn, field	2.5	1.20	0.22	5	1.60
						Gladioli	1.0	0.45	0.14	3	0.60
						Summer Perennials	1.5	0.65	0.24	3	0.87
						Nursery Crops, 1st yr.	1.0	0.45	0.16	3	0.60
						Nursery Crops, 2nd yr.	2.0	0.90	0.18	5	1.20
						Orchards (bare)	3.0	1.50	0.20	7	2.00
						Orchards (cover)	3.0	1.50	0.24	6	2.00
						Peanuts	2.0	0.90	0.18	5	1.20
						Peas, field	1.5	0.65	0.18	4	0.87
						Sweet Potatoes	2.0	0.90	0.22	4	1.20
						Small Grain or Soybeans	2.0	0.90	0.18	5	1.20
						Tobacco	1.5	0.65	0.18	4	0.87
						Vineyards, cultivated	3.0	1.50	0.18	8	2.00
						Vegetables, Group 1	1.0	0.45	0.14	3	0.60
						Vegetables, Group 2	1.5	0.65	0.14	5	0.87
						Vegetables, Group 3	1.5	0.65	0.18	4	0.87
						Vegetables, Group 4	2.0	0.90	0.18	5	1.20

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

8	Well to moderately well drained Coastal Plain soils, with sandy surface layers and firm clayey subsoils.	3.0+	1.2 2.0 2.8 3.6 4.3	0.35	0.40	Alfalfa	2.5	1.80	0.24	7	2.40
						Cotton	2.5	1.80	0.20	9	2.40
						Corn, field	2.5	1.80	0.22	8	2.40
						Gladioli	1.0	0.60	0.14	4	0.80
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.00	0.24	4	1.33
						Nursery Crops, 1st yr.	1.0	0.60	0.16	4	0.80
						Nursery Crops, 2nd yr.	2.0	1.40	0.18	8	1.87
						Peanuts	2.0	1.40	0.18	8	1.87
						Peas, field	1.5	1.00	0.18	6	1.33
						Irish Potatoes	1.5	1.00	0.20	5	1.33
						Sweet Potatoes	2.0	1.40	0.22	6	1.87
						Small Grain or Soybeans	2.0	1.40	0.18	8	1.87
						Tobacco	1.5	1.00	0.18	6	1.33
						Vegetables, Group 1	1.0	0.60	0.14	4	0.80
						Vegetables, Group 2	1.5	1.00	0.14	7	1.33
						Vegetables, Group 3	1.5	1.00	0.18	6	1.33
						Vegetables, Group 4	2.0	1.40	0.18	8	1.87
9 [4]	Somewhat poorly drained Coastal Plain and terrace soils with sandy surface layers and friable loamy or firm clayey subsoils.	3.0+	1.1 1.9 2.7 3.5 4.3	0.40	0.50	Annual & Perennial Flowers	1.0	0.55	0.14	4	0.73
						Azaleas & Camellias	2.0	1.35	0.18	7	1.80
						Cotton	2.5	1.75	0.20	9	2.33
						Corn, field	2.5	1.75	0.22	8	2.33
						Gladioli	1.0	0.55	0.14	4	0.73
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	0.95	0.24	4	1.27
						Nursery Crops, 1st yr.	1.0	0.55	0.16	3	0.73
						Nursery Crops, 2nd yr.	2.0	1.35	0.18	7	1.80
						Peanuts	2.0	1.35	0.18	7	1.80
						Peas, field	1.5	0.95	0.18	5	1.27
						Irish Potatoes	1.5	0.95	0.20	5	1.27
						Sweet Potatoes	2.0	1.35	0.22	6	1.80
						Small Grain or Soybeans	2.0	1.35	0.18	7	1.80
						Tobacco	1.5	0.95	0.18	5	1.27
						Vegetables, Group 1	1.0	0.55	0.14	4	0.73
						Vegetables, Group 2	1.5	0.95	0.14	7	1.27
						Vegetables, Group 3	1.5	0.95	0.18	5	1.27
						Vegetables, Group 4	2.0	1.35	0.18	7	1.80

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

10 [4]	Somewhat poorly drained Coastal Plain soils with loamy surface layers and friable loamy subsoils	3.0+	1.5 2.4 3.3 4.2 4.9	0.35	0.40	Azaleas & Camellias Cotton Corn, field Gladioli Ladino Clover & Grass, Summer perennials or Mixed Hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Peas, field Irish Potatoes Small Grain or Soybeans Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.0 2.5 2.5 1.0 1.5 1.0 2.0 1.5 1.5 2.0 1.0 1.5 1.5 2.0	1.65 2.10 2.10 0.75 1.20 0.75 1.65 1.20 1.20 1.65 0.75 1.20 1.20 1.65	0.18 0.20 0.22 0.14 0.24 0.16 0.18 0.18 0.20 0.18 0.14 0.14 0.18 0.18	9 10 10 5 5 5 9 7 6 9 5 8 7 9	2.20 2.80 2.80 1.00 1.60 1.00 2.20 1.60 1.60 2.20 1.00 1.60 1.60 2.20
11	Well to moderately well drained soils of the Piedmont uplands with loamy surface layers and firm plastic clayey subsoils.	3.0+	1.3 2.4 3.6 4.6 5.3	0.30	0.35	Cotton Corn, field Ladino Clover & Grass, Summer perennials or Mixed Hay Peas, field Small Grain or Soybeans Tobacco Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.5 2.5 1.5 1.5 2.0 1.5 1.0 1.5 1.5 2.0	2.30 2.30 1.20 1.20 1.80 1.20 0.65 1.20 1.20 1.80	0.20 0.22 0.24 0.18 0.18 0.18 0.14 0.14 0.18 0.18	11 10 5 7 10 7 5 8 7 10	3.07 3.07 1.60 1.60 2.40 1.60 0.87 1.60 1.60 2.40
12	Well to moderately well drained soils of the Piedmont uplands with loamy surface layers and plastic, sticky clayey subsoils.	1.5	1.5 2.5	0.20	0.20	Cotton Corn, field Ladino Clover & Grass, Summer perennials or Mixed Hay Peas, field Small Grain or Soybeans Tobacco	1.5 1.5 1.5 1.5 1.5 1.5	1.25 1.25 1.25 1.25 1.25 1.25	0.20 0.22 0.24 0.18 0.18 0.18	6 6 5 7 7 7	1.67 1.67 1.67 1.67 1.67 1.67
13	Well to moderately well drained Coastal Plain soils, with silty surface layers and friable loamy subsoils.	3.0+	1.5 2.4 3.4 4.4 5.2	0.30	0.35	Alfalfa Cotton Corn, field Gladioli Ladino Clover & Grass, Summer perennials or Mixed Hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Peanuts Peas, field Small Grain or Soybeans Tobacco Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	2.5 2.5 2.5 1.0 1.5 1.0 2.0 2.0 1.5 2.0 1.5 1.0 1.5 1.5 2.0	2.20 2.20 2.20 0.75 1.20 0.75 1.70 1.70 1.20 1.70 1.20 0.75 1.20 1.20 1.70	0.24 0.20 0.22 0.14 0.24 0.16 0.18 0.18 0.18 0.18 0.18 0.14 0.14 0.18 0.18	9 11 10 5 5 5 9 9 7 9 7 5 8 7 9	2.93 2.93 2.93 1.00 1.60 1.00 2.27 2.27 1.60 2.27 1.60 1.00 1.60 1.60 2.27

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

14	Moderately well to somewhat poorly drained Coastal Plain and terrace soils, with loamy surface layers and firm clayey subsoils.	3.0	1.5 2.7 3.5 4.4 5.3	0.30	0.35	Cotton	2.5	2.20	0.20	11	2.93
						Corn, field	2.5	2.20	0.22	10	2.93
						Gladioli	1.0	0.75	0.14	5	1.00
						Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	1.35	0.24	6	1.80
						Peas, field	1.5	1.35	0.18	7	1.80
						Irish Potatoes	1.5	1.35	0.20	7	1.80
						Small Grain or Soybeans	2.0	1.75	0.18	10	2.33
						Vegetables, Group 1	1.0	0.75	0.14	5	1.00
						Vegetables, Group 2	1.5	1.35	0.14	9	1.80
						Vegetables, Group 3	1.5	1.35	0.18	7	1.80
						Vegetables, Group 4	2.0	1.75	0.18	10	2.33
15	Well drained shallow soils of the Piedmont Uplands with thin discontinuous subsoils.	1.5	0.8 1.3	0.30	0.35	Ladino Clover & Grass, Summer perennials or Mixed Hay	1.5	0.65	0.24	4	0.87
						Orchards (bare)	1.5	0.65	0.20	4	0.87
						Orchards (cover)	1.5	0.65	0.24	4	0.87
						Peas, field	1.5	0.65	0.18	5	0.87
						Small Grain or Soybeans	1.5	0.65	0.18	5	0.87
						Tobacco	1.5	0.65	0.18	5	0.87
16	Well drained to moderately well drained Coastal Plain and terrace soils with sandy surface layers and loose sandy subsoils.	3.0+	0.7 1.0 1.4 1.8 2.2	0.75	0.75	Cotton	2.5	0.90	0.20	4	1.20
						Corn, field	2.5	0.90	0.22	4	1.20
						Summer Perennials	1.5	0.50	0.24	2	0.67
						Orchards (bare)	3.0	1.10	0.20	5	1.47
						Orchards (cover)	3.0	1.10	0.24	5	1.47
						Peanuts	2.0	0.70	0.18	4	0.93
						Peas, field	1.5	0.50	0.18	3	0.67
						Small Grain	2.0	0.70	0.18	4	0.93
						Tobacco	1.5	0.50	0.18	3	0.67
						Vineyards, cultivated	3.0	1.10	0.18	6	1.47
17	Moderately well drained to somewhat poorly drained Coastal Plain and terrace soils with sandy surface layers and friable loamy subsoils.	3.0+	0.8 1.3 1.7 2.1 2.8	0.50	0.50	Alfalfa	2.5	1.05	0.24	4	1.40
						Annual & Perennial Flowers	1.0	0.40	0.14	3	0.53
						Azaleas & Camellias	2.0	0.85	0.18	5	1.13
						Cotton	2.5	1.05	0.20	5	1.40
						Corn, field	2.5	1.05	0.22	5	1.40
						Gladioli	1.0	0.40	0.14	3	0.53
						Summer Perennials or	1.5	0.65	0.24	3	0.87
						Nursery Crops, 1st yr.	1.0	0.40	0.16	3	0.53
						Nursery Crops, 2nd yr.	2.0	0.85	0.18	5	1.13
						Orchards (bare)	3.0	1.40	0.20	7	1.87
						Orchards (cover)	3.0	1.40	0.24	6	1.87
						Peanuts	2.0	0.85	0.18	5	1.13
						Peas, field	1.5	0.65	0.18	4	0.87
						Sweet Potatoes	2.0	0,85	0.22	4	1.13
						Small Grain or Soybeans	2.0	0.85	0.18	5	1.13
						Tobacco	1.5	0.65	0.18	4	0.87
						Vineyards, cultivated	3.0	1.40	0.18	8	1.87
						Vegetables, Group 1	1.0	0.40	0.14	3	0.53
						Vegetables, Group 2	1.5	0.65	0.14	5	0.87
						Vegetables, Group 3	1.5	0.65	0.18	4	0.87
						Vegetables, Group 4	2.0	0.85	0.18	5	1.13

Table NC6-4: Piedmont and Coastal Plain Regions of North Carolina – General Design Parameters

18 [4]	Poorly drained to very poorly drained Coastal Plain and terrace soils with organic hardpans, fragipans or loose sandy subsoils.	2.0	0.7 1.2 1.7	0.60	0.65	Annual & Perennial Flowers Azaleas & Camellias Corn, field Gladioli Ladino clover & grass or mixed hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Irish Potatoes Small Grain or Soybeans Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	1.0 2.0 2.0 1.0 1.5 1.0 2.0 1.5 2.0 1.0 1.5 1.5 2.0	0.35 0.85 0.85 0.35 0.60 0,35 0.85 0.60 0.85 0.35 0.60 0.60 0.85	0.14 0.18 0.22 0.14 0.24 0.16 0.18 0.20 0.18 0.14 0.14 0.18 0.18	3 5 4 3 2 2 5 3 5 2 4 3 5	0.47 1.13 1.13 0.47 0.80 0.47 1.13 0.80 1.13 0.47 0.80 0.80 1.13
19 [4]	Poorly drained Coastal Plain and terrace soils with loamy surface layers and friable loamy subsoils.	3.0+	1.2 2.0 2.9 3.5 4.3	0.35	0.40	Annual & Perennial Flowers Azaleas & Camellias Corn, field Gladioli Ladino clover & grass or mixed hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Peanuts Peas, field Irish Potatoes Small Grain or Soybeans Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	1.0 2.0 2.5 1.0 1.5 1.0 2.0 2.0 1.5 1.5 2.0 1.0 1.5 1.5 2.0	0.60 1.45 1.75 0.60 1.00 0.60 1.45 1.45 1.00 1.00 1.45 0.60 1.00 1.00 1.45	0.14 0.18 0.22 0.14 0.24 0.16 0.18 0.18 0.18 0.18 0.18 0.14 0.14 0.18 0.18	4 8 8 4 4 4 8 8 6 6 8 4 7 6 8	0.80 1.93 2.33 0.80 1.33 0.80 1.93 1.93 1.33 1.33 1.93 0.80 1.33 1.33 1.93
20 [4]	Very poorly drained Coastal Plain and terrace soils with loamy surface layers and friable loamy subsoils.	3.0+	1.5 2.4 3.2 4.0 4.8	0.40	0.45	Annual & Perennial Flowers Azaleas & Camellias Cotton Corn, field Gladioli Ladino clover & grass or mixed hay Nursery Crops, 1st yr. Nursery Crops, 2nd yr. Peas, field Irish Potatoes Small Grain or Soybeans Vegetables, Group 1 Vegetables, Group 2 Vegetables, Group 3 Vegetables, Group 4	1.0 2.0 2.5 2.5 1.0 1.5 1.0 2.0 1.5 1.5 2.0 1.0 1.5 1.5 2.0	0.75 1.60 2.00 2.00 0.75 1.20 0.75 1.60 1.20 1.20 1.60 0.75 1.20 1.20 1.6	0.14 0.18 0.20 0.22 0.14 0.24 0.16 0.18 0.18 0.20 0.18 0.14 0.14 0.18 0.18	5 9 10 9 5 5 5 9 7 6 9 5 8 7 9	1.00 2.13 2.67 2.67 1.00 1.60 1.00 2.13 1.60 1.60 2.13 1.00 1.60 1.60 2.13
21 [4]	Somewhat poorly and poorly drained loamy alluvial soils on first bottoms and upland Piedmont depressions	3.0+	1.5 2.2 2.9 3.6 4.5	0.30	0.35	Corn, field Ladino clover & grass or mixed hay Peas, field Small Grain or Soybeans	2.5 1.5 1.5 2.0	1.80 1.10 1.10 1.45	0.22 0.24 0.18 0.18	8 5 6 8	2.40 1.47 1.47 1.93