

***6.23 EXTRA REQUIREMENTS FOR WATERSHED PROTECTION OVERLAY DISTRICTS**

*Amended
1/1/94

Pursuant to requirements of North Carolina General Statute 143-214.5 (Chapter 143, Article 21), thirteen (13) Watershed Protection Overlay Districts, as described in Article 4.2.27 of this Ordinance, have been established for lands within the watersheds of existing or potential drinking water rivers and reservoirs. These districts overlay other zoning districts established in this Ordinance and delineated on the Orange County Zoning Atlas. Wherever standards of the underlying zoning district differ from the watershed overlay standards, the more restrictive provisions shall apply.

6.23.1 LAND USE RESTRICTIONS

Amended
5/21/97
1/20/98

All uses and activities allowed in the underlying zoning district are permitted with the following exceptions:

DISTRICT	LAND USE RESTRICTIONS
UNIV-CA UNIV-PW CANE-CA U-ENO-CA	No new landfills are permitted. No commercial or industrial uses are permitted. No new golf courses are permitted.
UNIV-CA CANE-CA U-ENO-CA	No residual (sludge) application is permitted.
CANE-PW U-ENO-PW HYCO-PW LITTLE-PW BACK-PW FLAT-PW HAW-PW L-ENO-PW JORDAN-PW	No discharging landfills are permitted. Industrial use is limited to non-hazardous light industrial uses characterized by low water use (<i>less than 10,000 gpd, excluding domestic water (25 gpd per employee) and water used for heating and air conditioning</i>).

6.23.2 RESIDENTIAL DENSITY

Maximum residential density shall be as indicated in the Table below, or as required by the underlying zoning district, whichever is less.

*Amended
1/17/95
10/19/99

DISTRICT	MAXIMUM DENSITY
UNIV-CA UNIV-PW	1 du/five acres. Lots of record existing on October 2, 1989 may contain up to, but no more than, five lots with a density of one du/two acres. Contiguous lots of record existing on October 2, 1989 may be combined into one parcel for development. The number of two-acre lots and the total number of lots in the combined parcel cannot exceed the sum of the number of lots which could be created from each lot of record.
CANE-CA CANE-PW (Amended 10/19/99)	1 du/ five acres Lots of record existing on October 19, 1999 may contain up to, but no more than, five lots as small as two acres in size. Contiguous lots of record existing on October 19, 1999 may be combined into one parcel for development. The number of two-acre lots and the total number of lots in the combined parcel cannot exceed the sum of the number of lots which could be created from each lot of record.
U-ENO-CA LITTLE-PW	1 du / 2 acres
HYCO-PW FLAT-PW	1 du/ 40,000 square feet (.92 acre)
U-ENO-PW L-ENO-PW HAW-PW JORDAN-PW BACK-PW	Maximum density is as permitted in the underlying zoning district. <i>Structural BMPs are required in some cases where density exceeds 1 dwelling unit per acre. Refer to Article 6.23.3c1.</i>

6.23.3 STORMWATER INFILTRATION AND DETENTION

As a watershed becomes more developed, the amount of impervious surface increases, causing a decrease in the rate at which stormwater runoff which can be absorbed into the soil. This results in more stormwater flowing directly into streams and other water bodies. Because this direct runoff has not been filtered through the soil, pollutants from the air and land surface enter streams and increase the potential for pollution of drinking water supplies.

The effects of stormwater pollution on drinking water supplies can be minimized by one of two general approaches. First, the amount of stormwater runoff which reaches drinking water supplies can be controlled by assuring that there is adequate ground area into which water can be absorbed. This type of non-structural control is achieved through limitations on impervious surface. A second approach is to collect stormwater run-off in engineered ponds so that pollutants may settle. The water is then slowly released and contains fewer impurities when it reaches the water supply reservoir. The watershed

protection standards adopted by Orange County utilize a combination of these two approaches.

a) Non-Structural Stormwater Control

The first inch of stormwater run-off shall be controlled to the extent possible through on-site infiltration and through the use of methods which rely on natural soil properties for absorption and treatment.

In order to promote infiltration of stormwater runoff into the soil and minimize direct and immediate runoff into streams and water supply impoundments, the maximum percentage of the total lot area which may be covered with an impervious surface shall be specified. This limit is referred to as the "impervious surface ratio".

Impervious surface calculations for an individual development shall be cumulative for original construction and any subsequent additions. One-half of the width of any of any existing or proposed road adjacent to an individual lot shall be included as impervious surface for that lot, except in the case where an existing road was contained within a dedicated public right-of-way at the time that the watershed regulations were first applied to the watershed within which the development is located.

Infiltration techniques not only remove both suspended and dissolved pollutants, but they require less maintenance, reduce flooding, promote groundwater recharge and help maintain stream flow during dry periods.

Where on-site infiltration methods are utilized, areas for such purposes shall be designated on the plat and shall remain undisturbed both during and after construction. Undisturbed areas for infiltration of run-off shall also be located downslope from impervious surfaces and shall not include areas characterized by floodplains, highly erodible or impervious soils, steep slopes or previously disturbed areas. Areas designated as suitable for septic tank nitrification fields may not be used for stormwater infiltration purposes.

Run-off from roads, parking lots, and/or sidewalks shall be directed to undisturbed areas through use of berms, grassed diversion ditches or swales, or other acceptable means to reduce run-off velocity and filter out pollutants.

b) Structural Measures

Non-structural methods may not adequately control the first inch of stormwater runoff due to the amount of impervious surface proposed to be developed, and other factors such as soil type, slope, presence of floodplains and erodible soils, and/or lack of vegetative cover. In such cases, structural detention ponds, which capture stormwater for slow release through an outlet, are required. Where required, detention ponds shall be constructed in accordance with Appendix A.

c) Impervious Surface and Detention Pond Requirements

For all protected watersheds, there is a absolute limit on the percentage of lot area which can be covered with impervious surfaces. In some cases, detention ponds are required when the proposed impervious surface ratio exceeds a specified percentage, which is below the absolute limit.

Impervious surface and detention pond requirements are as follows:

1. Residential Development

Amended 1/4/94; 8/21/01

DISTRICT	IMPERVIOUS SURFACE/DETENTION POND REQUIREMENTS (RESIDENTIAL)
UNIV-CA UNIV-PW	6% impervious surface limit. EXCEPT for all lots which existed prior to 4/2/90, which are subject to impervious surface limits as provided in the following Table (entitled <i>Sliding Scale for Residential Impervious Surface Ratios</i>). * BMPs cannot be used to satisfy watershed impervious surface requirements.
CANE-CA CANE-PW U-ENO-CA	6% impervious surface limit. EXCEPT for lots smaller than two acres which existed prior to 1/1/94, which are subject to impervious surface limits as provided in the following Table (entitled <i>Sliding Scale for Residential Impervious Surface Ratios</i>). * BMPs cannot be used to satisfy watershed impervious surface requirements.
LITTLE-PW	6% impervious surface limit. EXCEPT for lots which existed prior to 1/1/94, which are subject to impervious surface limits as provided in the following Table (entitled <i>Sliding Scale for Residential Impervious Surface Ratios</i>). * BMPs cannot be used to satisfy watershed impervious surface requirements.
FLAT-PW HYCO-PW	12% impervious surface limit for new and existing lots. * BMPs cannot be used to satisfy watershed impervious surface requirements.
U-ENO-PW BACK-PW	12% impervious surface limit for existing and new lots outside of Transition Areas as designated in the Orange County Land Use Plan. * BMPs cannot be used to satisfy watershed impervious surface requirements. 30% impervious surface limit for developments which exceed a density 1 du/acre within Transition Areas as designated in the Orange County Land Use Plan. Structural BMPs are required if impervious surface exceeds 12%.
L-ENO-PW	24% impervious surface limit with curb and gutter. 36% impervious surface limit without curb and gutter. * BMPs cannot be used to satisfy watershed impervious surface requirements.
HAW-PW JORDAN-PW	24% impervious surface limit. * BMPs cannot be used to satisfy watershed impervious surface requirements.

* BMP's as mandated by the Stormwater Management Program for Lands within the Neuse River Basin are allowed.

SLIDING SCALE FOR RESIDENTIAL IMPERVIOUS SURFACE RATIOS			
Lot Size (Acres)	ISR	Square Feet	
6+ Ac	5.0		
6.0	5.0	13,068	
5.9	5.1	13,107	
5.8	5.2	13,138	
5.7	5.3	13,159	
5.6	5.4	13,172	
5.5	5.5	13,177	
5.4	5.6	13,172	
5.3	5.7	13,159	
5.2	5.8	13,138	
5.1	5.9	13,107	
5.0	6.0	13,068	
4.9	6.2	13,234	
4.8	6.4	13,381	
4.7	6.6	13,512	
4.6	6.8	13,625	
4.5	7.0	13,721	
4.4	7.2	13,880	
4.3	7.4	13,861	
4.2	7.6	13,904	
4.1	7.8	13,930	
4.0	8.0	13,939	
3.9	8.2	13,930	
3.8	8.4	13,904	
3.7	8.6	13,861	
3.6	8.8	13,800	
3.5	9.0	13,721	
3.4	9.2	13,625	
3.3	9.4	13,512	
3.2	9.6	13,382	
3.1	9.8	13,234	
3.0	10.0	13,068	
2.9	10.2	12,885	
2.8	10.4	12,685	
2.7	10.6	12,467	
2.6	10.8	12,232	
2.5	11.0	11,979	
2.4	11.2	11,709	
2.3	11.4	11,421	
2.2	11.6	11,116	
2.1	11.8	10,794	
2.0	12.0	10,454	
1.9	12.2	10,097	
1.8	12.4	9,723	
1.7	12.6	9,331	
1.6	12.8	8,921	
1.5	13.0	8,494	
1.4	13.2	8,050	
1.3	13.4	7,588	
1.2	13.6	7,109	
1.1	13.8	6,612	
1.0	14.0	6,098	
0.9	14.2	5,567	
0.8	14.4	5,018	
0.76	14.6	4,452	
0.6	14.8	3,868	
0.5	15.0	3,267	

2. Non-Residential Development

Amended 1/4/94; 10/19/99; 8/21/01

DISTRICT	IMPERVIOUS SURFACE/DETENTION POND REQUIREMENTS (NON-RESIDENTIAL)
UNIV-CA UNIV-PW	Same as Residential (See previous Table)
CANE-CA	5-acre minimum lot size, with potential of up to five lots as small as two acres for lots of record October 19, 1999 (Amended 10-19-99); AND 6% impervious surface limit. * BMPs cannot be used to satisfy watershed impervious surface requirements.
U-ENO-CA	2-acre minimum lot size AND 6% impervious surface limit. * BMPs cannot be used to satisfy watershed impervious surface requirements.
CANE-PW	5-acre minimum lot size with potential of up to five lots as small as two acres for lots of record October 19, 1999 (Amended 10-19-99); AND 50% ISR for all fire stations and solid waste collection centers; AND 12% ISR for all other non-residential uses; AND on-site infiltration of the first inch of stormwater runoff; AND a limit of 1.0% of the watershed for non-residential use (139 acres in CANE-PW). * BMPs cannot be used to satisfy watershed impervious surface requirements.
LITTLE-PW	2-acre minimum lot size AND 50% ISR for all fire stations and solid waste collection centers; AND 12% ISR for all other non-residential uses; AND on-site infiltration of the first inch of stormwater runoff; AND a limit of 1.0% of the watershed for non-residential use (139 acres in CANE-PW). * BMPs cannot be used to satisfy watershed impervious surface requirements.

* BMP's as mandated by the Stormwater Management Program for Lands within the Neuse River Basin are allowed.

<p>U-ENO-PW BACK-PW</p>	<p>70%</p> <p>ISR in Commercial and/or Industrial Nodes as designated in the Land Use Element of the Comprehensive Plan (high-density option) with structural BMPs if ISR > 12%;</p> <p>AND</p> <p>50% ISR for all fire stations and solid waste collection centers outside of Commercial and/or Industrial Nodes as designated in the Land Use Element of the Comprehensive Plan, with structural BMPs if ISR > 12%;</p> <p>AND</p> <p>12% ISR for all other non-residential uses outside of Commercial and/or Industrial Nodes as designated in the Land Use Element of the Comprehensive Plan (* BMPs cannot be used to satisfy watershed impervious surface requirements);</p> <p>AND</p> <p>on-site infiltration of the first inch of stormwater runoff;</p> <p>AND</p> <p>A limit of 1,151 acres of non-residential use throughout U-ENO-PW (5.0%) and 163 acres throughout BACK-PW (1%).</p>
<p>HYCO-PW FLAT-PW</p>	<p>50% ISR for all fire stations and solid waste collection centers;</p> <p>AND</p> <p>12% ISR for all other non-residential uses;</p> <p>AND</p> <p>on-site infiltration of the first inch of stormwater runoff;</p> <p>AND</p> <p>a limit of 1% of the watershed for non-residential use (37 acres in HYCO-PW, 66 acres in FLAT-PW).</p> <p>* BMPs cannot be used to satisfy watershed impervious surface requirements.</p>
<p>L-ENO-PW</p>	<p>70% impervious surface, with structural BMPs required when impervious surface exceeds:</p> <p style="padding-left: 40px;">24% (w/ curb and gutter); or</p> <p style="padding-left: 40px;">36% (w/o curb and gutter).</p>
<p>HAW-PW JORDAN-PW</p>	<p>24% impervious surface limit.</p> <p>* BMPs cannot be used to satisfy watershed impervious surface requirements.</p>

* BMP's as mandated by the Stormwater Management Program for Lands within the Neuse River Basin are allowed.

3. Modifications of the Impervious Surface Ratio

Modifications of the Impervious Surface Ratios may be requested through one of the following provisions:

- a) Through variance procedures of the Board of Adjustment, as described in Article 6.23.11b.
- b) Through approval and recordation of a conservation agreement, as provided in Article 4 of Chapter 121 of the N.C. General Statutes, between Orange County and a land owner that prohibits development of land in a protected watershed in perpetuity. In such cases, a modification of the required impervious surface ratios may be approved administratively but only to the extent that additional land in the same watershed is conserved or protected from development. In such instances, the land which will be subject to a conservation agreement must be adjacent to the land proposed for development and for which a modification of the impervious surface ratios is sought.

As an example, a person owning a 40,000 square foot lot and subject to a 12 percent impervious surface ratio would be limited to 4,800 square feet of impervious coverage. If the person's plans called for 5,500 square feet of coverage (a difference of 700 square feet), the recording of a conservation easement on 5,833 square feet of contiguous property would satisfy the impervious surface ratio requirements. (12% of 5,833 square feet is 700 square feet.)

The conservation easement shall describe the property restricted in a manner sufficient to pass title, provide that its restrictions are covenants that run with the land and, in form, be approved by the County Attorney. The conservation easement shall, upon its recording, be in the place of a first priority lien on the property (excepting current ad valorem property taxes) and shall remain so unless, with the approval of Orange County, it is released and terminated. Orange County shall require the priority of the conservation easement to be certified by an attorney-at-law, licensed to practice law in the State of North Carolina and approved to certify title to real property by a lending institution (bank or savings and loan association) doing business in Orange County.

Orange County approval of a release or termination of the conservation agreement shall be declared on the document releasing or terminating the agreement. The document shall be signed by the Orange County Manager, upon approval of the Orange County Board of Commissioners. No such document shall be effective to release or terminate the conservation agreement until it is filed for registration with the Register of Deeds of Orange County.

6.23.4

OPERATION AND MAINTENANCE OF STRUCTURAL BMPs (DETENTION PONDS)

a) Posting of Financial Security

All stormwater control structures shall be conditioned on the posting of adequate financial assurance for the purpose of maintenance, repairs or reconstruction necessary for adequate performance. Financial assurance shall be in the form of one of the following:

1. Security Performance Bond or Other Security

The permit applicant shall obtain either a performance bond from a surety bonding company authorized to do business in North Carolina, an irrevocable letter of credit or other instrument readily convertible into cash at face value payable to Orange County or placed in escrow with a financial institution designated as an official depository of Orange County. The bond or other instrument shall be in an amount equal to 1.25 times the total cost of the stormwater control structure, as estimated by the applicant and approved by the County Engineer. The total cost of the stormwater control structure shall include the value of all materials such as piping and other structures; seeding and soil stabilization; design and engineering; and, grading, excavation, fill, etc. The costs of the stormwater control structure shall not be prorated as part of a larger project, but shall be costed as a separate project.

Upon default of the permit applicant to complete and/or maintain the stormwater control structure as spelled out in the performance bond or other security, the County may obtain and use all or any portion of the funds necessary to complete the improvements based on an engineering estimate. The Board shall return any funds not spent in completing the improvements to the owning entity.

2. Cash or Equivalent Security Deposited After Release of the Performance Bond

The permit applicant shall deposit with Orange County either cash or other instrument approved by the County Attorney that is readily convertible into cash at face value. The cash or security shall be in an amount equal to fifteen (15) percent of the total cost of the stormwater control structure or the estimated cost of maintaining the stormwater control structure over a ten (10) year period, whichever is greater. The estimated cost of maintaining the stormwater structure shall be consistent with the approved operation and maintenance plan or manual provided by the developer under Article 6.23.4b2. The amount shall be computed by estimating the maintenance cost for twenty-five (25) years and multiplying this amount by two-fifths or 0.4.

Upon default of the owning entity to maintain, repair and, if necessary, reconstruct the stormwater control structure in accordance with the Operation and Maintenance Agreement, the County shall obtain and use all or any portion of the cash security

to make necessary improvements based on an engineering estimate. Such expenditures of funds shall only be made after exhausting all other reasonable remedies seeking the owning entity to comply with the terms and conditions of the Operations and Maintenance Agreement. The County shall not return any of the deposited cash funds.

b) Maintenance and Upkeep

1. Operation and Maintenance Agreement Required

The permit applicant shall enter into a binding Operation and Maintenance Agreement between Orange County and all interests in the development. Said Agreement shall require the owning entity to maintain, repair and, if necessary, reconstruct the stormwater control structure in accordance with the operation and management plan or manual prepared by the developer. The Operations and Maintenance Agreement shall be filed with the Orange County Register of Deeds.

2. Operation and Maintenance Plan Required

An operation and maintenance plan or manual shall be provided by the developer for each stormwater control structure, indicating what operation and maintenance actions are needed, what specific quantitative criteria will be used for determining when those actions are to be taken and, consistent with the Operations and Maintenance Agreement, who is responsible for those actions. The Plan shall clearly indicate the steps that will be taken for restoring a stormwater control structure to its design specifications if a failure occurs.

3. Landscaping and Grounds Maintenance

Landscaping and grounds maintenance shall be the responsibility of the owning entity. However, vegetation shall not be established or allowed to mature to the extent that the integrity of the control structure is diminished or threatened, or to the extent of interfering with any easement or access to the stormwater structure.

4. Repair or Reconstruction

Except for general landscaping and grounds maintenance, the owning entity shall notify the County prior to any repair or reconstruction of the stormwater structure. All improvements shall be made consistent with the approved plans and specifications of the stormwater control structure and the operations and maintenance plan or manual. After notification by the owning entity, the County Engineer and/or Erosion Control Supervisor shall inform the owning entity of any required additions, changes or modifications and of the time period to complete said improvements.

5. Minor Amendments to Plans and Specifications

Amendments to the plans and specifications of the stormwater control structure and/or the operation and maintenance plan or manual may be approved by the County Engineer, provided that the changes do not involve a change in the size or location of the structure. Proposed changes shall be prepared by a North Carolina registered professional engineer or landscape architect (to the extent that the General Statutes, Chapter 89A, allow) and submitted to and reviewed by the Erosion Control Supervisor prior to consideration by the County Engineer.

- a. If the County Engineer approves the proposed changes, the owning entity of the stormwater control structure shall file sealed copies of the revisions with the Erosion Control Supervisor.
- b. If the County Engineer disapproves the changes, the proposal may be revised and resubmitted to the Erosion Control Officer as a new proposal. If the proposal has not been revised and is essentially the same as that already reviewed, it shall be returned to the applicant.
- c. The County Engineer shall report any such revisions to the Board of County Commissioners at the next available regular meeting.

6. Major Amendments to Plans and Specifications

Amendments to the plans and specifications of the stormwater control structure and/or the operation and maintenance plan or manual which involve a change in the size or location may be approved by the Board of Commissioners after receiving a recommendation from the County Engineer. Proposed changes shall be prepared by a North Carolina registered professional engineer or landscape architect (to the extent that the General Statutes, Chapter 89A, allow) and submitted to and reviewed by the Erosion Control Supervisor prior to review by the County Engineer.

7. Revision of Plan Required if Found to be Inadequate

If the County finds that the operations and maintenance plan or manual is inadequate for any reason, the owning entity shall be notified of any required changes and shall prepare and file copies of the revised agreement with the Orange County Register of Deeds, the Erosion Control Supervisor, and the owning entity.

c) Inspection and Release of the Performance Bond

1. Inspection by Erosion Control Supervisor

The stormwater control structure shall be inspected by the Erosion Control Supervisor, after the owning entity notifies the Erosion Control Supervisor that all work has been completed. At this inspection, the owning entity shall provide:

- a. The signed deed, related easements and survey plat for the stormwater control structure ready for filing with the Orange County Register of Deeds; and
- b. A certification sealed by an engineer or landscape architect (to the extent that the General Statute, Chapter 89A, allow) stating that the detention pond is complete and consistent with the plans and specifications.

2. Submittal of Inspection Report to County Engineer

The Erosion Control Supervisor shall present materials submitted by the developer and the inspection report and recommendations to the County Engineer.

- a. If the County Engineer approves the inspections report and accepts the certification, deed and easements, he/she shall file the deed and easements with the Orange County Register of Deeds, release up to seventy-five (75) percent of the value of the performance bond or other security and issue a Watershed Protection Compliance Permit for the stormwater control structure.
- b. If deficiencies are found, the County Engineer shall direct that the improvements and inspections be made and/or documents corrected and resubmitted to the County Engineer.

3. Watershed Protection Compliance Permit Required Prior to Occupancy

No Building Permit or Certificate of Occupancy may be issued in the absence of a valid Watershed Protection Compliance Permit.

4. Release of Remaining Security

No sooner than one (1) year after the filing date of the deed, easements and maintenance agreement, the developer may petition the Board of Commissioners to release the remaining value of the performance bond or other security. Upon receipt of said petition, the County Engineer shall inspect the stormwater control structure to determine whether the controls are performing as designed and intended. The County Engineer shall present the petition, inspection report and recommendations to the Board of Commissioners.

- a. If the Board of Commissioners approves the report and accepts the petition, the developer shall deposit with Orange County a cash amount equal to that described in Article 6.23.4a1, after which, the Board shall release the performance bond or other security.
- b. If the Board of Commissioners does not accept the report and rejects the petition, it shall provide the developer with instructions to correct any deficiencies and all steps necessary for the release of the performance bond or other security.

5. Annual Inspection Required

Amended
1-20-98

- a. All stormwater structures shall be inspected by Orange County at least on an annual basis to determine whether the controls are performing as designed and intended. Records of inspections shall be maintained on forms approved or supplied by the North Carolina Division of Water Quality. Annual inspections shall begin within one (1) year of the filing date of the deed for the stormwater control structure.
- b. In the event the County Engineer discovers the need for corrective action of improvements, he/she shall notify the owning entity of the needed improvements and the date by which the corrective action is to be completed. All improvements shall be made consistent with the plans and specification of the stormwater control structure and the operation and maintenance plan or manual. After notification by the owning entity, the County Engineer shall inspect and approve the completed improvements.

6.23.5 PLACEMENT OF STREETS, DRIVEWAYS AND BUILDINGS

Streets, driveways, and buildings or other structures shall be located, to the extent reasonable possible, so as to take full advantage of the absorptive capacity of the soils on which they are to be situated and to avoid the following environmentally sensitive areas:

- 1) Stream buffer zones as required by Article 6.23.7;
- 2) Wetlands as defined by the U.S. Army Corps of Engineers;
- 3) Land with slopes greater than fifteen percent (15%); and
- 4) Natural areas as identified in the Inventory of Natural Areas and Wildlife Habitats of Orange County, NC.

To avoid creating lots that will be difficult to build upon in compliance with the standards of this Article, the preliminary plan shall show proposed building envelopes and approximate driveway locations for all lots within subdivisions. Thereafter, no zoning compliance permit may be issued for the construction of buildings or driveways outside the areas so designated on the preliminary plan unless the Zoning Officer makes a written finding that the proposed location complies with the provisions of this Article.

6.23.6 UNDISTURBED AREA

Because soils which are seriously disturbed, even if re-vegetated, can generate nearly as much run-off as paved areas, a portion of property being developed within watershed critical areas must remain undisturbed during construction.

DISTRICT	UNDISTURBED AREA
UNIV-CA CANE-CA U-ENO-CA	<p>The area necessary to meet impervious surface requirements shall remain undisturbed during the construction process.</p> <p>The area to remain undisturbed shall include portions of the lot utilized for stormwater infiltration.</p> <p>All clearing limits shall be clearly marked and observed.</p>
All Other Watershed Overlay Districts	As may be required pursuant to an approved grading permit or erosion control plan.

6.23.7 STREAM BUFFERS

Amended
9/18/01
5/20/03

- a) **Definition**
See Article 22 Stream Buffer

b) **Permitted Uses Within Stream Buffers**

*Amended
1-17-95

The following uses are allowed as a matter of right in stream buffers. All other uses are prohibited, except as provided in Article 6.23.10 of this Ordinance.

- 1) Above-ground and buried utility lines for local distribution of electricity, telephone and cable television service, accessory and appurtenant apparatus such as poles, guy wires, transformers and switching boxes, and individual or community wells.

Individual or community wastewater disposal systems are not permitted in stream buffers.

Public water and sewer lines are permitted only as allowed by the Orange County Water and Sewer Policy, and may be located within stream buffers only to the extent necessary to cross the stream buffer as closely as possible to perpendicular.

- 2) Public and private streets, bridges and railroad rights-of-way, provided that they enter and exit the buffer area as nearly perpendicular as possible.

c) **Land Disturbance and Planting of Vegetation**

Amended
5/21/97

- 1) Area within a stream buffer which is subject to serious erosion may be disturbed for the purpose of planting and maintaining erosion-resistant vegetative cover.

- 2) Existing forested areas or any other healthy vegetation cannot be removed from a stream buffer, except where replaced with vegetation resulting in comparable stormwater runoff velocity and quantity one year after planting.

An exception shall be allowed for golf courses where the line of play crosses a stream buffer. Only trees which obstruct the intended line of play may be cut, provided stumps and root mass are not removed and trees which are cut can be removed in a sensitive manner which minimizes additional disturbance to the stream buffer.

- 3) New vegetation shall be planted to capture non-source pollutants before they reach the perennial stream, as per applicable Orange County Standards.

Amended
9/18/01

d) Calculating Width of Stream Buffer

Those streams identified by FEMA as having floodplains shall have stream buffers calculated from the outside edges of the floodplain.

- 1) How to Calculate Slope
 - a. Draw 250' length perpendicular lines, at 200- foot horizontal intervals along the entire length of the outside edges of the stream, or the outer edge of the FEMA floodplain, whichever is greater.
 - b. Determine the elevation at either the stream bank itself (1) or the outer edge of the FEMA floodplain, whichever is highest, and at the point 250' from the stream or FEMA floodplain, whichever is applicable, along the perpendicular line (2).
 - c. Subtract (1) from (2).
 - d. Divide c. by 250.
 - e. Multiply d. by 100.
 - f. Perform this calculation for both sides of the stream or floodplain.

Hereafter, the number derived in e. will be referred to as "slope value."

- 2) Method A – Stream Buffer Based on Slope and Groundcover

The width of the buffer shall be a minimum of fifty (50) feet from each edge of the floodplain. In addition to the fifty (50) foot buffer, an additional 15 feet shall be added to the 50-foot buffer (65 feet total) where the slope value is less than 7.5%, as measured 250 feet from the edge of the floodplain. For slope values 7.5% and greater, as measured 250 feet from the edge of the floodplain, an additional 30 feet shall be added to the 50-foot buffer (80 feet total). These calculations shall be made from each side of either the stream bank or floodplain, whichever is greater.

3) Method B - Stream Buffer Based on Slope and Groundcover

STREAM BUFFER WIDTH (IN FEET) BASED ON SLOPE AND GROUNDCOVER ¹		
Slope Value	Type of Groundcover	
	Grass	Wood s
2 to 4.9	100	50
5 to 9.9	150	100
10 to 14.9	200	100
15 or greater	250	150

¹In addition to the buffer zone resulting from the calculations below, a stream buffer shall include any portion of a floodplain as defined in the Orange County Flood Damage Prevention Ordinance, by special survey by a registered engineer or surveyor, or by alluvial soils as designated in the Orange County Soils Survey.

²The required stream buffer zone shall not be limited to one calculation, but shall be based on calculations made at points where topographical and ground cover conditions change based on an analysis of the site.

e) Minimum Buffer Width Required

DISTRICT	MINIMUM STREAM BUFFER WIDTH*
UNIV-CA	<p>The buffer width adjacent to streams shall be calculated for both Method A and Method B, and at any given point along the stream, the width of the buffer shall be the larger of the two.</p> <p>The same method shall be used to calculate the buffer around the reservoir itself. New structures shall be located at least 150' from the reservoir or outside of the stream buffer, whichever is greater.</p>
UNIV-PW	<p>The buffer width shall be calculated for both Method A and Method B, and at any given point along the stream, the width of the buffer shall be the larger of the two.</p>
CANE-CA U-ENO-CA	<p>The buffer width adjacent to streams shall be the width calculated using Method A.</p> <p>The same method shall be used to calculate the buffer around the reservoir itself. New structures shall be located at least 150' from the reservoir or outside of the stream buffer, whichever is greater.</p>
U-ENO-PW L-ENO-PW BACK-PW	<p>The buffer width shall be as calculated using Method A, or 150', whichever is less, except where density exceeds 1 du/ac and impervious surface exceeds 12%.</p> <p>Where density exceeds 1 du/ac and impervious surface exceeds 12%, the buffer width shall be calculated as above, but shall not be less than 100'.</p>
CANE-PW LITTLE-PW HYCO-PW FLAT-PW HAW-PW JORDAN-PW	<p>The buffer width shall be the width calculated using Method A, or 150', whichever is less.</p>

6.23.8

*Amended
 1-17-95
 7-1-96
 10-19-99

WATER SUPPLY/SEWAGE DISPOSAL FACILITIES

DISTRICT	WATER SUPPLY/SEWAGE DISPOSAL
UNIV-CA UNIV-PW	Water supply and sewage treatment systems shall be limited to individual wells and on-site septic tanks systems or individual on-site alternative disposal systems.
All Watershed Overlay Districts	No new treatment system will be permitted where effluent disposal occurs on a separate lot from the source of wastewater generation; provided, however, off-site systems shall be permitted in all Watershed Overlay Districts except the University Lake Protected Watershed (UNIV-PW) and Critical Area (UNIV-CA) when located in a Flexible Development subdivision approved in accordance with Section IV-B-10 of the Orange County Subdivision Regulations.
UNIV-CA	New septic tanks and their nitrification fields shall be located outside of any stream buffers, or 300 feet from a reservoir or perennial or intermittent stream as shown on the USGS Quadrangle maps, whichever is further.
CANE-CA U-ENO-CA	<p>New septic tanks, pump tanks and their appurtenances shall be located outside of any stream buffers and at least 100 feet from a perennial or intermittent stream as shown on the USGS Quadrangle maps, and at least 150 feet from a reservoir.</p> <p>New nitrification fields shall be located outside of any stream buffers and at least 100 feet from a perennial or intermittent stream as shown on the USGS Quadrangle maps, and at least 300 feet from a reservoir.</p>
CANE-PW CANE-CA U-ENO-CA (Amended 10/19/99)	Water supply and sewage treatment systems shall be limited to individual wells and septic tanks or individual on-site alternative disposal systems; provided however, off-site systems shall be permitted when located in a Flexible Development subdivision approved in accordance with Section IV-B-10 of the Orange County Subdivision Regulations.
UNIV-PW CANE-PW U-ENO-PW HYCO-PW LITTLE-PW BACK-PW HAW-PW JORDAN-PW L-ENO-PW FLAT-PW	New septic tanks and their nitrification fields shall be located outside of any stream buffers and at least 100 feet from a perennial or intermittent stream as shown on the USGS Quadrangle maps.

6.23.9 CLUSTERING

DISTRICT	CLUSTERING REQUIREMENTS
UNIV-CA UNIV-PW	Clustering of residential lots is permitted in accordance with Section IV-B-9 of the Orange County Subdivision Regulations, with the additional provision that each lot contains a minimum of one acre.
All Other Overlay Districts	Clustering of residential lots is permitted in accordance with Section IV-B-10 of the Orange County Subdivision Regulations.

6.23.10 APPLICABILITY

*Amended 1-17-95
10-19-99 9-18-01
5-20-03

a) Existing Development

For the purpose of determining compliance with or applicability of Article 6.23 of this Ordinance, existing development is defined as a residential or non-residential structure which:

- 1) was constructed prior to January 1, 1994 (October 19, 1999, with respect to the October 19, 1999 amendments related to the CANE-CA and CANE-PW districts and September 19, 2001 with respect to the Stream Buffer/Usable Lot amendments; and May 20, 2003 with respect to the Stream Classification Amendments), or
- 2) was constructed in accordance with a valid building permit issued prior to January 1, 1994 (October 19, 1999, with respect to the October 19, 1999 amendments related to the CANE-CA and CANE-PW districts and September 19, 2001 with respect to the Stream Buffer/Usable Lot amendments; and May 20, 2003 with respect to the Stream Classification Amendments), or
- 3) was included as part of a Site Specific Development Plan approved by the Board of Commissioners prior to January 1, 1994 (October 19, 1999 with respect to the October 19, 1999 amendments related to the CANE-CA and CANE-PW districts and September 19, 2001 with respect to the Stream Buffer/Usable Lot amendments; and May 20, 2003 with respect to the Stream Classification Amendments), or
- 4) had otherwise established a vested right under North Carolina Zoning law prior to January 1, 1994 (October 19, 1999 with respect to the October 19, 1999 amendments related to the CANE-CA and CANE-PW districts and September 19, 2001 with respect to the Stream Buffer/Usable Lot amendments and May 20, 2003 with respect to the Stream Classification Amendments).

Existing development is hereby deemed to be conforming with respect to requirements of Article 6.23 of this Ordinance. Periodic updates to FEMA maps may affect structures located within the floodplain of specific streams. The zoning ordinance text amendments dated September 19, 2001 and May 20, 2003 only affect the Stream Buffer section of the ordinance and are not meant to supersede any FEMA regulations or requirements.

b) Redevelopment

The rebuilding or replacement of residential or nonresidential structures which are defined as existing development according to Article 6.23.11a is allowed, provided that the rebuilding or replacement does not result in an increase in the amount of impervious surface, and does not encroach any farther into stream buffers or setbacks from reservoirs than the previous development. A structure which is rebuilt or replaced in accordance with these provisions is deemed conforming with respect to setbacks from streams and reservoirs required by Articles 6.23.7 and 6.23.8 of this Ordinance.

c) Existing Lots

An existing lot, for the purpose of determining compliance with Article 6.23, is defined as a lot which was created prior to January 1, 1994, or a lot within the Cane Creek watershed which was created prior to October 19, 1999, with respect to the October 19, 1999, amendments related to the CANE-CA and CANE-PW districts, and non-conforming lots of record.

Stream buffers as required by Article 6.23.7, and setbacks for septic systems as required by Article 6.23.8 may be reduced to the extent necessary to allow development of the lot, provided that all of the following criteria are met:

1. The septic system is sized to serve no more than four bedrooms; and
2. The septic tank, drainfield and repair area (where required) can be accommodated on 20,000 square feet of area or less; and
3. The Orange County Planning Staff, in consultation with Orange County Environmental Health and/or the Orange County Engineer has determined that encroachment of the structure into the stream buffer and/or encroachment, of the septic system or repair area into the stream buffer or reservoir setback is necessary in order to provide adequate area for septic disposal and repair while maintaining required separations between wells, septic systems, structures and property lines; and
4. The Orange County Planning Staff, in consultation with Orange County Environmental Health and/or the Orange County Engineer, has determined that the relative locations of the well, septic system and structure maximize the amount of watershed protection that can be achieved while allowing development of the lot. Generally, an exception to setbacks for repair area is preferable to an exception for the initial septic system, and encroachment of structures or gravity septic systems into the setback is preferable to the installation of a septic system pump.
5. The amount of encroachment into the stream or reservoir buffer is the minimum amount which can be obtained while meeting the above criteria.

6.23.11 ADMINISTRATION

a) Appeals

Amended
4-1-96

Decisions of the Zoning Officer in the implementation of this Article may be appealed to the Orange County Board of Adjustment in accordance with Article 2.3.7 of this Ordinance.

b) Variances

Amended
1-17-95
4-1-96
1-20-98

Minor variances for dimensional requirements may be approved by the Board of Adjustment in accordance with Article 2.3.6 of this Ordinance. The Board of Adjustment may also approve variance requests to allow the use of off-site septic easements for lots created before January 1, 1994, and for non-conforming lots of record.

A Minor Variance is defined as a variance from the minimum statewide water supply watershed protection rules that results in a relaxation by a factor of up to ten (10) percent of any management requirement under the low density requirement.

A Major Variance is defined as a variance from the statewide water supply watershed regulations that results in the relaxation by a factor of greater than ten (10) percent of any management requirement under the low density option or the relaxation of any management requirement that applies to a development project requiring construction of a BMP.

A description of each project receiving a variance and the reason for granting the variance shall be submitted for each calendar year to the Division of Water Quality on or before January 1st of the following year.

All other local governments having jurisdiction within the watershed area and the entity using the water supply for consumption shall be notified of the proposed exemption.

6.24 Additional Requirements for Lots Outside of Watershed Protection Areas

Amended
9/18/01

6.24.1

Amended
9/18/01
5/20/03

In areas not identified on the Official Zoning Atlas as Watershed Protection Overlay Districts, a stream buffer a minimum of 50 feet in width shall be established along both sides of streams identified by any of the following means: 1) shown as solid blue lines or as broken blue lines on the USGS Quadrangle maps, 2) shown as a water feature in the Orange County Soil Survey, or 3) a water feature identified by a field determination of County staff trained in surface water identification through the North Carolina Division of Water Quality (NCDWQ). Stream buffers shall extend around the perimeter of all other water features if any portion of the stream buffer of a stream touches the water feature. Disputes pertaining to water feature decisions by County staff shall be filed directly to the NCDWQ. Stream buffers for Soil Survey streams shall only be calculated using Method A as explained in Section 6.23.7d.

6.24.2

Minimum Usable Lot Area for Lots that Utilize Ground Absorption Wastewater Systems

Amended
9/18/01

The usable lot for parcels between 40,000 square feet and 1.99 acres in size shall be a minimum of 30,000 square feet. Zoning lots two acres and greater shall have a minimum usable lot area of at least 40,000 square feet.