

## Appendix C: Town Of Carrboro Community Capability Assessment

### TOWN OF CARRBORO, N.C. COMMUNITY CAPABILITY ASSESSMENT

Policies, Practices, Programs, Regulations and Activities (Existing and potential)	Document Reference (Include page numbers or Other Source)	Effectiveness for Mitigation (High/Medium / Low/Not Effective) <i>Notes: gaps, shortfalls, conflicts, or opportunities</i>	Rationale for Effectiveness
<i>Carrboro Vision 2020, Policies Through the Year 2020</i> -adopted by the Carrboro Board of Aldermen on December 5, 2000. This documents provides the following policies that support a decrease in the town’s exposure to natural hazards:			
<p style="text-align: center;"><b>Open Space</b></p> <p><b>1.11</b> The town should encourage and support the development of greenways and parklands dedicated to public use along streams and easements. There should be a network of connected greenways throughout the town. These greenways should serve as nature trails, biking and walking trails, wildlife corridors. All should protect our natural environment.</p>	Page 9	High <i>Financial assistance will benefit the full implementation of the greenway system.</i>	Limits or disallows construction within flood hazard areas
<p><b>2.0 DEVELOPMENT</b></p> <p>Carrboro's development should take place in a manner consistent with a set of adopted values... Respect for and protection of the natural environment should be integrated into the town’s policies as a high priority in enriching the quality of life...</p>	Page 12	Medium <i>Need assistance in maintaining the inventory, database and digital topos /ortho-photos</i>	Supports floodplain protection

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<p><b><u>Preservation of the Natural Environment</u></b></p> <p><b>2.21</b> The Town should continue to require the preservation and maintenance of open space when land is developed, to enforce restraints on clear-cutting, and to require adequate buffers.</p> <p><b>2.22</b> Where development is deemed acceptable, there should be well-defined dense development with areas of well-preserved open space.</p> <p><b>2.23</b> The town encourages the planting of native plant species, as well as non-native species that are not invasive. Removal of invasive species is encouraged. The town supports education on this topic and encourages the public to become aware of the list of invasive plant species found in Appendix E-17 of the Town of Carrboro Land Use Ordinance.</p>	Page 12-13	<p>Medium</p> <p><i>Enabling legislation is needed to limit clear cutting within buffers on bonafide farms</i></p> <p><i>Need assistance in maintaining the inventory, database and digital topos /ortho-photos</i></p>	Supports floodplain protection
<p><b>Limits on Development</b></p> <p><b>2.41</b> Development throughout Carrboro should be consistent with its distinctive town character. The town should adhere to policies that limit the widening of roads, encourage plantings alongside roads, preserve historic areas, buildings and older neighborhoods, and retain unspoiled green spaces and other natural areas.</p> <p><b>2.42</b> Carrboro should plan and encourage the growth of tree canopies over roads to mitigate the heat and smog effect caused by superheated pavement. Carrboro should strongly encourage the electric utilities to put their lines underground to allow for full canopy coverage.</p>	Page 13	<p>Medium</p> <p>Financial assistance for maintaining and/or enhancing open space.</p> <p><i>Assistance from utilities and others to install existing overhead utilities underground.</i></p>	Supports floodplain protection
<p><b><i>Town of Carrboro, North Carolina; Land Use Ordinance-</i></b> adopted by the Board of Aldermen on November 25, 1980. This documents is a unified development ordinance that regulates all matters relating to the use of land throughout the town’s planning jurisdiction including both zoning and subdivision regulations. Following is a summary of</p>			

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regulations that should decrease the town’s exposure to natural hazards:			
<p><b><u>Section 15-251.9 Specific Standards for Flood Hazard Reductions</u></b></p> <p>(a) <u>New structures generally prohibited within SFHAs. Within a Special Flood Hazard Area, no new structure (as defined in this part) may be constructed or located, and no substantial improvement of an existing structure may take place, unless and to the extent that the permit issuing authority for the proposed use determines that, in the absence of an authorization to do so, the owner would be deprived of all reasonable use of the subject property. Notwithstanding the foregoing, manufactured homes that are nonconforming because they are located within a SFHA may be replaced with another manufactured home. If such construction (or replacement of manufactured homes) is authorized, all such construction (or replacement) shall be in conformity with the remaining provisions of this section in addition to those set forth in Section 15-251.8.</u></p> <p>(b) <u>Residential construction. New construction and substantial improvement of any residential structure (including manufactured homes) located within a Special Flood Hazard Area or on any lot where a SFHA is located shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation.</u> <b><u>Definition#45 Regulatory Flood Protection Elevation. The “Base Flood Elevation” plus the “Freeboard.” In “Special Flood Hazard Areas” where Base Flood Elevations (BFEs) have been determined, this elevation shall be the BFE plus two (2) feet of freeboard.</u></b></p> <p>(c) <u>Non-residential construction. New construction and substantial improvement of any</u></p>	Section 15-251.9	High Assistance may be needed to acquire properties substantially within a floodway or floodplain.	Limits or disallows construction within flood hazard areas

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<p><u>commercial, industrial, or other non-residential structure located within a SFHA shall have the reference level, including basement, elevated no lower than the regulatory flood protection elevation. Structures located in the AE Zone may be floodproofed to the regulatory flood protection elevation in lieu of elevation provided that all areas of the structure, together with attendant utility and sanitary facilities, below the regulatory flood protection elevation are watertight with walls substantially impermeable to the passage of water, using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the administrator along with the operational and maintenance plans.</u></p> <p><u>(d) Manufactured homes. Manufactured homes that are located within a SFHA or on a lot where a SFHA is located shall be securely anchored to an adequately anchored foundation to resist flotation, collapse, and lateral movement, either by engineer certification, or in accordance with the most current edition of the State of North Carolina Regulations for Manufactured Homes adopted by the Commissioner of Insurance pursuant to NCGS 143-143.15. Additionally, when the elevation would be met by an elevation of the chassis thirty-six (36) inches or less above the grade at the site, the chassis shall be supported by reinforced piers or engineered foundation. When the elevation of the chassis is above thirty-six (36) inches in height, an engineering certification is required. Finally, all enclosures or skirting below the lowest floor shall meet the requirements of subsection (e).</u></p> <p><u>(e) Elevated buildings. Fully enclosed areas of new construction and substantially improved</u></p>			

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<p><u>structures that are below the lowest floor of buildings located with a SFHA:</u></p> <p><u>(1) Shall not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator). The interior portion of such enclosed area shall not be finished or partitioned into separate rooms, except to enclose storage areas;</u></p> <p><u>(2) Shall be constructed entirely of flood resistant materials below the regulatory flood protection elevation;</u></p> <p><u>(3) Shall include flood openings to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet or exceed the following minimum design criteria;</u></p> <p style="padding-left: 40px;"><u>a. A minimum of two flood openings on different sides of each enclosed area subject to flooding;</u></p> <p style="padding-left: 40px;"><u>b. The total net area of all flood openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding;</u></p> <p style="padding-left: 40px;"><u>c. If a building has more than one enclosed area, each enclosed area must have flood openings to allow floodwaters to</u></p>			

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<p><u>automatically enter and exit;</u></p> <p><u>d. The bottom of all required flood openings shall be no higher than one (1) foot above the adjacent grade;</u></p> <p><u>e. Flood openings may be equipped with screens, louvers, or other coverings or devices, provided they permit the automatic flow of floodwaters in both directions; and</u></p> <p><u>f. Enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require flood openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires flood openings as outlined above.</u></p> <p><u>(f) Additions/Improvements. With respect to additions and improvements to structures that are nonconforming because they are located within a Special Flood Hazard Area:</u></p> <p><u>(1) When the addition or improvement constitutes a substantial improvement as defined in Section 15-251.1, both the existing structure and the addition or improvement must comply with the standards for new construction.</u></p> <p><u>(2) When the addition or improvement does not constitute a substantial improvement, the addition or improvement must be designed to minimize flood damages and must not be any more non-conforming than the existing structure.</u></p>			

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<p><u>(g) Accessory Structures. When accessory structures (sheds, detached garages, etc.) are allowed to be placed within a Special Flood Hazard Area pursuant to the provisions of subsection (a) of this section, the following criteria shall be met:</u></p> <p><u>(1) Accessory structures shall not be used for human habitation (including working, sleeping, living, cooking or restroom areas);</u></p> <p><u>(2) Accessory structures shall not be temperature-controlled;</u></p> <p><u>(3) Accessory structures shall be designed to have low flood damage potential;</u></p> <p><u>(4) Accessory structures shall be constructed and placed on the building site so as to offer the minimum resistance to the flow of floodwaters;</u></p> <p><u>(5) Accessory structures shall be firmly anchored in accordance with Section 15-251.8;</u></p> <p><u>(6) All service facilities such as electrical shall be installed in accordance with Section 15-251.8; and</u></p> <p><u>(7) Flood openings to facilitate automatic equalization of hydrostatic flood forces shall be provided below regulatory flood protection elevation in conformance with Subsection (e) of this section.</u></p> <p><u>(8) An accessory structure with a footprint less than 150 square feet that satisfies the criteria outlined above does not require an elevation or floodproofing certificate. Elevation or floodproofing certifications are required for all</u></p>			

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<p><u>other accessory structures.</u></p> <p><u>(h) Subsequent to the effective date of this subsection, no portion of any Special Flood Hazard Area outside of the floodway may be filled in with fill dirt or similar material for the purpose of elevating buildings. Whenever fill is placed within a SFHA for any other permitted purpose, slopes shall be adequately stabilized to withstand the erosive force of the base flood.</u></p> <p><b><u>Section 15-251.10 Floodways and Non-Encroachment Areas</u></b></p> <p>(a) Areas designated as floodways or non-encroachment areas are located within the Special Flood Hazard Areas established in Subsection 15-251.2(b) (1). The floodways and non-encroachment areas are extremely hazardous areas due to the velocity of floodwaters that have erosion potential and carry debris and potential projectiles. The requirements set forth in the remaining provisions of this section, in addition to the standards set forth in Sections 15-251.8 and 15-251.9 shall apply to all development within such areas.</p> <p>(b) No encroachments, including fill, new construction, substantial improvements and other developments shall be permitted unless it has been demonstrated that:</p> <p>(1) The proposed encroachment would not result in any impact to the flood levels during the occurrence of the base flood, based on hydrologic and hydraulic analyses performed in accordance with standard engineering practice and presented to the administrator prior to</p>			

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<p>issuance of any development permit, or</p> <p>(2) A Conditional Letter of Map Revision (CLOMR) has been approved by FEMA. A Letter of Map Revision (LOMR) must also be obtained upon completion of the proposed encroachment.</p> <p>(c) Any development within a floodway or non-encroachment area that is authorized by this section shall comply with all applicable flood hazard reduction provisions of this part.</p> <p>(d) No manufactured homes shall be permitted, except replacement manufactured homes in an existing manufactured home park or subdivision, provided the following provisions are met:</p> <p>(1) The anchoring and the elevation standards of Subsection 15-251.9(d); and</p> <p>(2) The no encroachment standard of Subsection 15-251.10(b) (1).</p> <p><b><u>Section 15-251.11 Special Provisions for Subdivisions</u></b></p> <p>(a) An applicant for a conditional use permit or special use permit authorizing a major subdivision and an applicant for minor subdivision final plat approval shall be informed by the planning department of the use and construction restrictions contained in this Article if any portion of the land to be subdivided lies within a Special Flood Hazard Area.</p> <p>(b) A conditional use permit or special use permit for a major subdivision may not be issued, and final plat approval for any subdivision may not be granted, if any portion of one or more lots lies within a Special Flood Hazard Area unless it reasonably appears</p>			

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<p>that:</p> <p>(1) With respect to each lot that lies wholly or partly within a Special Flood Hazard area, either (i) a building of the type that is consistent with the zoning of the property can practicably be located in accordance with applicable regulations on the portion of such lot that is located outside the SFHA, or (ii) such lot has already been developed, or (iii) such lot is formed as the result of an adjustment of lot lines between lots in existence on the effective date of this section, and such readjustment does not result in a previously developable lot being rendered undevelopable, or (iv) it plainly appears that such lot is intended to be devoted to a permissible use that does not involve the construction of any building (e.g. that such lot is reserved or dedicated for open space purposes).</p> <p>(2) Creation of each lot that does not satisfy the criteria set forth in subdivision (1) of this subsection is necessary to avoid depriving the owner of the property of all reasonable use of the tract taken as a whole.</p> <p>(c) Final plat approval for any subdivision containing land that lies within a Special Flood Hazard Area may not be given unless the plat shows the boundary of the SFHA according to the best information available at the time the final plat is approved and contains in clearly discernible print the</p>			

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<p>following statement: <i>“Use of land within a special flood hazard area is substantially restricted by Article XVI of Chapter 15 of the Carrboro Town Code.”</i> If, at the time final plat approval is granted, a Conditional Letter of Map Revision (CLOMR) affecting such subdivision has been approved, or the town is otherwise aware that some action is pending that would likely alter the location of the boundary of the SFHA as it affects such subdivision, then the statement on such plat referenced immediately above shall include a note similar to the following: <i>“The location of the boundary of the special flood hazard area may be altered by a request for a special flood hazard map revision now pending before the Federal Emergency Management Agency.”</i></p>			
<p><b>Storm Water Management Natural Drainage System Utilized to Extent Feasible.</b></p> <p>(a) To the extent practicable, all development shall conform to the natural contours of the land and natural drainage ways shall remain undisturbed.</p> <p>(b) To the extent practicable, lot boundaries shall be made to coincide with natural drainage ways within subdivisions to avoid the creation of lots that can be built upon only by altering such natural drainage ways.</p>	Section 15-261	High <i>Need assistance in maintaining the drainage inventory, database and digital topos /ortho-photos</i>	Limits or disallows construction within flood hazard areas and minor drainage ways
<p><b><u>Development Must Drain Properly</u></b></p> <p>(a) All development shall be provided with a stormwater management system containing drainage facilities that are adequately designed and constructed to prevent the undue retention of surface water on the development site. Surface water shall not be regarded as unduly retained if:</p> <p>(1) The retention results from a technique, practice or device deliberately installed as part of an approved sedimentation or stormwater management plan, or</p>	Section 15-262		

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<p>(2) The retention is not substantially different in location or degree than that experienced by the development site in its pre-development stage, unless such retention presents a danger to health or safety.</p> <p>(b) No surface water may be channeled or directed into the OWASA sanitary sewer system.</p> <p>(c) Whenever practicable, the drainage system of a development shall coordinate with the drainage system or drainage ways on surrounding properties or streets.</p> <p>(d) Use of drainage swales rather than curb and gutter and storm sewers in subdivisions is provided for in Section 15-216. Private roads and access ways within unsubdivided developments shall utilize curb and gutter and storm drains to provide adequate drainage if the grade of such roads or access ways is too steep to provide drainage in another manner or if other sufficient reasons exist to require such construction.</p> <p>(e) The minimum design storm frequency for all drainage systems shall be the 10 year storm, except that those facilities crossing streets shall be designed for the 25 year storm.</p> <p>(f) Drainage culverts and associated facilities shall be suitably sized to accommodate designated storm frequencies and shall be suitably constructed and installed to insure that the facilities will function adequately and will not deteriorate within an unreasonably short period of time. <b>(AMENDED</b></p>			

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04/03/90)			
<p><u>Management of Stormwater <i>Abbreviated:</i></u></p> <p>(c) Developments must install and maintain stormwater management systems that will control and treat runoff from the first one inch of rain as follows:</p> <p>(1) Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours.</p> <p>(2) Achieve an eighty-five percent (85%) average annual removal rate for Total Suspended Solids.</p> <p>To the extent reasonably practicable, the stormwater management systems designed and constructed to satisfy the requirements of this section shall utilize best management practices that reduce nutrient loadings. <b>(AMENDED 6/24/08)</b></p> <p>(d) Developments shall be constructed and maintained so that their stormwater management systems meet the following minimum standards:</p> <p>(1) The post-development discharge rates shall be less than or equal to the pre-development discharge rates for the 1-, 2-, 5-, 10-, and 25-year 24-hour design storms.</p> <p>(2) For upstream properties, the 1% chance flood elevation may not be increased.</p>	Section 15-263	<p>High Additional financial support to offset engineering expenses would benefit both the town and the developer.</p> <p><i>Opportunities exist for storm water mitigation computer models to assist in selecting water quality and quantity BMP's.</i></p> <p><i>Additional assistance is needed to fund water quality monitoring on an ongoing basis.</i></p>	Limits or disallows construction within flood hazard areas, reduces runoff and limits damage to properties and water quality.
<p><b>Sedimentation and Erosion Control.</b></p> <p>(b) The Orange County Erosion Control Officer is authorized by resolution of the Carrboro Board of Aldermen to</p>	Section 15-264	Medium Financial assistance	Supports floodplain protection and

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by resolution of the Carrboro Board of Aldermen to enforce within the town the Orange County Soil Erosion and Sedimentation Control Ordinance		would be helpful to support monitoring and enforcement capabilities.	soil stabilization
<p><b>Buffer Requirements rewritten as PART III. WATER QUALITY BUFFERS</b> to incorporate new State “Jordan Rules”, including buffer classification, function, definitions and list of activities within buffer areas that are either allowed with or without mitigation or exempt. Revised buffer rules were adopted by the Carrboro Board of Aldermen on March 24, 2009 effective upon approval by the State.</p> <p><b><u>Section 15-270.3 Width of Buffers</u></b></p> <p>(a) ZONES OF THE RIPARIAN BUFFER. The protected riparian buffer shall have two zones as follows:</p> <p>(1) A streamside zone (“Zone 1”) shall consist of an undisturbed area except as provided for in Section 15-270.5. The function of the streamside zone is to protect the physical and ecological integrity of the stream ecosystem, and filter runoff received from Zone 2. The desired vegetation for Zone 1 is mature forest. The location of Zone 1 shall be as follows:</p> <p>a. Zone 1 shall begin at the most landward limit of the top of the bank. Zone 1 shall extend landward on either side of the stream as indicated in Table 1, measured</p>	Section 15-270.2	High <i>Need assistance in maintaining the stream buffer inventory, database and digital topos /ortho-photos</i>	Limits or disallows construction within flood hazard areas and minor drainage ways

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<p>horizontally on a line perpendicular to a vertical line marking the origin of the buffer as defined above.</p> <p>b. For ponds, lakes and reservoirs, Zone 1 shall begin at the most landward limit of the normal water level and extend landward as indicated in Table 1, measured horizontally on a line perpendicular to a vertical line marking the edge of the surface water.</p> <p>(2) Zone 2 shall consist of an undisturbed area except as provided for in Section 15-270.5. The functions of this zone are to: protect the streamside zone, to filter runoff from upland development, and deliver runoff to Zone 1 in a dispersed fashion. Grading and revegetating Zone 2 is allowed provided that the health of the vegetation in Zone 1 is not compromised. Zone 2 shall begin at the outer edge of Zone 1 and extend landward as indicated in Table 1 as measured horizontally on a line perpendicular to the surface water. The desired vegetation for this zone is mature native vegetation; forest cover is encouraged.</p> <p>(3) The total buffer width shall be the sum of the widths of the two zones, as indicated in Table 1, and shall extend</p>			

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<p style="text-align: center;">on all sides of the waterbody.</p> <p><b>Table 1: Required Minimum Buffer Width (*)</b></p> <table border="1" data-bbox="155 569 857 1039"> <thead> <tr> <th rowspan="2">Waterbody type</th> <th colspan="2">Zone 1 width</th> <th colspan="2">Zone 2 width</th> <th colspan="2">Total width</th> </tr> <tr> <th>Water shed</th> <th>Out of Water shed</th> <th>Water shed</th> <th>Out of Water shed</th> <th>Water shed</th> <th>Out of Water shed</th> </tr> </thead> <tbody> <tr> <td>Perennial Streams, Ponds, Lakes, Reservoirs</td> <td>100'</td> <td>50'</td> <td>--</td> <td>50'</td> <td>100'</td> <td>100'</td> </tr> <tr> <td>Intermittent Streams, <u>Ponds</u></td> <td>60'</td> <td>30'</td> <td>--</td> <td>30'</td> <td>60'</td> <td>60'</td> </tr> <tr> <td>Ephemeral Streams, <u>Ponds</u></td> <td>--</td> <td>--</td> <td>30'</td> <td>15'</td> <td>30'</td> <td>15'</td> </tr> </tbody> </table> <p>* “Watershed” means within the University Lake Watershed, and “Outside of watershed” means the remainder of the Town’s planning jurisdiction. For streams, the width indicated is in one direction from the stream channel; the total width is therefore twice the width indicated.</p> <p style="text-align: center;">(4) Notwithstanding the other provisions of this section, in no case shall the width of any buffer be less extensive than the special flood hazard area for the same stream, pond, or lake drainage feature designated in accordance with the provisions of Part I of this article.</p> <p><b><u>Diffuse Flow Requirement</u></b></p> <p>To the maximum extent practicable and in consideration especially of topography and existing uses, diffuse flow of runoff at non-erosive velocities shall be established before the runoff enters the buffer, and maintained in the</p>	Waterbody type	Zone 1 width		Zone 2 width		Total width		Water shed	Out of Water shed	Water shed	Out of Water shed	Water shed	Out of Water shed	Perennial Streams, Ponds, Lakes, Reservoirs	100'	50'	--	50'	100'	100'	Intermittent Streams, <u>Ponds</u>	60'	30'	--	30'	60'	60'	Ephemeral Streams, <u>Ponds</u>	--	--	30'	15'	30'	15'	<p>Section 15-270.4</p>		
Waterbody type		Zone 1 width		Zone 2 width		Total width																															
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<p>buffer by dispersing runoff that has concentrated into rills, gullies, and ditches, and reestablishing vegetation where concentrated flow has displaced vegetation. Corrective action to restore diffuse flow shall be taken if necessary to impede the formation or expansion of erosion rills or gullies. Where site conditions constrain the ability to ensure diffuse flow through both Zones 1 and 2, emphasis will be placed on ensuring diffuse flow through Zone 1, as provided for in 15-270.3. No new engineered stormwater devices or conveyances are allowed in the buffers except as provided for in Section 15-270.5.</p>			
<p><b>Impervious Surface Limitations (Univ. Lake Watershed)</b></p> <p>(a) Commercial (B-5 or WM-3 zoning districts) = 6% impervious and 24% impervious with retention of first one inch of rainfall. Residential (C or WR) = may not exceed an impervious surface area equal to 4% of the lot size (minimum lot size is five acres except for existing lots of record)</p>	Section 15-266	Medium No additional <i>gaps, shortfalls, conflicts, or opportunities</i>	Supports floodplain protection and reduces runoff
(b)			
2.			
<p><b>Open Space.</b></p> <p>(3) The following areas shall be regarded as open space if such areas satisfy at least the criteria set forth in Subdivision (1) a, b, and c of subsection (b) of this section:</p> <ul style="list-style-type: none"> <li>a. Utility easements located outside of street rights of way;</li> <li>b. Cemeteries located on a tract prior to its development.</li> <li>c. Areas used for the growing of crops, such as hay, corn, or vegetables, if and to the extent that such uses occur within an area that is subject to the control of a homeowners association and such uses are approved by the homeowners association.</li> </ul> <p>(4) The term “primary conservation areas” shall mean:</p>	Section 15-198	High Opportunities are created for new greenways and structures are developed outside of fragile environmental areas such as floodways, floodplains, and steep slopes.  <i>Need assistance in maintaining</i>	Limits or disallows construction within flood hazard areas and minor drainage ways

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<ul style="list-style-type: none"> <li>a. Areas containing slopes greater than 25%</li> <li>b. Hardwood areas identified on the Carrboro Natural Constraints Map</li> <li>c. Wetlands as defined pursuant to Section 404 of the Clean Water Act</li> <li>d. Floodplains</li> <li>e. With respect to streams designated on the adopted Stream Classification Map of Carrboro, those areas within an average perpendicular distance of sixty feet from the edge of the floodway of the stream, if the floodway is designated on the “Flood Boundary and Flood Map” prepared by the U.S. Department of Housing and Urban Development, or sixty feet from the centerline of the stream where the floodway is not designated on this map.</li> <li>f. Lakes and ponds;</li> <li>g. Road buffers as required by Section 15-312 of this Chapter, except for those portions of the buffers that must be included in road or utility crossings.</li> </ul> <p>(5) The term “secondary conservation areas” shall mean:</p> <ul style="list-style-type: none"> <li>a. Areas containing slopes greater than 15% but not more than 25%;</li> <li>b. Wooded areas other than hardwood areas identified on the Carrboro Natural Constraints Map;</li> <li>c. Vistas along entranceways to the town;</li> <li>d. Other areas containing unusual natural features (such as major rock formations);</li> <li>f. Other environmentally, historically or archaeologically significant or unique areas.</li> </ul> <p>(c) Except as otherwise provided in subsection (j) and Section 15-203, every residential development in zoning districts other than the R-2 district shall be developed so that at least forty percent (40%) of the total area of the development remains permanently as open space. Every residential development in the R-2 district shall be developed so that at least twenty percent (20%) of the total area of the development remains permanently as open space. <b>(AMENDED</b></p>		<p><i>the primary and secondary conservation area inventory, database and digital topos /ortho-photos</i></p>	

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<p><b>09/05/95)</b></p> <p>(d) Subject to subsection (g), every residential development containing at least 25 lots or dwelling units shall contain, as part of its required open space, one or more areas that are relatively flat, well drained, grassed, and otherwise well suited for use as a play field:</p> <p>(1) Each such area shall contain a minimum of 20,000 square feet configured in such a manner as to be useful as a play field.</p> <p>(2) Every development covered by this subsection shall set aside in one or more play fields meeting the criteria of this subsection a minimum of 400 square feet of area per lot or dwelling unit within the development.</p> <p>(3) Play fields provided under this section shall be located with due regard for the safety and convenience of those using such facilities as well as the welfare of residents living nearby. The play fields required by this subsection shall be located such that 90% of the lots or dwelling units within any development that is required to install such play field are within 1,500 feet of a play field installed to meet the requirements of this subsection, unless the developer demonstrates by clear and convincing evidence that adherence to this requirement would not be feasible.</p> <p>(4) Play fields constructed to meet the requirements of this subsection may be used by the developer to satisfy the active recreational requirements set forth in Section 15-196 as well as the open space requirements of this section. However, the recreation points assigned to such play fields shall be based upon the actual cost of constructing such play fields, exclusive of land costs.</p> <p>(e) Subject to subsection (g), if a tract where a residential development is proposed contains any areas defined above as primary conservation areas, then such areas shall be designated as open space.</p>			

<b>Policies, Practices, Programs, Regulations and Activities (Existing and potential)</b>	<b>Document Reference (Include page numbers or Other Source)</b>	<b>Effectiveness for Mitigation (High/Medium / Low/Not Effective) <i>Notes: gaps, shortfalls, conflicts, or opportunities</i></b>	<b>Rationale for Effectiveness</b>
<p>(g) A developer shall not be required to set aside as open space under the provisions of subsections (d) and (e) more than the minimum required percentage of open space set forth in subsection (c). If the sum total of open space otherwise required under the provisions of subsections (d) and (e) exceeds forty percent of the development tract (twenty percent in the R-2 district), then the permit issuing authority shall allow the developer to set aside a smaller area of open space under subsections (d) and (e), individually or collectively, so that the developer is not required to preserve as open space more than forty percent of the development tract (twenty percent in the R-2 district). However, if areas that constitute primary conservation areas have not been set aside as open space, then the development plans shall otherwise provide for the preservation of such areas even though they may be located within privately owned lots (e.g. by specifying buildable areas within individual lots). Notwithstanding the foregoing, hardwood areas identified on the Carrboro Natural Constraints Map that are not set aside as common open space shall be preserved except to the extent that removal of such hardwood trees is necessary to accommodate the permitted uses created out of land not set aside as common open space.</p> <p>(h) If the area of open space required to be preserved under subsections (d) and (e) does not exceed forty percent (40%) of the area of the development tract (20% in the R-2 district), then the permit issuing authority may require that the developer set aside from among the areas that constitute secondary conservation areas as defined above an amount of open space equal to the difference between the amount of open space preserved under subsections (d) and (e) and forty percent (40%) of the development tract (20% in the R-2 district).</p>			
<p><b>Residential Density of Major Developments in Certain Districts.</b> (a) Notwithstanding the provisions of Section 15-182, when any tract of land within the R-10, R-15, R-20, and</p>	<p>Section 15-182.3</p>	<p>High <i>Opportunity is created to limit</i></p>	<p>Limits or disallows construction</p>

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<p>RR districts is developed under circumstances requiring the issuance of a special or conditional use permit, the maximum number of dwelling units that may placed on that tract shall be determined in accordance with the provisions of this section.</p> <p>(b) If the development is to be served by OWASA owned water and sewer lines, then the maximum number of dwelling units for any type of residential development shall be determined by dividing the adjusted tract acreage [calculated in accordance with the provisions of subsection (c) below] by the “minimum square feet per dwelling unit” associated with the zoning district of the property to be developed as set forth in Section 15-182. <b>(AMENDED 06/22/99)</b></p> <p>(c) The adjusted tract acreage shall be calculated by deducting from the gross acreage of the tract the sum total of each of the following areas that may be located within the tract in question. If an area within the tract qualifies under more than one of the following categories, then that area shall be included only within the one category that involves the most restrictive (i.e. the greatest) deduction.</p> <ol style="list-style-type: none"> <li>(1) Floodways: multiply the area within a floodway by a factor of 1.0.</li> <li>(2) Wetlands: multiply the area of designated wetlands by a factor of 0.95.</li> <li>(3) Major Rock Formations: multiply the area of major rock formations by a factor of 0.90.</li> <li>(4) Step Slopes: multiply the area of land with natural ground slopes exceeding 25 percent by a factor of 0.80.</li> <li>(5) Land traversed by high-tension electrical transmission lines (69kv or higher): multiply the area within the power easement by a factor of 0.75.</li> <li>(6) Floodplains: multiply the 100-year floodplain by a factor of 0.5.</li> <li>(7) Moderately steep slopes: multiply the area with natural ground slopes of between 15 and 25 percent by a factor of 0.4.</li> </ol>		<p><i>the density of development in relation to the land’s ability to support development. The need to utilize less suitable areas is reduced and the potential to preserve hazard areas such as flood ways and flood plains is enhanced.</i></p>	<p>within flood hazard areas</p>

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(8) Land traversed by underground utility lines (not within a street right of way): multiply the area within the easement (or if no easement exists, the area within ten feet on either side of the line) by a factor of 0.3.			
<ul style="list-style-type: none"> <li> <b>Floodplain Mapping</b>            The Town of Carrboro participated in the following floodplain mapping projects designed to more accurately define and locate special flood hazard areas throughout Carrboro’s planning area:         </li> </ul>			
<p><b><i>NC Floodplain Mapping Program</i></b>            The Town of Carrboro participated in the North Carolina Floodplain Mapping Program administered by the NC Division of Emergency Management. This effort produced new floodplain maps and FEMA approved documents dated February 2, 2007. This updated flood hazard data provides current, accurate information for communities and property owners to make proper site and design decisions;</p> <ul style="list-style-type: none"> <li>Updated flood hazard data provides current, accurate information for communities and property owners to make proper siting and design decisions;</li> <li>The use of updated data should dramatically reduce long-term flood losses to local communities;</li> <li>New flood information alerts those at risk of flooding of the need to purchase flood insurance;</li> <li>A digital Information System allows online access to all map users 24 hours a day without requiring sophisticated software; and</li> <li>Up-to-date base maps along with the digital format allows users to make more efficient and accurate flood risk determinations.</li> </ul>	NA	High <i>A shortfall in funding has delayed the completion of this project. Additional federal or state assistance is needed. The completion of this project should create opportunities for implementing computer storm water modeling.</i>	Accurately defines and locates flood hazard areas and directly supports the regulation of development activity within flood hazard areas.
<ul style="list-style-type: none"> <li> <b>Cooperating Technical Partner</b>            The Town of Carrboro and the Town of Chapel Hill have entered into an agreement with the State of North Carolina         </li> </ul>	NA	High <i>This project creates</i>	Directly supports the enforcement,

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<p>and the Federal Emergency Management Agency to cooperate as technical partners for the purpose of reducing flood losses. Carrboro adopted a resolution and signed the agreement in June of 2001.</p>		<p><i>opportunities to work cooperatively in formulating and implementing mutually beneficial solutions that reduce the risk associated with flooding.</i></p>	<p>administration, and application of flood hazard regulations</p>

## TECHNICAL AND FISCAL CAPABILITIES

### Technical-Staff Responsibilities Regarding Hazard Mitigation

The following positions, listed by department, share primary responsibility for implementing components of Carrboro's Hazard Mitigation Plan:

#### **Planning Department**

- **Planning Director**-coordinates the implementation of FEMA regulations; directs efforts to secure financial assistance from other sources, recommends local budget support for hazard mitigation projects, coordinates hazard mitigation activities with neighboring jurisdictions, prepares hazard mitigation plans and updates, serves as a member of the Orange County Hazard Mitigation Team.
- **Planning Administrator**-administers amendments to the town's land use ordinance and zoning map, coordinates the formulation and adoption of plans, policies, and programs related to transportation, the use of land and environmental resources within the town's planning jurisdiction.
- **Environmental Planner**-works under the general supervision of the planning administrator and is responsible for NPDES permitting, the Community Rating System and coordinating greenway acquisition activities.
- **Transportation Planner**- works under the general supervision of the planning administrator, responsible for Transportation Improvement Program activities including enhancement projects such as the development and funding of greenway trails.
- **Town Engineer**-reviews all site plans and construction drawings to assure that town engineering standards are complied with including storm water management and FEMA requirements.
- **Land Use Administrator**-Reviews all site plans, final plats, and construction drawings to assure compliance with the Town's land use ordinance.
- **Code Enforcement Supervisor**-reviews and inspects all structures to assure compliance with the NC State Building Code, Minimum Housing Code and FEMA construction requirements.

#### **Public Works Department**

- **Director of Public Works**-Serves as a member of the Orange County Hazard Mitigation Team, directs the maintenance and improvement of the Town's street and storm water system, administers emergency clean up efforts for the Town of Carrboro.

#### **Fire Department**

- **Fire Chief**-Directs the town's Primary Command Center during an emergency, coordinates the town's emergency response with Orange County

Emergency Management, serves as the town's Civil Preparedness Coordinator, monitors emergency activities such as rising flood waters and coordinates evacuation efforts.

### **Police Department**

- **Police Chief**-Directs general police services, traffic control, protection of life and property, records a photographic and video history of the disaster, assists in search, rescue and evacuation operations.

### **Fiscal Capabilities Regarding Hazard Mitigation**

The Town of Carrboro, in addition to its basic operating budget, the Town will continue to seek additional financial resources through available funding sources such as those listed on the NCEM website

[http://www.ncem.org/Mitigation/additional\\_funding.htm](http://www.ncem.org/Mitigation/additional_funding.htm) .