

Model Development Principles for the Central Rappahannock

A Consensus of the Central
Rappahannock Roundtable

a working group of development, conservation,
site design, public safety and regulatory
professionals from Stafford County,
Spotsylvania County and Fredericksburg, Virginia

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Central Rappahannock

Introduction

Every year, hundreds of thousands of acres of land are altered as part of the development process. The development radius around many cities and smaller municipalities continues to widen at a rapid rate, far outpacing the rise in population (Leinberger, 1995). Communities across the country are recognizing that the preservation of large contiguous tracts of land and the minimization of development impacts at the site level are crucial to retaining the quality of our water resources and the character of our landscape.

In order to achieve widespread implementation of development strategies that preserve open space and minimize impervious cover, local governments and developers alike must fundamentally change how and where land is developed. Towards this end, in 1996 the Center for Watershed Protection (Center) began the “Site Planning Roundtable” project to encourage better design at the site level. In the first phase of this project, a roundtable membership consisting of planners, engineers, developers, attorneys, fire officials, environmentalists, transportation, and public works officials from nationally recognized organizations developed and endorsed a set of *national model land development principles* that promote economically viable and environmentally sensitive site planning techniques. The products of this phase of the Site Planning Roundtable project include the development of a *Consensus Agreement* (CWP, 1998b) and a supporting technical document: *Better Site Design: A Handbook for Changing Development Rules in Your Community* (CWP, 1998a).

A primary goal of the Site Planning Roundtable project was to provide communities with a technical and economic framework to rethink their zoning and subdivision processes as well as individual site development decisions. Since that time, a Roundtable was completed in Frederick County, Maryland, resulting in changes to the codes and ordinances in that county. The roundtable process has also been initiated in Cecil County, MD. In addition, several other communities around the country have evaluated their existing programs using the Codes and Ordinances Worksheet developed as part of the Site Planning Roundtable. These experiences have revealed that almost every community can alter some part of their codes to foster development that better protects environmental resources.

A Locally Adapted Roundtable for the Central Rappahannock in Virginia

The Central Rappahannock Roundtable project is intended to adapt the principles developed at the national level for local application. In short, the purpose of the project is to identify, through a consensus building process, local codes and ordinances that act to prohibit or impede better site designs. This document presents the resulting recommendations on how these codes might be amended to foster more environmentally friendly development.



Audit of Counties

As part of the Rappahannock Roundtable process, the Center staff worked in conjunction with the planning staff in each jurisdiction to conduct an audit of the local subdivision and zoning code in each region. The Center reviewed each jurisdiction's subdivision and zoning ordinances, the existing Virginia stormwater regulations, Virginia Department of Transportation's *Subdivision Street Requirements* (1996), Virginia Department of Transportation's *Land Development Manual*, existing erosion and sediment control ordinances, and the impact of the Chesapeake Bay Preservation Act in these three jurisdictions.

Review of three jurisdictions determined that existing regulations are not fully capable of protecting the Rappahannock and its tributaries as aquatic resources.

Why Do a Roundtable in the Central Rappahannock?

Over the next 25 years, the population of Virginia is expected to grow by over 1.5 million people (Yax, 2000). Within a commuting distance to the Washington metropolitan area, the central Rappahannock region shoulders a significant burden of the growth pressures. At the same time, the preservation of its natural and historic sites is a primary concern for many of the residents of the Rappahannock. With this in mind, the goal of the Rappahannock Roundtable was to encourage discussion and understanding between stakeholders about the existing codes and ordinances, while promoting changes to help the codes be more environmentally friendly and economically viable.



Overarching Issues

A few overarching issues were discussed by the Roundtable during the course of the project. While the group attempted to confine the discussions to those that impacted the site design strategies, there were two issues that overlapped into jurisdiction-wide, regional and even the state planning arena:

- * The need for educational programs that must be put into place to fully execute and realize the benefits of these principles.
- * The implementation of these principles through state-wide stormwater regulations.

The Roundtable Process

The Rappahannock Roundtable was conceived as a joint project of the Center for Watershed Protection and the Friends of the Rappahannock. The potential Roundtable members assembled in a 10-month process to review existing subdivision codes and regulations. The Roundtable consisted of 35 members representing a wide range of professional backgrounds that have a relation to development issues, all of whom reviewed the national-level model development principles to identify what modifications could be made for application to the city of Fredericksburg, and Spotsylvania and Stafford Counties. The process included the following steps:

- 1.** A Roundtable kick-off meeting in June 2000 to comment on the national model development principles and participate in an innovative site design exercise.
- 2.** Local government reviews in September and October 2000 to review each jurisdiction's existing codes and ordinances.
- 3.** Subcommittee meetings in January and February 2001 to align model development principles to reflect Roundtable goals.
- 4.** A final meeting in late February 2001 to review recommendations of subcommittees and achieve full consensus.

Benefits of Applying the Model Development Principles

The model land development principles have been documented to benefit both the natural environment and the community. In addition, incorporating these principles can help communities meet the performance criteria of the Chesapeake Bay Preservation Area Designation and Management Regulations.

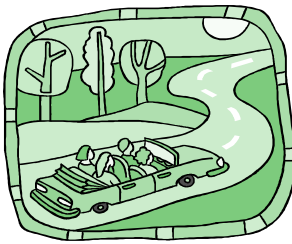
Communities that have implemented the model principles have realized the following benefits:

- Protected the quality of local streams, lakes, and estuaries
- Generated smaller loads of stormwater pollutants
- Helped to reduce soil erosion during construction
- Reduced development costs
- Increased property values
- Created more pedestrian-friendly neighborhoods
- Provided open space for recreation
- Protected sensitive forests, wetlands, and habitats from clearing
- Resulted in a more attractive landscape
- Reduced car speeds on residential streets
- Allowed for more sensible locations for stormwater facilities
- Increased local property tax revenues
- Facilitated compliance with wetland and other regulations
- Promoted neighborhood designs that provide a sense of community
- Preserved urban wildlife habitat

Model Development Principles Recommended by the Central Rappahannock Site Planning Roundtable

The 22 principles discussed on the following pages are the result of the 10-month consensus process by the roundtable members identified on page 11.

Principle No. 1



Design residential streets for the *minimum* required pavement width needed to support travel lanes, on-street parking, and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.

- Make private roads as narrow as possible.
- Public roads should conform with Table 1 of Virginia Department of Transportation's (VDOT) Subdivision Street Standards.
- Promote the use of mountainous terrain standards in appropriate areas in order to reduce excess land clearing.

Principle No. 2



Increase the number of homes per unit length through street layout and development standards within allowable densities.

Principle No. 3



Wherever possible, residential street right-of-way (ROW) widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and associated drainage systems.

- Encourage the use of the minimum right-of-way widths in the most current Virginia Department of Transportation's (VDOT) Subdivision Street Standards.

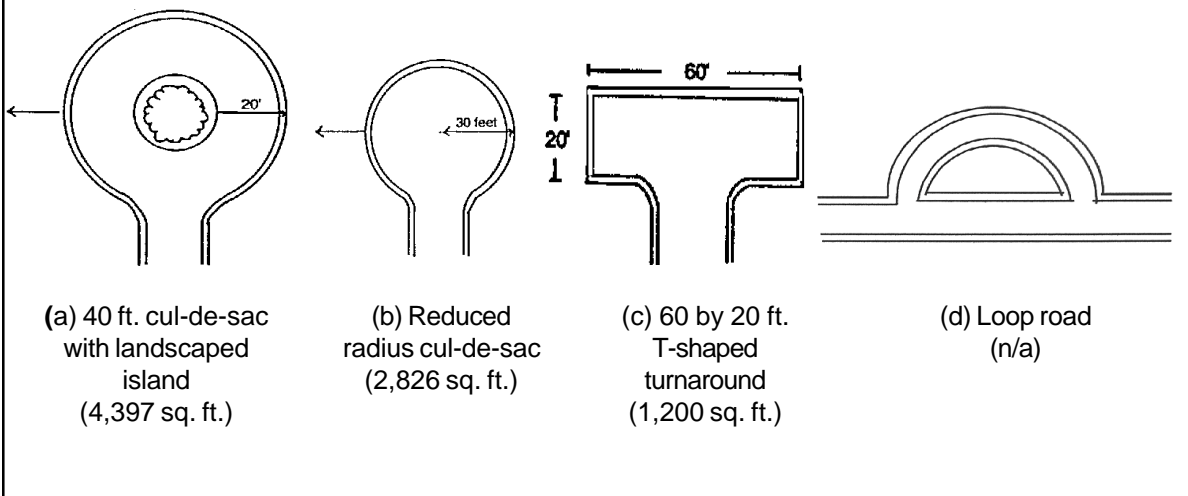
Principle No. 4



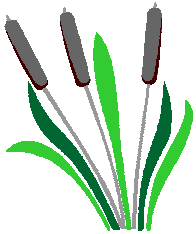
The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Encourage landscaped areas and alternative turnarounds to reduce impervious cover where appropriate.

- If landscaped areas are used, encourage their use for infiltration of runoff.

Figure 1: Four Comparable Turnaround Options (w/square impervious footage) for Residential Streets (adapted from CWP, 1998 and Schueler, 1995)



Principle No. 5



Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.

- Channels specifically designed to **treat** stormwater should minimize flow velocities.
- Safety and appropriateness should be considered in the design of channels.

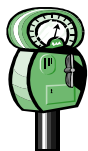
Principle No. 6



Establish both a minimum and *maximum* parking ratio in a particular land use or activity in order to curb excess parking construction.

- Promote the use of pervious and/or permeable paving and provide stormwater credits as an incentive.
- The *maximum* number of parking spaces for a particular land use should be 1.5 times the national minimum. Any parking requested in excess should be designed using permeable paving or other pervious surfaces.

Principle No. 7



Parking codes should be revised to lower parking requirements where enforceable shared parking arrangements are made or where mass transit is available.

- Provide government policies and procedures to encourage shared parking.

Principle No. 8



Reduce the overall imperviousness associated with large scale parking lots by providing compact car spaces, minimizing stall dimensions based on use (i.e. compact, regular and large car spaces), promoting efficient parking lanes, and using pervious materials in the spillover parking areas where possible.

- Reduce existing off-street loading space requirements to reflect actual need and reduce impervious cover.

Principle No. 9



Provide meaningful incentives to encourage structured and shared parking to make it more economically viable.

- One incentive to encourage the use of structured and shared parking is to provide parking credits by relaxing parking maximums if provided in the form of a garage.

Principle No. 10



Require stormwater treatment for parking lot runoff. Encourage the use of bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic areas.

Principle No. 11



Advocate *cluster development* that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide passive community recreational space, and promote watershed protection.

- Make cluster developments a “by right” form of development rather than a special exception process.
- Allow common drainfields in cluster areas where maintenance and homeowner roles are clearly defined and bonded or local jurisdiction accepts maintenance responsibility.
- Allow the use of irregular lots.
- Administrative review by the planning staff should be conducted to ensure natural area conservation.

Principle No. 12



Reduce required side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to the minimum needed to accommodate utilities and any required off-street parking.

- Setbacks should be determined in concert with utilities to minimize front setbacks.

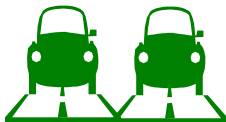
Principle No. 13



Promote more flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrian areas (in lieu of sidewalks along streets).

- Allow the waiving of sidewalk requirements when alternative transportation networks are provided (i.e. walkways, trails through common green space, etc.).
- Ensure that the Americans with Disabilities Act (ADA) requirements are met.

Principle No. 14



Reduce overall lot imperviousness by promoting alternative driveway surfaces.

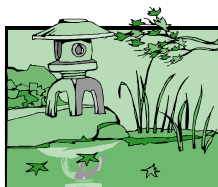
Principle No. 15



Clearly specify how community *open space* will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.

- Require signs that designate open space areas.

Principle No. 16



Where practical, direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the stormwater conveyance system. Provide infiltration and filtration in a manner that ensures adequate drainage while utilizing landscapes to diffuse, filter and infiltrate stormwater runoff.

- Capture and reuse runoff if possible (e.g. rain barrels for downspouts).

Principle No. 17



Create a variable width, naturally vegetated buffer system encompassing critical environmental features along all intermittent and perennial streams. Require buffer widths commensurate with stream size and aquatic function and value.

- * Require permanent signs on development sites indicating buffer lines and boundaries. Require all buffers to be clearly identified on all plans.
- * Develop *resource setbacks* to protect identified natural resources from potential clearing and grading.
- * Require the use of visible fencing to protect buffers, instituting procedures to enact sanctions for violators.
- * Add buffers to homeowner plats or set buffers aside into conservation easements.
- * Educate contractors, engineers, consultants, and homeowners about the benefits of buffers, wetlands and other natural features and the potential impacts over time.
- * Develop measures to minimize the impacts associated with working on or near steep slopes.
- * Require evidence of wetland permitting before site plans are approved.
- * Encourage the pursuit of field mapping to reflect true existing conditions.
- * Each locale should specify and define criteria for identification and preservation of its significant environmental features.

Principle No. 18



The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.

- Existing resources and funds should be utilized to promote and enhance buffer restoration and preservation programs.
- Stream assessments should be encouraged to identify areas in need of restoration.

Principle No. 19



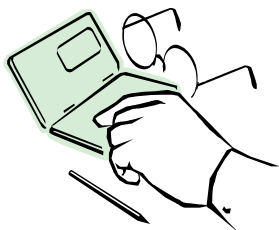
Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community *open space* should be managed as protected green space in a consolidated manner and placed to promote contiguous riparian corridors.

Principle No. 20



Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community *open space*, street rights-of-way, parking lot islands, and other landscaped areas to promote natural vegetation.

Principle No. 21



Incentives and flexibility in the form of *density compensation*, *buffer averaging*, property tax reduction, *stormwater credits*, and by-right open space development should be encouraged to promote conservation of stream buffers, forests, meadows, and other areas of environmental value. In addition, off-site mitigation consistent with locally adopted watershed plans should be encouraged.

- Provide incentives for conserving non-regulated land and reforesting other areas.

Principle No. 22



New stormwater outfalls should not discharge untreated or unmanaged stormwater into jurisdictional wetlands, sole-source aquifers, or other water bodies.

Definitions

Buffer averaging: A technique for delineating the width of a buffer such that the buffer boundary can be narrower at some points along the stream and wider at others so that its average width meets the minimum criteria.

Cluster development: The use of designs which incorporate open areas into a development site without changing the allowable lot yield of a particular project. Cluster development promotes the layout of houses and other buildings into smaller lots, utilizing a smaller portion of the developable site.

Density compensation: Granting a credit for higher density elsewhere on a site to compensate for developable land lost due to environmental considerations.

Natural areas: These are pervious land areas that consist primarily of native vegetation and allow the percolation of stormwater into the ground.

Open space: A portion of a development site that is permanently set aside for public or private use and will not be developed. The space may be used for passive or active recreation, or may be reserved to protect or buffer natural areas.

Resource setback: A designated distance away from a special natural area (forest, stream, wetland, springs, seeps or other) set to prohibit uses within a certain range; usually set to protect the area from potential contamination or development.

Stormwater credits: A form of incentive for developers to promote conservation of natural and open space areas. Developers are allowed reductions in stormwater management requirements when they use techniques to reduce stormwater runoff at the site.



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- Ray Utz: Residential Streets and Parking Lots
- Erik Nelson: Conservation of Natural Areas

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About the Center for Watershed Protection

Founded in 1992, the Center for Watershed Protection works with local, state, and federal governmental agencies, environmental consulting firms, watershed organizations, and the general public to provide objective and scientifically sound information on effective techniques to protect and restore urban watersheds. The Center also acts as a technical resource for local and state governments around the country to develop more effective urban stormwater and watershed protection programs.

The Center for Watershed Protection is a non-membership, nonprofit 501(c)3 corporation. Since its inception, the Center has provided technical assistance to local governments in thirty states and the District of Columbia.

Oversight of the Center is provided by a Board of Directors and a national watershed advisory council, whose members are leaders in the watershed protection arena. Our mission is to do the following:

- Understand and define the relationship between urban growth and the degradation of watersheds
- Link specific land uses to water quality
- Educate public and private sectors about the need for greater protection of our waters through watershed protection
- Advise communities on the most reliable and effective ways to protect and restore watersheds over the entire development cycle
- Bring together new approaches to watershed management by promoting technology-transfer and professional dialog

The Center does not participate in lobbying activities or political advocacy. For more information on the Center for Watershed Protection, visit our website at www.cwp.org.



About the Friends of the Rappahannock

Founded in 1985, Friends of the Rappahannock is a conservation organization dedicated to promoting the protection of the natural, scenic and historical values of the Rappahannock River and its tributaries. Headquartered at the river's fall line in Fredericksburg, Virginia, FOR has over 1,000 members and a satellite office for riparian buffer programs in the town of Rapidan.

FOR's main programs are in the areas of advocacy, restoration, and community education. FOR seeks to use the tools of constructive dialogue and consensus building to foster broad-based community strategies to protect the values of the river for this and future generations. The group is governed by an elected Executive Committee, with a full time executive director and a part time professional staff of five.

For more information on FOR programs, visit their website at for.communitypoint.org.



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Additional Resources

Better Site Design: A Handbook for Changing Development Rules in Your Community: Covering everything from basic engineering principles to actual vs. perceived barriers to implementing better site designs, this comprehensive handbook outlines 22 guidelines for better developments and provides detailed rationale for each principle. *Better Site Design* also examines current practices in local communities, details the economic and environmental benefits of better site designs, and presents case studies from across the country. **Available from the Center for Watershed Protection at www.cwp.org.**

Consensus Agreement on Model Development Principles to Protect our Streams, Lakes, and Wetlands: This companion to *Better Site Design* outlines the series of 22 nationally endorsed principles developed by the Site Planning Roundtable, a national cross-section of diverse planning, environmental, home builder, fire, safety, public works, and local government personnel, and details basic rationale for their implementation. **Available from the Center for Watershed Protection at www.cwp.org.**

The Do-It-Yourself Local Better Site Planning Roundtable Kit: Designed for watershed planners, government officials, and citizen activists alike, this kit contains all the information and materials you need to get a local better site planning roundtable started in your community. Based on the Center for Watershed Protection's award-winning local roundtable in Frederick County, MD, the kit contains two ready-to-show slideshow presentations on CD-ROM, materials and instructions to guide workshop participants through a site planning exercise, documentation of the benefits of better site design, and electronic copies of all of the agendas, invitation letters, and other correspondence you'll need to get the roundtable process started. **Available from the Center for Watershed Protection at www.cwp.org.**

Growing Greener in Your Rappahannock River Watershed: Contains case studies, design/maintenance and cost information on real world development projects where developers utilized innovative stormwater management and site design practices. Prepared by the Friends of the Rappahannock. **Available from the Friends of the Rappahannock at for.communitypoint.org.**

Rappahannock Roundtable Project Cookbook: Prepared by the Friends of the Rappahannock, this is a compilation of lessons learned and logistical advice for communities wishing to undertake a Better Site Design consensus process in their community. **Available from the Friends of the Rappahannock at for.communitypoint.org.**

A Survey of Residential Nutrient Behavior in the Chesapeake Bay: This publication provides an in-depth examination of the effectiveness of nutrient education programs in the Chesapeake Bay region. Focusing on programs geared towards lawn products, septic systems and pet waste, it neatly summarizes resident attitudes towards these behaviors, analyzes the effectiveness of education programs designed to change resident attitudes, and recommends ways to increase the potency of future nutrient education programs. A must-read for watershed managers and community leaders interested in instituting effective outreach programs in their own communities. **Available from the Center for Watershed Protection at www.cwp.org.**