

Technical Assistance for Sound Land Use Tools

Report for

Robert E. Lee Soil & Water
Conservation District

Amherst County
Virginia



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“[strive for] development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

United Nations World Commission on Environmental Development

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GENERAL APPROACHES TO OPEN SPACE AND NATURAL RESOURCE PROTECTION

During the review of land use and natural resource protection programs across the Commonwealth, it became apparent that there are two fundamental approaches for local governments to adopt these types of programs. The traditional approach for government is to adopt **regulatory programs** that require that certain standards be met for land use, stormwater management, or riparian areas. Examples of this approach include zoning and subdivision codes, stormwater ordinances, and riparian protection modeled on the Chesapeake Bay Preservation Act.

An alternative approach that is becoming more widespread is for a locality to provide **incentives** to promote the types of actions or land uses that it deems desirable. These incentives may be monetary or process-oriented, such as streamlining the development review process. Examples of this approach include purchase of development rights, incentives for landowners to donate riparian easements, incentives to promote cluster subdivisions, and incentives to allow low-impact development as an alternative stormwater strategy.

Many local programs consist of a combination of regulatory and incentive programs. The distinction between the two approaches is demonstrated in each section of this document. This provides a framework for understanding that there are multiple ways to accomplish the same objective. Amherst County, in its Comprehensive Plan update, can choose between different types of programs based on their merits, the goals they accomplish, and the local conditions that will influence how the programs are adopted.

OPEN SPACE PROTECTION

Regulatory Approach -- Zoning

There are several ways to try to protect open space through zoning regulations. The straightforward approach is to restrict or reduce development potential. An example of this approach would be increasing the minimum lot size. This method usually arouses a good dose of public opposition (property rights are being diminished). In Fluvanna and Nelson counties, recent attempts to adopt a “Rural” zoning district have resulted in packed public hearings and an organized opposition. A Board of Supervisors must be very resolute to adopt such a program.

Given this, such measures as increasing the minimum lot size in a rural zone may decrease the overall development potential, but, some would argue, would also lead to more “sprawl” and large-lot subdivisions spreading across the countryside. An alternative approach, which focuses more on the protection of open space, is to promote or require cluster subdivisions. In a cluster design, the allowable number of lots are concentrated in one part of the property (hopefully, the part that is the most suitable for the development) while the balance is preserved as open space. The driving force for the open space parcel may be continued agricultural and forestry use, water resource protection, habitat protection, active or passive recreation, and/or other open space objectives.

Some have argued, however, that cluster subdivision standards (possibly utilizing centralized water and/or sewer utilities) would provide an incentive to subdivide and develop property that may not otherwise be developed (or at least not as quickly). Also, one could argue that the cluster portion of such projects has a distinctly “suburban” appearance compared to more spread-out rural lots.

Many localities in Virginia provide for some type of clustering, including Culpeper, Fauquier, Clark, and Albemarle counties. This paper will focus on case studies from Fluvanna and Nelson counties.

Another approach that has been used in Virginia is “time-release of development rights.” With this approach, the zoning or subdivision ordinance allows only a certain number of lots to be created from a given parcel in a set period of time. The effect of this type of measure is to control the rate of subdivision activity, but not the ultimate number of development rights. It may also lead to subdivisions with fewer lots than would otherwise occur (although nothing would prevent larger subdivisions being built in phases). Counties in Virginia that use this approach to some extent include Madison, Orange, Rockingham, and Augusta. It is not known whether the time-release approach has ever been challenged legally in Virginia. The paper outlines this type of program from Madison County.

Fluvanna County

Rural Cluster Development

Fluvanna County has recent experience with two of the approaches noted above – changing zoning designations and providing for cluster subdivisions. Due to a controversial start, the zoning district initiative has been put on hold. Alternately, the “Rural Cluster Development” provision in the Zoning Ordinance was adopted in 2004. The general sentiment among County decision-makers at present is to wait and see how the cluster provision is working before revisiting the zoning district idea.

The specific characteristics of the cluster standards are as follows:

- Any “major” subdivision (6 or more lots) must be a cluster design.
- The County has set a maximum lot size of 1 acre for cluster lots.
- The open space parcel must be no less than 75% of the property in the rural zone (50% open space in the R-1 zone).
- The applicant must first do a “yield plan” to determine how many lots could be placed on the property using a conventional design, once nondevelopable land is taken out (flood plains, steep slopes, wetlands, etc.). Then this number of “allowable” lots is applied to the cluster design.
- Centralized utilities are an acceptable approach to water and sewer, especially given the 1-acre lot size. Individual or central utilities can also be placed on the open space parcel. For instance, one design had individual wells on each cluster lot with the individual drainfields on the open space parcel (with necessary easements provided). If centralized utilities are used, the County would prefer that they be operated by a professional operator, but they acknowledge that some may be operated by homeowners’ associations.
- With small lot sizes, it is important for the Health Department to be involved early in the process. Sometimes, lot configurations may change based on soil suitability for septic fields.

The program is still new in the County, and there are not a lot of approved projects at this point. County staff indicates that developers had quite a few concerns early on, but have become more comfortable with the requirements. Multiple stakeholders were involved throughout the process of developing the cluster standards.

The County is also working on an Open Space Plan, which the staff considers to be an important companion to the cluster ordinance. Ultimately, they hope to tie the Open Space Plan to subdivision review. The plan can be instrumental in identifying which open space resources may be most important to protect in various parts of the County, and therefore should be incorporated into the open space parcels of particular subdivisions.

One comment that County staff made was that it may be more appropriate to have a range of lot sizes for the cluster lots rather than an absolute maximum (1 acre in this case). A

range of 1 to 3 acres may allow for more flexibility with utilities and other design issues (Note: Nelson County's latest proposed Zoning Ordinance has a range of 1.5 acre to 5 acres for cluster lots).

Fluvanna's experience points to the difficulty in trying to change development rights through zoning districts as well as to other approaches, such as cluster subdivisions, that may be less controversial and more targeted to specific open space objectives.

Fluvanna County Contact: Steven Biel, (434) 591-1910, sbiel@co.fluvanna.va.us

Materials Included: (see appendix 1)

- Zoning Ordinance Section 22-4-10, Rural Cluster Development

Nelson County

Proposed Rural Farming District

Nelson County has some similar experiences to Fluvanna in terms of proposing a new Zoning Ordinance that met with vehement local support *and* opposition. The latest proposal (February 9, 2005) is undergoing review by the Board of Supervisors.

The Nelson County "Rural & Farming District" contains limits on the number of divisions and minimum lot sizes for parcels of record. For example, a "major subdivision" can have a maximum of 5 lots with minimum 10-acre lots sizes, with the residue dividable into 20 acre lots. These limitations have perhaps been the most controversial aspects of the proposed ordinance.

However, the Nelson proposal also contains some interesting cluster concepts ("Rural Residential Cluster Subdivisions"). Some features of the cluster subdivisions include:

- A range of lot sizes for cluster lots – a minimum of 1.5 acres and a maximum of 5 acres, with a maximum of 12 cluster lots per subdivision.
- As with Fluvanna, allowance for private well and septic for the cluster lots to be located on the "rural open space parcel" with necessary easement. A 100% reserve drainfield is required for cluster lots.
- The open space parcel must be at least twice as large as the sum of all cluster lots (2:1 ratio). The open space parcel must also contain at least 50% of its land outside of flood plains, stream valleys, wetlands, water features, steep slopes, and utility easements. Presumably, the intention of this provision is that the open space parcel be used for "bona fide" rural uses, and not just the undevelopable parts of the property.
- A provision for the Planning Commission to allow an increase in the number of cluster lots by Special Use Permit if several "creative" approaches are used (for instance, creative design, water resources protection, preservation of mountain areas, enhanced used of erosion control and BMPs, etc.) [Chapter 3.A, Section I(5)]

The fate of Nelson’s proposed Zoning Ordinance is undetermined. Whatever the outcome, the cluster provisions bear some attention for the thought they put into cluster subdivision design.

Nelson County Contact: Fred Boger, (434) 263-7090

Materials Included: (see appendix 2)

- Proposed Zoning Ordinance, Chapter 3.A – Rural & Farming District, R-F

Madison County

Time Release of Development Rights

Madison was one of the first localities to adopt time release of development rights. The rule was originally adopted into the County’s subdivision ordinance in 1989 and allowed a maximum of 4 lots to be created in a 4-year time period. However, the County Board strengthened the provision in 2004, allowing 4 lots (including any residue lot created) in a 10-year period. These restrictions apply only to the Conservation and Agricultural zoning districts. The driving force of the County’s action is to protect its rural and agricultural land uses.

The Subdivision Ordinance also restricts to four the number of lots that can be served by a private road. Subdivisions that create more than 4 lots must be served by a public road.

Madison remains a primarily rural county, although it is bounded by counties that are seeing more rapid growth. There appears to be general support in the community for a growth management stance. At the public hearing to extend the four-lot creation period to 10 years, only 6 citizens spoke in opposition. However, one result of the Board’s action was that more landowners seem to be having subdivision plats approved under the current rules to hedge their bets on the rules becoming even more restrictive in the future. According to the County Zoning Administrator, there are many older landowners that are concerned about their “nest eggs” and ability to have economic options for their heirs. It seems that many of these new divisions are created on paper only in order to become vested – most landowners are not actually selling the new lots that are created at this point.

The main result of Madison’s actions is that, of the subdivisions that are approved, most are small – four lots or less. Other counties have had less success with the time-release approach. For instance, Augusta County allows 1 lot each year. Landowners can easily wait long enough to create larger subdivisions.

Madison County Contact: Betty Grayson, Zoning Administrator, (540) 948-6102

Materials Included: (see appendix 3)

- Excerpt from Madison County Subdivision Ordinance

Incentive Approach

The previous section dealt with regulatory approaches to control growth and provide open space protection. While regulatory programs are one tool in the toolkit, there are many other voluntary or incentive programs that encourage landowners to keep land in agricultural, forestry, and/or open space uses.

The attached report from MarshWitt Associates (contact – Terrance Harrington, Director of Planning Services) is an excellent overview of these program options in Virginia. One particular type of program – purchase of development rights – is highlighted here.

Albemarle County

Acquisition of Conservation Easements (ACE) Program

One of the main considerations with regulatory growth management programs is the extent to which they compromise or threaten landowners' property rights. This is a lively topic unto itself, and one with many legal ramifications. Needless to say, communities have been searching for methods to protect open space while respecting property rights. Various programs provide economic incentives through tax credits, property tax relief, or outright payment for development rights (see the MarshWitt paper for more detail on the various program options).

Albemarle County adopted its Acquisition of Conservation Easements (ACE) program in 2000. The program provides funding for the County to purchase development rights from qualifying landowners. The program was adopted through an ordinance that provides structure for how properties will be identified, rated, prioritized, appraised, and purchased. For instance, the ordinance establishes ranking criteria based on open space resources, development threat, natural, cultural, and scenic resources, and the availability of leveraging funds from other sources. The ordinance also provides incentives for low or moderate income landowners to receive a larger percentage of a property's appraised value.

Initially, the program was funded at \$1 million annually. Funding is received from a dedicated transient lodging tax (\$350,000 annually), with the balance made up by the General Fund. Politics seems to enter into each new funding cycle, and it has been a struggle to maintain the \$1 million annual allocation. However, the program enjoys widespread community support from organizations and individuals.

In its first three years, the ACE program has purchased the development rights from 15 properties comprising approximately 3,700 acres. 230 development rights have been retired.

The first, obvious observation about the relevance of this type of program to other Virginia localities is funding. Without State support, most localities may not be able to fund this type of program at a level that would have an appreciable impact on the overall level of development.

Albemarle County Contact: Ches Goodall, ACE Coordinator, (434) 296-5832, X 3084,
cgoodall@albemarle.org

Materials Included: (see appendix 4)

- Highlights of the Albemarle County ACE Program
- ACE Web Site materials
- ACE ordinance

Land Use Planning to Protect Rural Character

In addition to protecting open space by managing new development, preserving the rural character of Amherst County involves managing the growth within cities and towns. Many communities around Virginia have used ordinances and zoning as well as volunteer efforts to maintain the character of their urban areas.

One thing that helps maintain rural character is a clear boundary between urban and rural areas. Centuries ago, “greenbelts” were created in England to separate the cities from the countryside and this same concept is being used today. Greenbelts help draw the line on sprawl and encourage smart growth inside that line. Some greenbelts feature walking, equestrian and bike trails, as well as ponds and picnic areas.

Boulder, Colorado is surrounded by a 31000-acre greenbelt that includes 130 miles of hiking trails. Acquisition of the open land was funded by a voter approved sales tax increase of one third of a cent.

San Francisco also has a broad band of open lands that surround the cities and towns of the nine county San Francisco Bay Area. The San Francisco greenbelt is one of the largest and most productive systems of open space in any U.S. metropolitan region.

Maryland has a Rural Historic Villages Program, which has created greenbelts around a number of small towns such as Sharpsburg, Burkitsville and Claiborne. The land that makes up these greenbelts was obtained by purchasing development rights on surrounding farmland.

To keep the small town charm, urban areas can be revitalized when communities use urban space efficiently and strengthen the community core. Some examples follow.

- Encourage new businesses to refurbish existing buildings rather than build new ones



Old house to New Cafe

- Insist that chain stores modify their standard buildings to blend in with the local architecture



Keep government offices downtown



- Encourage interest in the towns by arranging local fairs, festivals and farmers markets



- Limit the size and design of road signs

From this:



To this:



RIPARIAN PROTECTION

Protecting the critical riparian zone adjacent to streams, reservoirs, and lakes is an important subset of the overall objective of open space protection. Riparian zones provide multiple benefits for water quality, habitat, and recreation.

As with open space programs, there are several approaches to protecting riparian areas – regulatory approaches, performance standards, and incentive programs. Several fairly recent riparian easement programs in Virginia, supported by soil and water districts, are particularly relevant to the topic of riparian protection.

Regulatory Approach

Chesapeake Bay Preservation Act and Regulations

In Virginia, the predominant regulatory method for riparian protection is the Chesapeake Bay Preservation Act and Regulations (Section 10.1-2103 & 10.1-2107 of the Code of Virginia; 9 VAC 10-20-10 et seq.). The Act was adopted by the General Assembly in 1988 and the Regulations were promulgated in 1990 and amended in 2001. These regulations, adopted as Virginia's response to the Chesapeake Bay Program, are mandatory for all localities in Virginia's "Tidewater" region (generally east of Interstate 95) and voluntary for the rest of the state.

Several "non-Tidewater" localities have voluntarily adopted parts of the regulations, including Albemarle and Clarke counties. It is not necessary for a non-Tidewater locality to adopt the whole program; the locality may choose which sections are most appropriate to local needs. For instance, Albemarle County adopted only the Resource Protection Area (stream buffer) provisions.

The regulations are detailed and fairly rigorous. The regulations specify general performance criteria, and also specific performance criteria for Resource Protection Areas (RPAs). RPAs are designated as:

At a minimum, Resource Protection Areas shall consist of lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of state waters. In their natural condition, these lands provide for the removal, reduction or assimilation of sediments, nutrients and potentially harmful or toxic substances in runoff entering the bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. (9VAC 10-20-80.A).

In general, RPAs include perennial streams, associated wetlands, and 100 foot buffer on either side of the stream.

The general performance standards of the Regulations address:

- Preservation of indigenous vegetation.
- A plan of development and erosion control plan for all developments exceeding 2,500 square feet of disturbance.
- Pump-out or management of septic systems.
- Reserve drainfields or alternative drainfield technologies.
- Best Management Practices for stormwater.
- Soil and water quality conservation assessments for agricultural activities, conducted by the local soil & water district.
- Forestry best management practices.

The performance standards for RPAs are specific to the 100 foot buffer areas. These standards address:

- Restrictions on redevelopment.
- Permitted encroachments into the buffer, including grandfathering for older lots.
- Buffer modifications for site lines, vistas, paths, and woodlot management.
- Agricultural buffer reductions using best management practices.
- Water quality impact assessments for authorized encroachments.
- Exemptions and exceptions for existing or proposed uses in the buffer area.

Several advantages of the program are, a tremendous amount of regulatory guidance at the State level, a track record of implementation by localities, and the legal underpinnings of a local program that is firmly based on State enabling codes and regulations. Other factors for localities to consider are that administration and enforcement of the program can be a large burden on staff and resources, and that the program is a heavily regulatory approach, which can be difficult to sell in some (if not most) political climates around the State.

Virginia Chesapeake Bay Program Contact: Martha Little, Manager, Environmental Planning Section, Chesapeake Bay Local Assistance, Department of Conservation & Recreation, (804) 371-7504, martha.little@dcv.virginia.gov

Materials Included: (see appendix 5)

- Excerpt, Chesapeake Bay Preservation Area Designation and Management Regulations

Incentive Approach

As with open space protection, riparian protection can be accomplished through non-regulatory approaches. Two soil and water districts in Virginia have established riparian easement programs that are noteworthy for the lessons they have learned. Each is highlighted below.

Headwaters Soil and Water Conservation District

Riparian Easement Program

The Headwaters SWCD has had a riparian easement program since the late 1990's. Currently, the District holds 23 easements. Most are co-held with the non-profit Valley Conservation Council (VCC). Several include open space protection, but most are strictly riparian easements. Currently, the District Board is not accepting any new easements due to legal and compliance issues that have arisen. They have decided to hold off on accepting new easements until enforcement issues with the Commonwealth Attorney's Office can be ironed out (see below for more information on these issues).

Originally, the riparian easement program was established in partnership with VCC with grant funding through the National Fish & Wildlife Foundation grant program. Grant funding allowed for the initial purchase of the easements. However, the District budget is used for administrative costs (inspections, follow-up).

Some of the issues that have arisen with the existing easements include:

- When property is sold, subsequent owners are unaware and/or dispassionate about the easement and its intent. This can be particularly acute if land is subdivided, and the District then has to deal with multiple owners.
- Some easements are small. With smaller parcels, it is difficult for landowners to "leave them alone." Commonly, these areas are disturbed or cleared for picnic areas or a park-like setting. In this regard, District staff recommends a minimum easement size; for instance, at least 500 yards with a 35' wide easement along a stream.
- Some easement documents do not specify actual management practices in enough detail. Some of this detail includes: livestock exclusion, mowing, road building, septic fields, french drains to drain wetlands, tree species allowed for restoration (e.g., are white pines allowed?), and even wastewater treatment plant outfalls.
- The District indicates that they have not had good success with legal enforcement. In general, Commonwealth Attorneys' offices don't have time to deal with small easement disputes, and in some cases are reluctant to press suit against citizens. In lieu of actual enforcement, the District must send letters and use other persuasion tactics. In one case, a troop of Girl Scouts built a fence to exclude livestock from the stream when the landowner didn't follow through. In general, the District avoids being confrontational with landowners, and looks for "carrots" to achieve compliance. However, this can take a lot of staff time. Also, they indicate that it is difficult to find funds to press lawsuits if that course of action is ultimately needed.

One District employee is charged with inspecting the easements on an annual basis. In many cases, a VCC representative also attends the inspections. In general, routine easement administration takes about 70 hours per year, not counting follow-up for compliance issues. The total may be closer to 100 hours per year.

The Headwaters SWCD experience provides some solid on-the-ground lessons about setting up and administering a riparian easement program. There is still a lot of enthusiasm for the program, and general support for the mission of the program. However, their experience also demonstrates the resources needed to successfully implement such a program.

Headwater SWCD Program Contact: Sandy Greene, (540) 248-4328, extension 3

Thomas Jefferson Water Protection Foundation

Riparian Easement Program

The Thomas Jefferson Soil & Water Conservation District (TJSWCD) took a slightly different approach than the Headwaters District to setting up a riparian easement program. Under the leadership of one of the District Directors, TJSWCD established the easement program under a separate foundation, known as the Thomas Jefferson Water Protection Foundation. There were three primary reasons for establishing a separate foundation: (1) finances could be kept separate, (2) the Foundation could be governed by a Board that is interested in easements, and (3) the Foundation has 501c(3) tax status, making it easier to raise grant funds.

The Foundation was established in 2000, after about one year of groundwork (e.g., obtaining the non-profit tax status, assembling the Board of Directors). The Foundation's focus is on water quality protection versus strictly open space protection. In establishing the program, the District noted a gap in existing programs, such as the Virginia Outdoors Foundation, which focus on larger open space easements. The District believed that it could fill a niche with smaller easements focused on healthy riparian corridors.

To date, 17 easements are in the works, with 9 complete. The 9 easements comprise about 130 acres. In some cases, the easements are co-held with VOF or a County government. Easements are held in the counties of Albemarle, Fluvanna, Louisa, and Nelson.

One interesting feature of the easement program to date is that most of the easement donations are driven by development activity. For instance, one easement was required through an Army Corps of Engineers permit. Other easements, especially in Albemarle and Fluvanna counties, have been donated as an alternative stormwater compliance strategy. In these cases, County officials determined that permanently protecting the riparian areas would be more beneficial than building structural stormwater measures,

such as basins. These determinations were made based on the conditions of the sites, and some also involved riparian restoration.

Another interesting aspect of the program is that the Foundation has a fee schedule for those donating easements. The fee is assessed based on rates for easement set-up, monitoring and inspections, and administration. The fee is a one-time assessment to cover the Foundation's costs for a 50-year time-frame. In some cases, grants have helped to subsidize a landowner's fee, and the Foundation Board has the discretion to grant a credit for easements that are not associated with development activity.

To date, the primary issues identified by the District staff include:

- While development-related easements have come in, it has been more difficult to get voluntary easements. The staff indicates that interest is quite high if the process is free to the landowner. However, the associated costs can be a deterrent. As stated, the program has sought creative ways to defray the costs for voluntary easements, but this type of easement still lags behind the development-related projects.
- On development-related issues, program staff have had to work closely with plan reviewers at the counties. In some cases, there are “chicken and egg” procedural issues with the timing of County plan approvals and the administrative process for approving easements.
- Communication is always key. Program staff must continuously motivate the Foundation Board members to promote the program in the various localities. Staff must also keep in touch with county plan reviewers to make sure they are aware of the “easement alternative.”

In general, the Thomas Jefferson Water Protection Foundation has done an excellent job of building a solid institutional and financial structure to administer the program. Several innovative features include setting up a separate foundation, instituting an easement fee to cover long-term commitments, and using easements as an alternative compliance tool for erosion control and stormwater requirements administered by the counties.

Thomas Jefferson Water Protection Foundation Contact: Alyson Sappington, (434) 975-0224, Alyson.Sappington@vaswcd.org

Materials Included: (see appendix 6)

- Thomas Jefferson Soil & Water Conservation District, Easement Program Brochure
- TJSWCD Easement Fee Estimate Worksheet
- Fact Sheet: Thomas Jefferson Soil & Water Conservation District Easement Program

STORMWATER MANAGEMENT & LOW-IMPACT DEVELOPMENT (LID)

Low-Impact Development (LID) is an emerging technique in stormwater management and development design to replicate pre-development hydrologic conditions. LID was pioneered in Prince George's County, Maryland, and is spreading across the country. Some basic concepts of LID design include:

- Minimizing site disturbance and preserving/conserving open space.
- Reducing impervious cover.
- Promoting infiltration, similar to the pre-developed site.
- Replicating the pre-development flow patterns and times.
- Using "Integrated Management Practices" (IMPs) across the landscape, usually as small-scale, decentralized practices.
- Incorporating pollution prevention through design and outreach.

In Virginia, communities that have incorporated LID in some fashion have used two basic approaches: (1) requiring that LID be the preferred approach for stormwater management, and (2) encouraging the use of LID practices through incentives in the plan review process.

Requiring LID for Stormwater Management

Town of Warsaw

Low-Impact Development Stormwater Management Policy

The Town of Warsaw is in Virginia's Northern Neck in Richmond County. Due to this location, the Town and County are already subject to the Chesapeake Bay Preservation Act. However, due to Town leadership, and a partnership with the Friends of the Rappahannock, Inc. (a non-profit river conservation group) and the Low-Impact Development Center, the Town became the first municipality in the state to actually require that LID be the preferred method for stormwater management. This was enacted as a Town policy around 2001.

The policy is quite simple, and contains the following provisions:

- Development plans shall use Low-Impact Development for site design and stormwater management. If LID cannot be used, then "hybrid" designs that combine LID and conventional stormwater measures can be considered through an exception process.
- The post-development volume of runoff for the 2-year, 24-hour storm shall match the pre-development level.
- The post-development peak runoff rate for the same storm event shall meet the pre-development rate.

- The post-development Time of Concentration (TOC) shall be no shorter than the pre-development TOC.
- Detention shall not be used for peak runoff rate control unless other measures (e.g., retention) are not feasible on the site.

These stormwater criteria represent modifications and enhancements to the standards outlined in State Code and in common use across the country (for instance, it has been usual to this point to regulate the volume of runoff rather than just the peak rate). To help implement the policy, the Town and its partners also developed a “Site Design Checklist and LID Calculations Worksheet.” All development applications must fill out these documents.

Since the policy is still quite new and the Town is very small, there is not a lot on the ground in terms of LID implementation. However, several private, Town, and State projects are in process of incorporating LID designs. Some of these projects include the local community college and a Town parking lot.

In general, the terrain is flat and the soils are excellent for infiltration, so LID may be an particularly good match for the Town’s stormwater. However, County staff indicates that LID may be more difficult to implement on redevelopment sites where the property may be partially disturbed by past activities. In these cases, the soils may have been disturbed, and LID designs must work with existing site constraints.

Richmond County Contact: Christopher Jett, Richmond County Director of Planning, (804) 333-3415, cjett@co.richmond.va.us.

Materials Included: (see appendix 7)

- Town of Warsaw Low-Impact Development Stormwater Management Policy
- Site Design Checklist & LID Calculations Worksheet (5/9/2003)
- Low-Impact Development Strategies for Rural Communities, John Tippet (Friends of the Rappahannock, Inc.) and Neil Weinstein (Low-Impact Development Center).

Stafford County

Low-Impact Development Ordinance

Stafford County shares a geographic fact with the Town of Warsaw – both are in the Rappahannock watershed, and both have received encouragement and support from the Friends of the Rappahannock to develop LID programs.

Stafford came by its LID program in an incremental fashion. In 2003, the County amended its stormwater ordinance to allow LID as an option. Later that same year, the Zoning and Subdivision ordinances were amended to create LID incentives, such as providing waivers for curb and gutter and sidewalks to allow less impervious cover. Most recently, the County again amended the stormwater code to require that LID be

used on stormwater concept plans “to the maximum extent practicable,” and to require bioretention and/or filtration in all proposed parking lots.

An interesting comment made about the Stafford effort is that they mandated that LID be attempted on all development sites without first hammering out the details of what this actually means and how to confirm that it is being done in the plan review process. In order to provide more clarity, the County has assembled a Low-Impact Development Workgroup, with three subgroups (Technical, Regulatory Process, and Construction/Maintenance/VDOT issues). Among the issues the workgroup is grappling with are:

- How can “maximum extent practicable” be defined and verified for each plan?
- How can LID design meet MS-19 (channel adequacy) criteria in the County code?
- What is the role of “hybrid” designs that incorporate both LID and conventional stormwater measures?
- How much maintenance will LID measures require and who will perform it? How can maintenance responsibility be legally established and enforced?
- Should drainage easements apply to LID measures on individual lots? If so, how would they be recorded?
- Can the County work with VDOT to get management practices in the road right-of-way?
- What type of training is needed for inspectors and contractors?
- What type of outreach is needed for property owners, many of whom will have LID measures on or near their lots? Who will be responsible for educating property owners – the County or the developers?

While Stafford is at the vanguard of LID in Virginia with regard to ordinance and policy development, the program is still too new to have many actual examples on the ground. The County has set up some demonstration sites at its own facilities and has also held training workshops for design consultants and developers. County staff acknowledges that there is much work still to do.

All of the issues listed above with regard to LID implementation are critical for Stafford and any other locality that is interested in LID. Stafford will continue to provide interesting lessons as they proceed with program implementation.

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Materials Included: (see appendix 8)

- Low-Impact Development Workgroup, Technical Issues
- Amendments to Subdivision & Zoning ordinances to allow LID waivers
- Amendments to Stormwater Ordinance

Providing Incentives in Stormwater Programs for LID

While the Town of Warsaw and Stafford County have taken the plunge and structured their codes to require an LID approach in most cases, other localities have taken an “incentive” approach whereby LID may be used (or substituted) for structural stormwater practices as long as certain standards are met. While this approach will not lead to LID being adopted on every site, it can provide local officials, developers, and design consultants with an alternative for certain sites where LID is most appropriate. The three counties addressed here that use some form of this approach are James City, Albemarle, and Nelson.

James City and Albemarle counties use a point or credit system to provide an incentive for sites to adopt LID practices. This type of system is most appropriate where a highly analytical approach to ensure compliance for LID features (e.g., detailed hydrologic computations) and the attendant lengthened plan review process may act as a disincentive for LID implementation. These cases may include relatively simple projects, projects with relatively low impervious cover (such as a typical rural subdivision), redevelopment projects and/or cases where downstream drainage and flooding are not a concern.

James City County

BMP Point System & Special Stormwater Criteria

In James City County, compliance with non-point source pollution control requirements for Chesapeake Bay Preservation areas is based on use of a BMP point system. The point system was a unique tool developed for screening BMPs to ensure that development sites are adequately covered by preferred BMPs. The points assigned to each BMP are weighted by the proportion of the site served by the BMP. To achieve compliance, a stormwater management plan for a site must attain at least ten (10) BMP points using the standard County worksheet. Compliance may be achieved by a combination of structural or non-structural BMPs and/or treatment of offsite drainage areas. Preserving open space in conservation easements can help an applicant gain points towards the overall requirement. Higher point scores are available if the open space is positioned in a way that accepts and treats stormwater or is adjacent to a wetland, mature forest, or RPA.

More recently (December 2004), James City adopted “Special Stormwater Criteria” that apply to areas of the County deemed worthy of additional protection. These areas include watersheds covered by a watershed management plan and sites seeking waivers from the County’s Chesapeake Bay Preservation ordinance. The Special Stormwater Criteria are designed to provide stormwater and site design features, including LID, that go beyond traditional stormwater management. The criteria provide incentives for saving soils on a property that is especially conducive to infiltration (hydrologic soil groups A and B) and for adopting a wide range of LID technologies, including pervious parking, disconnecting impervious cover, bioretention, level spreaders, rainwater harvesting, rain gardens, green roofs, and increased buffer areas, among other practices.

The program is too new to see results on the ground. However, James City County has done a creative job of working within its existing codes and design guidance to build in alternative routes for compliance.

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Materials Included: (see appendix 9)

- BMP Point System for Evaluation Acceptable Water Quality BMPs and Preservation of Open Space
- Special Stormwater Criteria (SCC) in James City County

Albemarle County

Non-Structural Measures

Albemarle's Water Protection Ordinance, adopted in 1998, has requirements for both water quantity and quality control. Stormwater requirements can be addressed, in part or whole (depending on the site in question) with "non-structural measures." The ordinance defines these as including "minimization of impervious surfaces, stream buffer reforestation, providing additional stream buffer areas, wetland restoration, waste reuse and recycling, and development design that reduces the rate and volume of runoff" (Section 17-313).

In addition to this code language, the County Design Standards Manual reinforces the use of non-structural measures by assigning credits to various practices, including adding additional stream buffer area to the minimum requirement, revegetating existing buffers, and protecting buffers with permanent easements. Other non-structural measures allowed include using open space as stormwater treatment areas (if certain design parameters can be met), disconnecting impervious cover, and using individual lot practices, such as rain gardens. The County has also partnered with the Thomas Jefferson Soil & Water Conservation District to use the non-structural measure provision to get riparian easements on high value stream corridors (see the previous section on Riparian Protection – Thomas Jefferson Water Protection Foundation).

Typically, non-structural measures are used for rural-type development, such as rural subdivisions. From the County's perspective, it may be more advantageous for these sites to protect and preserve environmental features than to build stormwater basins that require perpetual maintenance. This approach also tends to be popular with developers because it is easy and economical to implement and reduced long-term maintenance liability. In many cases, non-structural measures (e.g., stream buffer restoration) are combined with several structural practices, such as biofilters, to ensure that any concentrated flows are handled. In these cases, the non-structural measures provide for partial compliance.

While the approach has been quite successful to get LID practices on the ground, one continuing challenge has been to develop a consistent approach to verifying compliance (for instance, how much buffer restoration is enough to be “equivalent” to a structural practice). Since each site has its own set of unique features and opportunities, the approach almost demands a site-by-site negotiated approach to compliance.

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Materials Included: (see appendix 10)

- Water Protection Ordinance excerpt, Section 17-313
- Design Standards Manual Excerpt from Chapter 5, BMP Selection Table

Nelson County

Design Guidelines and Development Standards

Nelson’s program is different from James City’s and Albemarle’s in that the County only requires water quantity control. The proposed zoning ordinance contains provisions intended to be consistent with Minimum Standard 19 of the Virginia Erosion and Sediment Control Regulations (4VAC50-30). MS-19 deals with the adequacy of outfall channels for new development, and often results in water quantity measures (basins) being used on development sites. MS-19 does not explicitly address water quality.

While Nelson County decided to take a measured approach to stormwater implementation, beginning with an MS-19 based ordinance rather than a full water quantity and quality ordinance, the County’s recently-adopted *Design Guidelines and Development Standards for Stormwater Management in Nelson County, Virginia*, provides incentives for both infiltration and water quality protection. Several of the goals of this effort included:

- Protect groundwater supplies by encouraging the use of infiltration facilities.
- Provide a program that is beyond the minimum required by law, yet does not require excessive restrictions for residents of Nelson County.
- Provide an incentive based program that encourages mitigation and minimization of runoff and associated pollutants through innovative practices, without requiring expensive controls.
- Ensure that the design standards will be measurable so that equivalency with State Laws and Regulations can be demonstrated
- While control of flooding is mandated by the state, improvement of runoff quality should be a secondary goal of the program
- Restrict the proliferation of unsightly dry and wet ponds.
- Stormwater ordinances will not apply to agriculture based enterprises.

(Excerpt: *Design Guidelines and Development Standards for Stormwater Management in Nelson County, Virginia*, page 3).

The manual encourages low-tech infiltration practices by providing incentives in the computation process and by providing design guidance. The manual also contains standards for grass swales, bioretention, porous pavement, and rooftop collection.

The County originally used grant funding for this effort. The grant was obtained by the Thomas Jefferson Soil & Water Conservation District from the Virginia Department of Conservation & Recreation. The manual was assembled with input from a Steering Committee. While the County's revised Zoning Ordinance has not yet been adopted as of the writing of this document, the stormwater standards are being adopted on a voluntary basis. To date, two or three projects have been designed and installed using the standards. In general, the standards are receiving a positive response.

This effort in Nelson County is a good demonstration of creative use of grant funds to jump start stormwater management in a predominantly rural county, partnering opportunities with the soil and water districts, and a measured approach, starting with the state-mandated MS-19 program with built-in incentives to meet local water quality objectives.

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Materials Included: (see appendix 11)

- Design Guidelines and Development Standards for Stormwater Management in Nelson County, Virginia, Revised August 2003.

The point, credit, and/or incentive system is a very flexible concept. A locality can adapt it to meet local needs and conditions, or to promote particular practices. One main caution to using this approach is that it leaves a lot of interpretation in the hands of the local plan reviewer, and may be viewed as more of a negotiated approach to compliance than more quantitative methods. The positive side is that it can be simple for both plan preparers and reviewers and can lead to designs that more fully incorporate LID and encourage use of natural open space. The locality should strive for review procedures that are equitable while allowing for a certain amount of case-by-case interpretation.

EROSION & SEDIMENT CONTROL

Erosion and sediment control is a state program with required local implementation (Erosion and Sediment Control Law, Title 10.1, Chapter 5, Article 4; Erosion and Sediment Control Regulations, VR 625-02-00). The basic program is spelled out in the State Code and Regulations, and localities have limited flexibility to modify the program.

More recently, the State's program of issuing permits for construction sites (1 acre or greater) has been transferred from the Department of Environmental Quality (DEQ) to the Department of Conservation & Recreation (DCR). As a result, DCR is responsible for the issuance, denial, revocation, termination and enforcement of permits for the control of stormwater discharges from land disturbing activities under the Virginia Stormwater Management Program. This permit program mimics many of the features of DCR's existing erosion and sediment control program, as outlined in the law and regulations noted above, and also adds a component on the handling of waste materials on construction sites.

Of interest to localities, House Bill 1177 (adopted by the General Assembly in 2004) provides mechanisms for DCR to pass some of the permit-issuing authority to localities. If a locality has a regulated municipal separate storm sewer system (MS4), then the pass-through will become mandatory. For other localities, it is a local option to adopt the program, including issuing permits and collecting fees (some percentage of which must be returned to the State).

While, the State's erosion control and stormwater programs are in flux, for most localities, the local erosion and sediment control law has been a relatively staid feature of the code book. In some cases, localities have taken steps to try to make erosion control enforcement more effective. Such an effort in Roanoke County is highlighted here.

Roanoke County

Civil Penalties and Erosion & Sediment Control Summons

One of the cumbersome features of erosion and sediment control enforcement is the required process to cite and follow-up on violations with numerous letters and site visits. While the Erosion and Sediment Control Law provides for both criminal and civil penalties (Section 10.1-569), the criminal provisions are labor-intensive, can be difficult to enforce, and are expensive to pursue in court. Some local inspectors feel that, by the time they have gone through all the required steps, the major damage has already been done to the environment. The State law specifically provides for a local option to adopt a schedule of civil penalties. This is exactly what Roanoke County has done, and several localities have followed suit (e.g., Stafford, Chesterfield).

The County's erosion and sediment control law (Chapter 8.1) contains a schedule of civil penalties that follows the minimum standards of the Erosion and Sediment Control

Regulations. The law also states that the director of community development shall prepare an erosion and sediment control civil violation summons. This, in effect, serves as a “ticket book” that inspectors can use to cite violations and issue penalties in the field.

County officials report that, at first, there was a lackluster approach to using the summons, and that most fines were minor (for instance, \$100 at a time). However, after a program review by DCR, the County became more aggressive at using the summons tool, and more substantial fines started being levied for serious violations. County officials also report that most violations are resolved by the landowner paying the penalty, and no cases have yet had to go to court. They also commented that the schedule of penalties and the summons makes it very clear what specific action is causing the violation, rather than the more general approach previously used.

The Roanoke County experience makes it clear that it is one thing to adopt a civil penalty schedule into the code, and quite another to actually use it in the field. This is a matter of political will by the decision-makers, as well as institutional and customary practices at the staff level. While erosion control civil penalties are not for every locality, they do seem a good tool for those localities that want to take erosion control more seriously. After all, erosion and sediment control is a mandated State program, and is often the first line of defense in protecting water resources and property from potential development-related impacts.

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Materials Provided: (see appendix 12)

- Excerpt, Chapter 8.1 – Erosion and Sediment Control, Section 8,1-9.
- Erosion & Sediment Control Summons

RECOMMENDATIONS FOR AMHERST COUNTY COMPREHENSIVE PLAN UPDATE

After reviewing relevant programs across the State, John McNair & Associates and Biohabitats of Virginia have the following recommendations for consideration by the Environment Task Force.

1. Riparian Buffers:

- Consider revising the standards in the County's Watershed District (in the Zoning Ordinance) to be more consistent with the standards of the Chesapeake Bay Regulations. For instance, the County's buffer in the Primary Water Supply District is 75 feet, while the Chesapeake Bay Preservation Act (CBPA) buffer is nominally 100 feet. Consider adopting only part of the CBPA program, such as the Resource Protection Area provisions. Some parts of Amherst's Watershed District are more stringent than CBPA (e.g., 350-foot setback from water supply reservoirs). In these cases, consider folding in the more stringent standards to the revised program (in other words, do not make the program less stringent, unless there are compelling reasons to do so).
- Consider expanding a riparian buffer ordinance County-wide. If this is done, the Watershed District can still be a unique area with different or more stringent standards (for example, the buffer in the Watershed District can be 100 feet, and 50 feet outside of the District).
- Coordinate any riparian/buffer program with a passive recreation and trail effort. To the extent possible, make the riparian areas multi-functional.
- Consider working with the Robert E. Lee Soil & Water Conservation District to set up a voluntary riparian easement program, modeled on the Headwaters and Thomas Jefferson SWCD examples. Seek incentives for landowners to participate in such a program.

2. Stormwater Management & Low-Impact Development

- Provide a mechanism to promote low-impact development and water quality protection for all new development and redevelopment projects. Nelson County's *Design Guidelines and Development Standards for Stormwater Management* may be a good model for Amherst since it is an incremental approach whereby incentives are provided for low-impact techniques and water quality protection. Amherst should consider adopting new stormwater management criteria in its code to provide water quantity and quality protection in areas that are developing the most rapidly. Again, build incentives for low-impact designs into any revised standards.
- Provide a mechanism for long-term maintenance of stormwater facilities through adoption of a maintenance agreement or similar tool.
- Develop design standards and guidelines to help steer development projects toward preferred stormwater methods and to aid the plan review process.

3. Cluster Subdivisions & Utility Planning

- Consider adding a cluster provision to the County's Zoning Ordinance focused on open space protection. Both Nelson and Fluvanna counties' ordinances are good examples to borrow ideas from. Great care should be taken in drafting the standards for cluster subdivisions, since, once they are in the code, they will become a by-right option (as per General Assembly action). Great care must also be taken in considering the provision of water and sewer in cluster designs. There has been a great proliferation of technologies for centralized or community water and sewer systems. However, long-term maintenance responsibility is a crucial issue to consider before approving these types of systems.
- Synchronize the County's growth management plan with utility planning by the Amherst County Service Authority. Provide public sewer (and water) only to areas designated for further growth, as long as engineering specifics can be worked out.

4. Open Space Protection

- Consider a fledgling Purchase of Development Rights program, even if it cannot be funded at any substantial rate. If a program is established (ordinances and policies in place), then the County will be in a better position to take advantage of outside funding, if and when it becomes available. Grant funds may already be available for a limited program. Seek non-profit conservation partners to help establish and administer the program.