

DRAGON RUN LAND USE POLICY AUDIT

for the Middle Peninsula Planning District Commission

TECHNICAL MEMORANDUM- REVIEW OF EXISTING POLICIES

May 13, 2003

Prepared by Paradigm Design; Reston, Virginia



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NOTE: Every effort was made to verify the accuracy of the information included in this Technical Memorandum. We hope that the readers will let us know of any inaccuracies or mistakes contained herein, either in the work session or by directly contacting us at:

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1.0: INTRODUCTION AND CONTEXT

1.1. Purpose of Memorandum

This Memorandum responds to Task #2 in the Scope of Work for conducting a **Land Use Policy Audit for the Dragon Run Watershed**. It contains a summary of existing planning and regulatory documents for Essex, Gloucester, King and Queen and Middlesex Counties. It also evaluates how well existing local plans coordinate with each other and how effectively and consistently existing plans, policies and regulations implement natural resource protection goals for the 90,000 acre Dragon Run Watershed as identified in local plans, the Chesapeake 2000 Commitments and the Memorandum of Agreement signed by the participants in the Dragon Run Special Area Management Plan (DRSAMP) effort.

The purpose of this Technical Memorandum is to provide the Dragon Run Steering Committee (the "Steering Committee") and the DRSAMP Advisory Group (the "Advisory Group") with background material, analysis and preliminary suggestions as a starting point for discussions at the groups' second work session on May 13, 2003. The work session will summarize the initial findings of the Land Use Policy Audit and discuss opportunities to strengthen existing policies and develop a more comprehensive approach to land planning in the Dragon Run Watershed.

1.2. Dragon Run Special Area Management Plan

In 2001, the Middle Peninsula Planning District Commission (MPPDC) received a grant from the Virginia Coastal Management Program and NOAA to develop a Special Watershed Management Plan for the Dragon Run Watershed. The Dragon Run is a stream that flows through the Middle Peninsula of Virginia and through the counties of Essex, King and Queen, Middlesex and Gloucester. It empties into the Piankatank River, which flows into the Chesapeake Bay. The Dragon Run has been identified as a unique and ecologically significant resource because of its pristine, largely undeveloped state and because its tidal and non-tidal cypress swamps support numerous habitats for rare and endangered plant and animal species. The Smithsonian Institute ranked the Dragon Run **the second (out of 232) most ecologically significant area in the Chesapeake Bay region**. Within the Dragon Run Watershed, the Virginia Department of Natural Heritage has so far identified one endangered animal species, five rare animal species, eight rare plant species, and five rare natural communities, although the entire area has not yet been surveyed.

Recognizing the significance of the Dragon Run as a cultural and ecological resource for the entire Middle Peninsula region and beyond, the MPPDC and the counties that surround and encompass the Dragon Run have undertaken development of a Dragon Run Special Area Management Plan. In 2002, the MPPDC and the counties of Essex, King and Queen, Middlesex and Gloucester signed a Memorandum of Agreement to participate in the development of the DRSAMP and to consider a set of specific goals and objectives intended

to promote local policies that recognize the unique and distinct features of the Dragon Run. The mission, the goals and the objectives included in the Memorandum of Agreement were recommended by the Dragon Run SAMP Advisory Group to the Dragon Run Steering Committee and are summarized in **Appendix A**.

1.3 Chesapeake 2000 Commitments

On June 28, 2000, the governors of Virginia, Maryland, Pennsylvania, the Mayor of the District of Columbia, the U.S. EPA Administrator and the Chairman of the Chesapeake Bay Commission signed a new agreement to guide restoration in the Chesapeake Bay watershed through the year 2010. The agreement includes 83 specific “commitments” to improve water quality and protect natural resources in the Chesapeake Bay and its tributaries with the goal of removing the Bay from the federal list of impaired waters by 2010. In addition to a number of specific commitments, there are five overriding goals:

Living Resource Protection and Restoration - Restore, enhance and protect the finfish, shellfish and other living resources, their habitats and ecological relationships to sustain all fisheries and provide for a balanced ecosystem.

Vital Habitat Protection and Restoration - Preserve, protect and restore those habitats and natural areas that are vital to the survival and diversity of the living resources of the Bay and its rivers.

Water Quality Protection and Restoration - Achieve and maintain the water quality necessary to support the aquatic living resources of the Bay and its tributaries and to protect human health.

Sound Land Use - Develop, promote and achieve sound land use practices which protect and restore watershed resources and water quality, maintain reduced pollutant loadings for the Bay and its tributaries, and restore and preserve aquatic living resources.

Stewardship and Community Engagement - Promote individual stewardship and assist individuals, community-based organizations, businesses, local governments and schools to undertake initiatives to achieve the goals and commitments of this agreement.

The jurisdictions within the Dragon Run Watershed have affirmed their commitment to implementing the Chesapeake 2000 Agreement at the local level in part through their commitment to development of the DRSAMP. While all of the Chesapeake 2000 goals will ultimately depend on implementation at the local level, goals #2, #3 and #4, are most directly implemented through local land use policy and practice. These goals and related commitments from the Chesapeake Bay 2000 Agreement will be considered in this memorandum to the extent that they relate to local land use regulations and policies.

1.4 Growth in the Dragon Run Region

The Dragon Run Steering Committee was formed in 1985 largely in response to concerns that mounting development pressure in the Middle Peninsula would threaten the unique ecological and cultural character of the Dragon Run Watershed. Over the last 15 years, the Middle Peninsula has continued to attract new residents, particularly retirees, due to its proximity to the Tidewater region and Richmond, its moderately priced housing and numerous recreational amenities, including the Dragon Run. From 1990 to 2000, three of the four counties encompassing the Dragon Run Watershed experienced growth rates exceeding the State average of 14.4%.

Table 1: Population Growth by Counties

County/PDC	1990 Population	2000 Population	% Growth 1990-2000
Essex	8,689	9,989	15.0
Gloucester	30,131	34,780	15.4
King & Queen	6,289	6,630	5.4
Middlesex	8,653	9,932	14.8
MPPDC	73,023	83,684	14.6

Source: U.S. Census Bureau

The most populous county in the Dragon Run Watershed is also the fastest growing. Between 1990 and 2000, Gloucester County added approximately 4,650 new residents, accounting for almost 45% of the total population increase in the Planning District that decade. Gloucester County has also led the PDC in issuance of new residential building permits over the past 5 years. Despite steady growth in the region, new development in the Dragon Run Watershed itself has been very limited and the area has retained its rural character. Agricultural and forestal activities, including silviculture, remain the predominant uses in the Watershed. Maintaining traditional uses like these and preserving the unique natural resources in the Dragon Run in the future will depend largely on plans, policies and regulations implemented at the local level.

Table 2: Residential Building Permits by Counties

County/PDC	Residential Building Permits Issued 1997 – 2001 ¹				
	1997	1998	1999	2000	2001
Essex	43	49	67	41	119
Gloucester	188	204	203	183	215
King & Queen	27	26	24	24	33
Middlesex	90	82	107	71	102
MPPDC	491	543	587	484	626

Source: Weldon Cooper Center for Public Service at the University of Virginia
¹ Permits for new construction only, excluding data for mobile homes

2.0: COMPREHENSIVE PLAN POLICIES

2.1. Comprehensive Plan Documents

The following analysis compares the current comprehensive plan policies that apply to the Dragon Run watershed as set forth in these county documents:

1. King and Queen County Comprehensive Plan. Dated June 13, 1994 with Planning Commission Review and Resolution July 2, 2001.
2. Essex County Comprehensive Plan, dated April 1998 and adopted June 16, 1998.
3. Comprehensive Plan, Gloucester County, Virginia, dated September 1991, amended November 2001.
4. County of Middlesex, Virginia 2001 Comprehensive Plan Update, dated December 4, 2001.

While each of the comprehensive plan documents address future land uses, natural resource protection, preferred development and the Chesapeake Bay provisions, the comprehensive plans vary in their scope and scale and their approach to guiding future development through comprehensive plan policies

2.1.1. The Dragon Run Watershed as a Planning Area

Local comprehensive plans are typically organized by geographic areas that represent communities of interest, by land use type (that may apply to several different parts of a county), or by subject area (i.e. public utilities, natural resources, etc.). Using a watershed as a basis for land use planning is a relatively new concept and one that is particularly suited to regional resources that span several jurisdictions.

At present, none of the comprehensive plans map or identify the Dragon Run Watershed as a distinct geographic planning area subject to a separate set of planning policies. Most of the documents do refer to and/or map the Dragon Run as one of several watersheds or streams in their respective counties in the “inventory” section of their plans. The text of the King and Queen County Comprehensive Plan addresses the “Dragon Run Swamp Preservation Area” as a component of its Middle and Lower District Planning Districts, but the plan does not provide a map to identify the extent of the watershed within these planning districts or describe how the preservation area designation is applied. The text acknowledges that the area will continue to require protection as wetlands because of its unique characteristics, but also states that “because of the Chesapeake Bay Protection Area, there should be no need for additional land use policies covering this feature” (p. 4:11, f.). Overall however, there is minimal discussion of the Dragon Run in the current comprehensive plans and very little specific policy guidance for the Dragon Run.

Two counties have adopted special zoning district regulations (to be discussed in greater detail in the zoning section of this memo) for at least portions of the Dragon Run Watershed. King and Queen County has a Dragon Run Protection Overlay in its zoning

ordinance that limits land uses immediately adjacent to the stream. Middlesex County has also adopted a Dragon Run Conservation District as part of its zoning ordinance. Ideally, zoning provisions are derived from comprehensive plan policies. A clear set of Dragon Run policies that emphasize the unique qualities of this regional resource would provide a defensible basis for any reasonable zoning or land use regulations that will be used by the local jurisdiction, collectively or individually, to protect the Dragon Run on a day to day basis.

Like most comprehensive plans, the comprehensive plans for the four counties address only the land within their county boundaries. As noted at the outset, regional watershed planning is a fairly new concept and the adopted comprehensive plans do not place particular emphasis on the Dragon Run as a regional resource and do not outline a consistent policy approach for the Dragon Run watershed. The ongoing SAMP process presents an opportunity to develop consistent policies for the entire Dragon Run Watershed at a time when at least two of the key counties are working on Comprehensive Plan updates. Opportunities to coordinate planning policies can range from revisions to individual plans making overall goals and policies consistent, to the adoption of a joint strategic plan for the Dragon Run that each county agrees to implement in its own jurisdiction. At the very least, there is an opportunity to highlight planning efforts for the watershed and to increase community awareness of the Dragon Run watershed as a unique regional and national resource.

Findings: *The Dragon Run as a Planning Area*

- None of the comprehensive plans map or identify the Dragon Run Watershed as a distinct geographic planning area subject to a separate set of planning policies.
- There is minimal discussion of the Dragon Run in the current comprehensive plans and very little specific policy guidance for the Dragon Run.
- The adopted comprehensive plans do not place particular emphasis on the Dragon Run as a regional resource.

2.1.2. Land Use Policy Guidelines

The Dragon Run Watershed is subject to the land use policies of four different jurisdictions. The predominant future planned land uses in the watershed are agriculture and rural residential uses. These designations reflect the major land uses in the region today. However, there are areas that are planned for more intense development, particularly at the east end of the watershed and in the Route 17 corridor. The following table summarizes planned land uses in the Dragon Run Watershed by County.

Table 3: Planned Future Land Uses in the Dragon Run Watershed

County	Future Land Use Designations - Dragon Run Watershed	
Essex	Countryside District	The majority of the watershed located in Essex County is planned for rural residential development with a minimum one-acre lot size. However, development intensity is limited to one unit per 5 acres of land owned.
	Rural Residential	A very small portion of the watershed in Essex County is designated Rural Residential which allows for residential development on one acre lots. This designation generally recognizes existing development patterns.
Gloucester	Rural Countryside District	The majority of the watershed located in Gloucester County falls within this district which is intended to encourage farming and maintain rural character. Rural residential development is permitted, but is intended to be secondary to agricultural uses. A five-acre minimum lot size is recommended and clustering is encouraged.
	Rural Service Area	The area known as the Glens is deemed a Rural Service Area. Generally these are existing settlements or crossroads that include service uses such country stores, post offices, fire stations as well as houses. Residential development at a one-acre minimum lot size is appropriate and clustering is encouraged. The plan mentions that some light industrial or transportation oriented uses may be appropriate at Glens because of Route 17 frontage.
	Resource Conservation District	Land areas, including wetlands and floodplains, along shorelines and all tributary streams are included in the Resource Conservation District. Generally only passive recreation and low density residential uses are considered appropriate in these areas.
King & Queen	Rural Development Area	This area is planned for forests, agriculture and rural residential subdivisions. A landfill is indicated in the watershed area.
	Dragon Run Swamp Preservation Area	This area is not mapped but the plan's description suggests that it borders the Dragon Run/Swamp. For land use guidance, the plan defers to the Chesapeake Bay Act provisions.
Middlesex	Residential Areas	The majority of the watershed is designated for low density residential development, although the policies do state that preservation of prime farmland is a priority. Appropriate densities are determined by the zoning ordinance and surrounding uses.
	Industrial Development Areas	South of Saluda, there is an existing area of light industrial use/zoning that is planned for continued light industrial use. The plan also identifies the Route 17 corridor as an "Industrial Development Opportunity Zone", appropriate for suitable industrial activities. Exact boundaries would be determined as individual uses are approved. The south side of Route 17 is generally located within the Dragon Run watershed.
	Transitional Development Commercial Center	Saluda and the surrounding area is planned to continue as a mixed settlement of low impact commercial activities, services, and residences at low to medium density adjoining higher intensity commercial development.

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Comprehensive Plans.

Generally, less intensive land uses will better support the goals of the memorandum of agreement to maintain the Dragon Run in a natural and pristine state, because they require less monitoring and mitigation.

In addition to the planned land use map, each plan contains general land use goals and policies relating to growth management and future development. Several of the overall growth management and land use goals included in the county plans are consistent with SAMP goals to maintain traditional land uses, such as farming and forestry, within the watershed and protect natural resources. However, many of the existing goals and policies are so broad that they could be difficult to apply on a day-to-day basis. At a minimum, specific revisions to individual policies identifying which types of uses are appropriate and preferred in the Dragon Run should be considered.

Broad policies and goals provide flexibility in evaluating land development applications but can result in inconsistent decision-making. The more specific a land use plan is, the more likely it is to bring about the desired end state. Therefore, a specific set of policies for the Dragon Run should improve the likelihood that it will retain its character and quality. However, developing a set of specific land use recommendations that is acceptable to multiple jurisdictions may prove difficult since priorities and preferences tend to emerge as the planning process becomes more focused.

Findings: Future Land Uses in the Dragon Run

- The predominant future planned land uses in the watershed are agriculture and rural residential uses.
- There are areas planned for light industrial development in Middlesex County, particularly at the east end of the watershed and in the Route 17 corridor. There is also the potential for industrial development in the Glens area.
- Several of the overall growth management and land use goals included in the county plans are consistent with SAMP goals to maintain traditional land uses, such as farming and forestry, within the watershed and protect natural resources. However, many of the existing goals and policies are so broad that they could be difficult to apply on a day-to-day basis.

2.1.3. Natural Resource Policy Guidelines

Since all four of the comprehensive plans that address the Dragon Run watershed are subject to the Chesapeake Bay Preservation Act, environmental policies for features that impact water quality, such as wetlands, floodplains, slopes, soils, etc., are extensive. In most cases, comprehensive plan policies relating to preservation of water quality have been extensively implemented in the Dragon Run through zoning, subdivision, and erosion and sediment control regulations. These policies are somewhat easier to implement because there are scientific methods of measuring how effective the policy is. Another reason that these policies are so well defined is that localities were required to respond to a state mandate. Absent an outside force establishing minimum standards, it is sometimes difficult to impose new regulations on landowners, particularly in communities where landowners have a well-developed respect for individual property rights.

All of the plans address a range of other natural and cultural resources that contribute to the rural character and unique ecology that defines the Dragon Run Watershed. These include policies relating to wildlife habitat, groundwater, forest resources, prime agricultural soils, scenic, historic and archaeological resources, surface water features, etc. The Gloucester County plan even addresses the design and siting of new structures in the rural landscape. Generally, these policies are not as specific or well defined as policies relating to water quality. This may be because there is more subjectivity involved in implementing, measuring and mitigating the impacts associated with the loss of some of these resources. Additionally, developing specific policies for protection of many of these resources requires balancing public rights and private rights.

Preparing more specific natural resource policies to address the features of the Dragon Run Watershed would be easier than trying to refine or apply existing policies from the adopted comprehensive plans because the Dragon Run is a unique ecological environment. The SAMP provides an opportunity to evaluate what resources are particularly important to maintain the cultural, ecological and natural environment that defines discrete ecosystem. This process also involves working with key stakeholders and landowners in the Dragon Run to develop natural resource policies that are more appropriate, effective, and that may proceed through a county level adoption process more easily than policies that would apply countywide.

Findings: *Natural Resource Guidelines for the Dragon Run*

- Policies for natural features that impact water quality, such as wetlands, floodplains, slopes, soils, etc., are highly refined and relatively consistent.
- Policies addressing other natural features and cultural and historic resources vary widely from broad goal statements to specific implementation strategies, indicating that there may be different levels of commitment to resource protection and priorities in these four jurisdictions.

2.1.4. Utility Policy Guidelines

One significant factor that influences development and land use is the provision of utilities, particularly central sewer and/or water. The availability of public utilities allows for far more intense development than that supported by individual systems. Central sewer and water services can create demands for additional development to make their development financially feasible. Even though individual systems can act as non-point source pollutants that may threaten water quality in inferior soils, more serious threats to water quality may develop with central utilities.

There are currently no true public or central utilities within the Dragon Run watershed, although the Saluda courthouse, which is just outside the Watershed, has a public sewer system. Saluda, in Middlesex County, is served by a private water system. This is one important reason why development has been limited in the watershed. All four of the comprehensive plans discuss the possibility of central sewer and water service in the future in planned growth areas and to serve industrial development. None of the comprehensive plans call for the extension or construction of central sewer and water service into the Dragon Run watershed. Middlesex County has however, identified the Saluda area and the Route 17 Light Industrial Corridor as water and sewer study areas. Portions of these are located within the Dragon Run watershed. The issue of central utility extensions into the Dragon Run watershed should be carefully considered to ensure that potential impacts on the watershed are fully evaluated.

Findings: Utility Policy Findings for the Dragon Run

- There are currently no public or central utilities within the Dragon Run watershed. Saluda, in Middlesex County, is served by a private water system and the Saluda Courthouse (just outside the Watershed) has a public sewer system.
- Generally, planned land uses in the watershed would not require central utilities.
- None of the comprehensive plans call for the extension or construction of central sewer and water service into the Dragon Run watershed at this time.
- Middlesex County has identified the Saluda area and the Route 17 Light Industrial Corridor as water and sewer study areas. Portions of these are located within the Dragon Run watershed.

3.0: ZONING & LAND DEVELOPMENT REGULATIONS

3.1 Zoning

The following analysis compares the current zoning ordinances and regulations of the 4 counties as they relate to the area inside the Dragon Run Watershed. While there are clearly similarities in approach and general intent among the jurisdictions, there are some important differences in the ways that land uses and development are regulated in the Watershed.

3.1.1. Zoning Districts

The table below summarizes the zoning districts that are included within the boundaries of the Dragon Run Watershed for each of the 4 counties:

Table 4: Zoning Districts By Jurisdiction

County	Zoning Districts within the Dragon Run Watershed	
Essex	A-2 R-2 MH-1	Limited Agricultural Limited Residential Mobile Home Park
Gloucester	RC1 B-4 I-1 H-1	Resource Conservation Rural Business Industrial Historic Overlay
King & Queen	A I	Agricultural Industrial
Middlesex	RH LDR VC GB LI DRCD	Resource Husbandry Low Density Rural Village Community General Business Light Industrial Dragon Run Conservation District

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

From this comparison, it is evident that there is a considerable variety in the types of zones that are represented within the Watershed. While the overwhelming majority of the land

area in the watershed is in relatively low-intensity zones such as conservation and agricultural, there are a number of areas in which commercial, business and industrial uses are permitted. The geographical distribution of these zones by county are shown in the attached **Map 1**. The Relative land area in each zone within the Watershed is shown in **Appendix C**.

The zoned area in the Watershed represents **the lowest intensity zoning district** for King & Queen and Middlesex Counties. For Gloucester County, there is one lower intensity district (C-1) that is outside the Dragon Run area which allows no residential development at all. For Essex County, there is one lower intensity district (A-1) that is outside the Dragon Run area which generally restricts residential density to 1 lot per 20 acres.

Findings: Zoning Districts in the Watershed

- There is a considerable variety of zoning districts, including commercial and industrial zones in the Watershed.
- More intense zones such as higher density residential and non-residential zones are present but only over a relatively small land area.
- The lowest intensity zones for 2 of the counties (Gloucester and Essex) are not in the Dragon Run Watershed at all.

The Permissible Use Matrix shown in **Appendix B** shows a comparison of permissible uses by zoning district within each county. The Matrix allows a comparison, County by County, of which uses are permitted, either by right or through some sort of conditional use permit or process.

In looking at how this list of uses either support or detract from the goals for the Dragon Run Watershed, it is important to look at two basic ways of controlling adverse impacts through zoning regulations in a rural area:

1. by USE
2. by PERFORMANCE STANDARDS

In the first case, certain uses are assumed to have some intrinsically harmful impacts in a local area and are **excluded** as uses from the particularly sensitive area, for example such as industrial or mining uses in an agricultural area. In the second case, the zoning districts are generally more **permissive** of a wide range of uses, relying instead on **performance standards** located elsewhere in the ordinance to mitigate the impacts from these more intense uses. For example, site plan requirements or conditional approval processes in an ordinance would set standards for such things as noise levels, erosion and sediment control and water quality impacts. The Chesapeake Bay Act ordinances adopted at the local level

are a good example of the second case – typically addressing impacts more through performance standards than through uses within the Resource Management Areas.

This is an important distinction within the Dragon Run Watershed since there is a wide range of permitted uses as a whole for the 4 counties in the watershed, including relatively intense uses such as Auto Graveyard, Manufacturing and Truck and Freight Terminal. Although these uses are in limited areas of Industrial or Commercial zoning districts, they are potentially incompatible with the goals for the watershed, especially the preservation of traditional farming and forestry industries. It could be assumed that negative impacts from these uses are controlled through **performance standards** such as those in the Chesapeake Bay ordinances, for example. Nevertheless, it is reasonable to consider whether they should be allowed within the Dragon Run Watershed at all, and whether they further the goals of the area.

The inclusion of more intense uses such as these in zoning districts within the watershed can negatively affect the local environment and traditional farm and forest uses in at least two important ways:

1. Incompatible uses exert a subtle pressure over time for “like” uses – applicants for rezonings may fairly argue that these uses are already present in an area and should be allowed to expand if there is no specific prohibition against them in the zoning ordinance.

2. Incompatible uses over time can “fragment” the traditional land use patterns in an area - even small amounts of incompatible development can alter the perception of an area and degrade its rural character unless the uses themselves are managed, not just their impacts. For example, very low-density rural residential uses can fit well with traditional uses such as forestry. However, higher-density suburban patterns, even in small quantities, are often a poor fit with forestry practices and new residents often complain about cutting, log trucks, controlled burns or other aspects of forest management.

Findings: Overall Permissible Uses in the Watershed

- Currently, permitted and conditional uses in the watershed cover a broad spectrum, including some very intense uses such as auto junkyards and manufacturing.
- It should be considered whether these more intense uses are compatible with the goals for the watershed, specifically environmental protection and the protection of farming and forestry.
- Performance standards, such as those in the Chesapeake Bay Act, do not completely protect against the impacts of these uses.
- Incompatible uses exert a subtle pressure over time for “like” uses.
- Incompatible uses contribute to a fragmentation of the traditional land use pattern in an area.
- Inclusion of uses in an area should be purposeful and based on a finding that they support the goals for the area – many of the currently permitted uses could be considered to conflict with the goals outlined in the SAMP, Chesapeake 2000 Agreement and the county Comprehensive Plans.

3.1.2. Permissible Uses

All 4 counties have base zoning districts that permit a wide complement of agricultural and forestry uses by right. There is a considerable consistency of purpose and intent among the base agricultural or conservation districts that make up the majority of the Dragon Run watershed for the 4 counties. The following table gives a profile of the purpose and intent behind each of the zones that are predominant in the Dragon Run area in each County:

Table 5: Purpose and Intent of Predominant Zoning Districts in the Dragon Run Watershed

County	District	Purpose and Intent (excerpted)
Essex	A-2 Agricultural Preservation	<i>The purpose of this District is to protect existing and future farming operations and at the same time allow for low density residential uses. This district generally corresponds to areas of the County represented as the Countryside District and Rural Residential District in the County Comprehensive Plan. Generally, this district covers certain portions of the County now devoted entirely or predominantly to various open uses, such as farms, forests, parks or lakes, into which residential or other types of development could reasonably be expected to expand in the foreseeable future.</i>
Gloucester	RC-1 Rural Countryside	<i>The intent of the RC-1 district is to conserve farm and forest land and to encourage agricultural activities, thereby helping to ensure that commercial agriculture and silviculture will continue as long term land uses and viable economic activities within the County.</i>
King & Queen	A Agricultural	<i>The district is designed to protect existing farms, forests, conservation areas and other types of rural uses; to encourage future development only when it promotes the preservation of the rural qualities of the County; and to provide for supportive commercial uses, along with necessary community facilities. The use restrictions and other regulations within the district are intended to reflect the importance of agriculture and forestry to the character and economy of the County and to discourage development of other uses, except where they promote the preservation of the rural qualities of the County.</i>
Middlesex	RH Resource Husbandry	<i>The purpose of the Resource Husbandry "RH" District is to conserve and protect from competing or incompatible uses, traditional agricultural and forestry uses of large tracts which are particularly well suited for such uses by virtue of soil, topographic, and other natural conditions. The protection of large agricultural and forestry tracts is necessary to promote the general health and welfare of the County by insuring that valuable natural resources such as timber and fertile farmlands are properly managed and preserved for present beneficial environmental effects and for use of future generations.</i>

Middlesex	LDR Low Density Residential	<i>Middlesex County is predominantly rural in character and should remain so according to the Comprehensive Plan. The rural character of the County promotes the general health, welfare and safety of the citizens of the County by insuring them with a quiet, peaceful, uncluttered and safe living environment. The “LDR” District is intended to aid in the achievement of this goal by providing for a low density mixture of the primary uses of agriculture and forestry and secondary residential, recreational, and selected non-intensive commercial and public or quasi-public uses, throughout a major portion of the County.</i>
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Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

The above language from the County ordinances is important for establishing the basic intent of the agricultural and conservation zones that make up the majority of the Dragon Run Watershed area. This is a prime indication of how much the zoning ordinances support farming, forestry and resource conservation. There is a variation in the implied degree of protection for farming and forestry, as described in the statements of intent. While all the districts highlight the protection of farming and forestry as a principal intent of the zone, the LDR district in Middlesex County acknowledges residential and other uses as acceptable but “secondary”. The A-2 district in Essex County states that residential uses could be expected to expand in the future in this district (although Essex and other counties control residential expansion somewhat through the subdivision requirements). King and Queen County goes somewhat farther in stating that other uses are discouraged except where they can be shown to “promote the preservation of the rural qualities of the County.” Finally, Middlesex County’s Resource Husbandry District has probably the strongest language by specifically stating that the zone is intended to **protect** traditional farming and forestry “from competing or incompatible uses.”

Another indicator of how supportive the zoning is for farming and forestry is how other, potentially competing, uses are treated in the zoning. The following are examples of land uses that could potentially be incompatible with traditional farming and forestry that are currently permitted by right or conditionally in the Watershed:

Table 6: Selected By Right Uses in Agricultural / Forestry Districts

Use	County & Zoning District
Public Landfill	Essex (A2 District – permitted)
Golf Course / Country Club	Middlesex (LDR District – permitted)
Public Airport	Essex (A2 District – permitted) Middlesex (LDR District – permitted)

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

Table 7: Conditional Uses in Agricultural / Forestry Districts

Use	County & Zoning District
Wastewater Treatment Plant	King and Queen (A District – conditional)
Self Storage Facility	King and Queen (A District – conditional)
Duplex Residences	Gloucester (RC-1 District – conditional)
Commercial Racetrack	King and Queen (A District – conditional)
Dirt Dragway	King and Queen (A District – conditional)
Concrete Plant	King and Queen (A District – conditional)
Auto Graveyard	Essex (A2 District – conditional)
Mining, Sand & Gravel	Essex (A2 District – conditional) Gloucester (RC-1 District – conditional)
Public Landfill	Essex (A2 District – conditional) Gloucester (RC-1 District – conditional)

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

It is commonly assumed that special exception, conditional permit and other such legislative processes allow jurisdictions to pick and choose whether they allow certain uses in a particular zone. While this may be true to some extent, it is generally not the best planning practice. The intent of conditional permit processes is to allow greater scrutiny of uses that are **basically compatible with the intent of the district**. It allows boards and planning commissions to mitigate potential negative impacts from some of these uses

through their legislative approvals **but it is not intended to permit uses that are incompatible with the purposes of the district.** For example, commercial stables may be considered compatible with rural character and agricultural purpose but may need additional controls to manage impacts of traffic or waste disposal. Commercial racetracks, on the other hand, could be considered incompatible in an agricultural district and would be more appropriately located in another zoning district. Aligning the list of permissible uses with the basic intent of the zones could make the zoning stronger, less susceptible to legal challenge and would better protect traditional uses in accordance with the goals of the comprehensive plans and the Dragon Run Memorandum of Agreement.

Findings: Permissible Uses in Agricultural and Forestry Zones

- All the counties use language that highlight farming and forestry as the **primary** uses in the zones
- However, all but the Middlesex RH District allow for varying degrees of **other** uses in the zones, with Essex County's A District indicating that residential uses could expand into the zone in the future.
- Currently, there are a few potentially incompatible or competing uses permitted "**by right**" in the agricultural and forestry districts, such as golf courses and landfills.
- There is a much greater variety of potentially incompatible uses that are permitted **conditionally** in the agricultural/forestry zones, such as concrete plants, auto graveyards and duplex residences.
- Although conditional uses allow for greater control than permitted uses, they should not be included in the districts if they are clearly at odds with the basic purpose and intent of the district itself.

3.1.3. Residential Uses and Densities

Modern land use trends have shown that the greatest competitive threat to farming and forestry uses in a rural area have come from widespread **residential** development. To this end, it is important to compare how the base agricultural, forestry and resource conservation zoning in each county treats residential development. All of the County zones in the Dragon Run Watershed allow some degree of residential development, both by-right and conditionally.

The general consensus from the planners and administrators interviewed in each County is that there is currently low market pressure for residential development in the Dragon Run area. However, several commentators from the Advisory Group meetings have noted that

the pressure seems to be rising, based on increasing interest in, and prices for, residentially zoned land in the area. Experience in other rural jurisdictions in Virginia, such as Northampton County, Clarke County and Gloucester County as well, have shown the speed with which residential development pressure can accelerate in an area, even when it is fairly remote from major employment areas. This increased demand typically plays out in greater volume of development applications, more conversion of farmland and forestry uses to subdivisions, increased threats to the natural resources and changes to the basic rural character and way of life in an area.

Typically, counties look to strengthen their agricultural and forestry zoning only after the market changes are well established and the threats to traditional uses have become more widespread. By contrast, the lack of development interest in the Dragon Run area allows the counties an opportunity to plan ahead and prepare their ordinances for increasing development pressure while the stakes are lower and the community is potentially less divided over these issues.

For purpose of comparison, it is instructive to look at the base residential densities in each of the County agricultural or conservation zones. The 2001 Buildout Analysis completed by Anderson & Associates analyzes the basic permissible densities by zone and allocates them geographically on the landscape to come up with a theoretical potential of 38,000 to 40,000 lots within the 90,000 acre watershed. A closer look at the specific zoning and subdivision requirements in each county, however, yields a more complex picture of how that potential compares with rules for by-right development, conditional uses, subdivision and approval requirements.

3.1.3.1. “By Right” Densities & Lot Sizes

The basic question of what residential density is allowed in the watershed is a crucial one. A fundamental distinction is between “by right” or permitted uses and conditional uses. With by right uses, review and approvals are administrative, typically made by the zoning administrator or planning director. With conditional uses, approval is subject to a public hearing process involving Planning Commission and Board of Supervisors approval, based on public and staff input and other potential levels of review.

The following table shows the permitted residential densities in the basic agricultural/forestry/conservation zones in each county:

Table 8: “By Right” Density & Lot Size in Agricultural / Forestry/Conservation Districts

County	Zoning Districts within the Dragon Run Watershed		Minimum Lot Size	Maximum Number of Lots Permitted “By Right”
Essex	A-2	Limited Agricultural	1 ac. ¹	5 lots ²
Gloucester	RC1	Resource Conservation	5 ac. ³	3 lots ⁴
King & Queen	A	Agricultural	2 ac. ⁵	3 lots ⁶
Middlesex	RH	Resource Husbandry	2.5 ac. ⁷	2 lots ⁸
	LDR	Low Density Rural	2.5 ac. ⁹	6 lots ¹⁰

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

The key finding from this comparison of “by right” potential is that only a handful of lots may be properly subdivided without legislative approval in all the predominant zones in the Watershed. For the purpose of this comparison, “by right” is defined as an **administrative approval** process (by the Zoning Administrator or similar agent). Conditional uses are defined here as being those that need some sort of **legislative or quasi-legislative approval** (Board of Zoning Appeals or Board of Supervisors).

Basically, all of the Counties have some provision that assures that major residential development in the agricultural/forestry/conservation zones must go through a legislative process. This is generally done by prohibiting **major subdivisions** in low intensity districts, thus requiring a **rezoning** to a higher intensity zone in order to allow a major subdivision. This approach is a relatively effective way to protect these traditional uses from competing residential development, especially where development pressures are low as they currently are in the Dragon Run area. Anyone who wanted to develop a larger residential project in the Watershed would have several hurdles to jump over, including rezonings, public hearings, building roads to VDOT standards and potential proffer contributions for offsetting the fiscal impact of the development on the County.

¹ 5 acre min. lot size if designated as “Countryside District” in the Comprehensive Plan

² Major subdivisions are not permitted in the District

³ Family Transfers allow 3 ac. min. lot size

⁴ Major subdivisions (more than 3 lots) require rezoning to a residential zone

⁵ 2 ac. min. lot size if fronting on exist. rural roadways – 3 ac. min. lot size if on private access easements

⁶ Up to 2 subdivided lots + “remainder” of parcel

⁷ Family subdivision may be reduced to 1 ac. lot size

⁸ 1 lot + remainder for parcels over 50 acres

⁹ Family subdivision may be reduced to 1 ac. lot size

¹⁰ Max. 6 lots for Minor Subdivisions – Major subdivisions are Permitted only in Residential Districts

Nevertheless, all these impediments and others beyond them, have clearly not been absolute deterrents to residential development when market forces have been sufficient to offset their costs, as evidenced by rural development examples in other parts of the Commonwealth. It is therefore instructive to look at what actions and approvals would be required in order to develop a major residential subdivision in each County, under the current ordinances.

3.1.3.2. Potential Residential Development from Rezoning or Conditional Approvals

The following table compares the general process under which a potential major residential subdivision could be approved in each County – i.e., what would it take to get a major subdivision approved in the Watershed?

Table 9: Theoretical Changes Required to Permit a Major Subdivision Development in the Watershed

County	Action Required to Allow Major Resid. Subdivision In Watershed	Review/Approval Bodies	Additional Requirements	Potential Density
Essex	A-2 Revise Comp. Plan to Rural Residential	Plan Comm. & Board		1 unit/5 acres
Gloucester	RC1 Revise Comp. Plan to allow Residential growth - Rezone to SC-1 District	Plan Comm. & Board	VDOT road requirements – potential proffers	1 unit/1.5 acres
King & Queen	A Rezoning to R-R zone	Plan Comm. & Board	VDOT road requirements – potential proffers	75,000 s.f. lots
Middlesex	RH Rezoning to R District	Plan Comm. & Board	VDOT road requirements – potential proffers	30,000 s.f. lots
	LDR Rezoning to R District	Plan Comm. & Board	VDOT road requirements – potential proffers	30,000 s.f. lots

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

Findings: Residential Development Potential in the Watershed

- Generally the greatest **land use** threat to traditional farming and forestry uses in a rural area comes from fragmentation of land use patterns, partly due to large scale **suburban-style residential** development.
- All 4 Counties are already well positioned to manage large-scale residential development in the Watershed. They do this primarily by prohibiting **major subdivisions** in agricultural zones or areas.
- As a result, landowners throughout the Watershed can subdivide **no more than 2-6 lots** (depending on the County) without going through the major step of a rezoning and/or comprehensive plan amendment.
- Developing a larger scale residential development in the Dragon Run would entail many hurdles, including rezoning, construction of public roads, potential proffers and other review standards.
- Nevertheless, experience in other communities in Virginia has shown that even these hurdles are not insurmountable when the market forces for residential development are sufficiently high.
- The best way to strengthen protection of natural resources and traditional uses through land use policies is to ensure a **consistency of intent and application** through all the policy and ordinance documents, from comprehensive plan through zoning, subdivision and other ordinances.

3.1.4. Commercial and Industrial Zoning

Although a comparatively small portion of the watershed is in non-residential or non-agricultural zoning categories, it nevertheless amounts to over **1,400 acres** (based on data from Dragon Run Management Framework, Anderson & Associates, Inc. November 5, 2001). This amount of acreage is distributed among Gloucester (Industrial & General Business Districts), King and Queen (Industrial District) and Middlesex Counties (General Business, Light Industrial and Village Community Districts). **Appendix C.** shows the acreages by zone. Much of this area was zoned to conform to existing businesses and uses. At least part of it, though, represents a potential for new “by right” commercial or industrial development.

Additionally, most of the commercial/industrial zoning occurs toward the edges of the Watershed boundaries. The major exception to this is the Village Commercial and Light Industrial area around Saluda in Middlesex County. The other concentration of commercial/industrial zoning is the Glens area (US 17 & VA 33 intersection) in Gloucester County. These two areas, as well as the Route 17 corridor through Middlesex County should be looked at further to understand their potential for new development and its impact on the Dragon Run.

In general, the non-residential and non-agricultural zoning is limited and well contained on the zoning maps. The major concern with these areas, however, lies in their potential to **attract like uses**. There is a potential for a “locational” pull for similar uses to expand in these areas. At the same time, there may be an opportunity for rezoning applicants in the vicinity to argue that the more intensive-use areas could be expanded somewhat and still remain consistent with the Comprehensive Plan.

Findings: Non-Residentially Zoned Areas in the Watershed

- Non-residential zoning in the watershed is both limited and contained to a few areas.
- At the same time, there is a potential for the zoning districts to expand, if rezoning applicants can successfully argue that an expansion of those uses would remain consistent with the Comprehensive Plan.
- The best way to fulfill the goals of the Dragon Run SAMP in these areas is to ensure that the Comprehensive Plan designations for these areas state clearly that commercial and industrial uses should not be expanded into the Dragon Run Watershed.

3.1.5. The Dragon Run Conservation District

Two Counties, Middlesex and King and Queen currently have a Dragon Run Conservation District (DRCD) zone. This zoning district was an outcome of a proposal submitted by the Dragon Run Steering Committee in 1987 and was adopted at the time by Middlesex, King and Queen and Essex Counties. Essex County removed the District at the time that its Chesapeake Bay Preservation Ordinance was adopted, feeling that there was redundancy in the two ordinances. Gloucester County did not adopt the District at all due to citizen opposition to additional regulation in the area.

The DRCD is essentially a zone for the protection of natural resources along the Dragon Run watercourse. Permitted uses are strictly limited to recreation, maintenance and agriculture and forestry using Best Management Practices. No residential or other private buildings are permitted to be constructed in the District.

The DRCD is defined by soil types, as being the areas within Fluvaquent and Subaquent soils along the County boundary (Kinston-Bibb and Pocaty soils in Middlesex County) plus a 100-foot buffer along those soil types (reduced in some areas of steeper topography). Middlesex County has mapped the DRCD on their official zoning map while King and Queen has not. Comments have been made that it is a difficult zone to administer because of the boundaries being complicated and that it is somewhat duplicated by the Chesapeake Bay ordinances.

The DRCD is generally more restrictive than other applicable ordinances in the area. Other applicable restrictions that would also limit development in the same general area as covered by the DRCD would come from normal floodplain and wetland restrictions and the Chesapeake Bay ordinances. The DRCD is theoretically more restrictive than the Chesapeake Bay ordinances in that it limits all development (and agriculture and silviculture without BMP's) in an area that could extend beyond the typical Resource Management Area(RMA) designated by the Chesapeake Bay ordinance. In practice, however, the DRCD is not very different from the areas normally protected by the RPA, floodplain and designated wetlands restrictions in Middlesex County. To determine if this is also the case in King and Queen County, the DRCD would have to be mapped and compared to the other protected areas.

Findings: The Dragon Run Conservation District (DRCD)

- The DRCD, in place in Middlesex and King and Queen Counties is an effective measure of protection for the most sensitive areas along the Dragon Run watercourse. It is defined by soil types and buffers along the soil boundaries.
- Its geographic extent in Middlesex County is similar to the areas that are also protected by wetlands, floodplain or Chesapeake Bay restrictions. In King and Queen County, the DRCD has not been mapped.
- The DRCD is basically a “**streamside**” protection measure and does not address protection of the Dragon Run **watershed**.

3.1.6. The Chesapeake Bay Protection Ordinances

All 4 counties in the watershed have recently adopted protection ordinances in accordance with the requirements of the Chesapeake Bay Act (Section 15.1-489 of the Code of Virginia). They are generally similar in their requirements, in accordance with the provisions of the State legislation, except for the determination of their respective Resource Management Areas (RMA’s):

Table 10: Definition of Resource Protection Areas and Resource Management Areas

County	Definition of RPA	Definition of RMA
Essex	100 ft buffer from designated environmentally sensitive areas	Floodplains, highly erodible or permeable soils, non-tidal wetlands & areas necessary to protect State waters (outside the RPA)
Gloucester	100 ft buffer from designated environmentally sensitive areas	All areas of the County outside the RPA
King & Queen	100 ft buffer from designated environmentally sensitive areas	A minimum of 250 distance ft. landward of the RPA and any areas of highly permeable, erodible and/or hydric soils (outside the RPA)
Middlesex	100 ft buffer from designated environmentally sensitive areas	A minimum of 150 distance ft. landward of the RPA and any areas of 100-year floodplain, highly permeable and erodible soils, slopes greater than 15% and nontidal wetlands connected to tidal wetlands, tributary streams or tidal waters (outside the RPA)

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Zoning Ordinances

In general, the Chesapeake Bay Protection ordinances strictly limit activities, both by type of activity and by **land use** in the RPA, while in the RMA they regulate development practices for environmental impact, while leaving the **underlying zoning** as the basis for determining permissible uses. The RMA requirements include a comprehensive set of regulations that help to protect sensitive areas such as the Dragon Run Watershed, ranging from agricultural and forestry BMP's and management plans to development, clearing and grading and revegetation requirements for new development. Complaints about the difficulty of **enforcement** of the regulations at the local level, however, limit their potential environmental benefit. Moreover, the inconsistency of application of RMA's in the 4 Counties in the Watershed further limits the degree to which the Chesapeake Bay ordinances can ensure long-term protection of the Dragon Run.

Findings: Chesapeake Bay Protection Ordinances in the Dragon Run

- The Chesapeake Bay Protection Ordinances enacted by all 4 Counties foster protection of natural resources in the Dragon Run, primarily through the strict **land use and activity** restrictions in the RMA and the **development performance standards** in the RPA.
- However, the ordinances do not control land use outside the RPA and do not protect traditional farming and forestry from competing uses, which is only done through the underlying zoning districts.
- The inconsistent application of the RMA's in the 4 Counties leave the majority of land area in the watershed **exempt** from the development requirements and other protection standards contained in the ordinances.

3.2. Subdivision Ordinances

In general all 4 Counties have subdivision standards that follow standard planning practice and control, among other items, the procedures and practices for the subdivision of land. Design standards built into the subdivision requirements are generally limited to lot, block and street design and access provisions. The subdivision requirements do not typically effect any additional measures of protection within the Dragon Run Watershed, with the one significant exception of **major and minor subdivision determinations**, mentioned above. None of the ordinances require or encourage **conservation design** in the layout of lots or improvements and specific environmental provisions are generally absent from the minor subdivision standards.

Findings: Subdivision Regulations

- The only major impact on the Dragon Run from subdivision regulations in the 4 Counties lies in their prohibition against **Major Subdivisions** in agricultural zoning districts.
- The subdivision regulations impose no significant other environmental standards and do not encourage **conservation design**-based principles in the layout of lots or improvements in **minor subdivisions** which would apply in the watershed.
- This restriction on Major Subdivisions in agricultural zones is not the best way to guard against large scale residential development in these areas. It would be more effective for the **Zoning Ordinance** to also reinforce the restrictions on scale of development, specifically in the description of permitted uses and residential densities.

3.3. Other Land Development Regulations

In addition to the zoning and subdivision requirements listed above, other types of ordinances that typically can be used to protect natural resources and traditional uses in a rural area include those that control:

- Wetlands
- Erosion & Sediment Control
- Storm Water Management
- Groundwater Protection
- Stream Corridor Protection
- Landscaping or Revegetation
- Design Guidelines

The 4 Counties in the Dragon Run Watershed have a limited number of these supplemental development ordinances as follows:

Table 11: Supplemental Land Development Ordinances

County	Supplemental Ordinance or Code
Essex	Screening and Buffers for Major Routes (in Zoning Ordinance)
Gloucester	Floodplain Management Ordinance
	Erosion & Sediment Control
	Site Plan Review
	Wetlands Zoning Ordinance
King & Queen	Erosion & Sediment Control Ordinance
	Site Plan Review (in Zoning Ordinance)
Middlesex	Site Plan Review (in Zoning Ordinance)
	Wetlands Ordinance
	Erosion & Sediment Control Ordinance

Source: Essex County, Gloucester County, King & Queen County and Middlesex County Ordinances and Codes

As expected, there is a wide range between the number of supplemental ordinances and overall degree of regulation in ordinances between the more and less populous Counties in the Watershed. However, this is of comparatively little impact on land development in the Dragon Run area. For example, most of the Erosion and Sediment Control plans exempt the building of single family houses that are not part of a subdivision, unless they are also included in a Chesapeake Bay ordinance RPA or RMA. In addition, single family houses are also exempt from the site plan review procedures (except those that fall under the Chesapeake Bay ordinance). Supplemental ordinances for erosion control, wetlands or floodplain protection or site plan review are significant for protection of the Dragon Run only if they address the type of **small scale single family subdivisions** that are the only type of development permitted under current zoning rules in the Watershed.

One particular area that was lacking in the ordinances was some sort of **illustrative design guidelines** for the types of small-scale residential subdivisions that are permitted in the agricultural zones. Gloucester County has a good discussion of how rural character and farming uses can be protected with sensitive house siting and construction. However, this is located in their Comprehensive Plan rather than in the Zoning or Subdivision requirements and none of the other Counties appear to have any type of design guidance for the small farm subdivision.

Two other important issues that have been raised repeatedly in discussions about land use regulations in the Watershed are **enforceability** and **user friendliness**. The more rural counties are especially challenged to enforce a relatively complex set of interacting regulations with **limited staff and resources**. Moreover, the complexity of the regulations makes **voluntary compliance** by landowners difficult, when they cannot easily understand how the rules are applied on their land. Both Gloucester and Middlesex Counties have informational materials to help landowners navigate through the network of land regulations but they only address specific topic areas such as Chesapeake Bay enforcement or Erosion Control. According to discussions among the Advisory Group members, some sort of landowner's **stewardship manual** would be very helpful to assist property owners, in understanding both the important land use issues in the Dragon Run and the regulations and standards that apply to their property.

Findings: Supplemental Ordinances in the Watershed

- There is a wide range between the number and degree of supplemental ordinances and regulations among counties in the Watershed.
- Most of the supplemental regulations (other than the Chesapeake Bay ordinances) don't address design practices for the type of small-scale, single family development that is the only development type permitted in the Watershed.
- Supplemental ordinances could be beneficial in meeting the Dragon Run protection goals especially if they addressed small scale development areas in the Watershed that are outside the Chesapeake Bay ordinance provisions (those areas outside RPA's and RMA's).
- Some Counties have published topical brochures to help landowners understand certain aspects of the existing regulations but there is no **comprehensive landowner manual** that explains the applicable regulations in the Watershed.

4.0: CONCLUSIONS AND OPPORTUNITIES

Among the goals and objectives of the Dragon Run Memorandum of Agreement are to “Establish a high level of cooperation and communication between the four counties within the Dragon Run Watershed to achieve consistency across county boundaries” and to “Achieve consistency across county boundaries among land use plans and regulations in order to maintain farming and forestry and to preserve natural heritage areas by protecting plants, animals, natural communities, and aquatic systems.” By analyzing the various land use policies and ordinances across the four Counties in the Watershed and placing them on an equal-terms comparison, a broad picture emerges of the current state of land use policy and regulation in the Dragon Run area. From this comparison a number of opportunities emerge as potentials for bringing the four counties into closer alignment along similar goals and policies in the Watershed, while preserving fundamental property rights and traditional uses.

SUMMARY CONCLUSIONS

4.1 COMPREHENSIVE PLANS

Findings:

- In general the County Comprehensive Plans call for **agricultural and rural residential** uses as future land uses in the Watershed.
- However, the Plans tend to have minimal discussion of the Dragon Run Watershed and little or no **specific policy guidance** for the Dragon Run.
- While the Comprehensive Plan designations generally call for the preservation of traditional uses as a **primary** objective, they typically do not call for excluding uses that may be incompatible or competitive with traditional farming and forestry resources.

Opportunities:

- Developing more comprehensive guidelines and specific land use policies that are **specific to the Dragon Run Watershed** within each County’s Comprehensive Plan.
- Developing a **model plan designation and language** for adoption by each County that would make their goals and policies consistent within the Watershed

4.2 ZONING

Findings:

- The Zoning Ordinances for the 4 Counties generally support the traditional land use pattern and intent of the Comprehensive Plans within the area of the Watershed.
- However, the Zoning Ordinances also show a range of potentially incompatible uses that are permissible in the Dragon Run area and may be more appropriate in other parts of their jurisdictions.

Opportunities:

- Refining the **permissible uses and development parameters** for those zoning districts within the Watershed in each County so that they better meet the objectives in the SAMP and County Comprehensive Plans
- Developing some form of **overlay zoning** for the Watershed to bring greater consistency to the implementation of land use and development regulations among the Counties.

4.3 SUBDIVISION

Findings:

- All the Counties have very effectively managed widespread residential development in the Watershed through limitations on **major subdivisions**.
- However, the basic purpose and intent of this subdivision provision to **limit residential development** could be strengthened and reinforced by following it through and implementing in other regulatory documents (such as the Zoning Ordinance).

Opportunities:

- Reinforcing the basic intent of limiting residential development in the Watershed through **revisions to the Zoning Ordinances** of each County that would control the density and intensity of residential uses for each County.

4.4 CHESAPEAKE BAY PROTECTION

Findings:

- The Chesapeake Bay ordinances adopted by the Counties generally provide effective protection of **streamside** development impacts.

- However, only one of the Counties extends that protection to the entire area in the **watershed**.

Opportunities:

- **Extending the RMA's** in each County to encompass the entire Dragon Run Watershed area, thus allowing all development in the Watershed to have similar review standards for water quality and environmental protection.

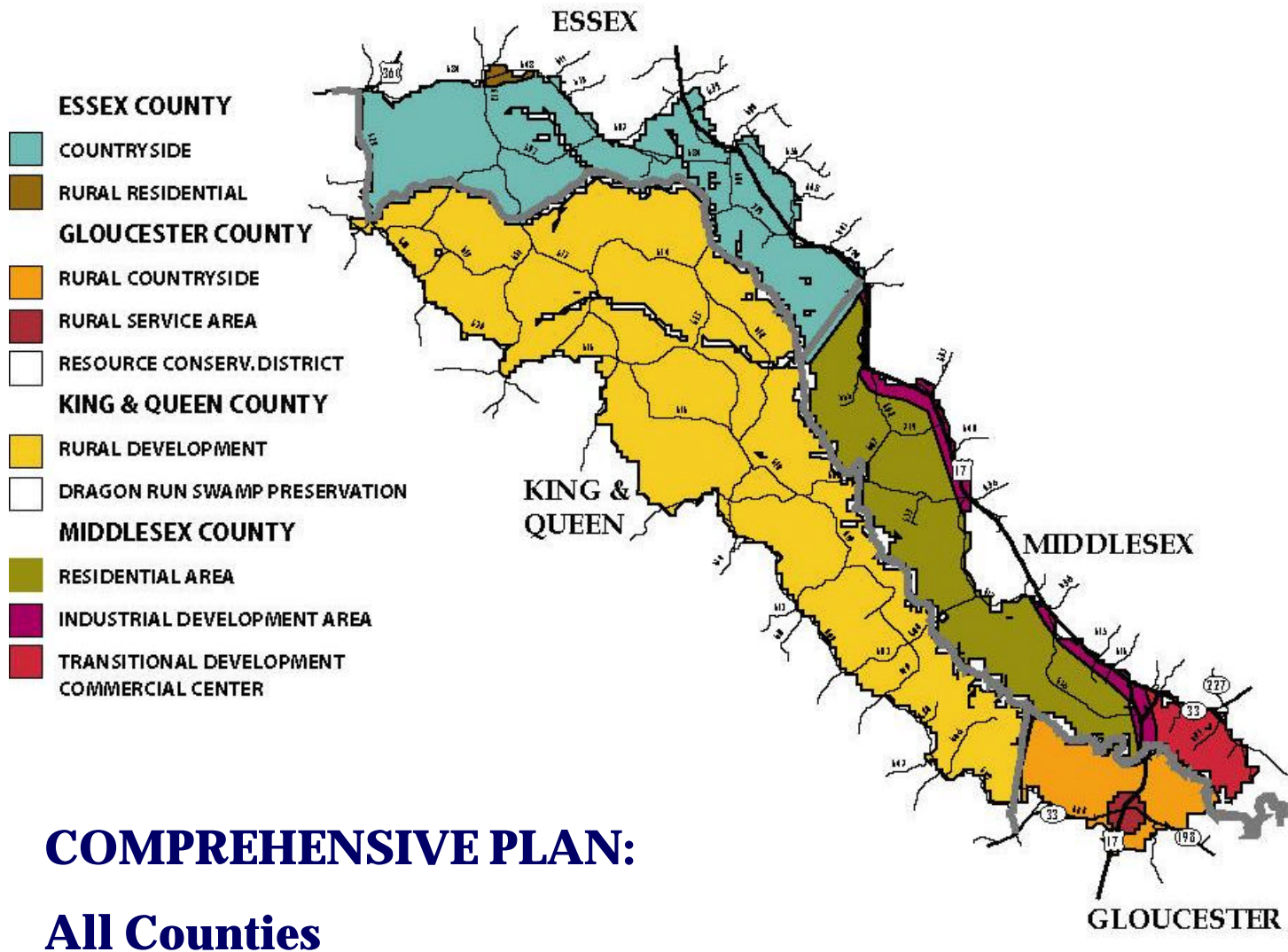
4.5 OTHER ORDINANCES AND POLICIES

Findings:

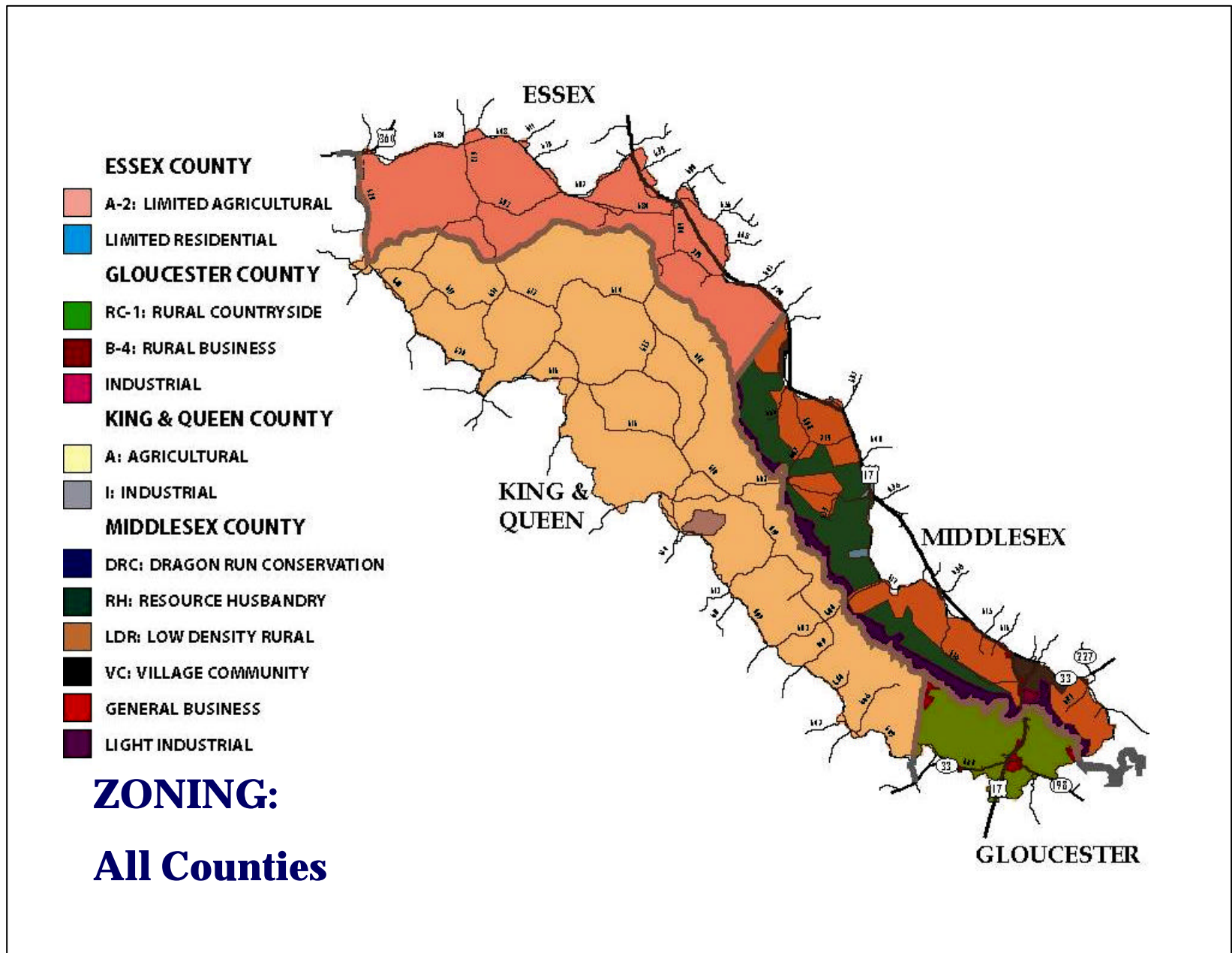
- Most of the supplemental ordinances and regulations in the 4 Counties do not significantly influence the type of **small scale residential development** that is currently the only type permitted in the Watershed.
- Two major issues of the difficulty of **enforcement** and the **complexity of the current regulations** have not been adequately addressed through comprehensive manuals or publications for landowners in the Watershed.

Opportunities:

- Develop a comprehensive **Stewardship Manual** for the Dragon Run, with design guidelines and examples, to assist landowners in understanding and voluntarily complying with the land use policies and regulations in the Watershed.



MAP 1.



MAP 2.

**APPENDIX A.
MISSION, GOALS & OBJECTIVES OF THE DRAGON RUN MEMORANDUM
OF AGREEMENT**

MISSION: To support and promote community-based efforts to preserve the cultural, historic, and natural character of the Dragon Run, while preserving property rights and the traditional uses within the watershed.

GOAL I

Establish a high level of cooperation and communication between the four counties within the Dragon Run Watershed to achieve consistency across county boundaries.

OBJECTIVE A

Develop a plan to address the inevitable future development pressure to change the traditional use of land in the Dragon Run Watershed.

OBJECTIVE B

Achieve consistency across county boundaries among land use plans and regulations in order to maintain farming and forestry and to preserve natural heritage areas by protecting plants, animals, natural communities, and aquatic systems.

OBJECTIVE C

Provide ongoing monitoring of existing plans and planning tools in order to assess traditional land uses and watershed health and take action necessary to preserve the watershed.

OBJECTIVE D

Comprehensively implement Best Management Practices (BMPs) for water quality, wildlife habitat, and soil conservation.

GOAL II

Foster educational partnerships and opportunities to establish the community's connection to and respect for the land and water of the Dragon Run.

OBJECTIVE A

Encourage experience-based education consistent with the Stewardship and Community Engagement goals of the Chesapeake 2000 Agreement.

OBJECTIVE B

Promote the community and economic benefits of the Dragon Run derived from its natural characteristics and traditional uses such as farming, forestry, hunting and fishing.

GOAL III

Promote the concept of landowner stewardship that has served to preserve the Dragon Run Watershed as a regional treasure.

OBJECTIVE A

Address the potential dilemma of preserving the watershed's sense of peace and serenity by protecting open space and reducing fragmentation of farms, forests, and wildlife habitat versus the landowners rights in determining or influencing future land use.

OBJECTIVE B

Educate landowners about the regional importance of the Dragon Run.

**APPENDIX B.
MATRIX OF PERMISSIBLE USES IN THE DRAGON RUN WATERSHED**

	Essex	Gloucester	Middlesex	King & Queen	Notes:
Accessory Apartment, Residence			P (LI)	P (A)	1,2 (King & Queen, Middlesex)
Accessory Uses/Structures	P (A-2, R-2)		P (RH, LDR, VC, LI)	P (I)	
Adult Bookstore, theater		C(I-1)			
Adult Day Care		C(RC1), P(B-4)			
Agriculture/Crop Cultivation/ Horticulture	P (A-2, R-2)	P(RC1)	P (RH, LDR, LI)	P (A)	More limited in R-2 (Essex)
Agricultural Products, Storage & Processing	P (A-2)	P,C(B-4)		P (A)	1(Essex), When raised on premises (K&Q) Feed and Grain Mills only by right in B-4 (Gloucester)
Airport, public	P (A-2)	C(RC1)	P (LDR)	P (I)	
Airport, grass strip or private strip			C (LDR)	C (A)	
Animal Raising, bird, poultry, fish	P (A-2)			P (A)	1(Essex)
Animal Shelter				C (I)	
Apartments			P (VC), C (GB)		1(Middlesex)
Aquaculture			P (LDR)		
Astrology Reading	C (A-2)				
Auction House			P (LDR)		
Auto Graveyard	C (A-2)				
Auto Service Station	C (A-2)	P(B-4, I-1)	P (VC, GB)		
Auto/Truck Sales (new)	C (A-2)	P(I-1)	P (VC, GB)	P (I)	
Auto/Truck Sales (used)	C (A-2)	P(I-1)		P (I)	
Auto/Truck Service, Repair	C (A-2)		C (LDR, VC) P (GB)	P (I)	
Auto/Truck Storage Lot					
Auto Racetrack			C (LDR)		
Bakery, retail					
Bed and Breakfast		C(RC1) P(B-4)	P (RH, LDR)	C, P (A)	Depends on Size (King & Queen)
Boat Docks, private	P (A-2, R-2)			P (A)	
Boat Landing, public	C (A-2)			C (A)	
Boat Yard	C (A-2)		C (LDR)		
Boat/Boat Trailer Sales & Service					
Bus Shelter, school	P (A-2)			P (A)	1(Essex)
Business or Technical School			P (LI)		
Campground	C (A-2)	C(RC1)	C (LDR)	C (A)	Youth Only (Essex)
Car Wash, attended or self-service			C (VC, GB)		

Catering Establishment					
Cemetery	P (A-2)	C(RC1	P (LDR)	C (A)	
Child Care Center	C (A-2, R-2, MH-1)	P, C(RC1), P(B-4)	P (VC)	C (A)	In home by-right only in RC-1 in Gloucester
Church, Places of Worship	P (A-2, R-2)	P(RC1, B-4	P (LDR, VC, GB)	P (A)	
Commercial Recreation, indoor					
Commercial Recreation, outdoor					
Communication facility, radio or Television stations or towers	C (A-2)	P, C (RC1), P, C (B-4, I-1)	C (LDR, VC, GB, LI)	C (A)	1(Essex, Gloucester)
Concrete Plant				C (A)	
Contractor's Storage Yard/Office		P(I-1)	P (LDR, VC, GB, LI)	P (I)	
Convenience Store		P(B-4	C (LDR, VC, GB)		
Correctional Facility, Local				C (I)	
Data Processing Center					
Dredge Spoil Sites		C (RC1			
Dirt Dragway				C (A)	
Drive- In Facility (not otherwise mentioned)					
Dry Cleaners					
Eating Establishments/Restaurant		P(B-4	P (VC)		
Eating Establishments with drive-in		P(B-4, I-1			
Electrical Supply Sales					
	Essex	Gloucester	Middlesex	King & Queen	Notes:
Farm Equipment Sales, Service, Repair		C(RC1, B-4)	C (LDR), P (GB)	P (I)	
Feed, Seed, Fertilizer Sales			C (LDR)		
Financial Institution, Bank		P(B-4			
Financial Institution without drive-in			P (GB)		
Fire/Rescue Station	C (A-2)		P (VC, GB)	P (A, I)	
Food Processing Plants			P (LI)		
Forestry	P (A-2, R-2)	P(RC1) P(B-4, I-1	P (RH, LDR)	P (A)	
Funeral Home/Mortuary			P (GB)		
Garage, parking or storage					
Golf Course/Country Club		C(RC1	P (LDR)	C (A)	
Greenhouses, commercial, wholesale, retail/Nursery	C (A-2)		P (RH, LDR, VC)	C (A)	
General/Country Store	P (A-2)	C(RC1), P(B-4)	C (LDR)	C (A)	4,000 s.f. or less (Essex, King and Queen); 5,0 or less in Middlesex
Grocery Store			P (VC)		
Group Homes		C(RC1	C (VC)	P (A)	1 (King & Queen)
Guest Houses & Country Inn		C(RC1) P(B-4)			

Health Clubs					
Home Business/Occupation	P (A-2)	P, C(RC1	P (VC)	P (A)	1(Gloucester)
Hotel, Motel, Motor Lodge		P(I-1)			
Hunting, Fishing, Clubs (private)	P (A-2)	P(RC1	P (LDR)	C (A)	1(Essex)
Hospital	P (R-2)		P (GB)		
Institutional Use - educational, philanthropic					
Junkyard			C (LDR		
Kennel, commercial	P (A-2)	C(RC1,B-4	P (LDR), C (VC)	C (A)	1(Essex)
Kennel, private	P (A-2)			P (A)	1(Essex)
Landfill, public (county)	P (A-2)	C(RC1	C (RH,)	C (I)	
Laundries, Laundromat				C (A)	
Lawnmower/Equipment, sales, rental, repair		P(B-4			
Library		P(RC1		P (A)	
Livestock, Auction & Market		C (RC1, B-4		P (A)	
Livestock Feed Lot		P(RC1			
Livestock, Intensive Dairy, Poultry	P (A-2)	P(RC1		P (A)	
Lumber and Building Supply			P (GB, LI)	P (I)	
Manufactured Home	P (A-2, MH-1)	P(RC1,I-1)	P (RH, GB	P (A)	1(King & Queen)
Manufactured Home and trailer sales		P(I-1)			
Manufacturing	C (A-2)	C(RC1) P(I-1),	P (GB, LI)	P, C (I)	Limited to heating units, burial vault in Essex; Wide variety of manufacturing uses allowed Ki Queen County; Limited to Light Manufacturing Food Processing, Cabinet, Furniture and Upholstery Fabrication under 5,000 s.f. in GB ; Light Manufacturing, Extractive Manufacturing and Cabinet, Furniture and Upholstery Fabrication in LI in Middlesex County; Light Manufacturing Only in RC-1 and Light to Medium, Fiberglass molding and construction and Cabinet, Furniture and Upholstery Fabrication by right in I-1 in Gloucester, Extractive Manufacturing with Conditional approval in I-I in Gloucester
Marina	C (A-2)		C (LDR)	C (A)	
Microbrewery		P(I-1)			
Mining, Surface			C (RH, LDR)		
Mining, Sand, Gravel, Stone	C (A-2)	C(RC1			

Mobile Home Park Office Building /Service Buildings	P (MH-1)				
Modular Home	P (A-2)				
Monument Works		P(I-1)			
Motorcycle Sales & Service					
Museum		P(RC1), P(B-4)	C (GB)		
Nursing Home/Home for Elderly	C (A-2) P (R-2)	P(B-4)	P (LDR, VC)		
Nursery School	C (A-2)				
Office, Business, Professional, Administrative	C (A-2)	P(B-4,I-1)	C (LDR, VC, LI)	C (A)	Professional Occupations (Middlesex)
Office, Medical, Dental		P(B-4,I-1)	C (LDR, VC, GB)	C (A)	Professional Occupations (Middlesex)
Office, Public/Government	C (A-2)	P(B-4)	P (GB)	P (A)	
Office, Temporary				P (A,l)	
Parks and Playgrounds	C (A-2,R-2)	P(RC1)	P (LDR, VC)	P (A)	
Personal Service Establishment					
	Essex	Gloucester	Middlesex	King & Queen	Notes:
Plumbing Supply Sales					
Police Station				P (A)	
Post Office	P (A-2)	P(B-4)	P (GB)	P (A,l)	
Printing, Commercial/Newspaper			P (GB)		
Private Club, Lodge		C(RC1) P(B-4)	C (VC)	C (A)	
Private School, College, University					
Public Uses (governmental)					
Public Utilities	P (A-2, R-2,MH-1)	P(RC1,B-4,I-1)	P (RH,LI)	P, C (A), P (l)	Electric and Telephone Transmission facilities only in RH district in Middlesex;
Racetrack, Commercial		C(RC1)			
Radio Station, Studio					
Radio Tower					
Research Institutions, Labs			P (LI)		
Recreation Center					
Recreation Facility, outdoor				C (A)	
Recreation, Noncommercial			P (RH)		
Recreational Use or Facility, private Civic, or commercial	P (A-2)	P, C(RC1,B-4)		P (A)	
Rental or Sale of trailers, camper, pick-up caps					
Rental Establishment (household items)					
Rental Storage Facility					
Repair Service Establishment				P (l)	
Residence, Single Family Detached	P (A-2, R-2)	P(RC1, B-4)	P (RH, LDR, VC)	P (A)	
Residence, Duplex			P (VC)	C (A)	

Residential Cluster				P (A)	7 lot maximum (K&Q)
Retail Sales Establishment		P(B-4)	P, C (VC); P(GB)		Less than 5,000 s.f. by right (Middlesex)
Retreat/Meeting/Assembly Facilities			C (LDR)		
Rifle, Pistol Range		C(RC1)	C (LDR)	C (I)	1 (King & Queen)
Rural Occupation	C (A-2)		P (RH, LDR)		Rural Home Occupation in Middlesex;
Sawmill	C (A-2)	C(RC1)	C (LDR) P (LI)	P (I)	
Sawmill, Portable or Temporary	P (A-2)	P(RC1)		P (I)	1,2(Essex)
School, Public	C (A-2,R-2)	P(RC1)	P (LDR, VC)	P (A)	
School, Private	C (A-2,R-2)	P(RC1)	P (LDR, VC)	P (A)	
Seafood Processing Plant		C(RC1)	C (LDR)		
Seawall	P (A-2, R-2)				
Self Storage Facility			C (LDR, VC, GB)		Less than 5,000 s.f. in VC (Middlesex)
Septic Lagoon				C (I)	1 (King & Queen)
Service Business		P(I-1)	P (GB),C (LDR,LI)	P (I)	
Solid Waste Transfer, public				C (I)	
Special Use Facility				C (I)	
Stable, commercial	P (A-2)	C(RC1)		C (A)	1(Essex)
Stable, private	P (A-2)		P (LDR)	P (A)	
Studio, music, dance			P (GB)		
Single Family Dwelling					
Taxidermist					
Television Station/Studio					
Television Tower					
Temporary Sales, stand or area					
Theater			P (GB)		
Travel Trailer	P (MH-1)				
Truck and Freight Terminal		P (I-1)			
Vehicle Repair, light					
Veterinary Clinic or Hospital		P(B-4) C(RC1)	P (LDR, GB)	C (A)	
Warehouse, Wholesale Distribution			P (GB, LI)	P (I)	
Wastewater Treatment Plant				C (A,I)	
Water Pumping Station				C (A), P (I)	
Water Treatment Plant				C (A,I)	
Wayside Stand		C(RC1), P(B-4)	P (RH, LDR, GB LI)		
Wholesale Businesses		P(I-1)	P (GB,LI)		
Wildlife Preserve, Reserve	P (A-2)	P(RC1)	P (RH, LDR)	P (A)	
Yacht Club		C(RC1)	C (VC)		

1 Subject to standards
2 In conjunction with another use

* Includes only those Zoning Districts in the Dragon Run Watershed Study Area

APPENDIX C.
LAND AREA BY ZONING DISTRICT IN THE DRAGON RUN WATERSHED

COUNTY	ZONE	Total Acreage / Zoning Type	Minimum Lot Size / Zoning Type
ESSEX	Limited Agricultural District (A-2)	18,439.0	1.0
	Limited Residential District (R-2)	28.0	0.5
	Mobile Home Park (MH-1)	27.0	1.0
GLOUCESTER	Historic Overlay District (H-1)	23.0	0.0
	Industrial (I-1)	16.0	1.0
	Rural Business (B-4)	129.0	30.0
	Rural Countryside District (RC-1)	5,585.0	5.0
KING AND QUEEN	Agricultural	45,934.0	2.0
	Industrial	411.0	5.0
MIDDLESEX	Dragon Run Conservation	3,545.0	0.0
	General Business	63.0	5.0
	Light Industrial	125.0	50.0
	Low Density Rural	8,542.0	2.5
	Resource Husbandry	6,181.0	100.0
	Village Community	658.0	1.0
TOTAL		89,706.0	

**Source: Dragon Run Management Framework, Anderson & Associates, Inc.
November 5, 2001**