

A PROTOTYPE FOR LARGE SITE ANALYSIS:  
1000 ACRES IN SPOTSYLVANIA, VIRGINIA

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SUBMITTED TO THE DEPARTMENT OF URBAN STUDIES AND PLANNING  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE

MASTER IN REAL ESTATE DEVELOPMENT AT THE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

SEPTEMBER, 1987

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JUL 29 1987

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Submitted to the Center for Real Estate Development  
July 31, 1987 in partial fulfillment of the  
requirements for the Degree Master of Science  
in Real Estate Development at the  
Massachusetts Institute of Technology

**ABSTRACT**

This thesis assesses the feasibility of the residential component of a 1000 acre development in Spotsylvania County, Virginia. The paper incorporates a market study for a proposed multiphased residential development, an analysis of development issues and risks, an overview of residential developments with golf course amenities, and a financial analysis.

The work is sponsored by a large national developer specializing in multifamily rental communities designed for the single, professional market. The sponsor is interested in diversifying into large scale land development. The site has been assembled by a local land development company.

The proposed joint venture of this site is centered on the development of a single family primary residence golf course community, and additional uses including commercial, R & D, hotel, and other residential products. The site is located in an essentially rural area, near historic Fredericksburg, in the rapid growth Washington D.C. - Richmond, Virginia corridor.

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## CHAPTER I

### INTRODUCTION

This paper was initiated at the request of a major multifamily residential developer, interested in developing a market study methodology for large scale sites. Although diversification into long term land development is a corporate goal, specific attention is currently directed toward a strategy for build-out of a 1000 acre site in Spotsylvania County, Virginia, adjacent to the city of Fredericksburg.

Since there is an identifiable location, and preliminary site programming has occurred, this paper concentrates on a study of the market for the primary component of the development, a residential community surrounding a golf course, and associated development issues. In addition to quantitative demographic data and verifiable information on construction and sales transactions in the market area, extensive conversations with public officials and the local real estate community provided necessary information. The creation of a golf course as an amenity which adds value to adjacent residences is not a new phenomena, and the research included a survey of data on such communities. However, each market and development entity is unique. This paper studies one proposed large scale development, with certain predefined development parameters, utilizing an analytical framework appropriate for other large sites.

This paper does not attempt to formulate the highest and best use for this site. Rather, as with most land assemblages, it studies the feasibility of the developer's vision which prompted assembly of the site. A description of the national residential developer and the local land development team provides a perspective for this analysis. To

the extent that the joint venture partners bring different skills to the project, they also have different motivations and objectives with regard to the development's final outcome. Their divergent perspectives will influence the site's physical programming, phasing, and financial structure.

#### A. DEVELOPERS AND PROPOSED DEVELOPMENT

A national developer is considering a joint venture arrangement with a locally based land developer to develop a site of approximately 1000 acres in Spotsylvania County, Virginia. The national developer is one of the largest developers of housing in the United States. As of March 31, 1987, the company had developed or acquired in excess of \$1 billion of residential and commercial real estate, comprising more than 10,000 multifamily housing units and 37 office buildings. The developer is involved in all phases of real estate construction and ongoing project management. In addition, one of its corporate entities serves as investment and mortgage banker for the company's affiliates, and its communications corporation provides telecommunications services (such as cable television) to multifamily complexes owned by the company, as well as other users.

The national developer's trademark product is a "theme community" providing 150-450 garden apartments, with recreational amenities, targeted to the middle and upper income young professional rental market. Besides these communities, the company has expanded into commercial real estate. The company is interested in becoming involved in acquiring and developing large parcels of land over an extended (5-20 year) period, and anticipates acquisition of 500-1200 acre sites which would be programmed for a variety of uses. However, the company intends to concentrate on projects which are primarily residential, can be constructed over a ten year horizon, and provide additional profit

through development of complementary on site amenities.

The partner in the proposed joint venture is a land development company located in Fredericksburg, Virginia. The company was incorporated in 1980, and its principals include the founding sole stockholder, a general manager, a comptroller, and a small support staff. The company's development experience includes the 1983 acquisition of a 153 acre site in Spotsylvania. It provided the infrastructure for a PUD (planned unit development) located on this site, and reported that all of the parcels of land were sold as of June, 1987. The site will contain a total of 1600 residential units and a commercial component. The local company has also been involved as a land developer in four other residential and commercial ventures in Virginia.

The Spotsylvania site which is the subject of this paper has been optioned by the local developer. The project is being analyzed as a land development deal. The proposed joint venture agreement with the national company has not been finalized, and they have not reached consensus on the precise mix of uses or density for the site. However, there is a generally agreed upon preliminary concept. The predominant character of the site will be residential, including single family, townhouses and multifamily units. The focal point of the development will be a golf course, and a number of residences will front on this amenity. In addition, man-made lakes and preserved open space will enhance the development. Commercial uses and a hotel will frame the outer portion of the site, adjacent to the developed Route 1 and I-95 corridor.

There are a number of development issues which have not been resolved at this point, and are beyond the scope of this paper. The potential joint venture partners are unclear as to the extent of their single or joint involvement in the actual build-out of the site. Although they are in agreement as to the type of uses which will ultimately be housed on the

site, the locations, and land allocations by use, have not been determined. The preliminary site plan prepared by the local developer indicates a residential density of seven dwelling units per acre, while the national company prefers a density of three units per acre. In addition, the potential developers have not addressed the issues of development and operation of the golf course (neither its programming, nor the entities responsible for construction and management). Similarly, the duties of the partners and financing requirements have not been resolved.

Given the uncertainties enumerated above, this paper limits its focus to the following issues critical to a residential developer:

- Discussion of residential developments with golf course amenities.
- Analysis of the residential market potential, local development climate, and site specific development issues.
- Preliminary cash flow model.

## **B. OUTLINE**

Chapter Two follows with an overview of large site developments which are predominantly primary residential communities centered on a golf course amenity.

Chapter Three of the text presents the site in its context. The use of exhibits defines the location and physical characteristics of the site. Further description of the area's social and political climate adds another dimension to the analysis.

Chapter Four investigates specific factors that will influence this site's development. Infrastructure requirements and transportation linkages are crucial to successful large site development. The development process is considered as a dynamic; the physical requirements are influenced by the regulatory environment, as well as community concerns regarding the project's impact on the

local environment.

Chapter Five provides the market study for the site. Demographic data, employment information, and accompanying growth projections, coupled with housing absorption potential, provide the statistical basis for the demand analysis. However, lacking a local historical precedent for a primary residence, golf course community with adjacent mixed uses, the demand side of the equation is not easy to estimate. A residential community proposed for the market area is studied to broaden the benefit of the analysis.

Chapter Six incorporates a number of exhibits, including a preliminary pro forma and discounted cash flow analysis.

Chapter Seven summarizes the conclusions which resulted from the research. Analysis has concentrated on the focal point of the development- the golf course amenity and surrounding residential uses. Therefore, the feasibility analysis is predicated upon the efficacy of this use as the basis for this long term development. An enumeration of potential development and operating risk sources are included, as well as risk management strategies related to development, marketing, financing, maintenance, and management.

## CHAPTER II

### GOLF COURSE RESIDENTIAL DEVELOPMENT

The development of residential communities with recreational amenities increased dramatically during the 1960's and 1970's through the growing use of PUD ordinances which facilitated large site development and encouraged preservation of open space. Golf courses were being built in record numbers from 1960-1973, when an average 350 new facilities were added each year. By 1974, forty percent of these facilities were real estate related. Although golf course construction has declined since then, of the 84 new courses opened in 1984, more than half were associated with real estate.[1]

The recognition of a golf course as an important amenity for a real estate development has not changed. Developers view it as an enhancement for marketing their projects, and as an investment which adds value to adjacent residential products. However, ever increasing capital requirements and operating costs have adversely effected the risk/reward ratio and made it necessary for the developer to exercise ongoing control over the amenity to ensure profitability. These concerns have lead to more sophisticated market analysis, course design and site planning, and the development of ownership alternatives and operating plans to mitigate project risk.

#### A. MARKET ANALYSIS

The scope of a market analysis for recreational real estate broadens with additional uses. The amenity package programmed into the development must consider the diverse needs of multifamily unit residents and hotel guests, in addition to single family homeowners. The market is segmented as a function of income, age, and household type.

As various product types are added to the development, additional facilities are required to satisfy both the increased population and their more diverse recreational demands. The mix and quality level of amenities (e.g., clubhouse, swimming pool, tennis courts, golf course, health facility, etc.,) must be related to both the marketing strategy of the developer and the user population.

Although the precise recreational demands are specific to the local market, and there are regional preferences, it is clear that the level of recreational participation increases with household income, as indicated in exhibit 2-1. The demand for golf courses varies with the key population characteristics of age and income, as displayed in exhibit 2-2.

The market study must also address leisure time availability and regional recreational preferences. Although the general rule-of-thumb is that between 20,000 and 30,000 people will support an 18 hole course, populations of 10,000 are adequate in warm climates.[2] Nationally, three of four rounds of golf are played by people between 19 and 64; in private clubs, women account for almost half of the rounds played.[3] Another consideration is travel time to the course. A frequently used estimate assumes a 15 minute travel time to a golfer's "home" course. Therefore, the developer must be wary of the quality and location of existing and planned courses.

#### **B. OWNERSHIP AND OPERATIONS**

Developers of golf course communities traditionally build the course early in the process, to aid marketing and provide up-front site premiums. In order to maximize the benefits of the golf course, the developer must have a strategy for disposition of the amenity. Profits from land premiums associated with amenity value are frequently

Exhibit 2-1

PERCENTAGE PARTICIPATING IN RECREATIONAL ACTIVITIES BY INCOME<sup>1</sup>

Activity	All Incomes	Less Than \$5,000	\$5,000-\$14,999	\$15,000-\$24,999	\$25,000-\$49,999	\$50,000 and up
Swimming	53%	34%	39%	57%	68%	72%
Bicycling	32	23	24	35	41	42
Boating	28	16	20	27	39	43
Jogging	26	21	20	27	33	37
Tennis	17	12	11	18	22	37
Golfing	13	6	6	13	20	27
No participation	11	28	18	6	4	3
Skiing	9	5	5	7	13	21

<sup>1</sup>Figures represent percent of respondents who participated in activity at least once in the previous year. Based on a sample of 5,757 persons 12 years and older with interviews conducted from September 1982 to June 1983.  
Source: *Statistical Abstract of the United States, 1985*. United States Bureau of the Census.

Exhibit 2-2

DEMOGRAPHIC CHARACTERISTICS OF GOLFERS, 1985

		Avid Golfers <sup>1</sup> %	All Other Past Year %	Infrequent Golfers <sup>2</sup> %	All Other Past Year <sup>3</sup> %
Sex:	Male	79	77	74	80
	Female	21	23	26	20
Age:	Under 20	7	13	11	11
	20-29	13	28	28	24
	30-49	32	38	46	34
	50 and over	48	21	15	31
Region:	Northeast	19	23	21	22
	North Central	34	38	41	36
	South	26	21	20	23
	West	21	18	18	19
Income:	Under \$20K	20	24	29	21
	\$20K-\$40K	41	44	45	43
	\$40K and over	39	32	26	36
Share of rounds at course type:	Municipal	26	28	24	27
	Private	35	19	21	31
	Daily Fee	39	53	55	42
Average strokes over par:		19.4	26.3	29.6	23.1

<sup>1</sup>Those players playing 25 or more times during the past 12 months.

<sup>2</sup>Those golfers playing once or twice during the past 12 months.

<sup>3</sup>Those golfers playing from 3 to 24 times during the past 12 months.

Source: National Golf Foundation, *Golf Participation in the United States 1985* (North Palm Beach, Fla.: National Golf Foundation, 1986), p. 19.

depleted with the sale of the last house or lot. Therefore, the developer must ensure control over the amenities throughout the construction period and devise an effective disposition strategy to capture maximum profits.

The development the golf course requires a significant capital investment and assumption of considerable risk.

Up-front amenity development requires heavy early financing in the face of high initial operating losses as real estate products are delivered. In many cases, these front end capital costs, high carrying costs, and early operating losses prove large enough to cause the initial return on the total investment to be quite low.[4]

With this in mind, the developer must devise a plan for access to the course, perhaps trading off the value of exclusivity as a marketing advantage for additional initial operating revenue. In addition, the developer must analyze the issues of construction, operation, and maintenance of the course, until it is sold to the homeowners' association or another entity. Although the developer must control the amenity, lack of operational expertise may necessitate contracting for management services. This is a method to transfer a component of operational risk. Often separate limited partnerships are established to build and operate the course. Another issue for resolution at the outset is the extent of resident participation in decisions concerning facilities operations, particularly problematic when residents will eventually become course owners.

Developers are becoming increasingly aware of the recreational amenity value which may be recognized in addition to land premiums. The rights associated with use of the amenity are an alternative source of revenue. However, the disposition plan for these amenities must be devised prior to construction, to enable early recapture of the developer's investment and maximize amenity value. One strategy is the equity sale of club facilities to residents at the outset of the development (including a provision to

include future residents). Typically, a nonprofit corporation is established which is the conduit for funds from the equity investors to be used by the developer for operation of the facilities. The equity offering can be made to both residents and the public, depending upon the capacity of the facilities and the level of exclusivity dictated by the marketing strategy. In addition, different membership categories can be established to control facility use.

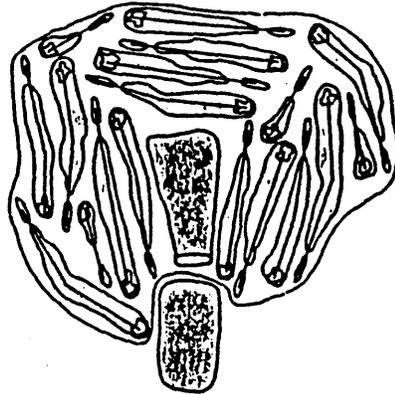
### C. GOLF COURSE DESIGN AND CONSTRUCTION CONSIDERATIONS

The golf course amenity is constructed to fulfill a range of competing and complementary objectives which will impact its ultimate form. Besides adding value to the real estate and providing a marketing edge, it must also answer the recreational needs of the user.

Golf courses are based on five basic models (core, single fairway continuous, single fairway with returning nines, double fairway continuous, double fairway with returning nines) which vary with regard to land consumption, residential frontage opportunities, maintenance cost, operational flexibility and user capacity, (see exhibit 2-3 and 2-4).[5] Since the developer of a primary home community creates considerable value via land premiums associated with lots having course frontage, such courses are typically designed with single fairways to maximize fairway frontage.

In a primary home community, a developer should aim to create a course that will sustain the interest of project residents and club members over a relatively long period. Because there is likely to be a large number of golfers, it should be designed to encourage fairly speedy play. Fairways should thus be relatively generous in width, from 150 feet to more than 200 feet. With several sets of tees to accommodate skilled play as well as heavy play by women, juniors, and other shorter hitters, a course can play from about 5,600 to 7,000 yards long, depending on particular site conditions. Because this type of course is likely to be eventually owned and maintained by its members, maintenance costs should probably be a key concern.[6]

Exhibit 2-3



Core golf course.

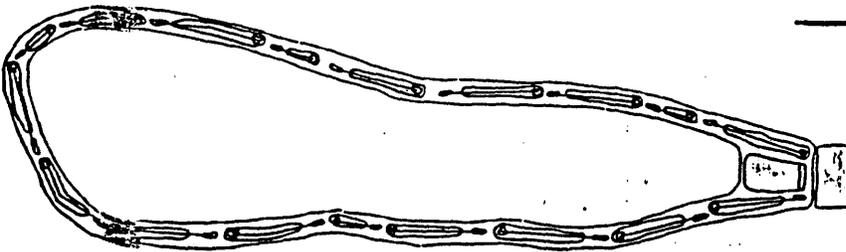
Double fairway 18-hole course with returning tees.



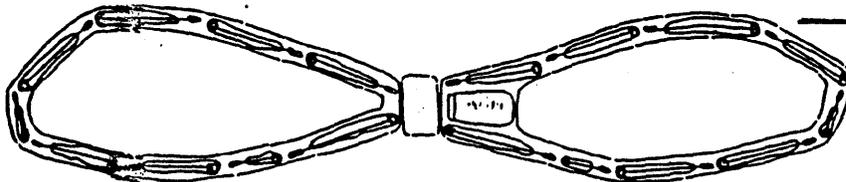
Double fairway continuous 18-hole course.



Single fairway continuous 18-hole course.



Single fairway 18-hole course with returning nines.



**18-HOLE REGULATION COURSE DESIGN OPTIONS:  
RELATIVE PERFORMANCE ON SELECTED CHARACTERISTICS**

<b>Design Options</b>	<b>Land Consumption</b>	<b>Frontage Opportunities</b>	<b>Flexibility/Capacity</b>	<b>Maintenance Cost</b>	<b>"Integrity"<sup>1</sup></b>
Core	Low	Low	Low <sup>2</sup>	Low	High
Single fairway continuous	High	High	Low	High	Low
Single fairway with returning nines	High	High	High	High	Low
Double fairway continuous	Medium	Medium	Low	Medium	Medium
Double fairway with returning nines	Medium	Medium	High	Medium	Medium

<sup>1</sup>Performance levels indicated are relative and assume a fixed, hypothetical case. A good site and clever design, for example, can produce a single fairway course with stronger golf "Integrity" than a run-of-the-mill core course.  
<sup>2</sup>Low if continuous, high if returning nines.

An 18 hole golf course requires a site of not less than 110 acres.[7] The shape of the site will be a major factor in determining the type of course layout. The topography of the site, its related drainage and soil conditions, vegetation, and water availability will impact both design and construction costs. Course construction and maintenance are most adaptable to well drained, sandy soils. The standard water requirement for maintenance of a regulation 18 hole course is 1.5 - 3.5 million gallons per week. Water can be supplied from a variety of existing and man-made sources, including treated waste water. However, a concentration of more than 2,000 parts soluble salts per million will not support most grasses.[8]

A golf course green, although it may look utterly natural, represents one of the most carefully controlled monocultures imaginable.[9]

Optimal site planning and frontage requirements are key to course design. However, there are construction requirements which are peculiar to golf courses (clearing, earthwork, drainage, landscaping, etc.,) and impact course layout. The design must consider the optimal routing of the holes, the placement, size and slope of tees, greens and hazards, and the maintenance associated with all physical characteristics. The physical site plan must also address the requirements of the clubhouse and maintenance facilities, their size, function, and placement, related to the dictates of the market and the clubhouse and course programs. An 18 hole course will generally require a maintenance building of 6,000-8,000 square feet.[10] A resort clubhouse may include 4,000 usable square feet, while an elaborate facility in a primary home community could be 40,000 square feet.[11] Clubhouses which answer the needs of both residents and resort visitors have a complicated diversity of space and programming needs (such as separation of public/private

areas, and golf course loads during peak resort use). Their focal role in the marketing process is another function which must be addressed.

#### D. DEVELOPMENT AND MAINTENANCE COSTS

The range of potential sites and attendant preparation costs plus the diversity of clubhouse facilities from basic to elaborate, makes it difficult to generalize development and maintenance costs. The rule-of-thumb has been construction costs of \$100,000 per hole for an 18 hole course (excluding land costs). However,

According to recent estimates by developers and lenders, a fully equipped, regulation course built as part of a typical residential or resort project in the southern states will cost between \$3.5 and \$4 million to open to play.[12]

The largest ongoing expense item for a golf course is maintenance. During the last twenty years expenses for a typical course have increased by 500 %, while revenues per member have increased only 300%.[13] Costs vary considerably by location, the major contributing factors are the length of the golf season and the amount of natural precipitation. It is estimated that the average annual per hole expenditures for golf courses associated with real estate projects will range between \$15,000 - \$25,000 (or, \$270,000 - \$450,000 annually for an 18 hole course).[14] This does not include capital expenses.

#### E. CURRENT DEVELOPMENT CLIMATE

As stated at the outset of this chapter, the development of a golf course as a residential amenity is widely recognized as contributing additional value to the surrounding area. However, such developments are not undertaken without considerable risk, particularly for those not attuned to their specialized requirements. Significant up-front capital investment is necessary, and ongoing

expenses are high. Development companies willing to take such risks are often large, well capitalized entities, committed to this product (such as Landmark Land Co., a \$1.65 billion development concern, and Arvida Corp., a subsidiary of Walt Disney Productions Inc.,).

Some projects started by local businessmen who simply love the game have failed for a lack of planning. And the market for the more expensive projects also has limits.[15]

A major participant in golf course developments is Jack Nicklaus Development Corp., currently constructing nine courses and planning for the development of an additional seventeen. The president of this company characterizes the courses as loss leaders in residential communities (it is estimated that approximately 90% of golf courses nationally operate at a loss), while recognizing the associated land premiums.[16] An example cited is the company's Country Club of the South, north of Atlanta, which sells lots at prices 35% to 40% higher than the immediate area's average. However, the company has also experienced the downside risk of golf related residential developments, losing more than \$1 million in the redevelopment of St. Andrews Golf Club, Hastings-On-Hudson, New York, into a residential community. Construction problems resulted in the take over of the club by Chemical Bank in April, 1986.[17]

## CHAPTER III

### SITE CONTEXT

#### A. THE SITE

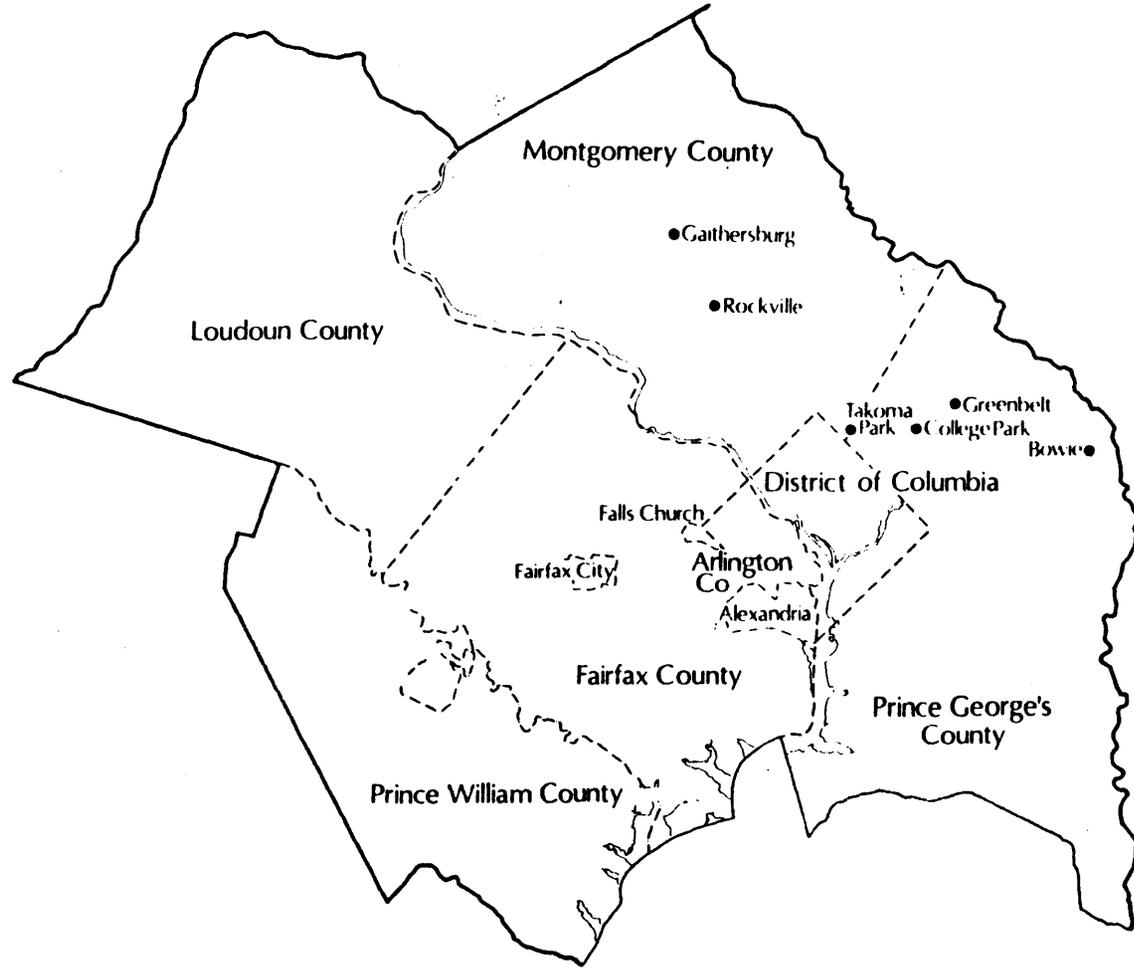
The subject site is located in Spotsylvania County, Virginia approximately 55 miles south of Washington D.C., (see exhibit 3-1). Total size is 1000 acres. The parcel is bounded on the west by Route I-95 and Route 1 both of which run in a north-south direction between Washington and Richmond. The Route 1 interchange, is one half mile south of the south west corner of the parcel. Virginia Route 636 serves as the northern boundary although there are some small parcels that extend into the site along this road. The southern border at its most southern point touches State Route 635. The site has a rather sawtoothed shape on this border with large northerly cuts. There is no natural or man-made border to the east. The site extends east from Routes I-95 and 1, approximately 9,600 feet. The eastern border is not straight and has one large western jog, 1200 feet north of the Massaponax Creek. The creek bisects the site, west to east.

#### B. METROPOLITAN WASHINGTON, D.C.

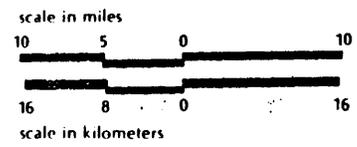
The site must be viewed, in its broadest context, with regard to the Washington, D.C. metropolitan area. The Metropolitan Washington Region, as defined by the Council of Governments, lies to the north of the site's immediate regional planning boundaries. The apex of this area, Washington, D.C., has fueled the growth of the ring of surrounding jurisdictions (Arlington, Fairfax, Prince William and Loudon Counties, and the city of Alexandria, in Virginia; Montgomery and Prince George's Counties, and the city of Rockville, in Maryland), see exhibit 3-2.

The region had extremely rapid employment and population





# Metropolitan Washington Region



growth throughout the 1960's. Job growth continued during the 1970's, but the rate of population growth decreased by more than 80 percent.[18] This divergence is attributed to two factors: rapid increases in the proportion of women in the labor force, and the rapid expansion of the area from which regional employers can draw their workforce. The region's population is expected to grow by 332,900 in the 1980's and 290,600 in the 1990's. Population growth will be paralleled by household growth and made more significant, with regard to development potential, by the decrease in average household size from 3.09 in 1970 to 2.67 in 1980.[19]

In the next 15 years two of three new households are expected to locate in the outer suburban area of the metropolitan region. This is a slight increase in the outward growth pattern experienced during the last 15 years.[20]

Although population growth declined during the 1970's, employment growth was dramatic. Regional employment declined during the recession period of the early 1980's, but has grown steadily since then.

Employment growth has paralleled regional population dispersion, particularly around the Beltway (Route 495) and along major growth corridors, such as Interstate 95. The large amount of employment growth in the suburbs is the major factor in the expanding geography of the region's workforce. [21] The economic growth of the area has become increasingly more dependent upon "in-commuting" to the Washington area by people who live outside the metropolitan region. A primary impetus for in-commuting is the affordable housing; the cost of housing declines with distance from Washington. Another factor contributing to in-commuting has been the growth of jobs in suburban areas. Driving time for in-commuters holding such jobs frequently is less than driving time for regional residents driving to regional jobs.[22]

The growth of the suburban ring has produced not merely bedroom communities, but separate "urban villages". The "Los Angelization" of the Washington metropolitan area has

resulted in as many as 14 emerging high-rise cities. These separate employment submarkets attract a growing number of workers.

More people go into them than leave each morning, they offer more jobs than homes, and they are perceived as being destinations, not starting points, for working, shopping, and entertainment.[23]

These emerging cities are characterized by at least 5 million square feet of office space and 600,000 square feet of retail space. Seven such "megacenters" in Northern Virginia are larger than Richmond by this measure.

Indeed, the amount of office space in Northern Virginia already exceeds that in downtown Washington....If everything developers say they want to build by 1989 does go up, Northern Virginia would be twice the size of D.C. by the office space measure of a downtown. (Office space, in this context, is defined as leasable space, excluding that occupied and owned by the federal government or a corporation.)[24]

Many see the emergence of additional urbanized submarkets as part of a national trend. As one leading urban economist states, "... if the trend (toward decentralization of firms and jobs) continues for another decade or two, most metropolitan areas will lose much of any 'centrality', and will instead be composed of numerous subcenters, scattered over a broad landscape." His research concludes that "as metropolitan areas grow, firms and households will find it desirable to 'co-locate' in an increasingly decentralized manner." [25]

In summary, the site's contextual perspective must include an analysis of its location with respect to the broader regional core, the Metropolitan Washington Region. The area is projected to enjoy increased employment, population and household growth through the year 2010.

Growth is projected to continue its dispersion beyond the core area. Significantly, the Metropolitan Washington Council of Governments predicts that the patterns of growth through 2000 are for most new homes to be built in areas well beyond the Beltway. However, COG also cautions that physical

infrastructure and public service needs may limit unencumbered growth in the immediate region.

...levels of population and commercial growth in some suburban areas are beginning to exceed the capacities of the roads, schools and other urban systems required to support such growth....local governments must devise ways to serve such growth or evaluate alternative courses of action.[26]

### C. RAPPAHANNOCK REGION

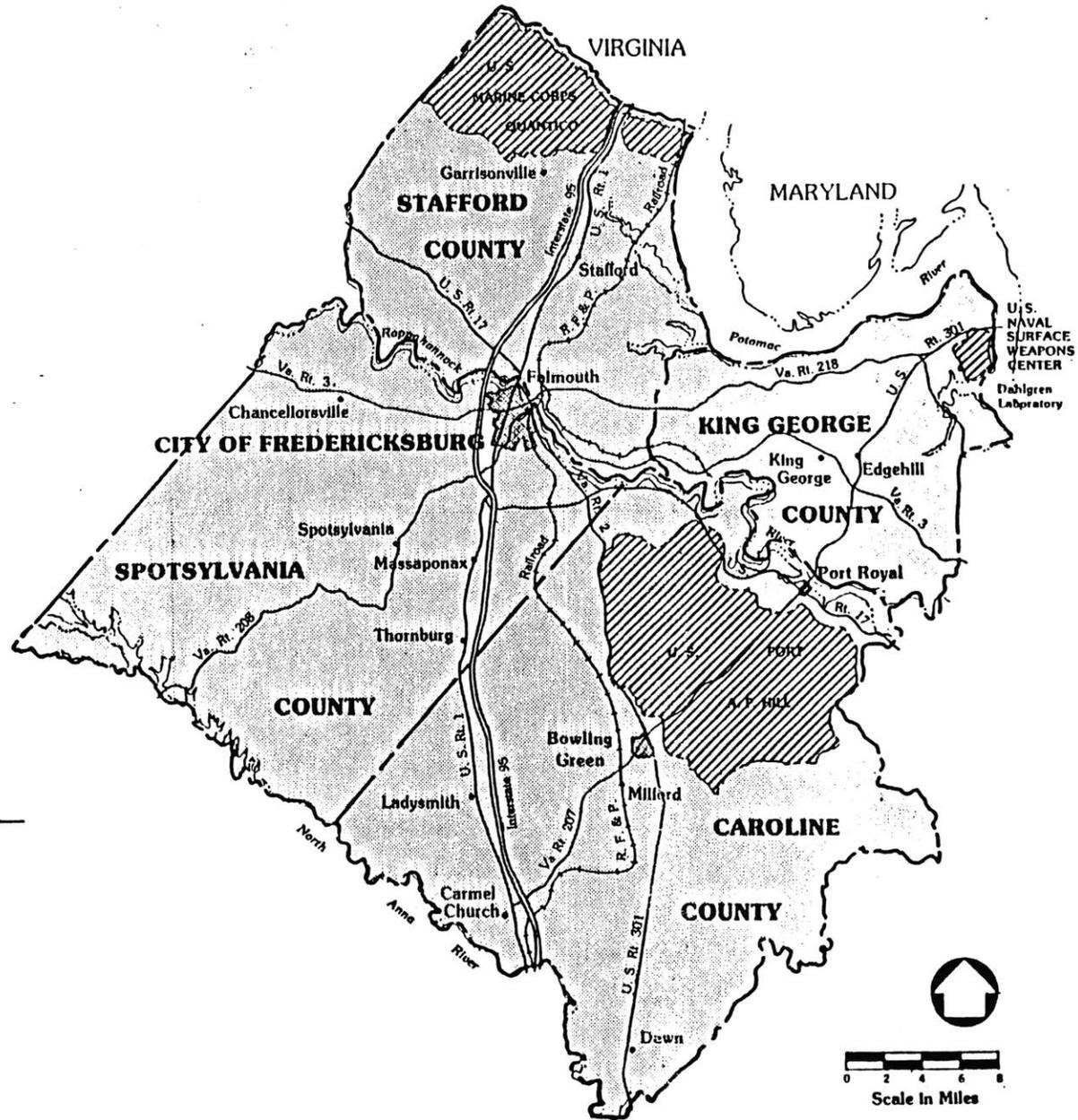
The site's context is further clarified by analyzing its more immediate regional setting, the Rappahannock Regional Planning District. This area is south of Washington's outer suburban ring, directly below rapidly growing Prince William County and accessible via I-95 which bisects the region. The Rappahannock Region consists of the Counties of Stafford, King George, Spotsylvania and Caroline, and the city of Fredericksburg, (see exhibit 3-3).[27]

This largely rural area surrounds the historic city of Fredericksburg (54 miles from Washington, D.C. and 58 miles from Richmond), scene of several Civil War battles, and traditionally the trading and financial center of the region. Although Fredericksburg remains the dominant population center, the areas surrounding Fredericksburg and the northern part of Stafford County are becoming urbanized. The area's substantial increase in population during the past two decades is directly related to the phenomenal commercial and residential growth in the metropolitan Washington area to the north. Improved highway connections have facilitated the spill-over of population, and enhanced the region's strategic location, in the middle of the Washington-Richmond corridor. Commercial growth has followed the population movement, and the region's economy is thriving.

Regional population increased approximately 53 percent during the 1970-1980 decade to 118,700. The region is the fastest growing area of Virginia and rapid growth is expected to continue, with a projected population of 190,000 by the

# PLANNING DISTRICT 16 — THE RADCO REGION

SOURCE: RADCO, 1982



year 2000. Much of the population growth is attributed to in-migration of people holding jobs in the Washington metropolitan area, and to expansion of the region's own economic base. The region's housing costs are approximately 35 percent lower than comparable units in metropolitan Washington, providing an incentive for relocation from the northern Virginia suburbs.[28]

The region's economic base has been expanding and diversifying. Employment by place of work was 39,303 in the Rappahannock Region for the fourth quarter of 1985. This is an increase of 7,800 local jobs (24.7 %) since 1980. Employment by sector is 25.1% government, 26.4% retail trade, 18.7% service and 10.8% manufacturing.[29]

The Dahlgren Naval Surface Weapons Center (NSWC), located in King George County, currently employs 3,400 civilian workers as part of the government sector. NSWC conducts munitions research and provides a tracking system for orbital satellites, its employees include engineers, computer scientists, physicists and mathematicians.[30] The region's manufacturing base has diversified during the last decade and the major industries are lumber, metals, apparel, and printing. Warehousing and distribution facilities are also major employers. The region's strategic location has attracted a number of major distribution centers (Southland, G.C. Murphy, People's Drug, and Martin Brower) to the area in recent years.

The Rappahannock region is served by a variety of transportation modes. Interstate 95 provides six lane north-south access, connecting with 12 other interstate highways. The area encompasses eight I-95 interchanges, and is connected to additional north-south (1 and 301) and east-west (17 and 3) routes. The Richmond, Fredericksburg and Potomac Railroad provides freight service, connecting to rail yards in Washington, D.C. and Richmond. Three major airports are within a 75 minute drive from the region

(National, near Washington - 55 miles north of Fredericksburg; Dulles, Chantilly, Virginia - 65 miles north of Fredericksburg; and Byrd, Richmond - 65 miles southeast of Fredericksburg). Local private and commercial aircraft use Shannon Airport, near Fredericksburg in Spotsylvania County.

The region has five school systems provided by the local governments and a small number of private schools. There are also two institutions for higher education: Mary Washington College, in Fredericksburg, a coeducational, state supported liberal arts school (enrollment of approximately 3000) and Germanna Community College which offers business, arts and sciences, and technical courses leading to an associate's degree (enrollment approximately 1,700). Fredericksburg also provides the base for Mary Washington Hospital, a 340 bed regional medical center. The region's recreational needs are served by a variety of parks, lakes, playgrounds, boating, camping and sports facilities operated by the local jurisdictions.

#### D. LOCAL DEVELOPMENT CLIMATE

Exhibit 3-3 is illustrative of the political jurisdictions surrounding the site. Its location, to the south of Fredericksburg, places it directly in the I-95 path (which projects out of Washington and consecutively south, through Stafford, Fredericksburg and then Spotsylvania.) The site is in the urbanizing Fredericksburg area. Although located in Spotsylvania, its metropolitan context also includes Stafford and Fredericksburg.

##### 1. STAFFORD COUNTY

Stafford, as well as Spotsylvania, is a county governed by an elected Board of Supervisors and a County Administrator, selected by the Board. Stafford's Board is comprised of six district representatives and one member elected at large; they serve for four year staggered terms.

Stafford had a 1985 population estimated at 48,300 and is characterized as a bedroom community. Approximately 80 percent of its residents commute out of the county to work, and 65 percent of these commuters go north to places of work.[31] Stafford has had a planning staff since 1973, and is currently updating its comprehensive plan.

Since adoption of the current comprehensive plan in 1975, the county has endorsed the "growth area concept", and has identified areas appropriate for varying densities. The local officials are committed to pulling growth toward the center of the county. The Quantico Marine Corps base occupies 37 square miles in the northern portion of the county's 277 square mile area, and local planners indicate that there is a dearth of land around the I-95 corridor.

Although it takes approximately one year for rezonings in Fairfax and Prince William Counties to the north, it is currently estimated to be only a 2 1/2 to 3 month process in Stafford. However, the Planning Commission is currently negatively disposed to increased residential growth. Local officials are strongly committed to increasing the retail and industrial base, and they maintain an infrastructure fund to assist commercial development.[32]

The increasing local tax burden has been an issue for some time, and in 1983 the Planning and Community Development Department published a study of the consumption costs of public services versus the tax contribution attributed to residential development. This analysis indicated that 62 percent of the population growth between 1960 and 1983 was due to new families moving into Stafford County, and that the bulk of the county's new development consisted of single family units (at that point, 95 percent of the county's residential units were single family). At the time of the study, the average residential unit contributed \$2,155 in revenue, contrasted with a cost to the county of \$2,640. The

study concluded that the excessive growth of the county's budget was attributable to skyrocketing school expenditures, and that all of these expenses, plus 89 percent of other budget increases, were due directly to residential growth. The policy recommendations of the study included a strong emphasis on increasing the commercial and industrial sectors of the tax base, controlling residential growth, and seeking related off site capital expenditures from residential developers.[33]

The study has not gone unheeded. The county adopted a new cluster subdivision ordinance in May, 1987. The ordinance requires developer donation of land for public purposes (e.g., parks, school sites) at the discretion of the locality.[34] In addition, the comprehensive plan for Stafford is in the process of being updated. The plan furthers the defined growth area concept promoted by the original 1975 plan, and provides for protection of natural resources. Stafford's planners stated that the new plan is based on using existing water and sewer lines, and that utility lines will not be extended beyond the designated growth areas. In fact, they predict that the county's treatment capacity will be exhausted by 1993. However, they do not view the water supply as a problem. The planners stated that the plan recognizes a new source. The county currently receives its water supply from the city of Fredericksburg.

Stafford's attitude toward commercial growth is in direct contrast to the negative climate toward residential growth. As one planner stated, the Board of Supervisors will "bend over backwards" to encourage commercial or industrial businesses.[35] The county has 1.5 million square feet of office space, of which 1.4 million was occupied in June, 1985. Five retail centers (strip mall developments) comprised 610,000 square feet, as of 1985. Retail sales increased 104 percent between 1979 and 1986, and two large

mixed-use developments (shopping center, motel, restaurant, theater) of 400,000 and 250,000-300,000 square feet are under development in the Aquia area of the county. Similarly, the number of hotel rooms has increased dramatically from 523 in 1985 to 783 in 1986.[36]

## 2. FREDERICKSBURG

Fredericksburg, in contrast to the previously rural counties which surround it, has a long tradition as a developed area, the trading center for the region. The central business district consists of relatively well preserved brick dwellings, some dating back to the mid 18th century when the town was established. Commercial and residential growth extends from the center throughout the city's 10.46 square miles. A portion of this (4.4 square miles) was annexed from Spotsylvania County in 1984. This land mass includes the rapidly growing Route 3 corridor, as well as an undeveloped area which the city expects to develop in an economically productive manner. The city owns an industrial park, and a number of subdivisions exist outside of the historic center.[37]

Fredericksburg is not expected to experience the same type of population growth as the surrounding counties. Population increased by only 6 percent during the 1970's, and growth is predicted to be minimal through the end of the century.

Development within Fredericksburg is currently constrained by a sewer hookup moratorium. There have been a series of problems with sewage capacity and treatment at Fredericksburg's plant. In addition, regional planners note that there are few buildable sites within the city limits.

Despite the fact that development within the specific political boundaries is limited by the moratorium, the immediately adjacent areas of Stafford and Spotsylvania are experiencing considerable growth, fueled by the local

economy. A recent issue of the College of William and Mary's Virginia Business Report, analyzing statistics (retail sales, water and electricity consumption, new car registrations, building permits, newspaper advertising linage, bank debits) for 17 Virginia cities, concluded that Fredericksburg led the state in economic growth during the first quarter of 1987.[38] The results of this growth are reflected in the intensity of construction, obvious to observers, in the areas of Stafford and Spotsylvania near Fredericksburg.

### 3. SPOTSYLVANIA COUNTY

Spotsylvania, in contrast to Stafford, does not have a professional planning staff. This is illustrative of the differences between the two counties. Stafford is generally considered a Northern Virginia suburb, and is part of the metropolitan Washington area. As such, the effects of growth, as evidenced by its immediate neighbors, have not gone unnoticed. The Planning Department is an active presence in the locality. Spotsylvania, however, is only beginning to organize its efforts to control growth. A regional planning official explained that the county has had "phenomenal residential growth" and Spotsylvania "just lets it happen".[39]

Spotsylvania is one of the largest (410 square miles) and fastest growing counties in Virginia. Its 1985 population was estimated at 37,500, although the County Administrator believes that it was closer to 45,000. He reiterated the effects of in-migration from northern Virginia, and described the rapid urbanization of the area. An illustrative example is the change from an area with one grocery store only two years ago, to the current existence of four major supermarket chains. He further cited building permit data to substantiate the magnitude of the growth. Spotsylvania had a total of 379 single family building permits in all of 1984. In contrast, 1987 is averaging 120

per month, with a high of 196 in May.[40]

Although an official planning agency has not been present in Spotsylvania, the county appears to be on the threshold of change. The current County Administrator is a professional planner, as is the head of the Zoning Department. The Administrator has updated the official comprehensive plan, and it is scheduled for adoption in August, 1987. Besides the state mandate to update this plan every 5 years, the Administrator noted that excessive growth and pressures on public services provided a strong impetus to focus on this document and long-range planning efforts.

Like Stafford, Spotsylvania aggressively promotes economic development, particularly light manufacturing and distribution facilities. The county was involved in a protracted annexation battle with Fredericksburg, and lost 4.4 prime square miles. However, the agreement, signed in 1981, prohibited further annexations for thirty years. In addition, the county kept the area's only regional shopping center, Spotsylvania Mall. The county has a total of four shopping centers, and new industries such as the Smith Bowman distillery and Simmons Mattress continue to move into the area. The county does not have much office square footage, and encourages further development of this product.

However, the development climate in Spotsylvania is not static, and a laissez-faire attitude toward unrestricted development should not be expected to continue. The County Administrator stated that they are advertising for a planning director. In addition, anti-growth groups are beginning to vocalize objections to development, although they are not well organized at this time. The administrator also predicts that an historic preservation ordinance will be passed in the near future. Although this county, as well as Stafford, cannot demand exactions from developers under current Virginia statutes, there is pressure for removing this restriction.

The county must locate a new water source, to allay fears that the water supply will be depleted in five years. The county recently increased the water and sewer hookup charge to \$5000 for a single family residence; the stated intention is to make "growth pay for itself". The county is undergoing a \$40 million school expansion, and is aware of the educational costs associated with residential developments. Spotsylvania currently has three PUDs (Mill Garden, Breezewood, and Salem Station), which were developed within the county's current zoning requirements. The draft comprehensive plan speaks to the need to impose tighter restrictions on the plat review process, and subdivision and planned unit development approvals. There is concern with interior road construction, access, residential and commercial mixes, and relationships with existing developed areas. In addition, there is a recognition of significant multifamily construction as a source of future problems.[41]

In summary, the region is experiencing rapid growth and enjoys a thriving economy. However, physical, social and political impediments to unrestricted growth are becoming apparent, and the region is also subject to the effects of macro-economic cycles.

## CHAPTER IV

### DEVELOPMENT ISSUES

The ultimate success of any development may hinge on the developer's ability to analyze the specific issues that are germane to his project. The impact that a project has on a locality and region must be mitigated in a positive manner so that the development will proceed smoothly through its various stages to completion. Failure to fully comprehend these issues may elicit negative community reactions and cause delays which lead to cost overruns. This chapter identifies six specific development issues which should be addressed, regardless of the size of the project. These six areas of concern are: A) the permitting process, B) zoning regulations, C) the infrastructure (both on and off the site), D) transportation, E) the impact on public services, and F) local, state and federal programs.

The 1000 acre site in Spotsylvania serves as an example of how these six issues must be studied to assess the impact each will have on the site, and to formulate a development plan and create a schedule that will ensure that problems are dealt with in a timely manner. Action concerning these issues requires extensive knowledge of a locality's laws and political structure. The permitting process is subject to change as a function of a realignment of the board of supervisors, a change in attitude of the county's political constituency, and varying government regulations and court decisions. During each step of the development process local, state, and perhaps, federal jurisdictions may need to be consulted. Permission may be required from several layers of government before a solution can be accepted. In certain instances consultants may be employed to formulate reports to substantiate a point or dispel the concerns of the locality.

Spotsylvania County is in a situation where its assets may eventually become its liabilities. The county has witnessed tremendous growth in the past twenty years and the prevailing attitude has been pro-growth. However, growth has started to change the nature of the county from a rural area to an expanding exurban center. The developers of a large scale project with a 10 year construction schedule must be particularly wary of potential anti-growth pressures. This attitude could take the form of tighter PUD requirements, a water and/or sewer moratorium, or the organization of an anti-growth citizens' group.

#### A. PERMITTING PROCESS

The permitting process in Spotsylvania is not encumbered by layers of approvals. A developer is required to submit a preliminary plan which is reviewed by the planning board. Approval may be granted in one week. The developer is not required to show sewer, water, utility connections or roads with the preliminary plan. This process enables a developer to acquire vested rights to build, although final subdivision plans have not been reviewed or approved and permits have not been issued. The requirements under the preliminary planning stage may become more formalized in the future as the county begins to focus on controlling growth.

The approval of a preliminary plan does not impose a time constraint on the developer to submit a final subdivision application. The process for final subdivision approvals is detailed in Chapter 16 of the Spotsylvania County Code. Specifications for all improvements must be prepared by an engineer and submitted to the subdivision agent. The County Administrator is the agent for Spotsylvania County. The agent acts as the representative of the Board of Supervisors. Per state law, the agent has sixty days to act on the submitted plans. During this time various county departments are asked to review the plans. However, if the agent fails to act

within the sixty days the plan is considered approved.

The subdivision regulations provide another layer of control beyond the zoning ordinances because they control street construction, drainage, lot size and design standards. However, the Draft Comprehensive Plan highlights some problems with the subdivision guidelines:

The lack of any formal preliminary plan for subdivision development makes planning for an area difficult.  
...there is no mechanism to ensure that a large development has sufficient entrances or adequate road widths when only individual sections are approved.  
...there have been instances where subdivision residents have expected one thing in the development only to discover a different situation when subsequent sections are constructed.[42]

#### B. ZONING

As a component of the 1980 Comprehensive Plan, Spotsylvania County identified five areas of the county suitable for growth, the Massaponax Creek, Hazel Run and Deep Run water sheds, the Spotsylvania Courthouse area, Thornburg, the shoreline around Lake Anna and the rural portions of the county. The 1986 Draft Comprehensive Plan, adds a further refinement through identification of a primary settlement area, a new transitional zone and a rural zone.

The primary settlement area is described as:

...that land in the Massaponax Creek watershed east of the Route 1 corridor and land in the Massaponax Creek watershed lying on the north side of the main branch of the creek west of the Route 1 corridor.[43]

This area is served by public water and sewer as well as upgraded roads. Much of the land in the primary settlement area is zoned Residential One (R-1) or Residential Two (R-2). The R-1 zone is designed to maintain a suburban character with 10,000 square foot lot sizes, allowing for the efficient extension of services (road, water, sewer) while providing a density of two to three units per acre. The Draft Plan calls for a maximum allowable density of three dwelling units (DU) per acre. The R-2 zone calls for a density of eight

dwelling units per acre, which allows townhouses or other multifamily type developments. The plan also states:

...land that is not yet appropriately zoned should be rezoned for greater development. With rezoning, plans should be made for adequate public facilities to accommodate expected growth.[44]

The 1000 acre site is located in the designated primary settlement area and is zoned under three categories, R-1, R-2 and C-3 (see exhibit 4-1). The commercial zone (C-3) runs along the western border of the site and has frontage on I-95 and Route 1 and is approximately 1200 feet deep. The R-1 zone is bordered by the Massaponax creek to the south and Route 636 to the North. The R-2 zone lies on the southern edge of the creek with the Route 17 bypass as its southern border.

The zoning designations allow for the mix of uses that the developers are considering. They are contemplating a Planned Unit Development (PUD) which will enable more flexibility in the site plan. A PUD is defined in the zoning ordinance as:

Fifty contiguous acres or more and lots of variable size with townhouses, single family, duplex, apartments, and commercial development allowed with approval from the Planning Commission and Board of Supervisors.[45]

PUDs are currently being used for three developments in the county. However, there has been some controversy concerning these projects. The outcry has centered around the issue of commercial uses within the PUD and a sense that the PUD has been a vehicle to circumvent the zoning ordinance. The Draft Comprehensive Plan suggests that a PUD designation should require a conditional use permit which would provide a mechanism for reviewing changes in a PUD's development plan. The zoning ordinance also allows a planned recreational community which is defined as:

An area of 1000 acres under single ownership or control having within its total plan a developed watershed or two hundred acres of surface water area, which has been approved by the Board of Supervisors for such land use.[46]



This designation limits residential development to single family homes, but allows for up to 2% of the total land area to be dedicated to C-1 and C-2 uses.

### C. INFRASTRUCTURE

Spotsylvania County has good municipal sewer and water systems in place. The sewer line runs through the Massaponax Creek and bisects the 1000 acre site running west to east following the natural water shed, (see exhibit 4-1). As the sewer line crosses I-95 it increases to 24" and there are three spurs running north from this line measuring 8", 12" and 18". The sewage is treated at the 3 million gallon per day capacity Massaponax wastewater treatment plant.

There are other sewer lines in the county that lead to the City of Fredericksburg for treatment. Fredericksburg currently has a building moratorium because it does not have enough sewer capacity.

Water for the site will come from the Ni River Reservoir which has a daily capacity of 4 million gallons. A 12" water line enters the site on the western edge along I-95 and runs north to route 636 where it turns into a 16" line and follows Route 636 to a 2 million gallon storage tank located just off the site to the north, (see exhibit 4-1). The tank creates the head pressure for the system. A 10" water line emanates from the water tank and bisects the site running south to an 8" line which follows route 17.

These utility systems have helped fuel the tremendous residential and commercial growth that has occurred in the northeast section of the county. However, as the Draft Comprehensive Plan states:

...there are indications that, with the rate of growth presently being experienced in the county, both the water and sewer systems could reach capacity within five to ten years. ...If demand outstrips the construction of new infrastructure, the county government could be forced to choose to restrict continued residential growth in order to reserve capacity for commercial and industrial

development.[47]

The county is evaluating its sewage treatment facilities and requirements and has begun an analysis of its drinking water. It is important that the developer of a large scale project, with a planned 10 year construction period, be cognizant of the potential water and sewer problems identified by the county. If the water supply or sewer treatment facilities are not expanded to meet demand, a building moratorium could be enacted. This could lead to delays in construction and cost overruns.

Another area of concern is the impact a large project might have on the solid waste facilities that exist in the county. The county operates a sanitary landfill in Chancellor, however, this site has a life expectancy of only 7 years. The county is also investigating the idea of promoting private collection services.[48]

#### D. TRANSPORTATION

The eastern portion of Spotsylvania County and the subject site enjoy excellent access to the interstate highway system via routes 95 and 1, accommodating travel to Washington D.C. to the north and Richmond to the south. Interstate 95 was recently upgraded to a six lane highway. There are two interchanges in Spotsylvania. One to the north connecting with Route 3 and one to the south connecting with Routes 1, 208 and 17. Route 17 provides access to Interstate 66 in northern Virginia. There is also a good state system of primary roads which provide east-west movement off the interstates into the county. The western boundary of the site runs along I-95 and construction of an interchange to facilitate direct access to the I-95 route 1 connector is being contemplated. The I-95 exit is only 1/2 mile from the proposed connector.

The county has witnessed a majority of its growth along the Route 3 corridor to the north and the Route 1/208 area in

the south. Traffic counts in both locations have been rising by an average of 10% a year for the last three years.[49] As the areas surrounding these interchanges continue to develop, more congestion is expected. The Spotsylvania Regional Mall is located off the Route 3 interchange, as are many new subdivisions.

It is estimated that each resident generates 7-10 car trips per day and that many of the secondary roads are already carrying more traffic than some primary roads.[50] The county is considering several scenarios to mitigate this problem:

If roads are inadequate to handle growth, then the timing of development should be controlled through zoning until the transportation infrastructure is improved. ...development can either wait until the roadways are improved with public funds or the cost of the necessary improvements can be included in the overall cost of the development... Some localities through the process of conditional zoning, are able to secure proffers from developers for road improvements along the entire frontage of a project.[51]

The State of Virginia does not allow counties and municipalities to gain exactions from developers for off-site improvements. The state has made some exceptions for specific northern counties and there is growing pressure throughout the state to change the law.

In addition to the road network which provides the primary source of transportation for citizens and commerce, the Spotsylvania area is served by railway, and if the need arises a 12' channel can be maintained by the Army Corp of Engineers on the Rappahannock River.[52] The Northern Virginia Transportation Commission (NVTC) is about to initiate a two year experiment which will provide commuter rail service from Fredericksburg to Union Station in Washington D. C.[53]

The proposed commuter rail service has been named the Virginia Railway Express (VRE). It will take 75 minutes from Fredericksburg to Union Station and trains are scheduled to run every half hour during the peak periods, four trains inbound in the morning and four trains outbound in the evening. The NVTC has completed a patronage and revenue

forecast report for the VRE taking into account population growth of the various counties and proposed extensions of the High Occupancy Vehicle lanes on I-95. The estimated ridership numbers for 1987 are 283 daily inbound passengers from Fredericksburg. The NVTC is also proposing commuter rail service from Manassas into Washington.

The commuter rail service will increase the transportation alternatives available to the area's residents, however its limited capacity will not be a major impetus for population movement to Spotsylvania. The commuter rail is not without controversy. Local jurisdictions are concerned with costs and potential deficits. Other problems include the lead time to buy equipment, versus renting existing equipment, and the cost of liability insurance.

Air service is available at the local Shannon airport for private planes. Residents use National, Dulles and Byrd airports. Efforts are now underway to build a local regional airport.

There is a park-and-ride commuter lot located at the Route 3, I-95 junction which is beginning to receive heavy use. Commuter buses and "van pooling" are becoming more common. Greyhound and Trailways make daily trips to Washington, as do several local lines. In 1980 approximately 22% of Spotsylvania's labor force commuted to the Washington Metropolitan area. This number is expected to grow significantly before 2000 which should create the demand for more commuter services.[54]

#### E. PUBLIC SERVICES

Publicly financed services, such as schools, fire, rescue and recreational facilities must expand and change to accommodate growth. As described in the Draft Comprehensive Plan, the county has reacted to the needs of its citizens and planned for future services.

During the 1984-85 school year there were 8,740 children

enrolled in the Spotsylvania School System. The county has two high schools, 3 middle schools and 8 elementary schools.[55] Between 1974 and 1980 the county built five new schools. Spotsylvania has a number of school construction projects underway with a total budget of \$40 million, including a new high school, one intermediate and one elementary school, two expanded facilities and new school department offices.[56]

Spotsylvania has six fire houses and one centrally located rescue squad which furnish emergency services to the county. The services are provided by volunteers and four paid firemen. There are 27 deputies in the sheriff's office. Capital expenditures to maintain these services come from the county's general revenues.

As the county grows, access to recreational facilities may become an issue. The state suggests that a locality provide 10 acres of park for every 1000 residents.[57] Within the county's boundaries there are two large parks, the National Battlefield Park and Lake Anna State Park. There is a local country club and a golf course at the Sheraton Hotel on Route 3.

A 1000 acre development will have a major impact on all of the services described above. The developers will have to plan for potential issues, such as donating funds or land for schools and fire sub stations, as well as public open space. One issue that may arise is accessibility of the proposed golf course and other recreational amenities to county residents.

#### F. PUBLIC PROGRAMS

The growing emphasis on preservation of open space and encouragement of well planned residential areas, has resulted in publicly supported programs which may be beneficial to the developer of large sites. States and localities provide funding and tax benefits which should be investigated for

applicability prior to finalizing site programming and specific land use allocations. The federal Title X program is another source of assistance which may be appropriate for the Spotsylvania project.

The Department of Housing and Urban Development is authorized, through Title X of the National Housing Act, to insure mortgages which will be used to finance land purchases and develop building sites for projects which will be primarily residential in character. The insured loan is nonrecourse, with a maximum term of 10 years. Improvements which are eligible for financing with mortgage proceeds generally include on and off site water and sewer systems, roadwork, storm drainage systems and other work "necessary or desirable to develop the land for residential and related uses or to provide facilities for public or common use".[58] Parking facilities and certain recreational amenities are also eligible items. However, the program encourages affordable housing and may not be used for resort or recreational communities, or luxury housing.

The Title X program charges mortgage insurance premiums based on the loan value, and there are limits on the total mortgage amount, dependent upon the value of the development and the amount of land that can be improved and absorbed within a 10 year period.[59] There is no prepayment penalty for the loan, and repayment is made as improved lots are sold or through scheduled amortization payments.

## CHAPTER V

### MARKET ANALYSIS

A real estate project often starts as the vision of an entrepreneur. The developer may pass a parcel of land or see an old building and realize the potential for a project. He can imagine what type of a project will be built and even the people that may inhabit the houses or office buildings. To take the entrepreneur's idea and bring it to fruition takes persistence, and the skills of many interacting parties. While the developer may be confident that a specific parcel of land has potential, convincing investors and bankers requires in-depth research to assess the viability of the market. The entrepreneur must assess the needs of the marketplace, identify who will buy the product and decide how much to charge.

This chapter will address the marketing issues associated with developing a 1000 acre site in Spotsylvania County, Virginia. As is the case throughout this analysis, many of the topics that must be researched in association with a large residential development are transferable to smaller or larger projects. The chapter is divided into six areas: A) market area description, B) national trends, C) demographics, D) housing starts and absorption, E) competitive developments, and F) conclusions. In addition to the discussion that accompanies these topics there are numerous exhibits to support the paper's conclusions.

#### A. MARKET AREA DESCRIPTION

The market area can be divided into two market sectors. The first or broad area encompasses the Northern Virginia counties that surround Washington D.C. Three counties, Fairfax, Arlington and Prince William have experienced explosive growth as have several Maryland counties. This

growth is attributable to the expansion in the service sector of the economy in and around the Capital. The second or local market area includes Spotsylvania County, Stafford County and the city of Fredericksburg which is surrounded by these counties.

Spotsylvania and Stafford counties have experienced rapid growth in both population and median household (HH) income since 1970. The expansion and demand for housing should continue through the 1990's. As the population matures and housing needs change households should follow the traditional pattern and move up from their townhouses, apartments and modestly priced homes to larger and more expensive dwellings.

In the past decade the proliferation of residential and office space development in the northern counties has lead to the creation of at least 14 subcenter cities as described in Chapter II.[60] As the Washington D. C. and Northern counties continue to grow, so will the outlying areas. Individuals seeking a quieter and less expensive life style will have several choices, including the outlying Maryland suburbs, western suburbs along Route 66, and the Fredericksburg area. Stafford, Spotsylvania and Fredericksburg have experienced explosive growth since 1970. Spotsylvania County is the fastest growing county in Virginia (see exhibit 5-1).[61] However, it is difficult to predict how many households the Fredericksburg market area will attract. The following sections will chart the growth of the Fredericksburg market area and show how various census projections, combined with more qualitative data and observations, support the concept of building a planned 1,000 acre residential golf course community.

### B. National Trends

Since the mid 1960's there has been great growth in the suburban counties of the country. This shift in population out of the central cities to the outlying areas has included

Exhibit 5-1

POPULATION CHANGE 1980 - 2000  
VIRGINIA FRINGE JURISDICTIONS

	<u>1980 POP</u>	<u>2000 POP</u>	<u>POP Change</u>	<u>Percent Change</u>
Clarke	9,965	12,520	2,555	25.6
Fauquier	35,889	44,900	9,011	25.1
Frederick	34,150	48,300	14,150	41.4
Fredericksburg	15,322	21,000	5,678	37.0
King George	10,543	14,600	4,057	38.4
Stafford	40,470	69,800	29,220	72.2
Spotsylvania	34,435	62,400	27,965	81.2
City of Winchester	20,217	24,800	4,583	22.6
TOTAL:	<u>200,991</u>	<u>298,320</u>	<u>97,329</u>	<u>48.4</u>

SOURCES: Census of Population and Housing, 1980: Bureau of the Census. -- Washington: The Bureau, 1982.  
Population Projections, Virginia Counties and Cities, 1980-2000; Department of Planning and Budget (Jan.1980).

residential, warehouse, manufacturing and office development [62]. As the older cities decentralize two phenomena are occurring. First, people move seeking a higher quality of life for a lower cost. Second, businesses and the associated jobs follow people:

County population growth is not much influenced by the location of office employment, but rather by the availability of land and services. On the other hand, county growth in office related employment is strongly affected by the size of the population base and its recent growth.[63]

If the above statement represents an accurate account of how suburban areas grow then it is important to understand the level of services a county provides, as described in Chapter III, and the availability and cost of land. Once a population is established the jobs will follow. Therefore, the analysis of job creation as a means to verify the viability of a suburban residential development is of questionable validity. Rather, it seems to make sense to look at the national, regional, and local demographic trends to establish a basis for analyzing the feasibility of a large scale residential development.

From 1967-1983 the population of the suburbs surrounding Washington grew by 167 percent, and 69 percent of the population was located outside the Washington center city.[64] This growth paralleled the national trend during the same period. Washington has a fairly regulated environment, especially concerning height restrictions, which has encouraged development outside the core city. In addition, new theories of land development argue that most cities grow horizontally:

...as cities grow, the buildings that already exist present an opportunity cost which prevent further vertical development or redevelopment. Cities mostly grow horizontally, therefore the density gradients should be largely flat [65].

The theory described above points to continued suburban growth and the statistics for the Washington area support this conclusion. Residential development seeks inexpensive land.

As people move out of the central city and the population stabilizes eventually jobs migrate to a new subcenter. The most difficult prediction to make is which county will grow faster or be more attractive than another. However, the following qualitative and quantitative attributes seem to attract development:

Both residential and office development are attracted to counties with higher per-capita income, and greater transportation infrastructure.[66]

The Northern Virginia area has experienced the trend of residential development followed by office development. A developer interested in long term projects should monitor a market area to assess whether the attributes exist to attract this phenomena. A discussion of the specific demographics of the Fredericksburg, Spotsylvania, and Stafford counties area follows.

### C. DEMOGRAPHICS

This section explains the specific demographic characteristics of the Rappahannock Planning Region (the city of Fredericksburg and four counties, Caroline, Spotsylvania, Stafford and King George). The analysis includes a basic description of the population, its age, income, and household size.

The population growth in the region has been very strong since 1970, and projections point to continued growth. As seen in exhibit 5-1, Spotsylvania and Stafford counties are two of the fastest growing counties in Virginia. From 1970-1980 Spotsylvania's population grew by 110% and Stafford's by 65%. The rate of growth has been less for each county since 1980 and the rate of growth will continue to diminish through 1992, because the base population will have increased. It is projected that the population will continue to expand through 2000 (see exhibit 5-2). Fredericksburg has

EXHIBIT 5-2

POPULATION 1970 - 2000

\*\*\*\*\*

	1970	1980	1987	1992	2000
Fredericksburg	14,450	15,322	19,902	21,385	22,700
Spotsylvania	16,424	34,435	39,944	45,530	60,000
Stafford	24,587	40,470	51,021	58,441	70,400
King George	8,039	10,543	12,096	13,179	15,000
Caroline	13,925	17,904	19,205	20,093	22,800
Total Region	77,425	118,674	142,168	158,628	190,900

Source: National Planning Data Corp.  
 Tayloe Murhpy Institute (2000)

CHANGES IN POPULATION

\*\*\*\*\*

% Increase	1970-1980	1980-1987	1987-1992	1992-2000
Fredericksburg	6.0	29.9	7.5	6.1
Spotsylvania	109.7	16.0	14.0	31.8
Stafford	64.6	26.1	14.5	20.5
King George	31.1	14.7	9.0	13.8
Caroline	28.6	7.3	4.6	13.5
Total Region	53.3	19.8	11.6	20.3

Real Increase	1970-1980	1980-1987	1987-1992	1992-2000
Fredericksburg	872	4,580	1,483	1,315
Spotsylvania	18,011	5,509	5,586	14,470
Stafford	15,883	10,551	7,420	11,959
King George	2,504	1,553	1,083	1,821
Caroline	3,979	1,301	888	2,707
Total Region	41,249	23,494	16,460	32,272

Source: National Planning Data Corp.  
 Tayloe Murhpy Institute (2000)

not grown rapidly, yet it continues to have a steady increase. In 1983 its population had a one time gain because the city annexed 4.4 miles of Spotsylvania County.

The 1987 estimated population of the entire planning region is 142,168, of this total 78% or 110,867 people live in the defined market area of Fredericksburg, Spotsylvania and Stafford. In 1992 the market area will have a population of 125,356 an increase of 13% in just five years. This will represent 78% of the entire region's population.

From 1987 through 1992 Spotsylvania County is expected to grow by 5,586 people (a 14% increase), and Stafford County by 7,420 (a 14.5% increase). The growth in Fredericksburg is projected to be negligible.

Spotsylvania and Stafford have had very rapid growth rates through 1980. As the base population increases the rate of growth will diminish although the population will continue to grow through 2000. Exhibit 5-2 describes the population, the rate of growth, and the real increase in population for the Fredericksburg area from 1970-2000.

#### 1. Household Formation

There are four primary indicators for demand besides general growth in population: growth in households, household size, age distribution, and income distribution. The growth in total households, or household formation, is an indicator of the number of units that a jurisdiction will require to meet its housing needs. The size of households, age and income distribution provide an indication of the type of housing demanded. Younger households typically rent apartments or mobile homes, and as they reach their late 20's and marry they purchase moderately priced townhouses, condominiums or single family houses. As households mature, and families and incomes grow, they upgrade to larger homes in more desirable neighborhoods. Finally, the empty nester or retirement household moves into a smaller home.[67]

The baby boom which occurred after World War II created a bulge in the population cohorts. Today these individuals are between the ages of 29 through 41. The number of households in an age group increases as the cohort matures and the demand for a specific type of housing should also increase. The lag between peak demand periods is estimated to be 20 years. In other words if the peak demand for apartments was in the late 1960's the peak demand for more upscale single family homes would be the late 1980's, and so forth. However, this demand can be frustrated by the high cost of money, scarcity of land, land restraints and high development costs.[68]

The decade from 1970 to 1980 saw large growth in the total number of households in the market area. Spotsylvania County led the area adding 6145 households (HH) a 130% increase in ten years. During this period Stafford added 5,466 HH's, an increase of 82%. Fredericksburg added 1,356 for an increase of 30%. This rate of household formation led to a boom in housing as is evidenced by the number of new subdivisions in the two counties.

The growth in HH formation moderated from 1980-1987. During this seven year period Spotsylvania reported 2,149 HH for an increase of 20%. Stafford added 3,703 HH for an increase of 31% and Fredericksburg experienced an addition of 2,494 HH. It must be noted that during this period Fredericksburg annexed a portion of Spotsylvania County which resulted in a skewing of the numbers.

This trend towards increased HH formation has occurred nationwide and is in part due to a decrease in the size of HH's as well as a swell in the number of individuals coming of age to form their own HH's. The baby boom of the post World War II era has created this HH formation bulge in the population. This phenomena will continue to impact demand for housing.

Spotsylvania and Stafford are projected to continue their growth in total HH formation through 1992, but at a slower

pace. Spotsylvania is estimated to grow by 16.4%, adding 2,130 households, and Stafford by 16.9%, adding 2,683 households. Exhibit 5-3 describes the growth in households and the rate of growth.

## 2. Household Size

Since 1970 the number of persons per household in Spotsylvania has decreased from 2.72 persons per HH to a projected 2.16 in 1987, (exhibit 5-4). This downward trend in household size impacts the type of product that a developer should consider building. Spotsylvania and Stafford have changed from rural counties, fewer but larger families, to a more suburban mix with a higher proportion of smaller families. The recent proliferation of townhouses, apartments, and smaller single family homes points to an in-migration of younger, smaller families. These HHs will mature as the 1990's approach and many may want to move into larger dwellings.

## 3. Age Distribution

There are two reasons for the growth in household formation: the aging of the baby boom generation, and the strength of the national economy (which has enabled more individuals to live independently). Nationally, household formation begins in the 25-29 age cohort, with 45.9% of the individuals forming their own households. The percentage of the population that creates households continues to rise steadily through the cohorts until 75+ when it begins to decline.[69]

In Spotsylvania 34% of the population is in the 25-44 age bracket and in Stafford County 35% are in this category, the prime years for creating households and purchasing homes. Like the national population, the market area has a bulge that

Exhibit 5-3

GROWTH IN HOUSEHOLDS 1970 - 2000

	1970	1980	1987	1992	2000
Fredericksburg	4,571	5,927	8,421	9,470	10,047
Spotsylvania	4,715	10,860	13,009	15,137	26,108
Stafford	6,706	12,172	15,875	18,558	26,720
Total Market Area	15,992	28,959	37,305	43,165	62,875

% Increase	1970-1980	1980-1987	1987-1992	1992-2000
Fredericksburg	29.7	42.1	12.5	6.1
Spotsylvania	130.3	19.8	16.4	72.5
Stafford	81.5	30.4	16.9	44.0
Total Market Area	81.1	28.8	15.7	45.7

Source: National Planning Data Corp.  
 Tayloe Murhpy Institute (2000)

Exhibit 5-4

HOUSEHOLD SIZE

	1970	1980	1987	1992
Fredericksburg	2.72	2.29	2.16	2.08
Spotsylvania	3.45	3.16	3.06	3.00
Stafford	3.43	3.19	3.11	3.06

Source: National Planning Data Corp.  
 Tayloe Murhpy Institute (2000)

conforms with the post war baby boom. The other large sector of the population consists of children and young adults in the 0-24 age bracket. Approximately 66% of this group is age 14 or under.[70] In Spotsylvania this age cohort accounts for 44% of the population and in Stafford 43%, (see Exhibit 5-5).

#### 4. Income Distribution

During the early 1980's it became more difficult for first time buyers to purchase a home because prices increased, therefore larger down payments were required. Higher real interest rates also created a barrier to home ownership. Although interest rates have decreased, the other barriers still exist and these phenomena are projected to continue through the 1990's. Households still have the desire to own single family homes and will either purchase condominiums or move into areas that offer less expensive single family homes.[71] It is assumed that the lower cost of housing in Spotsylvania has fueled the tremendous growth in the county.

A different situation exists for those that already own homes and wish to upgrade. As these individuals experience equity appreciation and rising incomes they usually choose to purchase larger more expensive homes.[72]

The median household income in the market area has increased substantially since 1969 and this upward trend will continue into the 1990's. The 1984 income tax returns for the Rappahannock region show that 35.5% of the population had an adjusted gross income above \$25,000. In Stafford County 41.7% of the population had incomes above \$25,000, and Spotsylvania had 38.4% of its households above this mark. In Fredericksburg only 27% of the population was above this level. Both Spotsylvania and Stafford were above the state level of 34.1%. To put this in perspective, among the 136 counties and cities in Virginia, Stafford County ranks 9th in median household income and Spotsylvania is 20th.[73]

**Exhibit 5-5**

**POPULATION BY AGE BY LOCALITY: JULY 1, 1984**

<b>Cohort</b>	<b>Spotsy</b>	<b>Stafford</b>	<b>Fredbrg</b>	<b>Market Area</b>
0-24	17,057	19,824	7,242	44,123
25-29	3,432	3,897	1,525	8,854
30-34	3,814	4,183	1,358	9,355
35-39	3,606	4,347	1,176	9,129
40-44	2,628	3,542	883	7,053
45-49	1,932	2,551	764	5,247
50-54	1,506	2,074	777	4,357
55-59	1,440	1,767	825	4,032
60-64	1190	1446	894	3,530
65-69	1030	1005	791	2,826
70-74	700	700	707	2,107
75 +	871	948	1034	2,853

**Source: Rappahannock Area Development Commission**

During the early 1980's, using median household income as an indicator, Stafford had a wealthier population than Spotsylvania . However, estimates for 1987 and projections for 1992 show that Spotsylvania may overtake Stafford as the wealthier county. From 1969 to 1979 the median household income in Spotsylvania increased 165.8% to \$19,216 compared to Stafford's increase of 155.7% to \$21,910. The respective estimated median incomes for 1987 are \$29,221 (a rise of 52%) and \$28,648 (a rise of 30.8%). The projected median household income for 1992 for Spotsylvania is \$37,184 (a rise of 27.3%) and for Stafford \$36,011 (an increase of 25.7%). In comparison to the counties, Fredericksburg has had lower levels of income and rates of increase. During these same periods per-capita income increased at similar rates as shown in exhibit 5-6 and 5-7.

As the population in the market area grows and matures, the distribution of household income is changing. In 1979 a majority of the households had incomes below \$25,000. The 1987 estimates show that 57.2% of the households in Spotsylvania will have an income above \$25,000. The projections for 1992 have 66.2% earning above this benchmark with 46.4% earning \$40,000 or more. The 1987 estimates for Stafford county have 56.3% of the households earning above \$25,000. The 1992 projections show an increase to 64.8% for households above \$25,000, and 44.8% earning above \$40,000.

It is evident from exhibit 5-8 which describes distribution of income among households, that the estimates for 1987 and the projections for 1992 describe a population that will continue to experience a rise in household income. This increase is so pronounced that the 1992 projections have nearly half of the households earning above \$40,000 and a large number above \$50,000. As the income of a household increases it is able to afford larger and more luxurious

Exhibit 5-6

-----  
**MEDIAN HOUSEHOLD INCOME (\$)**  
 =====

	1969	1979	(est.) 1987	(proj.) 1992
	-----	-----	-----	-----
Fredericksburg	8,472	14,255	26,639	32,083
Spotsylvania	7,229	19,216	29,221	37,189
Stafford	8,567	21,910	28,648	36,011

**% Increase**

	1969-1979	1979-1987	1987-1992
	-----	-----	-----
Fredericksburg	68.3	86.9	20.4
Spotsylvania	165.8	52.1	27.3
Stafford	155.7	30.8	25.7

Source: National Planning Data Corp.

Exhibit 5-7

-----  
**PER CAPITA INCOME (\$)**  
 =====

	1969	1979	(est) 1987	(proj) 1992
	-----	-----	-----	-----
Fredericksburg	3,140	7,089	11,637	14,511
Spotsylvania	2,369	6,708	11,904	15,439
Stafford	2,598	7,321	12,596	16,058

**% Increase**

	1969-1979	1979-1987	1987-1992
	-----	-----	-----
Fredericksburg	125.8	64.2	24.7
Spotsylvania	183.2	77.5	29.7
Stafford	181.8	72.1	27.5

Source: National Planning Data Corp.

DISTRIBUTION OF HOUSEHOLD INCOME 1979

=====			
DISTRIBUTION OF HOUSEHOLD INCOME 1987 (est.)			
=====			
% of Population	Fredericksburg	Spotsylvania	Stafford
LESS THAN \$7,500	25.0	14.1	11.4
\$7,500 - \$14,999	27.8	21.9	18.3
\$15,000 - \$19,999	14.7	16.7	14.0
\$20,000 - \$24,999	10.5	16.5	16.3
\$25,000 - \$29,999	6.9	12.6	13.1
\$30,000 - \$34,999	4.3	6.7	9.2
\$35,000 - \$39,999	3.7	4.5	6.8
\$40,000 - \$49,999	3.9	4.0	6.3
\$50,000 - \$74,999	2.3	2.1	3.6
\$75,000 AND OVER	1.0	1.0	1.0

DISTRIBUTION OF HOUSEHOLD INCOME 1992 (proj.)

=====			
DISTRIBUTION OF HOUSEHOLD INCOME 1992 (proj.)			
=====			
% of Population	Fredericksburg	Spotsylvania	Stafford
LESS THAN \$7,500	12.9	11.7	12.0
\$7,500 - \$14,999	15.0	13.4	13.7
\$15,000 - \$19,999	9.9	9.2	9.4
\$20,000 - \$24,999	9.4	8.5	8.6
\$25,000 - \$29,999	8.8	8.5	8.6
\$30,000 - \$34,999	8.0	7.5	7.5
\$35,000 - \$39,999	7.1	7.0	7.1
\$40,000 - \$49,999	10.2	10.9	10.8
\$50,000 - \$74,999	12.7	15.5	14.9
\$75,000 AND OVER	5.9	7.8	7.4

Source: National Planning Data Corp.

=====			
% of Population	Fredericksburg	Spotsylvania	Stafford
LESS THAN \$7,500	10.7	9.2	9.5
\$7,500 - \$14,999	12.3	10.4	10.7
\$15,000 - \$19,999	8.4	7.0	7.3
\$20,000 - \$24,999	7.9	7.2	7.3
\$25,000 - \$29,999	7.7	6.7	6.6
\$30,000 - \$34,999	7.4	6.7	6.9
\$35,000 - \$39,999	6.8	6.4	6.5
\$40,000 - \$49,999	11.3	11.1	11.4
\$50,000 - \$74,999	15.2	17.6	17.0
\$75,000 AND OVER	12.3	17.7	16.4

housing, provided that housing prices do not rise disproportionately. This trend describes a potential demand for single family homes that offer more amenities than the average suburban subdivision presently in the market area.

### 5. Summary

Demographic estimates and predictions point toward a more affluent and maturing population in the Fredericksburg market area. A greater percentage of the population will be older and have more disposable income. This should result in an increased demand for larger more expensive homes. This trend is projected to continue through 2000. It is surmised that more households will be created or migrate into the market area which will create a greater demand for housing.

It is important to note that any estimates or predictions of future population trends are made in light of today's world. The United States economy is affected by global politics. A renewed energy crisis, for instance, may dampen people's willingness to commute long distances by car. An unexpected recession may diminish the upward trend in median household income growth. Barring any of these changes, the Fredericksburg market area is well positioned for a quality residential development offering larger, more expensive homes with a variety of amenities.

### D. HOUSING STARTS AND ABSORPTION

This section examines the supply side of the housing equation. The key variables are the number of housing starts in a given period and the average length of time a unit remains on the market prior to sale. As soon as a unit is sold it has been absorbed by the market.

At the time this paper was prepared no reliable data existed for the Fredericksburg market which tracked the total number of new houses constructed, the time a unit remained on the market prior to sale, and the selling price of the house.

It is not possible, without this data, to report an historical rate of absorption for new housing units or to create a scenario for future demand. An organization, Housing Data Resources, collects this type of data for the Metropolitan Washington market and they are contemplating extending their service to include the Fredericksburg market. Because good data were not available, this paper uses other sources of information to project absorption. However, the conclusions reached in the following discussion are only as reliable as the data available at the time of publication.

Available data included building permits, occupancy permits and housing sales information. Municipalities usually keep a record of the number of building permits issued and the number of occupancy permits issued in a given year. The number of building permits is not necessarily an accurate indicator of units constructed, because the holder of a permit may choose not to build. An occupancy permit is only slightly more accurate, since it indicates that a unit has been built. However, that same unit may not yet be sold. The local Board of Realtors tracks unit sales, but the data are not differentiated by age of the unit, and data segmented by locality are not available for the 1982-1985 period.

### 1. Real Estate Markets

In its most basic form a real estate market has three levels of activity. It can be static, healthy, or over built. A static market is characterized by low vacancy rates and very few new starts. This type of market is often created through regulation or lack of affordable land. Housing prices are either stable, very high, or declining, depending on the demand. A healthy market is one in which there is both good demand or growth and an abundant supply to meet the demand. This type of market will be competitive and offer the consumer several product options in a wide range of prices. There is no optimal vacancy rate. Rather the historical vacancy rate

is a more important indicator. Some healthy markets have high structural vacancy rates. The third market, the unhealthy type, has an over supply of units and often has declining prices and a high vacancy rate.

## 2. Housing Starts

The Fredericksburg market area, the specific market for this development, is a fairly healthy market. The city is in a static state with very few new housing starts. In both Stafford and Spotsylvania counties the number of reported building permits has increased over the past five years, except for a dip in the recession years of 1981-82. From 1983-87 the number of permits increased steadily (see exhibit 5-9). The number of occupancy permits has also increased in these jurisdictions.

In 1986 in Spotsylvania County 1,012 building permits were issued for single family homes and approximately 300 permits were issued for multifamily dwellings [74]. Since 1982 there has been a steady increase in the number of building permits issued. The rates of increase for single family building permits are: 1982-83, 88%; 1983-84, 25%, 1984-85 17%; and 1985-86 11%. Through the first half of 1987 building permits were averaging 120 a month. If that rate continues 1,440 single family building permits will be issued in 1987 an increase of 42% since 1986 [75].

The number of building permits is only an indicator of proposed activity. The occupancy permits are a better indicator of the number of dwellings actually built. In 1986 924 occupancy permits were issued for single family dwellings, 103 for townhouses and 152 for apartments. For single family homes this translates into a 91% rate of occupancy permits to building permits issued.[76]

The high correlation between building permits issued and occupancy permits is evidence that a high percentage of the proposed houses get built and require an occupancy permit,

Exhibit 5-9

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RESIDENTIAL BUILDING PERMITS  
=====

	SPOTSYLVANIA		STAFFORD	
	SF	MF	SF	MF
1975	474	0	525	0
1976	654	0	704	28
1977	882	0	837	18
1978	715	112	761	8
1979	500	0	544	4
1980	403	7	465	12
1981	337	16	302	41
1982	333	10	260	145
1983	625	4	506	8
1984	779	4	464	0
1985	910	281	704	0

Source: Rappahannock Area Development Commission

indicating that the dwelling is complete. However, this relationship does not accurately predict the number of units sold or the length of time on the market because a dwelling with a valid occupancy permit could be vacant.

### 3. Absorption Data

Unfortunately, accurate absorption data is not available. The local Board of Realtors keeps records for all sales without differentiating between old units that have been resold and newly built unit sales. However, the length of time a unit stays on the market, whether it is old or new, is an accurate indicator of the health of a market. An additional predictor of the health of a market is the rate of price escalation.

In the period beginning January 1, 1987 and ending May 31, 1987 the Multiple Listing Service (MLS) of the Fredericksburg Board of Realtors recorded 897 new listings of single family homes in Spotsylvania County. Of these homes 404 were sold in the same period for an absorption rate of 45%. The average selling price was \$85,000. These homes stay on the market for an average of 64 days. Interviews with builders in the market area indicate that the purchase price for a new home is approximately \$150,000 and as high as 200,000.[77]

During this same period Stafford County reported 680 new homes listed, of which 344 were sold, for an absorption rate of 51%. The average selling price was \$95,000 and homes stayed on the market for approximately 62 days.

The Fredericksburg market showed greater absorption, although there were far fewer homes on the market. In this same period 98 homes were listed and 61 were sold for an absorption rate of 62%. The average selling price was \$83,000 and average days on the market was 75.

The numbers quoted above describe a contrast between the three jurisdictions. Spotsylvania reported 217 more new

listings than Stafford and an absorption rate that was only 6 points lower. These numbers suggest that Spotsylvania is a more active market. Perhaps most significant is the difference in reported sale price. The average sale price for a house in Spotsylvania was \$10,000 less than it was in Stafford. For a family that is cost conscious Spotsylvania offers the more affordable choice.

In the six month period beginning July 1, 1986 and ending December 31, 1986 the market for single family homes in Spotsylvania was weaker than the first five months of 1987. The MLS shows 1,145 new listings and 394 houses sold for an absorption rate of 34%. The average price was \$79,000 and homes stayed on the market for an average of 131 days. Research did not reveal why this six month period was weaker.

Stafford County was even weaker during this period with 932 new listings and 300 homes sold for an absorption rate of 32%. The average sales price was \$90,000 and homes were on the market for an average of 141 days.

The Fredericksburg market was also weaker with a 37% absorption rate and an average 110 days on the market. However, the average sales price was \$90,500, higher than that recorded during 1987.

From 1982-1985 the MLS grouped the entire Rappahannock region together. Therefore, it is not possible to break out the specific market area and track its performance. However, during this period the absorption rate for the region did strengthen from a low of 27% in 1982 on a volume of 2,790 homes listed to 40% in 1985 on a volume of 3,541 homes listed. During this same period the average sales price increased from \$63,000 to \$72,000.

These statistics show that the market for single family homes has been stronger during the first five months of 1987 as compared to the last six months of 1986. The trend since 1982 has been increased absorption rates, despite an increase in the number of new listings per reporting period. Overall,

the market for single family homes has become stronger in the latter part of this decade. Once again, it is cautioned that the data available make no distinction between newly constructed and older homes. However, a tour of both counties and discussions with various officials and developers indicate that much of the activity involves newly constructed units.

The market for townhouses, although much smaller, was very active during these two periods. For example, in the first five months of 1987, 27 townhouses in Spotsylvania were listed and 21 sold (an absorption rate of 78%). The average sales price was \$62,500 and the unit stayed on the market for 72 days. In Stafford, 34 units were listed, the absorption rate was 68%, and the average price was \$53,500.

During the last six months of 1986 Spotsylvania had a strong townhouse market. There were 36 units listed and 26 sold for an absorption rate of 72%. The average selling price was virtually the same as above although the unit stayed on the market for 125 days. During this period the Stafford market was much weaker. There were 76 units listed and the absorption rate was only 25%. The sales price was \$1,000 lower than 1987 and the average days on the market totalled 109.

It is interesting that the sale price for townhouses in Spotsylvania is greater than the sale price in Stafford. The market for townhouses appears weaker in Stafford than in Spotsylvania. More importantly, the market for townhouses is substantially smaller than the market for single family homes. Two conclusions can be made. First, households migrating from the more expensive Northern Virginia suburbs are probably leaving smaller expensive units in search of affordable detached single family homes. Second, as the population matures and becomes more affluent the potential demand for townhouses will decrease. This suggests that single family homes may be in greater demand and a developer contemplating a large scale development in this market should plan to build a

higher percentage of single family homes.

#### 4. Summary

It would have been helpful to have had historical absorption data for newly constructed homes. Statistics collected over a five year period would provide a good indicator of the strength of the housing market. The numbers quoted above point to a fairly healthy market. The number of occupancy permits is keeping pace with the building permits. The Spotsylvania market is a young market with much activity. It is absorbing listed homes at a good rate, however builders must be careful not to over build and create too large an inventory.

#### E. COMPETITIVE DEVELOPMENTS

The Stafford, Spotsylvania, Fredericksburg area has had substantial residential growth, as documented elsewhere in this paper. A number of PUDs have been built in the area and marketed to various segments of the community. One such development, Aquia Harbors (Stafford), was marketed as a vacation community surrounding a marina and a nine hole golf course. A site inspection and discussions with Stafford County planners indicated that this development functions as a primary home community. Although local planners characterized this as an "expensive" development, its physical condition, evidenced by road condition and maintenance of common areas is deteriorating.

The main competition, although currently planned as a second home community, may prove to be a project proposed for a 1,000 acre parcel fronting the Potomac River in northern Stafford County. The developer is seeking master plan and rezoning approval for up to 3,150 residential units, a commercial "village center", an 800 slip marina, a hotel/conference center, an 18 hole golf course and country club with recreational amenities, a business/industrial park,

and a private airport. Construction costs are estimated at \$40-45 per residential square foot, \$45-60 per commercial square foot, and \$30-35 per industrial square foot. The developer, to address local water and sewer problems, proposes to construct, own and operate a centralized sewer treatment and water system. The Stafford County Board of Supervisors has hired a consultant to review the proposal and public hearings are planned for August or September, 1987. The developer plans for the most concentrated build-out to occur between 1989-1992 (see exhibits 5-10 and 5-11).

The proposal indicates that 90% of the population (5,670 of 6,300 residents) will be over age 45 and, interestingly, projects no residents under age 26. In addition the developers project that 2% of the population will originate from within Stafford County, and 75% will come from within the "region" which is defined as inclusive of both the Washington, D.C. and Richmond, VA metropolitan areas. Land allocations for the proposed development are 590 acres residential use, 64 acres commercial, conference and marina uses, 132.4 acres industrial use and 211 acres of "undisturbed natural area".

#### 1. Summary

The proposed development in Stafford will be marketed as a second home community. Although it will have recreational amenities, its distance from I-95 indicates that it will probably not be direct competition for the proposed development in Spotsylvania. However, if its marketing focus shifts from a resort to a primary home community, it has the potential to adversely impact the absorption of the Spotsylvania project.

During the course of research for this paper no comparable developments were found in the market area. As mentioned above, there are several PUDs in Spotsylvania and Stafford. However, these projects do not compare in size, scope, or level of recreational amenity.

Exhibit 5-10

RESIDENTIAL AND HOUSEHOLD INCOME RANGE

COMPETITIVE PRODUCT

TYPE	PRICE RANGE [€]	UNITS/HH	INCOME RANGE	% TOTAL
CONDO	70,000-90,000	753	37,300-47,995	24%
TOWNHOUSE	90,000-120,000	1,246	47,995-63,993	40%
SINGLEFAMILY	125,000-300,000	151	63,966-160,000+	36%
TOTAL		2,150		100%

Exhibit 5-11

RESIDENTIAL AND HOUSEHOLD INCOME RANGE

COMPETITIVE PRODUCT

YEAR UNITS	YEAR-UNITS	YEAR-UNITS
1988 - 120	1993 - 180	1998 - 180
1989 - 220	1994 - 180	1999 - 180
1990 - 450	1995 - 180	2000 - 180
1991 - 320	1996 - 180	2001 - 180
1992 - 190	1997 - 180	2002 - 180

Source: Market Study for Competitive Product

## F. CONCLUSION

The designated market area for the proposed 1000 acre residential development in Spotsylvania has experienced rapid growth in both population and household formation since 1970. The growth is probably attributable to two phenomena. First, the baby boom generation has matured and is forming new households which have created demand for housing. Second, as the Northern Virginia suburbs around Washington D.C. have expanded, the cost of housing has increased dramatically. Individuals are relocating from these areas in search of affordable housing which is readily available in the Spotsylvania market area.

The statistics show that Spotsylvania County is the fastest growing county in Virginia. It is estimated that the rate of growth will decrease as the 1990's approach. However, this is only a reflection on the rate of growth in the base population, not the absolute population increase. The projections through 2000 point to continued strong population growth and household formation.

The projected growth in population will continue to create demand for housing. Two key statistics indicate the type of housing the market will probably demand. First, the population is maturing from younger newly formed households to older more established families. Historically, this has produced demand for single family detached dwellings. Second, the data reveals that a larger proportion of the population will be making above \$40,000. As households become more affluent demand for homes that offer amenities will increase.

The demographic data seems to indicate that a development which offers single family homes that are larger and offer more amenities will receive a favorable response. The one important factor that remains unknown is the ability of the market to absorb newly constructed units. More comprehensive research needs to be completed to answer this key issue. The

market area has enjoyed rapid growth as is evident from the number of new subdivisions. However, the market is untested as to its ability to absorb a 1000 acre residential development over a ten year holding period. All of the key data indicate that demand for upscale single family homes should be strong into the 1990's.

The statistics indicate a diminishing demand for townhouses and multifamily units because the sector of the population that has created the market for this type of housing will be a smaller proportion of the entire population as the 1990's approach.

## CHAPTER VI

### FINANCIAL FEASIBILITY

This Chapter will discuss the financial feasibility of the proposed project. The project is a phased land development deal. The intent of the developers is to purchase the 1000 acre site, build the infrastructure, and sell finished residential building lots, over a ten year holding period, to merchant builders. A cash flow analysis is provided in the form of a simple spread sheet. This measures the return on the developer's investment. Included is a discussion of the methodology behind the analysis, the assumptions, the results of the analysis, and a conclusion.

The financial analysis projects the costs of the project, both operational and financial, as well as the risk factor and associated rate of return that a developer requires to commit his time and resources to an investment. The decision to initiate a development is often dependent upon making key assumptions about various components of the project. These assumptions may include cost, schedule of construction, sale price and the amount of time it will take to sell the product. Potential problems include a change in the capital markets which can affect interest rates, and the willingness of the targeted audience to purchase the product.

The developer should endeavor to minimize his risks prior to initiating a given project. No development deal is without risk, for it is the willingness to take on and effectively manage risk that separates the successful developer from the less successful developer.

#### A. METHODOLOGY

There are several ways in which a developer can analyze the financial risks associated with a project. A pro forma or cash flow analysis is one method widely used. This

evaluates the potential return on investment for a given project, such as the internal rate of return (IRR) and the net present value (NPV). There are other methods for measuring the return to an investor, however this analysis uses only the IRR and NPV.

The viability of the cash flow analysis is dependent upon the accuracy of the assumptions. The greater the number of assumptions used the less precise it becomes. The developer, cognizant of the risks associated with the project, should vary the assumptions used in the model. This will enable him to determine which factors are most critical to his return on investment. As the project progresses, and assumptions become clarified, the developer should conduct more specific and complex cash flow analyses and additional sensitivity testing.

The site in Spotsylvania County is in an early stage of the development process. The land is being assembled, potential joint venture agreements are being scrutinized and the site plan is being formulated. The property has not been appraised, therefore a market value has not been established. These factors make it difficult to develop a complex cash flow analysis that will accurately assess the rates of return on the investment. Rather than design a complex model this study utilizes a simple spread sheet making as few assumptions as possible.

#### **B. ASSUMPTIONS**

Three development scenarios have been created and run through the model. The three scenarios share the same assumptions except for the density and distribution of land uses, specifically the number of single-family, townhouses, and multifamily lots available for sale during the holding period. Because the scenarios differ in the type and number of lots being developed, the absorption rate, (the number of lots sold in a period), also changes. All other assumptions

(such as hard costs, soft costs, sale price for finished lots, cost of capital and the acquisition price) remain constant. The analysis is calculated on a pretax basis because information concerning the tax status of the developer was not available.

#### 1. Distribution of Land Uses

The guidelines for distribution of land uses for Scenario I and II were provided by the two developers. Scenario I has a density of 3 dwelling units (DU) per acre and represents the national developer's estimate of land distribution. This program has 3,000 DU's, (900 single-family, 100 fairway homes, 1,400 townhouses, and 600 multifamily). Scenario II has a density of 5 DU per acre and represents the local land developer's estimate of land use. This plan includes 5,000 DU's, (900 single-family, 100 fairway homes, 2,500 townhouses, and 1,500 multifamily). Scenario III reports the results of an alternative proposal. This third proposal is based on the key concept of the development, the inclusion of the golf course amenity. Since this is the source of additional profit through premium lot values, the number of single family homes is maximized. Additionally, the demographic data indicate that there will be a greater demand for single family homes in the market. The third program has 2,375 DU's for a density of 2.3 units per acre, (1,550 single-family, 100 fairway homes, 375 townhouses, and 350 multifamily).

The quantity of fairway homes in each scenario is held constant because a golf course has a limited capacity to accommodate house lots. It is assumed that each scenario uses the same golf course design. As mentioned in Chapter II, it is in the best interest of the developer to design a golf course that maximizes the number of homes fronting the fairway. The quantity used in this analysis (100 fairway homes) is a conservative number. The average golf course has

approximately 6,000 yards of fairways. If each lot has 100 feet of fairway frontage 180 lots could be accommodated using only one side of the fairway.

## 2. Hard Costs

The estimated cost of the golf course, the interchange to Route 1, the main entrance, boulevard road, relocation of the sewer main, and construction of retention lakes was provided by the local land developer. The golf course is the single most expensive item, costing \$5 million. It includes building a clubhouse, pool, and tennis courts. This expense is in line with estimates from case studies in the Urban Land Institute's publication: Developing with Recreational Amenities: Golf, Tennis and Marinas. The combined cost of the roads, sewer relocation and lakes is estimated to be \$11.8 million.

The expense for constructing the infrastructure for the subdivisions is allocated on a per lot basis, and escalated 4 percent every period. The on-site infrastructure expenditures vary per unit type, (single-family and fairway, \$10,000; townhouse, \$7,000; and multifamily, \$2,500). These prices were provided by the local land developer.

## 3. Soft Costs

The percentages used to estimate soft costs are the result of discussions with the national developer and rules-of-thumb generally accepted in the development industry in this market area.

## 4. Financial Assumptions

The financial assumptions and escalation rates were provided by the national developer. The estimated acquisition cost for the land is \$6 million. The land will be purchased by paying 30 percent in cash and giving a purchase money mortgage to the seller equal to 70 percent of

the acquisition price. The terms of the loan are interest only for ten years with a balloon payment due at the end of the tenth year. The interest rate is assumed to be 8 percent.

A discount rate of 15 percent is used for calculating the net present value. This is recognized as a high discount rate, given current capital markets, but was mandated by the developer to adjust for the level of risk inherent in this type of development.

The rate for the construction loan is 9.75 percent which is one and one half points above the current prime rate. The construction loan provides for financing of all hard and soft costs incurred in the development of the project. The loan is interest only during the first two years of the project because no lots have been sold. A more aggressive approach would have been to accrue the interest in years one and two until revenue was available. This would increase the IRR and NPV.

It is assumed that the land will provide the collateral for the loan. Therefore, as lots are sold the loan balance must begin to be paid down. It is assumed that the project will be built in phases. The amount of the construction draw will be equal to the amount of expenses incurred in that period. A conservative assumption is made that 85% of revenue generated during the first few years lots are sold (years 3 and 4) will be used to pay down the large balance of the construction loan that is incurred in years one and two when no revenue is generated. During years five through ten revenue equal to the draw is used to pay down the balance.

The escalation rates of 4% for cost of construction and 5% for the sale price of the finished lots were provided by the developer.

##### 5. Land Sale Price

The land sale price for each dwelling unit was estimated

using the following two step procedure. The estimated selling price of a finished home was used as the starting point, these prices are described below in item 7.

First, the merchant builder's profit was derived by taking a rate of profit (20% for single-family, fairway homes and townhouses and 15% for multifamily), and multiplying the rate times the sale price. This amount was then subtracted from the base. Second, the construction cost (square feet of unit multiplied by cost per square foot) was subtracted from the remainder of the first calculation, and this new remainder became the selling price for the lots. The construction cost per square foot included the sewer and water fee.

The following is an example of the estimating procedure using prices associated with a single-family lot:

SINGLE-FAMILY SALE PRICE	\$172,500
DEVELOPER'S PROFIT @	20%
REMAINDER	\$138,000
CONSTRUCTION COST 2,200 SF * \$42.	\$92,400
SALE PRICE OF LOT	\$45,600

#### 6. Absorption Rate

The absorption rate was arrived at by distributing the sale of each type of unit over an eight year period. It was assumed that no lots could be sold until the third year because of initial construction of the off site infrastructure and golf course. The golf course is estimated to take 30 months to build.[78]

It is assumed that the number of lots built in a period will be absorbed in that period. The number of lots delivered to market in each period changes to account for phasing and potential dips in demand. The absorption rate is a very sensitive assumption. A variance in demand or the phasing plan will have a great impact on revenues, the total

cash flow and rate of return. The absorption, unfortunately, is not based on actual historic rates for the market area. As discussed in Chapter VI these statistics did not exist.

### 7. Size and Sale Price of Dwelling Units

The size of the units was estimated from discussions with developers active in the market area. The "fairway homes" are larger (2,800 square feet) than a normal single family unit (2,200 square feet) in the market, but it is assumed that buyers of these units want larger homes and more amenities.

The sale price for each type of dwelling was arrived at by taking today's selling price for a comparable dwelling and increasing it by 15 percent. The rationale for higher prices was that the homes in the proposed project would not come to market until the end of the third year and the golf course adds a premium. The base prices were estimated from discussions with local builders and statistics collected by the Fredericksburg Board of Realtors. Today's prices for single family homes range between \$100,000 to a high of \$200,000. Townhouses are selling between \$60,000 and \$72,000.[79]

It is difficult to quantify exactly what the premium is because there are no comparable types of developments in the market area. The sales price for the fairway homes is a best estimate using the ULI publication and case studies for golf course communities. The price was arrived at by taking the price of a single family home and adding a 40 percent premium. The premium that a developer can expect when he builds a project with an amenity is dependent upon the quality, location, and market acceptance of the project. The premium used in this study is an average for a golf course project.[80]

### 8. Miscellaneous Assumptions

There are no assumptions made concerning the annual cost to maintain the golf course or the revenue that will be derived from its operation, because several key decisions must be made regarding the operation and ownership of the course before a detailed analysis can be performed. Additionally, the developer has no estimates pertaining to the number of members and the annual dues and greens fees. As mentioned in Chapter III, the developers have several viable ownership and operational alternatives. The operation of the golf course will impact the return on investment.

### C. CASH FLOW ANALYSIS

The model is divided into four sections. The first section is the table of assumptions. The assumptions run the model. Changing a number in this table will filter through the model and change the final results. This allows for testing of different assumptions and scenarios. The second section of the model is a statement of net revenues. It includes the revenues generated from the sale of house lots and expenses, which are divided into hard and soft costs. The third section is the statement of projected cash flows. This table accounts for the net operating revenue, proceeds from the construction loan, interest paid on the purchase money mortgage and the construction loan, as well as the balances paid on the loans. The result of this table, the total cash flow, is used to calculate the IRR and NPV. The fourth section is comprised of supporting exhibits such as, escalations in sale price of lots, expenses, the interest, and balance paid toward the construction loan.

#### 1. Statement of Net Revenues

The first set of cash flows in the model represents the revenue generated from the sale of finished house lots. The revenue for a given period is derived by taking the number of lots estimated to be absorbed and multiplying that number by

the escalated price for that period. The total revenues for one year are calculated by adding up the revenues from the sale of each type of house lot in that period.

The second set of cash flows displays expenses required to build the project. These include both hard and soft costs. The on-site infrastructure costs for the residential lots is calculated by taking the estimated number of lots absorbed in a year and multiplying that number by the (escalated) per unit infrastructure cost. The other expenses include the golf course and off site infrastructure costs. These expenses are assigned equally among the first three years.

The commission and marketing expenses are derived by multiplying the appropriate rate, (6% and 1.5% respectively) by the total revenue in a year. Architectural and engineering (A&E) fees are calculated as a percentage (2 %) of total hard costs during the first three years. The total expenses for a year are calculated by adding up the hard and soft costs in that period.

The net revenue is calculated by subtracting the total expenses from the total revenues.

## 2. Statement of Projected Cash Flows

The first line in the statement of projected cash flows is the net revenue.

The second line calculates the proceeds from the construction loan. This is equal to the total expenses in a year.

The third item represents the interest paid for the purchase money mortgage and construction loan. The total interest paid is the sum of these two numbers.

The fifth and sixth line are the amount of principle required to pay back the construction loan and the land loan respectively.

The total cash flow for a year is calculated by adding

together the net operating revenue and the construction loan. From this sum the total interest and the loan balance paid in that period are subtracted. It is assumed that any negative cash flow will be paid for by the developer.

### 3. IRR and NPV

The cash flows over the entire holding period are used to determine the rate of return of the investment. The IRR and NPV are calculated to measure the expected rate of return to the investor given the total cash flow estimated by the model. The investor may specify a target IRR or NPV for a particular type of development. In many cases a developer may correlate the perceived level of risk with a prescribed rate of return. If the project does not deliver an IRR or NPV in compliance with the return guidelines for a project, the developer may choose not to proceed. A land development deal is often classified as a riskier venture than an office building which is 95 percent leased to credit tenants. In the case of the office building, the cash flow required to meet debt obligations and deliver the expected returns is secure. The land deal is exposed to many more fluctuations in the marketplace which can impact the ability of the developer to meet his obligations.

Because of the perceived level of risk associated with this project the national developer has a required IRR of 35 percent. Therefore if the model calculates an IRR less than 35 percent the developer might choose to not proceed with the project.

The discount rate used to calculate the NPV was 15 percent. This is adjusted to account for the risk associated with this project. If the NPV is positive then an investment is worthwhile and if it is negative it is defined as a poor investment, given the stated assumptions. The assumptions have a great impact on the measures of return.

#### 4. Sensitivity Analysis

Slight changes in one or two key estimates may impact the rate of return. Various sensitivity analyses should be run to determine which variables have the greatest affect on the returns. Since the proposed project is at such an early phase of the development process the only sensitivity analysis performed in this study is a variation in the land use. The numbers provided by the developers are subject to large changes. When the site plan and key expenses such as the infrastructure and golf course are known, more indepth sensitivity analyses should be performed.

#### D. RESULTS

The results indicate that each of the three scenarios provide an IRR of 40% or higher. This is above the 35% specified by the national developer. Using the IRR as a key indicator, Scenario II would be the investment of choice. However, Scenario III has the highest NPV and an IRR that is only .4% points lower than Scenario II. It may also offer the lowest risk because fewer lots are delivered to the market.

Because the model is driven by the total sales in a given period Scenario II which has the greatest number of units delivers the highest return on investment. However, Scenario III generates a higher IRR and NPV than Scenario I even though Scenario III has the fewest number of lots. This occurs because the third scenario has many more single family lots than either Scenario I or II. These sell for more than the townhouse and multifamily lots. The absorption rate in Scenario II was driven by the need to sell the 5,000 lots within the holding period. Since data charting historic absorption of newly constructed homes was not available it is not possible to predict if this many lots, especially the quantity of townhouse and multifamily units, could be successfully marketed.

Besides land use distribution and the absorption rate there are several assumptions which, if varied, would affect the rate of return. These include the acquisition price, hard costs, and the sale price of finished lots. Once the developer adopts a viable site plan and knows the density and distribution of the development, sensitivity analyses should be run varying these assumptions. This will isolate the variables that have the greatest affect on the rate of return. Once the most sensitive assumptions are identified steps can be taken to mitigate these risks.

Perhaps the most interesting comparison between the three scenarios is the difference in revenues, expenses, and total cash flow. Scenario III has comparatively less risk because it delivers fewer lots to the market during the holding period yet it generates more cash and is far less expensive to build and finance.

The three cash flow models appear as exhibits 6-1, 6-2 and 6-3. A summary of the results is listed below.

#### SUMMARY OF THE CASH FLOW MODELS

	SCENARIO I	SCENARIO II	SCENARIO III
	-----	-----	-----
INTERNAL RATE OF RETURN	40.0%	47.6%	47.2%
NET PRESENT VALUE	7.17 M	10.89 M	12.07 M
TOTAL REVENUES	85.7 M	109 M	98.9 M
TOTAL EXPENSES	44.5 M	49.4 M	42.5 M
NET OPERATING REVENUE	41.2 M	52.0 M	56.4 M
TOTAL CASH FLOW	26.3 M	36.2 M	42.2 M

#### E. CONCLUSION

The IRR achieved in each of the three scenarios exceeds the return on investment required by the developer. The financial model presented in Scenario III was designed as a consequence of the market conclusion reached in Chapter V. The demographics indicate that single family homes will be in greater demand. The cash flow analysis indicates higher return from the sale of single family lots. While Scenario

II has a higher IRR, its NPV is slightly lower and it presents greater risk because more lots have to be absorbed than in Scenario III. A development that can maximize the number of fairway homes and single family homes will deliver the highest return for the least risk.

-----SCENARIO I-----

ASSUMPTIONS

TOTAL PARCEL 1000 ACRES  
GOLF COURSE 18 HOLES

LAND USE:	#UNITS	DU/AC	#ACRES	%PARCEL
SINGLE FAMILY	900	2.5	360	36%
FAIRWAY HOMES	100	2.5	40	4%
TOWNHOUSE	1,400	8.0	175	18%
MULTI FAMILY	600	12.0	50	5%
GOLF COURSE			248	25%
LAKES			62	6%
SCHOOLS			30	3%
ROADS			35	4%
OTHER			0	0%
<b>TOTAL</b>	<b>3,000</b>		<b>1,000</b>	<b>100%</b>

**HARD COSTS:**

GOLF COURSE	5,000,000
OFF SITE INFRASTRUCTURE	
INTERCHANGE	2,500,000
ENTRANCE	300,000
MAIN ROAD	2,000,000
SEWER, LAKES	2,000,000
ON SITE INFRASTRUCTURE	
SINGLE FAMILY [DU]	10,000
TOWNHOUSE [DU]	7,500
MULTI FAMILY [DU]	2,000
<b>FINANCIAL ASSUMPTIONS:</b>	
ACQUISITION COST	6,000,000
DEBT/EQUITY	70%
PRINCIPLE	4,200,000
EQUITY	1,800,000
LOAN RATE	8.0%
TERM [YRS]	30
POINTS	1.0%
DISCOUNT RATE	15.0%
CAP RATE	9.0%
HOLDING PERIOD [YRS]	10

**CONSTRUCTION FINANCING:**

LOAN RATE	9.75%
TERM [YRS]	1
TOTAL COSTS	44,527,654
% REV. TO PAY LOAN (YRS 3 & 4)	85%

**ESCALATION RATES:**

INFLATION	4.0%
LAND PRICES	5.0%

**ABSORPTION:**

TOTAL	1	2	3	4	5	
SINGLE FAMILY	1000			120	160	135
FAIRWAY HOME	100			50	50	
TOWNHOUSE	1400			75	125	175
MULTI FAMILY	600			200		
		6	7	8	9	10
		200	100	95	100	90
		225	150	250	175	225
		200			200	

**SOFT COSTS:**

COMMISSION [% SALE \$]	6.00%
MARKETING [% SALE \$]	1.50%
A/E/LA [% HARD]	2.00%
LEGAL [% HARD]	0.25%
PLANNING [% HARD]	0.50%
MISC. [% HARD]	1.50%

**LAND SALE PRICE/DWELLING UNIT:**

SINGLE FAMILY	45,600
FAIRWAY HOME	50,600
TOWNHOUSE	13,300
MULTI FAMILY	6,250

**CONSTRUCTION COST [SF]:**  
(INCLUDES SEWER FEE)

SINGLE FAMILY	42
FAIRWAY HOME	50
TOWNHOUSE	39
MULTI FAMILY	45

**SIZE OF UNITS:**

SINGLE FAMILY [SF]	2,200
FAIRWAY HOME [SF]	2,800
TOWNHOUSE [SF]	1,300
MULTI FAMILY [SF]	900

**SALE PRICE:**

SINGLE FAMILY	172,500
FAIRWAY HOME	241,500
TOWNHOUSE	80,000
MULTI FAMILY	55,000

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-----SCENARIO I-----

STATEMENT OF PROJECTED NET REVENUES (000)

REVENUE (000)	YEAR	1	2	3	4	5
SALE OF FINISHED LOTS		---	---	---	---	---
SINGLE FAMILY				5,472	7,661	6,787
FAIRWAY HOME				2,530	2,657	0
TOWNHOUSE				998	1,746	2,566
MULTI FAMILY				1,250	0	0
TOTAL REVENUES		0	0	10,250	12,063	9,353
EXPENSES (000)						
HARD COSTS :		1	2	3	4	5
SINGLE FAMILY				1,200	1,664	1,460
FAIRWAY HOME				500	520	0
TOWNHOUSE				563	975	1,420
MULTI FAMILY				400	0	0
GOLF COURSE		1,667	1,667	1,667		
INFRASTRUCTURE		2,267	2,267	2,267		
TOTAL		3,933	3,933	6,596	3,159	2,880
SOFT COSTS:						
COMMISSIONS		0	0	615	724	561
MARKETING		0	0	154	181	140
A&E		79	79	79		
TOTAL		79	79	847	905	701
TOTAL EXPENSES		4,012	4,012	7,443	4,064	3,581
NET REVENUE		(4,012)	(4,012)	2,806	7,999	5,772

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-----SCENARIO I-----

STATEMENT OF PROJECTED CASH FLOWS (000)

		1	2	3	4	5
		---	---	---	---	---
NET OPERATING REVENUE		(4,012)	(4,012)	2,806	7,999	5,772
CONSTRUCTION LOAN		4,012	4,012	7,443	4,064	3,581
INTEREST PAID						
LAND		336	336	336	336	336
CONSTRUCTION		391	820	1,626	1,173	522
TOTAL INTEREST		727	1,156	1,962	1,509	858
CONST. LOAN BALANCE PAID		0	0	8,712	10,253	3,581
LAND LOAN BALANCE PAID						
INITIAL INVESTMENT	1,800					
TOTAL CASH FLOW	(1,800)	(727)	(1,156)	(425)	300	4,913
INTERNAL RATE OF RETURN		40.0%				
NET PRESENT VALUE		7,172				

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-----SCENARIO I-----

STATEMENT OF PROJECTED NET REVENUES (000)

6	7	8	9	10	TOTAL
10,558	5,543	5,529	6,111	5,775	53,434
0	0	0	0	0	5,187
3,464	2,425	4,244	3,119	4,211	22,772
1,447	0	0	1,675	0	4,372
15,469	7,968	9,772	10,905	9,985	85,765

6	7	8	9	10	TOTAL
2,250	1,170	1,156	1,265	1,184	11,349
0	0	0	0	0	1,020
1,898	1,316	2,281	1,661	2,221	12,334
450	0	0	506	0	1,356
					5,000
					6,800
4,598	2,486	3,437	3,432	3,405	37,859

928	478	586	654	599	5,146
232	120	147	164	150	1,286
					236
1,160	598	733	818	749	6,668
5,758	3,084	4,170	4,250	4,154	44,528
9,711	4,884	5,603	6,655	5,832	41,237

\*\*\*\*\*

-----SCENARIO I-----

\*\*\*\*\*

STATEMENT OF PROJECTED CASH FLOWS (000)

6	7	8	9	10	TOTALS
9,711	4,884	5,603	6,655	5,832	41,237
5,758	3,084	4,170	4,250	4,154	
336	336	336	336	336	
735	474	580	588	405	
1,071	810	916	924	741	10,674
5,758	3,084	4,170	6,027	4,154	
				4,200	4,200
8,640	4,074	4,687	3,954	891	26,363

\*\*\*\*\*

EXHIBITS

-----SCENARIO I-----

=====

PRICE ESCALATION:	YEAR	1	2	3	4	5
SINGLE FAMILY				45,600	47,880	50,274
FAIRWAY HOME				50,600	53,130	55,787
TOWNHOUSE				13,300	13,965	14,663
MULTI FAMILY				6,250	6,563	6,891

EXPENSE ESCALATION:	YEAR	1	2	3	4	5
SINGLE FAMILY				10,000	10,400	10,816
FAIRWAY HOME				10,000	10,400	10,816
TOWNHOUSE				7,500	7,800	8,112
MULTI FAMILY				2,000	2,080	2,163

CONSTRUCTION LOAN EXHIBIT:

=====

% OF REV. TO PAY LOAN (YRS 3 & 4)	85%	1	2	3	4	5
BEGINNING BALANCE		4,012	8,415	16,679	12,031	5,358
PAYMENT		0	0	8,712	10,253	3,581
INTEREST PAID		391	820	1,626	1,173	522
INTEREST		391	820	1,626	1,173	522
ENDING BALANCE		4,403	9,236	7,967	1,777	1,777

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-----SCENARIO I-----

6	7	8	9	10
52,788	55,427	58,198	61,108	64,164
58,576	61,505	64,580	67,809	71,199
15,396	16,166	16,975	17,823	18,714
7,235	7,597	7,977	8,376	8,794

-----

6	7	8	9	10	*****
11,249	11,699	12,167	12,653	13,159	
11,249	11,699	12,167	12,653	13,159	
8,436	8,774	9,125	9,490	9,869	
2,250	2,340	2,433	2,531	2,632	

-----

6	7	8	9	10
7,535	4,861	5,947	6,027	4,154
5,758	3,084	4,170	6,027	4,154
735	474	580	588	405
735	474	580	588	405
1,777	1,777	1,777	0	0

\*\*\*\*\*

-----SCENARIO II-----

ASSUMPTIONS

TOTAL PARCEL 1000 ACRES  
 GOLF COURSE 18 HOLES

LAND USE:	#UNITS	DU/AC	#ACRES	%PARCEL
SINGLE FAMILY	900	3.5	257	26%
FAIRWAY HOMES	100	3.5	29	3%
TOWNHOUSE	2,500	10.5	238	24%
MULTI FAMILY	1,500	15.0	100	10%
GOLF COURSE			248	25%
LAKES			62	6%
SCHOOLS			30	3%
ROADS			35	4%
OTHER			1	0%
<b>TOTAL</b>	<b>5,000</b>		<b>1,000</b>	<b>100%</b>

**HARD COSTS:**

GOLF COURSE	5,000,000
OFF SITE INFRASTRUCTURE	
INTERCHANGE	2,500,000
ENTRANCE	300,000
MAIN ROAD	2,000,000
SEWER, LAKES	2,000,000
ON SITE INFRASTRUCTURE	
SINGLE FAMILY [DU]	10,000
TOWNHOUSE [DU]	7,500
MULTI FAMILY [DU]	2,000

**FINANCIAL ASSUMPTIONS:**

ACQUISITION COST	6,000,000
DEBT/EQUITY	70%
PRINCIPLE	4,200,000
EQUITY	1,800,000
LOAN RATE	8.0%
TERM [YRS]	30
POINTS	1.0%
DISCOUNT RATE	15.0%
CAP RATE	9.0%
HOLDING PERIOD [YRS]	10

**CONSTRUCTION FINANCING:**

LOAN RATE	9.75%
TERM [YRS]	1
TOTAL COSTS	57,942,468
% REV. TO PAY LOAN (YRS 3 & 4)	85%

**ESCALATION RATES:**

INFLATION	4.0%
LAND PRICES	5.0%

**SOFT COSTS:**

COMMISSION [% SALE \$]	6.00%
MARKETING [% SALE \$]	1.50%
A/E/LA [% HARD]	2.00%
LEGAL [% HARD]	0.25%
PLANNING [% HARD]	0.50%
MISC. [% HARD]	1.50%

**LAND SALE PRICE/DWELLING UNIT:**

SINGLE FAMILY	45,600
FAIRWAY HOME	50,600
TOWNHOUSE	13,300
MULTI FAMILY	6,250

**CONSTRUCTION COST [SF]: (INCLUDES SEWER FEE)**

SINGLE FAMILY	42
FAIRWAY HOME	50
TOWNHOUSE	39
MULTI FAMILY	45

**SIZE OF UNITS:**

SINGLE FAMILY [SF]	2,200
FAIRWAY HOME [SF]	2,800
TOWNHOUSE [SF]	1,300
MULTI FAMILY [SF]	900

**SALE PRICE:**

SINGLE FAMILY	172,500
FAIRWAY HOME	241,500
TOWNHOUSE	80,000
MULTI FAMILY	55,000

**ABSORPTION:**

	TOTAL	1	2	3	4	5
SINGLE FAMILY	1000			120	160	135
FAIRWAY HOME	100			50	50	
TOWNHOUSE	2500			200	250	300
MULTI FAMILY	1500			300		300
		6	7	8	9	10
		200	100	95	100	90
		350	350	350	350	350
		300		300	300	

\*\*\*\*\*

-----SCENARIO II-----

STATEMENT OF PROJECTED NET REVENUES (000)

REVENUE (000)	YEAR	1	2	3	4	5
SALE OF FINISHED LOTS		---	---	---	---	---
SINGLE FAMILY				5,472	7,661	6,787
FAIRWAY HOME				2,530	2,657	0
TOWNHOUSE				2,660	3,491	4,399
MULTI FAMILY				1,875	0	2,067
TOTAL REVENUES		0	0	12,537	13,809	13,253
EXPENSES (000)						
HARD COSTS :		---	---	---	---	---
SINGLE FAMILY				1,200	1,664	1,460
FAIRWAY HOME				500	520	0
TOWNHOUSE				1,500	1,950	2,434
MULTI FAMILY				600	0	649
GOLF COURSE		1,667	1,667	1,667		
INFRASTRUCTURE		2,267	2,267	2,267		
TOTAL		3,933	3,933	7,733	4,134	4,543
SOFT COSTS:						
COMMISSIONS		0	0	752	829	795
MARKETING		0	0	188	207	199
A&E		79	79	79		
TOTAL		79	79	1,019	1,036	994
TOTAL EXPENSES		4,012	4,012	8,752	5,170	5,537
NET REVENUE		(4,012)	(4,012)	3,785	8,639	7,716

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-----SCENARIO II-----

STATEMENT OF PROJECTED CASH FLOWS (000)

		1	2	3	4	5
NET OPERATING REVENUE		(4,012)	(4,012)	3,785	8,639	7,716
CONSTRUCTION LOAN		4,012	4,012	8,752	5,170	5,537
INTEREST PAID						
LAND		336	336	336	336	336
CONSTRUCTION		391	820	1,754	1,219	614
TOTAL INTEREST		727	1,156	2,090	1,555	950
CONST. LOAN BALANCE PAID		0	0	10,656	11,737	5,537
LAND LOAN BALANCE PAID						
INITIAL INVESTMENT	1,800					
TOTAL CASH FLOW	(1,800)	(727)	(1,156)	(209)	516	6,766
INTERNAL RATE OF RETURN		47.6%				
NET PRESENT VALUE		10,890				

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-----SCENARIO II-----

STATEMENT OF PROJECTED NET REVENUES (000)

6	7	8	9	10	TOTAL
10,558	5,543	5,529	6,111	5,775	53,434
0	0	0	0	0	5,187
5,389	5,658	5,941	6,238	6,550	40,326
2,171	0	2,393	2,513	0	11,018
18,117	11,201	13,863	14,862	12,325	109,966

6	7	8	9	10	TOTAL
2,250	1,170	1,156	1,265	1,184	11,349
0	0	0	0	0	1,020
2,953	3,071	3,194	3,321	3,454	21,877
675	0	730	759	0	3,413
5,877	4,241	5,080	5,346	4,639	49,459

1,087	672	832	892	739	6,598
272	168	208	223	185	1,649
1,359	840	1,040	1,115	924	8,483
7,236	5,081	6,119	6,461	5,563	57,942
10,881	6,120	7,744	8,401	6,762	52,023

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-----SCENARIO II-----

STATEMENT OF PROJECTED CASH FLOWS (000)

6	7	8	9	10	TOTALS
10,881	6,120	7,744	8,401	6,762	52,023
7,236	5,081	6,119	6,461	5,563	
336	336	336	336	336	
780	570	671	704	542	
1,116	906	1,007	1,040	878	11,426
7,236	5,081	6,119	7,224	5,563	
				4,200	4,200
9,765	5,214	6,737	6,597	1,683	36,397

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EXHIBITS

-----SCENARIO II-----

=====

PRICE ESCALATION:	YEAR	1	2	3	4	5
SINGLE FAMILY				45,600	47,880	50,274
FAIRWAY HOME				50,600	53,130	55,787
TOWNHOUSE				13,300	13,965	14,663
MULTI FAMILY				6,250	6,563	6,891

EXPENSE ESCALATION:	YEAR	1	2	3	4	5
SINGLE FAMILY				10,000	10,400	10,816
FAIRWAY HOME				10,000	10,400	10,816
TOWNHOUSE				7,500	7,800	8,112
MULTI FAMILY				2,000	2,080	2,163

CONSTRUCTION LOAN EXHIBIT:

=====

% OF REV. TO PAY LOAN (YRS 3 & 4)	85%	1	2	3	4	5
BEGINNING BALANCE		4,012	8,415	17,988	12,501	6,301
PAYMENT		0	0	10,656	11,737	5,537
INTEREST PAID		391	820	1,754	1,219	614
INTEREST		391	820	1,754	1,219	614
ENDING BALANCE		4,403	9,236	7,331	764	764

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-----SCENARIO II-----

6	7	8	9	10
52,788	55,427	58,198	61,108	64,164
58,576	61,505	64,580	67,809	71,199
15,396	16,166	16,975	17,823	18,714
7,235	7,597	7,977	8,376	8,794

-----

6	7	8	9	10
11,249	11,699	12,167	12,653	13,159
11,249	11,699	12,167	12,653	13,159
8,436	8,774	9,125	9,490	9,869
2,250	2,340	2,433	2,531	2,632

-----

6	7	8	9	10
8,000	5,845	6,883	7,224	5,563
7,236	5,081	6,119	7,224	5,563
780	570	671	704	542
780	570	671	704	542
764	764	764	0	0

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-----SCENARIO III-----

ASSUMPTIONS

TOTAL PARCEL 1000 ACRES  
 GOLF COURSE 18 HOLES

LAND USE:	#UNITS	DU/AC	#ACRES	%PARCEL
SINGLE FAMILY	1,550	3.0	517	52%
FAIRWAY HOMES	100	3.0	33	3%
TOWNHOUSE	375	8.0	47	5%
MULTI FAMILY	350	12.0	29	3%
GOLF COURSE			248	25%
LAKES			62	6%
SCHOOLS			29	3%
ROADS			35	4%
OTHER			(0)	0%
<b>TOTAL</b>	<b>2,375</b>		<b>1,000</b>	<b>100%</b>

**HARD COSTS:**

GOLF COURSE	5,000,000
OFF SITE INFRASTRUCTURE	
INTERCHANGE	2,500,000
ENTRANCE	300,000
MAIN ROAD	2,000,000
SEWER, LAKES	2,000,000
ON SITE INFRASTRUCTURE	
SINGLE FAMILY [DU]	10,000
TOWNHOUSE [DU]	7,500
MULTI FAMILY [DU]	2,000
<b>FINANCIAL ASSUMPTIONS:</b>	
ACQUISITION COST	6,000,000
DEBT/EQUITY	70%
PRINCIPLE	4,200,000
EQUITY	1,800,000
LOAN RATE	8.0%
TERM [YRS]	30
POINTS	1.0%
DISCOUNT RATE	15.0%
CAP RATE	9.0%
HOLDING PERIOD [YRS]	10

**CONSTRUCTION FINANCING:**

LOAN RATE	9.75%
TERM [YRS]	1
TOTAL COSTS	42,504,792
% REV. TO PAY LOAN (YRS 3 & 4)	85%

**ESCALATION RATES:**

INFLATION	4.0%
LAND PRICES	5.0%

**ABSORPTION:**

	TOTAL	1	2	3	4	5
SINGLE FAMILY	1550			150	200	175
FAIRWAY HOME	100			50	50	
TOWNHOUSE	375			75		100
MULTI FAMILY	350					100
		6	7	8	9	10
		225	175	175	200	250
			100		100	
			125		125	

**SOFT COSTS:**

COMMISSION [% SALE \$]	6.00%
MARKETING [% SALE \$]	1.50%
A/E/LA [% HARD]	2.00%
LEGAL [% HARD]	0.25%
PLANNING [% HARD]	0.50%
MISC. [% HARD]	1.50%

**LAND SALE PRICE/DWELLING UNIT:**

SINGLE FAMILY	45,600
FAIRWAY HOME	50,600
TOWNHOUSE	13,300
MULTI FAMILY	6,250

**CONSTRUCTION COST [SF]:**  
 (INCLUDES SEWER FEE)

SINGLE FAMILY	42
FAIRWAY HOME	50
TOWNHOUSE	39
MULTI FAMILY	45

**SIZE OF UNITS:**

SINGLE FAMILY [SF]	2,200
FAIRWAY HOME [SF]	2,800
TOWNHOUSE [SF]	1,300
MULTI FAMILY [SF]	900

**SALE PRICE:**

SINGLE FAMILY	172,500
FAIRWAY HOME	241,500
TOWNHOUSE	80,000
MULTI FAMILY	55,000

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-----SCENARIO III-----

STATEMENT OF PROJECTED NET REVENUES (000)

REVENUE (000)	YEAR	1	2	3	4	5
SALE OF FINISHED LOTS		---	---	---	---	---
SINGLE FAMILY				6,840	9,576	8,798
FAIRWAY HOME				2,530	2,657	0
TOWNHOUSE				998	0	1,466
MULTI FAMILY				0	0	689
TOTAL REVENUES		0	0	10,368	12,233	10,953
EXPENSES (000)						
HARD COSTS :		---	---	---	---	---
SINGLE FAMILY				1,500	2,080	1,893
FAIRWAY HOME				500	520	0
TOWNHOUSE				563	0	811
MULTI FAMILY				0	0	216
GOLF COURSE		1,667	1,667	1,667		
INFRASTRUCTURE		2,267	2,267	2,267		
TOTAL		3,933	3,933	6,496	2,600	2,920
SOFT COSTS:						
COMMISSIONS		0	0	622	734	657
MARKETING		0	0	156	183	164
A&E		79	79	79		
TOTAL		79	79	856	917	822
TOTAL EXPENSES		4,012	4,012	7,352	3,517	3,742
NET REVENUE		(4,012)	(4,012)	3,015	8,715	7,212

\*\*\*\*\*

-----SCENARIO III-----

STATEMENT OF PROJECTED CASH FLOWS (000)

		1	2	3	4	5
		---	---	---	---	---
NET OPERATING REVENUE		(4,012)	(4,012)	3,015	8,715	7,212
CONSTRUCTION LOAN		4,012	4,012	7,352	3,517	3,742
INTEREST PAID						
LAND		336	336	336	336	336
CONSTRUCTION		391	820	1,617	1,101	452
TOTAL INTEREST		727	1,156	1,953	1,437	788
CONST. LOAN BALANCE PAID		0	0	8,812	10,398	3,742
LAND LOAN BALANCE PAID						
INITIAL INVESTMENT	1,800					
TOTAL CASH FLOW	(1,800)	(727)	(1,156)	(398)	398	6,423
INTERNAL RATE OF RETURN		47.2%				
NET PRESENT VALUE		12,071				

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-----SCENARIO III-----

STATEMENT OF PROJECTED NET REVENUES (000)

6	7	8	9	10	TOTAL
11,877	9,700	10,185	12,222	16,041	85,238
0	0	0	0	0	5,187
0	1,617	0	1,782	0	5,863
0	950	0	1,047	0	2,686
11,877	12,266	10,185	15,051	16,041	98,973

6	7	8	9	10	TOTAL
2,531	2,047	2,129	2,531	3,290	18,001
0	0	0	0	0	1,020
0	877	0	949	0	3,200
0	292	0	316	0	825
2,531	3,217	2,129	3,796	3,290	5,000
					6,800
					34,846

713	736	611	903	962	5,938
178	184	153	226	241	1,485
					236
891	920	764	1,129	1,203	7,659
3,422	4,137	2,893	4,925	4,493	42,505
8,455	8,129	7,292	10,126	11,548	56,468

\*\*\*\*\*

-----SCENARIO III-----

STATEMENT OF PROJECTED CASH FLOWS (000)

6	7	8	9	10	TOTALS
8,455	8,129	7,292	10,126	11,548	56,468
3,422	4,137	2,893	4,925	4,493	
336	336	336	336	336	
421	491	369	567	438	
757	827	705	903	774	10,028
3,422	4,137	2,893	5,820	4,493	
				4,200	4,200
7,699	7,302	6,586	8,328	6,574	42,240



\*\*\*\*\*

-----SCENARIO III-----

6	7	8	9	10
52,788	55,427	58,198	61,108	64,164
58,576	61,505	64,580	67,809	71,199
15,396	16,166	16,975	17,823	18,714
7,235	7,597	7,977	8,376	8,794

-----

6	7	8	9	10
11,249	11,699	12,167	12,653	13,159
11,249	11,699	12,167	12,653	13,159
8,436	8,774	9,125	9,490	9,869
2,250	2,340	2,433	2,531	2,632

-----

6	7	8	9	10
4,317	5,032	3,788	5,820	4,493
3,422	4,137	2,893	5,820	4,493
421	491	369	567	438
421	491	369	567	438
895	895	895	0	0

\*\*\*\*\*

## CHAPTER VII

### CONCLUSION

Land development, as any real estate venture, is subject to risk. This paper has analyzed the physical, social, economic and political factors specific to the feasibility of this project. In doing so, the analysis provides both an assessment of the project's potential, and an indication of areas of risk and methods to mitigate risk. Both feasibility and risk analysis are related to development, marketing, construction, operations, and financing. A summary of conclusions and recommendations regarding these areas follows.

#### A. PROJECT FEASIBILITY AND RISK ANALYSIS

##### 1. DEVELOPMENT

The current political climate within the site's jurisdiction is pro-growth. This, coupled with the fact that the site is properly zoned, should facilitate its timely development. However, as an area grows, groups usually coalesce around the aspects of a development perceived as negative. Often these organizations effectively delay or limit development of a site. It is recommended that the developer formulate a plan to promote the development and educate the public prior to initiating any on-site improvements. The importance of involving both elected officials and community residents is emphasized. If effective, the developer will have created a constituency for development to counteract attempts to block the project. This effort by the developer must be part of the development process throughout the ten year term of the project.

Although current Virginia law does not allow Spotsylvania to exact contributions from developers, this has occurred in other high growth areas of the state. The partnership should analyze the impacts of this large-scale project, identify potential detriments/costs to the community, and devise a program of on-and off-site benefits which may be necessary to mitigate its negative effects (i.e., school site, public park, fire station, etc.,).

## 2. MARKET

Perhaps the most crucial question for the developer relates to the existence of a market for this project. Research indicates that the area is growing rapidly, income levels are increasing, and the population is aging. Developers recognize a golf course amenity as both an advantage for marketing purposes, and an effective method for increasing land values. However, land value is intrinsically linked to the long term economic prospects of the area. Since the phasing of this development is projected for ten years, it is extremely susceptible to both macro-and micro-economic effects.

The market risk for this project, on the demand side, is fundamentally related to the formation and in-migration of higher income families and the affordability of the housing for the targeted population. Data indicate that there is a trend of increased household formation/in-migration and higher income levels, which are projected throughout the sales period. This trend can be affected adversely by national and local economic cycles. In addition, as stated in Chapter V, research indicates that residential and office development gravitates to counties with relatively higher per capita incomes and greater transportation infrastructure. Therefore, it is advisable to conduct further research on developments in other areas outside of the Washington, D.C. metropolitan ring. (i.e., the western Virginia suburbs and Maryland suburbs).

Since the golf lots, the source of additional land premiums, are targeted to the upper income segment of the market, the timing of their release to builders is pivotal to profit potential. The supply side of the market must also be constantly monitored. The absorption data available at the time of this research was incomplete. Further analysis, particularly with regard to newly constructed units, is necessary.

Risk exposure can be limited by re-programming site uses as economic conditions warrant, and guaranteeing mortgage rates to ensure affordability for critical unit types. In addition, the developer should impose stringent design controls on builders as part of the land sale agreement, to ensure the ongoing marketability of the project.

The inclusion of the golf course requires a separate market analysis. Its design, and complementary recreational amenities, must be targeted to the regional market.

### 3. CONSTRUCTION

Since the project is planned as a land development venture, most of the risks associated with construction are assumed by the builders buying the improved lots. However, the developer retains responsibility for infrastructure improvements. This paper has not included an analysis of the soil conditions or site topography, potential causes of increased costs and time delays. The off-site construction of the highway interchange is another area of construction risk, particularly with regard to government approvals.

The construction of the golf course requires specific skills not acquired through residential building experience. The risk tolerances of the joint venture partners will determine the extent of their involvement in this construction process. The design and construction could be undertaken by the developer with assistance from specialized consultants, other entities could be employed for all or part of the course

construction, or the partnership could sell or lease the parcel. Consideration may be given to providing financing, via a participation mortgage or other instrument, providing upside potential and limiting downside risk, while providing specific controls through the financing agreement. Regardless, the importance of the amenity related to profit potential is emphasized. Effective control by the developer is required.

#### **4. OPERATIONS**

Again, the nature of land development removes most operating risk. The partnership agreement must deal with the precise responsibilities of the partners in the ongoing management of the project, decision-making, dispute resolution, etc. As an example, decisions must be made regarding the partners single or joint involvement in marketing this project. Considerable fees can be generated as an outcome of successful marketing, contributing to the overall return on investment. But these must be compared with overhead costs and a critical assessment of marketing ability.

The operation of the golf course, particularly during land sales associated with the amenity, is a key factor in value creation. Surveys of other communities should be undertaken to devise an effective operating plan (alternatives are discussed in Chapter II). If the course has been well constructed, with attention to both design and maintenance requirements, its operation will be facilitated and expenses controlled.

#### **5. FINANCING**

The analysis presented in this paper suggests that the project is financially feasible, given the assumptions enumerated and the benchmark IRR and NPV criteria of the developer.

It is assumed that the partners have diverse risk tolerances for all aspects of this development. However, it can be speculated that this is particularly so for the financing aspects of this project, given the very different profiles of the two companies. In addition, their tax situations will dictate different preferences. Rather than enumerate all possible options, this paper recommends that the parties view the total development and each programming component separately. It is obvious that each segment of the project presents a different risk/reward potential. The partners may singly or jointly decide to participate in only the land development or a variety of the project's components. Both the specific product (e.g., retail, multifamily units, R & D, etc.,) and its place in the ten year development period will determine the ultimate form of financing instrument and the extent and type of partner participation. Cyclical product markets, economic conditions, and capital markets will influence the outcome of these future decisions.

#### **B. SUMMARY**

It is the conclusion of this paper, given the recommendations, cautions, and limitations enumerated above, that the residential golf course component of this development is feasible. The assessment is based on the preliminary planning completed thus far. Considerable refinement of the development plan is necessary, and it is foreseen that numerous programming changes will occur as the region and site develop during the next ten years.

## FOOTNOTES

[1]Patrick Phillips, Developing with Recreational Amenities, (Washington, D.C.: Urban Land Institute, 1986), p.5.

[2]Ibid., p. 46

[3]Ibid., p. 47.

[4]Ibid., p. 17.

[5]Ibid., p. 40

[6]Ibid., p. 55.

[7]Ibid., p. 41.

[8]Ibid., p. 43.

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