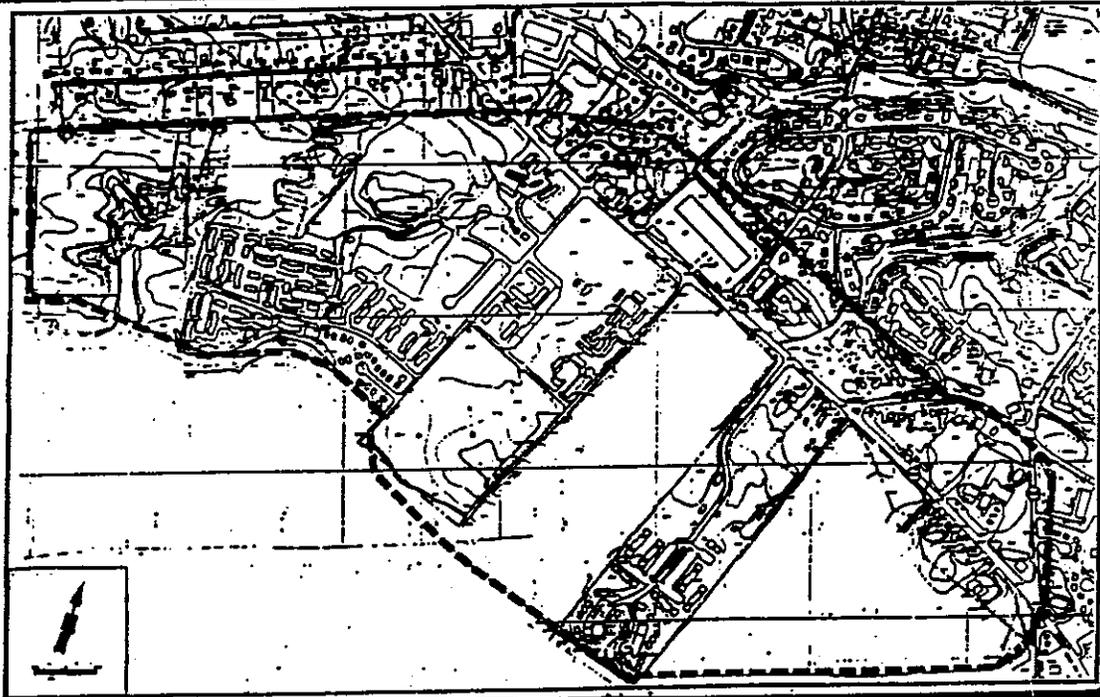


EXTRA

0-14-89

FOREST DRIVE SECTOR STUDY



**City of Annapolis
Department of Planning and Zoning**

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INTRODUCTION

Overview

This Sector Plan provides a guide for the development of the Forest Drive Sector as identified in the Annapolis Comprehensive Plan. This plan is based on the principles and policies established in the Comprehensive Plan and further refines them in light of the specific nature of the study area.

The sector plan includes five sections covering land use and zoning, transportation, environment, utilities and community facilities. Each section includes an evaluation of existing conditions, issues and recommendations. The final section presents the proposed Land Use Plan for the Sector and recommendations.

Appendices are also provided for the existing zoning codes in the area.

Purpose

The Annapolis Comprehensive Plan, adopted on May 13, 1985, officially established policy guidelines for the future growth and development of the City of Annapolis. Several areas were identified to be the focus for new development and more detailed study. The Forest Drive Sector was specified in the Plan as a Major Mixed-use Cluster and a special development area. It received this designation due to the availability of vacant land and the possibilities for the area when Patuxent Boulevard is completed. (Map 1)

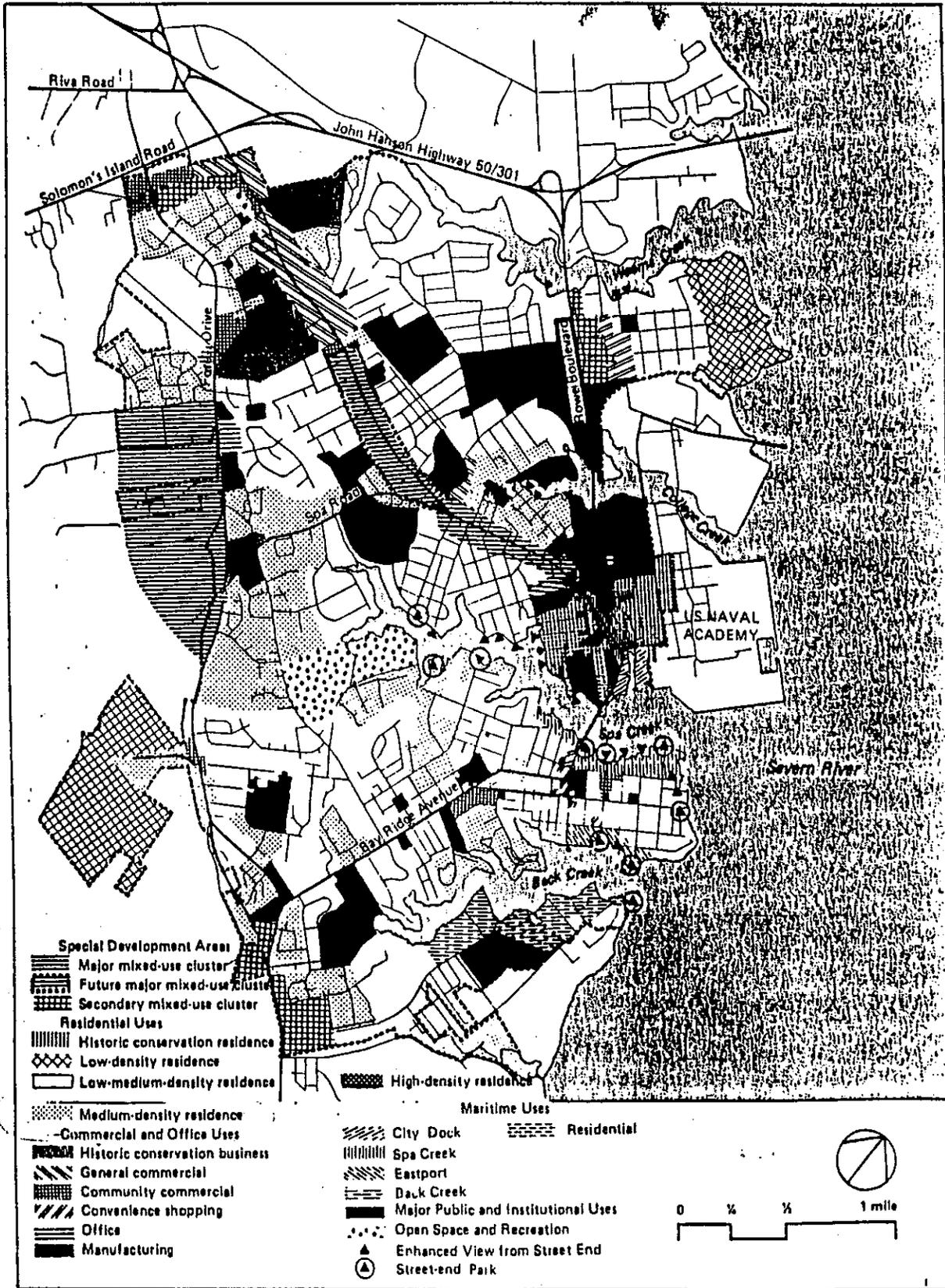
Mixed-use Clusters are defined in the Annapolis Comprehensive Plan as consisting of several different types of activity (commercial, residential, and office development) which benefit from each others' proximity. Mixed-use Clusters are also identified as needing special attention in the areas of access, landscaping, and development design. *

As stated in the Comprehensive Plan the objective is to preserve existing residential areas from further commercial encroachment and encourage efficient well-designed development of vacant parcels along Forest Drive.

The purpose of the Forest Drive Sector Study is to evaluate the existing conditions and development possibilities in this sector, identify future community commercial service needs within the mixed-use area, and make recommendations in accordance with city policies as specified in the Comprehensive Plan.

*Comprehensive Plan page 30

City of Annapolis Land Use Plan - Map 1



Study Area

The area originally designated in the Annapolis Comprehensive Plan to be studied was the Forest Drive Major Mixed Use Cluster between Bywater and Spa Roads. The relocation of MD 665, through the creation of Patuxent Boulevard, will have a significant effect on traffic and future development in the area. Therefore the boundaries of the Sector Study have been enlarged to begin at Chinquapin Round Road, rather than Bywater Road, and end at Spa Road. This area lies within census tract 7065.

As shown on Map 2, the Forest Drive Sector Study area encompasses approximately 331 acres on the South side of Forest Drive extending from Chinquapin Round Road to the intersection at Spa Road. The area includes a residential population of 2,261 people. The current land use is primarily residential, intermingled with vacant lots and farmland. Property fronting on the north side of Forest Drive is developed as a mixture of industrial, residential, commercial and institutional uses as one moves east from Chinquapin Round Road.

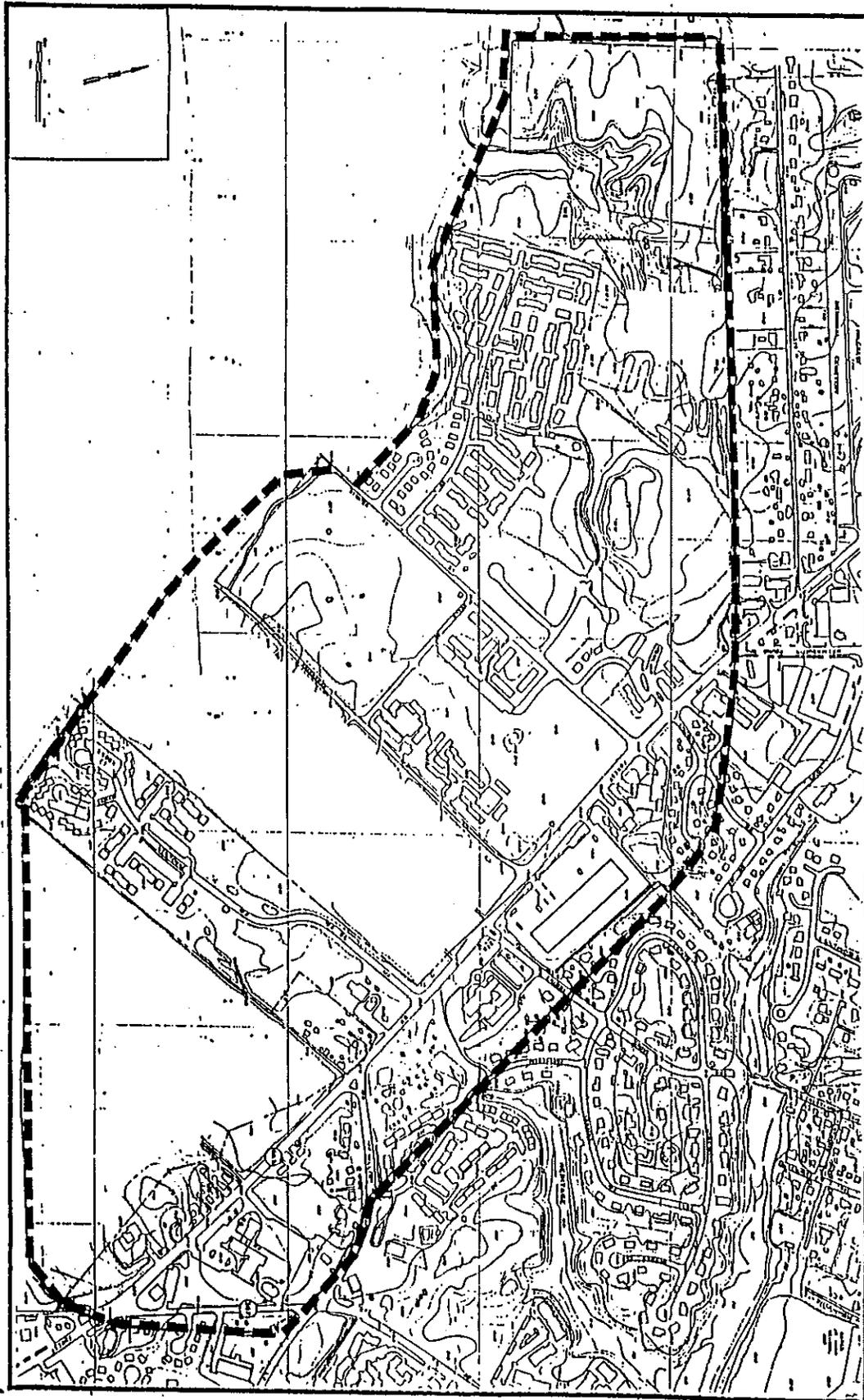
As shown in Map 2, the land contained in the study area is composed of parcels in both the City of Annapolis and Anne Arundel County. County property abutting Forest Drive was included in the study to assess the impact of all future growth on the transportation system, and on surrounding land uses. Further, this county land constitutes a logical extension of the corporate limits as it is contiguous to the city on three sides.

Demographics

According to the 1980 Census figures, 2261 individuals resided in the portion of the Study Area southwest of Forest Drive. Since the study boundary divides most of the census blocks on the northwest of Forest drive the population figure is an estimate of 233 persons for a total of 2594.

Forest Drive Sector 1 - Map 2

Study Area



The Annapolis Comprehensive Plan Goals

This Study has been prepared to ensure that future development be undertaken in a manner consistent with the policy framework established in the Comprehensive Plan. This study has attempted to follow the planning goals delineated in the Comprehensive Plan. Those policies that have significance to the Study Area are:*

Land Use

- Enhance the human scale and historic and architectural character of the City, respecting vistas and open space;
- Establish planned growth areas for development of vacant parcels along Forest Drive in accordance with City policies
- Provide for commercial service needs within mixed-use growth areas in lieu of strip commercial development;
- Residential densities be encouraged in support of commerce and public transportation;
- Adopt future land use configuration that will provide maximum opportunities to walk to work and for convenience and other shopping trips;

Transportation

- Improve the circulation patterns in support of the overall land use concept of higher intensity future development in areas north and west of Spa Road;

*From pages 18-22 Annapolis Comprehensive Plan

Economic Development

- Cooperation with and support of businesses undertaking projects that are consistent with the Plan;

Housing

- Provide a balanced housing stock for all of its citizens;
- Encourage a wide variety of market-rate housing units at a range of densities to conserve space and in support of existing and proposed neighborhoods;

Community Services

- Provision of additional public open space and recreation lands;
- Expansion of services for senior citizens, and day care;

Environment

- Strengthen the regulation of storm water management and undertake special measures to assure that future development respects the unique features and natural character of each of the Creeks;
- Remaining wooded areas be preserved to the extent feasible, open wooded space be properly managed, and that new plantings be encouraged to decrease erosion and for streambank stabilization.

LAND USE AND ZONING

Comprehensive Plan Goals

- Enhance the human scale and historic and architectural character of the City, respecting vistas and open space;
- Establish planned growth areas for development of vacant parcels along Forest Drive in accordance with City policies
- Provide for commercial service needs within mixed-use growth areas in lieu of strip commercial development;
- Residential densities be encouraged in support of commerce and public transportation;
- Adopt future land use configuration that will provide maximum opportunities to walk to work and for convenience and other shopping trips;

Residential Zoning

Approximately 173 acres of the incorporated land in the study area are zoned residential. The majority of the residentially zoned land is zoned R-3 (147 acres) which allows a maximum of 12 multi-family dwelling units per acre. Of the land zoned R-3 approximately 63% is developed or platted and 37% is vacant and unplatted. The bulk of the developed property in the R-3 zones has been developed into townhouse subdivisions. The R-3 zoned land includes 93 acres of developed or undeveloped yet subdivided lots, and 54 acres of vacant, unplatted property.

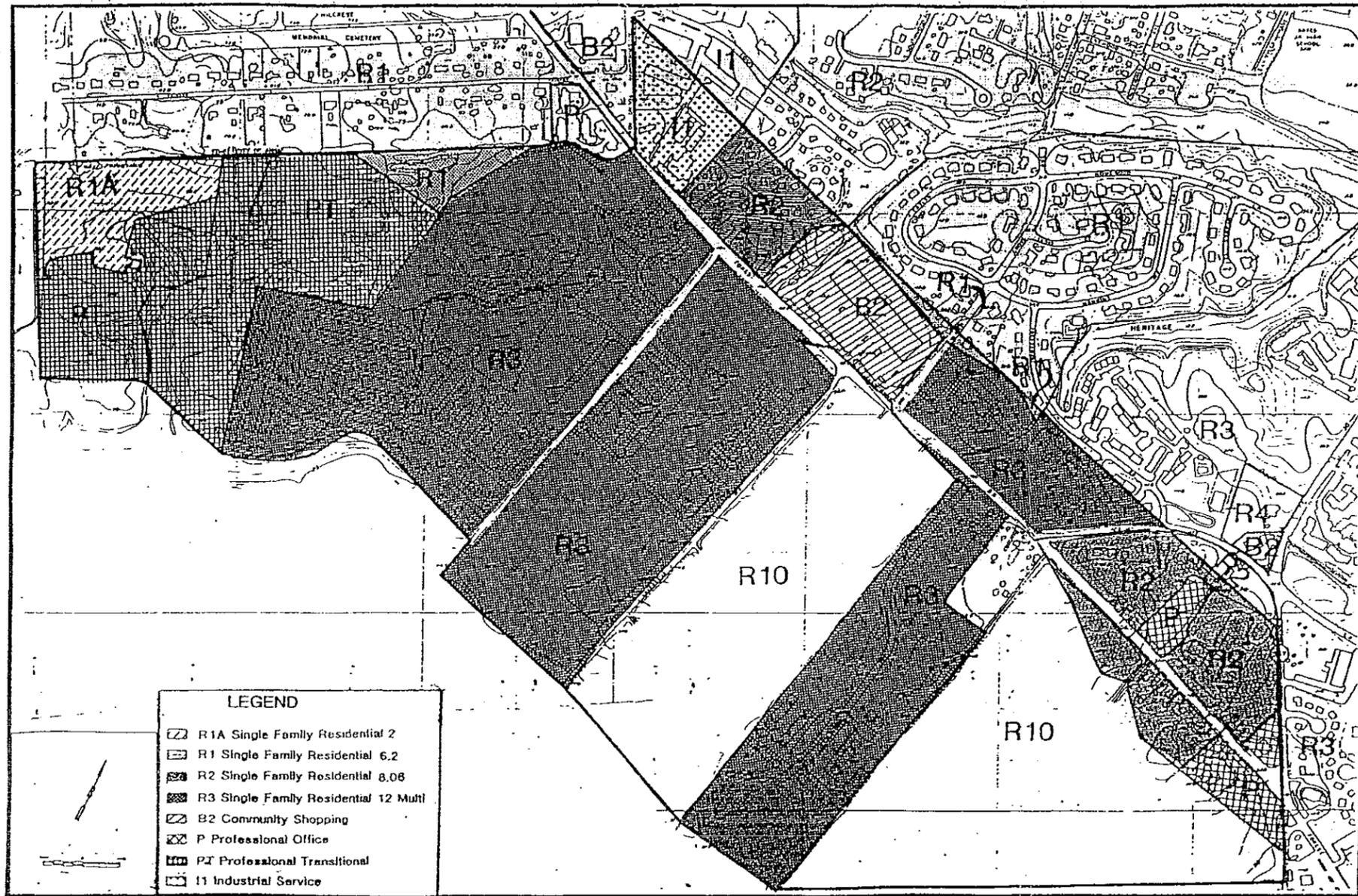
In addition recently annexed property is zoned R-1A (8 acres) allowing 2 units per acre. Another small parcel is zoned R-2. This parcel lies within the Right-of-Way of the new Patuxent Boulevard.

On the north side of Forest Drive the residential areas are zoned R-2 and are fully developed. Additionally, there are approximately 45 acres of vacant, unincorporated land zoned R-2 for which no development proposals have been made.

The Existing Zoning in the Forest Drive Study Area is shown on Map 3.

Forest Drive Sector 1 - Map 3

Existing Zoning



Forest Drive Sector 1 - Map 4

Existing Land Use

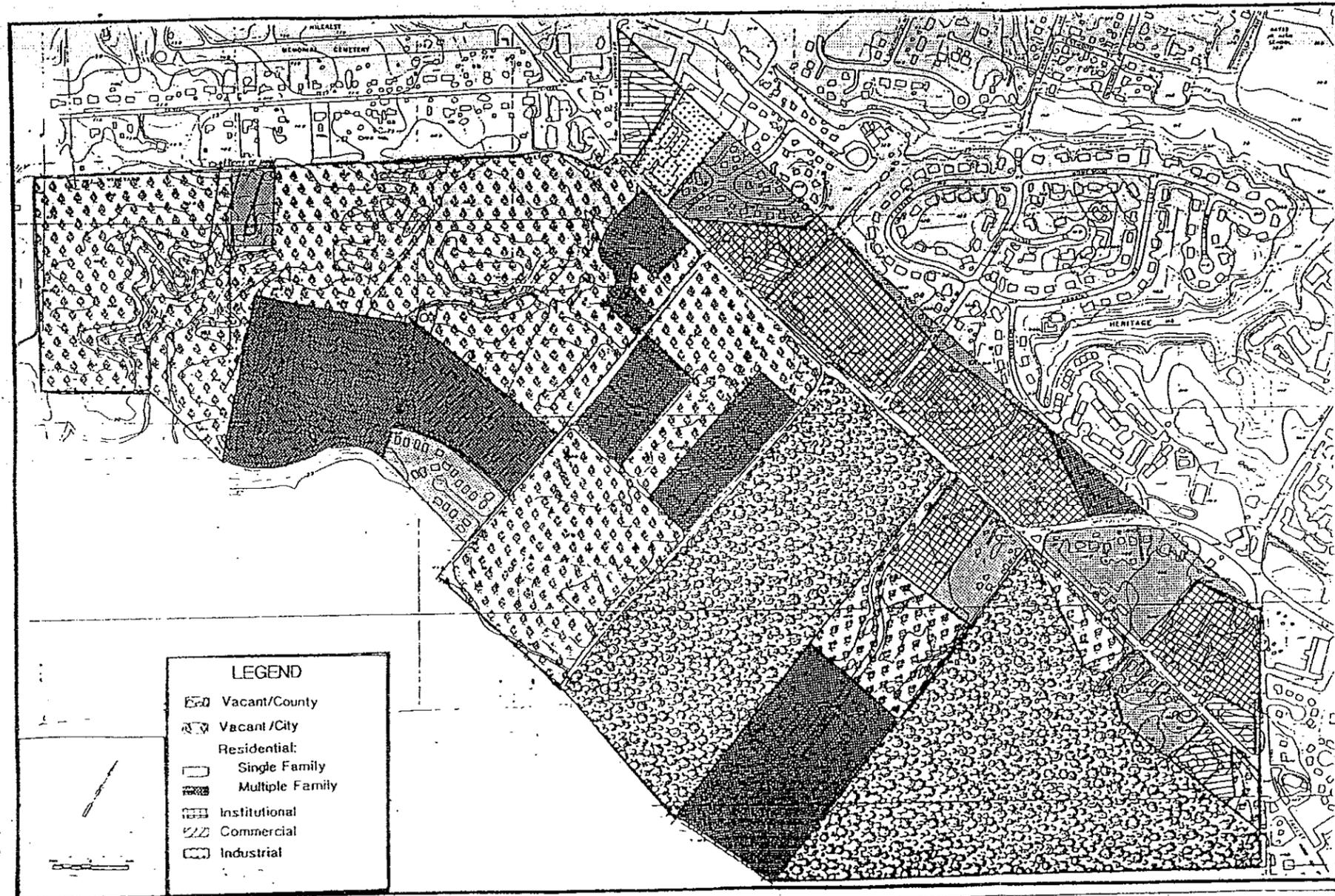


Figure 1

Acreage by Zoning District				
RESIDENTIAL		COMMERCIAL and INDUSTRIAL		
Zone	Acreage	Zone		Acreage
R1A	8	P	(Professional Office)	5
R1	3	PT	(Office & Resid. Transition)	11
R2	25	B2	(Community Shopping)	10
R3	<u>148</u>	I1	(Industrial)	<u>6</u>
TOTAL	176		TOTAL	32

Residential Land Use

The present Land Use in the Forest Drive Study Area is shown on Map 4. There are several instances of apparent non-conformity between use and zoning.

All the residentially zoned vacant land in the study area is on the southwest side of Forest Drive. The developed land on this side of Forest Drive is built up into five multiple-family duplex, townhouse or apartment unit developments; Bywater Estates, Federaltown, Greenbriar (22 acres), Newtowne 20, and Woodside Gardens. The American Legion Hall, located in the R-3 zone is considered a non-conforming conditional use.

Bywater Estates is Section 8 Subsidized Housing; Newtowne 20 consists of 77 Public Housing units, operated by the Public Housing Authority of Annapolis. Newtowne 20 is in a bad state of repair with several units having windows boarded up with plywood. The Housing Authority is currently renovating thirty vacant units.

The residentially zoned property directly abutting Forest Drive to the northeast is a mix of residential and institutional uses. The residential areas are zoned R-2 and R-3. Approximately 50% of the R-2 zone (St. Martins and the fire station), and 90% of the R-3 zone are devoted to institutional use.

Inside the R-2 zone in Blocks 7/8 adjacent to St. Martin's Evangelical Lutheran Church is a parcel, Number 10, zoned P (Professional Office).

Most of the dwelling units front on secondary roads. Fronting on Forest Drive within the residential zones, as permitted uses, are the Annapolis Fire Station (Company 35), the Heritage Baptist Church and St. Martin's Evangelical Lutheran Church. There is a large parcel of vacant landscaped open space adjacent to Heritage Baptist in the R-3 zone. This parcel is to be used as a stormwater management area by the State Highway Administration as part of the road improvements to Forest Drive.

There are several single family homes fronting on Forest Drive between Hiltop and Spa Roads. These residences will be affected by the future widening of Forest Drive.

Commercial and Industrial Zoning

Commercial and Industrial zones are interspersed with Residential zones on the northeast side of Forest Drive. Beginning at Chinquapin Round Road, an industrial (I-1) district contains: Branch Electric, a low scale office building, the American Oil Gas Station and the C & P electrical substation. This is followed by an R-2, Single Family Residential zone. The Fire Station is located in this R-2 zone.

Between the Fire Station and Cherry Grove Avenue is a B-2 (Community Shopping) zone housing the 7/11 and a former shopping center owned by the State Highway Department of Motor Vehicle Administration.

Two residential zones follow: the first is zoned R-3; the second R-2. Inside the R-2 zone in Blocks 7/8 and adjacent to St. Martin's Evangelical Lutheran Church is parcel, Number 10, zoned P (Professional Office). It is owned by the State Highway Administration and is vacant. (Parcel 10 is 1.54 acres.)

The single Community Shopping zone in the Sector is not currently being fully utilized to meet community shopping needs, but rather as offices for the State Highway Department of Motor Vehicle Administration. As the DMV moves to its new, full-service location off Riva Road, this space may become available for new development. A small parcel of the zone houses the only neighborhood convenience store, the 7/11.

Discussion and Recommendations

General

In the course of the study it was found that some property boundaries did not always coincide with zoning district boundaries. This can be especially noted along the north side of Forest Drive. It has been a long standing policy of the City to correct these situations when they are discovered.

Residential

Parcel 10, adjacent to St. Martin's Evangelical Lutheran Church, and owned by the State is a P, Professional Office Spot Zone that may not be appropriate in this setting. If developed as an office the parcel is not large enough to provide sufficient buffering from surrounding residences. On the other hand, non-residential, or higher residential uses of this property would be more appropriate adjacent to Forest Drive and would improve the access situation by consolidating or eliminating the curb cuts along Forest Drive.

The recommendation is to rezone the property R3 (medium density residential). R3 zoning permits both single family detached and two family attached dwellings with townhouse development being a conditional use. R3 does not conflict with existing development, and it does offer some incentives for construction of Waters Street (now a paper street) allowing egress onto Hiltop Road rather than Forest Drive, and to orient development away from Forest Drive.

To achieve Mixed-Use development in this sector, as recommended by the Comprehensive Plan, would require changes in the existing residential zoning. Properties fronting Forest Drive are suitable for such development provided they function as a buffer between residential uses and this heavily traveled arterial roadway.

Commercial

Any new commercial development should have an office orientation and be designed in such a fashion that traffic impacts are minimized as are the impacts of the development on adjacent residential uses.

The Comprehensive Plan suggested office park development for this area. The amount of vacant land available is not extensive enough to support a suburban office campus. If commercial development is desired, a scaled down office development that included supporting retail uses would be the least intrusive.

The current zoning code does not contain an acceptable low density office/commercial zone suitable for this area. Therefore a new zoning classification is proposed (Appendix B).

Recommendations

- Rezone land where needed to align zoning districts with property boundary lines.
- Rezone Parcel 10 to from P to R3 to conform with surrounding low density residential use.

- Encourage commercial development in the study area to achieve desired mixed use.
- Revise zoning code to create an acceptable category for office/commercial uses compatible with the recommendations of the Comprehensive Plan.
- Rezone appropriate vacant land along Forest Drive for commercial/professional office use consistent with developmental goals for the area.

Annexation

Early in 1988, the City amended its Comprehensive Plan to include, through mapped land use designations, the City's development objectives for unincorporated areas adjacent to City boundaries. The goals of the amendment were to promote a compact city configuration, provide additional land for urban growth, and to facilitate the extension of public services for property owners. By articulating these objectives the City hoped to address the sensitive transition from an urban to a rural community.

The amendment applied to five parcels of land adjacent to the City along Vineyard Road (approximately 52 acres). The parcels, as shown in Figure 2 are listed on the Anne Arundel County Tax Map # 51 as numbers 162, 322, 163, 387, and 335.

The City annexed the Brown parcel (# 162) in January, 1988, and is currently in the process of considering requests from two other property owners (Bowen and Daniels) for annexation. These two parcels are County land immediately adjacent to the Patuxent Boulevard Right-of-Way. (See Figure 2 from the October 25, 1987 Comprehensive Plan Amendment)

The Brown property (consisting of approximately 19 acres) after being annexed by the City was given an R1A zoning classification (low density residential) to that portion of the property to be taken by the State for Patuxent Boulevard (approximately 6 acres) as well as to a three acre parcel created to the north of Patuxent Boulevard. The remaining 10 acres of the site was zoned PT (Office and Residential Transition Zone). Given the environmental, buffering and screening constraints imposed by the City Council in recognizing and mitigating environmental and compatibility concerns, the Brown property has approximately 5-6 acres that can be developed as low-scale professional offices and associated parking.

Recently, the owners of the Bowen and Daniels properties adjacent to the Brown parcel have petitioned for annexation in order to obtain City services. The Daniels tract consists of approximately 4.1 acres, and the Bowen tract consists of approximately 18 acres.

The City has accepted these petitions and agreed to act upon them due to the fact that these properties will constitute a logical extension to City boundaries, will facilitate the extension of City services, and will result in a more compact City configuration.

As was the case with the Brown property, the Bowen and Daniels properties both have environmental constraints (e.g. slopes and heavily wooded areas) and design constraints (e.g. 100 foot buffers along Patuxent Boulevard). These constraints limit the amount of land available for development.

At the time of the Comprehensive Plan amendment, the State Highway Administration (SHA) had proposed a full-turning access onto Patuxent Boulevard from the Brown Property, and a right-turn only access to the Daniels/Bowen properties. Subsequent actions by the SHA have eliminated the full turning access to the Brown property, replacing this with right turn only.

Access to the properties will be as follows:

1. Right turn only access off of Patuxent Boulevard near the western boundary of the Brown property

2. Right turn only access at the shared property line between the Bowen and Daniels property
3. A service road from Bywater Drive adjacent to the northern property line of Bywater Mutual Homes.

A traffic impact study is currently underway for these annexations. Any necessary road improvements will be identified in that study.

Future Annexations

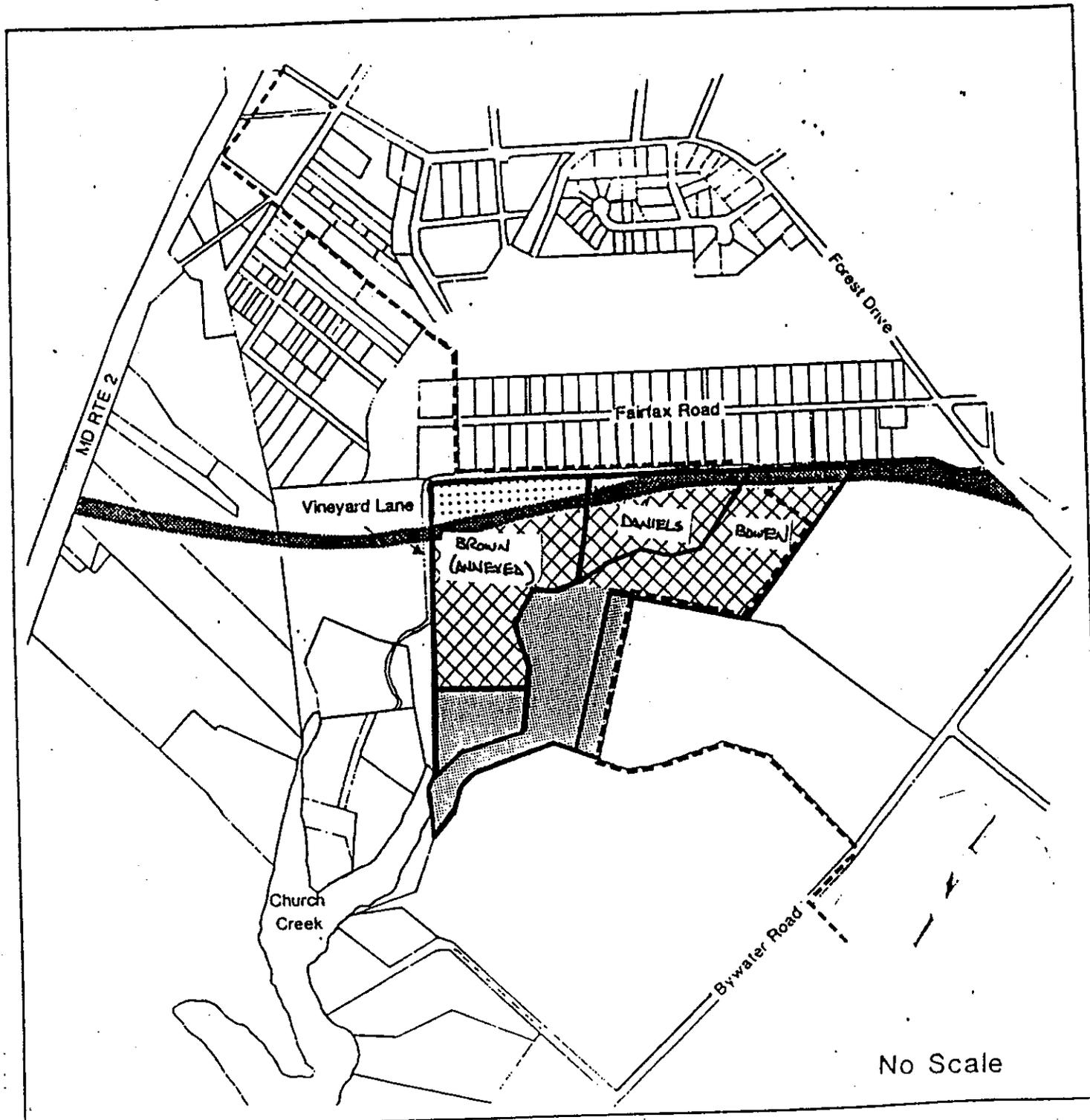
The City's policy for future annexation activity in this sector is not proactive and remains one of response to petitions from individual property owners.

As long as Anne Arundel County is unable to provide a public water source to unincorporated lands in this sector; annexation will be an attractive alternative to property owners along Forest Drive.

Recommendations

- Any future lands considered for annexation will be zoned for uses consistent with the recommendations of this study

City of Annapolis Amendments to Comprehensive Plan - Figure 2



No Scale

Comprehensive Plan Amendment

Legend

- | | | | |
|---|-------------------------|---|----------------------|
|  | Low Scale Office Park |  | Site |
|  | Low Density Residential |  | City/County Boundary |
|  | Open Space |  | Patuxent Boulevard |

TRANSPORTATION

Comprehensive Plan Goals

- Improve the circulation patterns in support of the overall land use concept of higher intensity future development in areas north and west of Spa Road;
- Maintain and develop a pedestrian oriented, human scale city.
- Adopt future land use configuration that will provide maximum opportunities to walk to work and for convenience and other shopping trips;

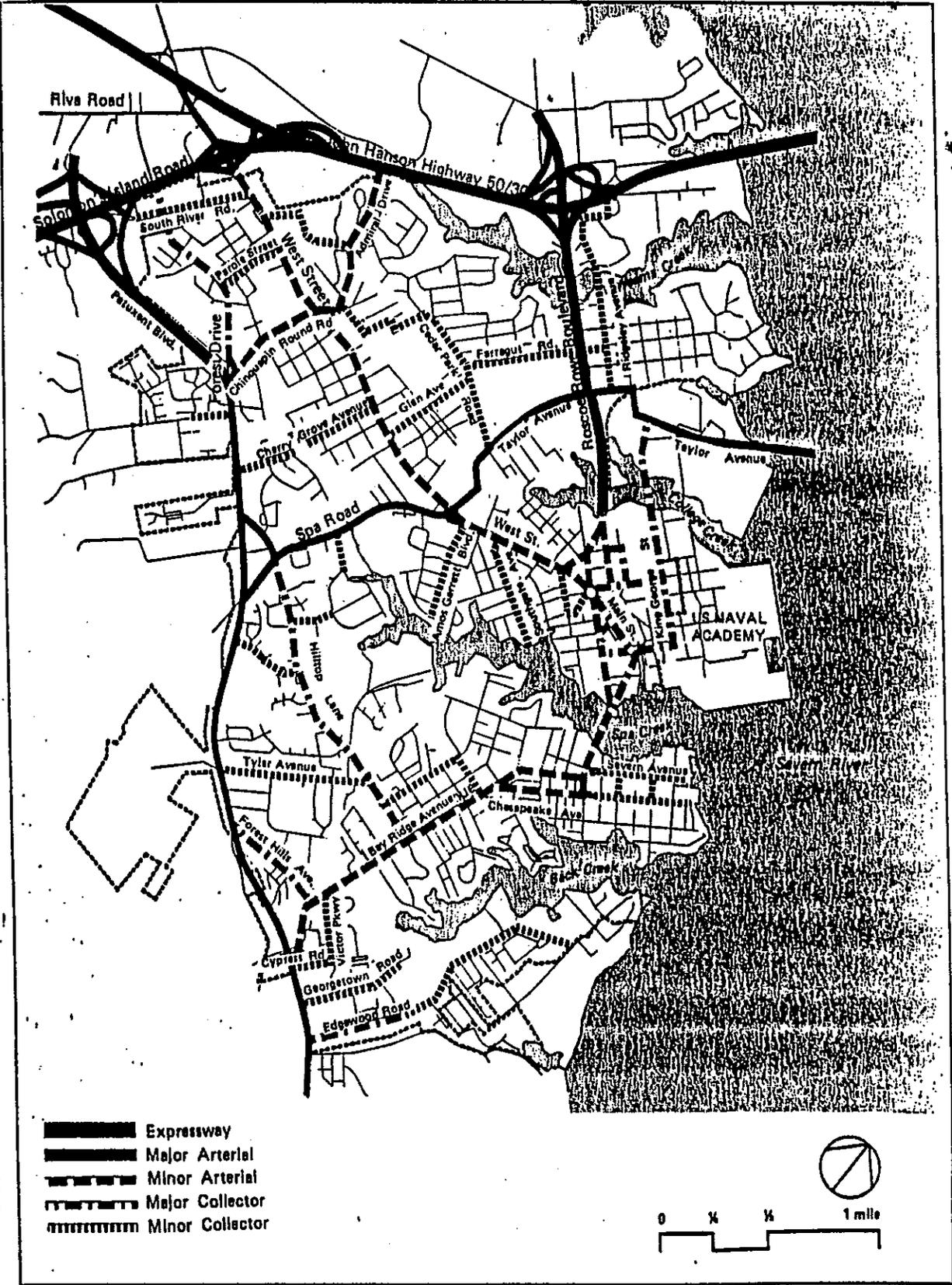
The Comprehensive Plan proposed that a cooperative effort with landowners and Anne Arundel County be initiated to establish an overall circulation and detailed development plan for the Forest Drive Cluster. Recognizing Forest Drive's new role as a major gateway corridor to Annapolis the Comprehensive Plan recommends that specific attention be paid to distinctive setbacks, buffering, limitation of curb cuts and commercial development.

Existing Conditions

Forest Drive (Route 665) as shown on Map 5, serves as the primary east-west arterial for most residents of the study area. It is a lengthy, heavily travelled arterial within both City and County political boundaries that runs roughly down the center of the Annapolis Neck peninsula. Some segments of the roadway are already overburdened by traffic from existing development in the County and City. Since development of much of the land west of Forest Drive is controlled by Anne Arundel County and development of all land south of Edgewood Road is controlled by Anne Arundel County, a substantial amount of new development approved during the past ten years has not been subject to review and control by the City. This new development and other approved upcoming development in the County, such as Steeplegate, west of Forest Drive at Spa Road, depends upon Forest Drive for access and egress.

All existing roads (Bywater, Greenbriar, Newtowne) to the southwest of Forest Drive have no other outlet and feed directly onto Forest Drive. As traffic increases, traffic densities could cause significant impact in the ease of access from these residential areas onto Forest Drive in the absence of signalized cross connections.

Forest Drive Sector 1 - Map 5 Existing Road System



The table in Figure 3 from the Annapolis Neck Sector Plan shows the D Level Service Capacities on three segments of Forest Drive with 1980 existing and 1990 projected peak hour traffic volumes and planned improvements.

Figure 3

Forest Drive Road Segments, Capacities, Existing and Projected Peak Hour Traffic, and Planned Improvements				
Segment	D Level Capacity	1980 Vehicles Peak Hour	1990 Vehicles Peak Hour	Planned Improvements
Solomons to Chinquapin	1500	2340	2620	Patuxent Blvd
Chinquapin to Spa	2400	2200	3500	Widening to 5 lanes or more by State
Spa to Hillsmere	2600	1200	2300	Improved signalization at Spa

As can be seen from the table, the westernmost segments, from Solomons Island Road to Chinquapin Round Road, are presently handling more traffic than the acceptable level of service and safety (called service level D).

Also, the five-lane Chinquapin to Spa segment is approaching capacity. This segment receives traffic from three City of Annapolis arterials: Chinquapin Round Road, Hilltop Lane and Spa Road, as well as from three residential collectors: Newtowne Road, Bywater Road and Cherry Grove Avenue. The State added a left hand turning signal to the light at Bywater Road in 1982, and in 1983 it constructed a fifth lane to allow through traffic to flow past turning traffic. These improvements, along with Patuxent Boulevard, should accommodate existing and projected traffic levels on this segment through 1990.*

*Annapolis Neck Sector Plan

Figure 4

DEFINITIONS OF SERVICE LEVELS*	
Level of Service	<u>UNINTERRUPTED FLOW CONDITIONS</u>
A --	Free flow. Drivers are not affected by other vehicles in the traffic stream. No delay.
B --	Stable flow. Drivers are somewhat restricted in maneuverability and speed by other traffic. Traffic density increases.
C --	Lower limit of stable flow. Drivers are restricted in their ability to maneuver and choose speed by other traffic. Higher but acceptable traffic density. Small delays. This level of service is commonly associated with design
D --	Approaching unstable flow. Traffic operations become very susceptible to changing conditions. Occasional delays might occur, with moderate to heavy duration.
E --	Unstable flow. Drivers are completely affected by other vehicles in the stream. Defines the capacity of the facility. Extensive delays are present.
F --	Forced flow. Continuous back ups.

Appendix C Figure 2 in the Annapolis Comprehensive Plan gave the following projections for Forest Drive - from Chinquapin Round to Hilltop:

1982	1990	2010
Daily traffic	without Patuxent Blvd extended	with Patuxent Blvd extended
21,400	26,200	38,800

However, Anne Arundel County completed traffic counts in 1988 and at the intersection of Cherry Grove and Forest Drive the ADT count was already 36,000. Five hundred cars were counted exiting from Newtowne Road. Clearly, actual traffic volume will soon reach the 2010 projections.

* Highway Capacity Manual, Highway Research Board Special Report 87, Washington, D.C., 1965.

Planned Improvements

In order to improve this situation, relocation of a portion of Forest Drive has been planned. It will connect with a new road named Patuxent Boulevard. This four-lane divided roadway will begin at the intersection of Forest Drive and Chinquapin Round Road, running generally south and west, crossing Solomons Island Road and Riva Road to connect with a

new interchange that will allow through traffic to proceed directly onto Patuxent Freeway (I-97) or U. S. Route 50/301 (I-68). (See Map 6) The State Department of Highways is undertaking this new major road project. It is scheduled to begin in the Spring of '89 and be completed by the fall of 1991. While being built as a four lane highway, the new Patuxent Boulevard will have an expansion capacity to 6 lanes. Thus, additional capacity could be provided if congestion occurs in the future. (Refer to Greenhorne & O'Mara Brown-Pavlinic Property Traffic Impact Study September 1986.)

A second State project to extend the road improvements on Forest Drive below the new interchange at Chinquapin Round has been tabled due to lack of funding. The present project time is December 1996. However, significant design work has been completed on the project.

The proposed changes are as follows:

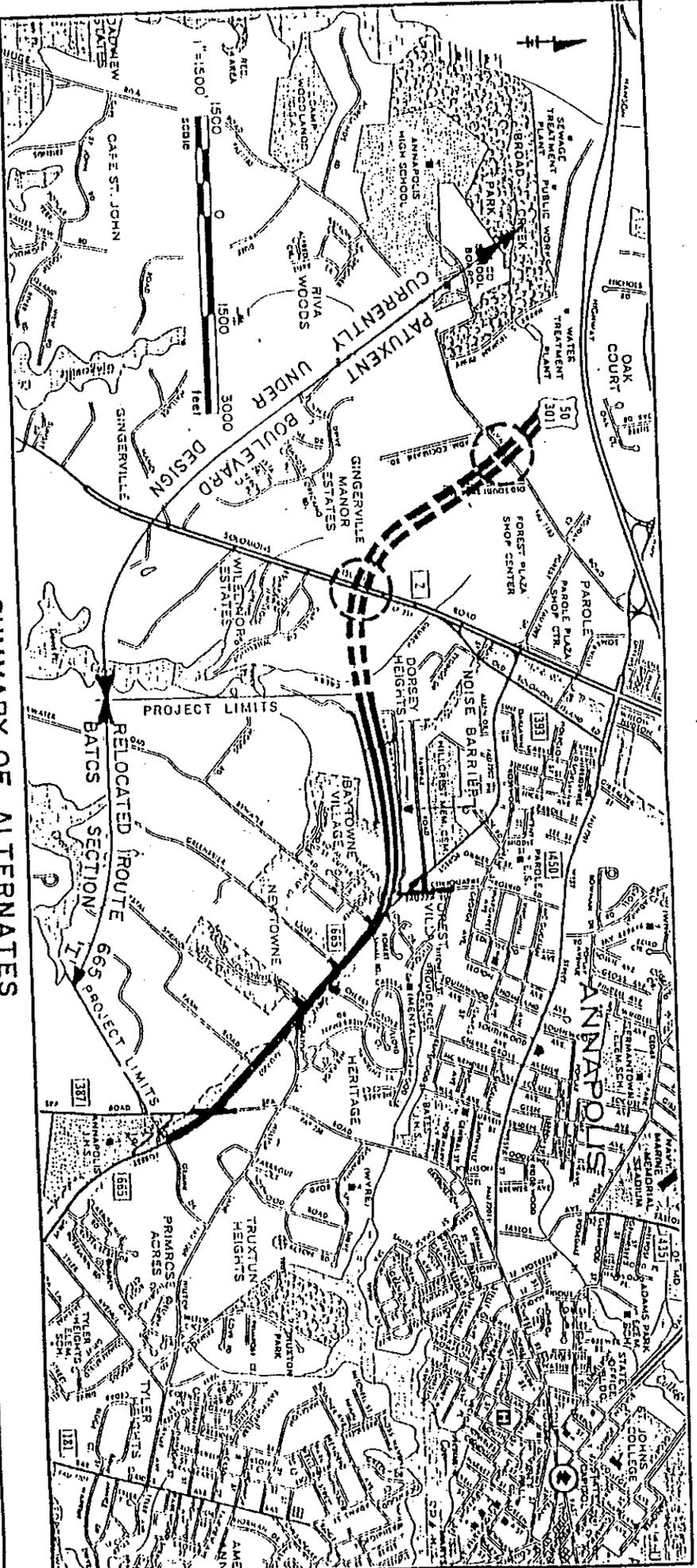
Currently, Forest Drive is approx 62' (5 lanes) from Bywater to Hilltop intersection. The State is planning to expand it to 89' (7 lanes) including an outside lane on each side for acceleration/deceleration (14' curb shoulder).

At Hilltop there will be two mandatory left turn lanes with an island. The road will then narrow in a 600 foot transition to 65' in width (5 lanes).

The existing road is now approx. 47'. No median is planned for the road.

The intersection of Forest Drive with Spa Road will be five lanes on Forest with a center left turn. On the south, Spa will be widened to 36' at the intersection to include a left turn lane. The existing width is 22' (2 lanes). Also Spa will have channels for right turns to Forest. On the north a storage lane for left turns 850' in length will be installed.

The State had been negotiating with property owners before the project was shelved this year. If property owners want to sell now, the State will purchase the properties at market value. Three houses on the north side of the street are very close to the road. They will be heavily impacted by the road widening.

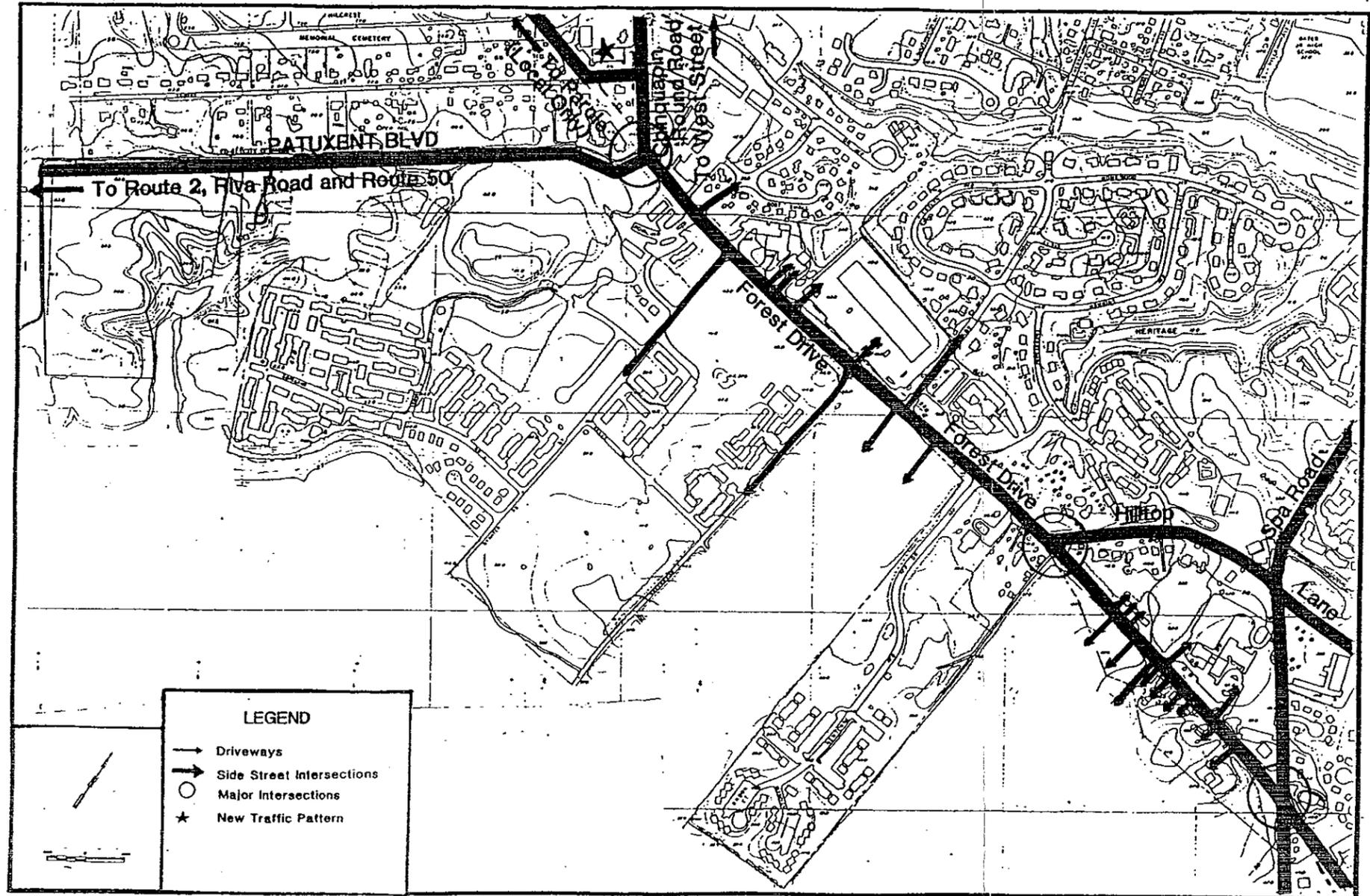


SUMMARY OF ALTERNATES

ALTERNATES	LENGTH (MILES)	STRUCTURES	RAILROAD CROSSING	STREAM CROSSING	RELOCATION					PROPERTIES AFFECTED					REQUIRED R/W (ACRES)					TOTAL R/W AND RELOCATION COST (\$ 1000)	CONSTRUCTION COSTS (\$ 1000)	TOTAL COSTS (\$ 1000)				
					FAMILIES	BUSINESSES	FARMS	NON-PROFIT	TOTAL	RESIDENCES	BUSINESSES	PUBLIC LANDS	HISTORIC SITES	TOTAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	AGRICULTURAL	WETLAND				PARKLAND	OPEN SPACE		
1	1.6	-	-	-	7	1	1	1	1	8	35	16	9	1	60	29	4	1	1	1	1	1	32	1,595	6,500	8,651
2	1.6	-	-	-	1	1	1	1	1	2	30	16	9	-	55	28	4	-	-	-	-	32	1,595	6,500	8,195	
					5										6											

FOREST DRIVE SECTOR 1

MAJOR ROADS/ACCESS



The State is required to place a Storm Water Management Pond in the area. It is expected to be placed above Hilltop on the open landscaped area next to Heritage Baptist Church.

The lack of four way intersections on Forest Drive creates difficulty in attempting to improve the flow of traffic from secondary roads. All secondary roads terminate at Forest Drive and necessitate left turns across the heavily trafficked Forest Drive.

The County is in the process of contracting for a Highway Safety and Beautification Study of Forest Drive to be completed in the Spring of 1989, with construction targeted for 1990.

Curb Cut Inventory

One study task was to inventory existing curb cuts along Forest Drive. The planimetric maps supplied by the Planning and Zoning Department were found to be accurate as to scale and placement of curb cuts with minor instances noted that required correction. The changes include: the North side of Forest Drive between Hilltop and Crystal Springs Road has three residences with four curb cuts serving them; the South side of Forest Drive between Crystal Springs Road and Spa Road has five residences (including one commercial use) with four more curb cuts than originally noted on the map. These corrections were made on the base map for this study.

Discussion and Recommendations

The two SHA projects; the imminent construction of Patuxent Boulevard and the eventual widening of Forest Drive, while serving to improve traffic flow will increase traffic through the study area. It is imperative that all present and future development plans anticipate and attempt to mitigate the effects increased traffic will have on the surrounding residential community. The surrounding residential communities have urged that a distinction be made between Patuxent Blvd. and Forest Drive; Patuxent Blvd being a limited access highway and Forest Drive being a "city street" in character and function. This is an important distinction in terms of access, speed and adjacent land uses.

- Through cooperative efforts with the State and County anticipate and attempt to mitigate the effects increased traffic will have on the surrounding residential community.

Due to increase in development of residential units and in accordance with the Comprehensive Plan policy of pedestrian access, sidewalks will be needed along the length of the study area. The only sidewalks presently existing are on the North side of Forest Drive in front of the fire station.

- Installation of sidewalks and bike paths on property abutting Forest Drive in accordance with the design standards used by the State.
- Installation of sidewalks and bike paths on property abutting secondary roads to improve circulation of pedestrian traffic;

- New developments should be required to finance the installation of sidewalks and bikepaths;
- Installation of clearly marked pedestrian crosswalks at the intersection of Forest Drive and Bywater Road to include a suspended "pedestrian crossing" warning sign across Forest Drive.
- Traffic control buttons on posts at the pedestrian crosswalk;
- Clearly demarcated pedestrian crosswalks at other intersections;
- Investigation of the feasibility of grade separated pedestrian crosswalks intersections;

Forest Drive is currently a speedway with no crosswalk designations at intersections and only one traffic light at the intersection of Bywater. Each road to the southwest of Forest Drive (Bywater, Greenbriar, Newtowne and Crystal Spring) ends at Forest Drive in a three-way intersection. These three-way intersections inhibit traffic flow across Forest Drive. According to county criteria, traffic flows at these intersections are too low to warrant traffic lights. This may change with increased development.

- Realignment of these secondary roads to create four way intersections with Cherry Grove or Hilltop should be explored. A four way intersection would necessitate the addition of another traffic light and facilitate access to Forest Drive;

Serious consideration should still be given to the addition of a traffic light at Newtown Road

At present Belle Drive and Copeland road are the only secondary roads that run parallel to Forest Drive.

- Development of a secondary road system parallel to Forest Drive to improve the traffic circulation pattern by extending Belle Drive;
- As development occurs new roads should be aligned with existing to create four way intersections and ease traffic flow, Hilltop Lane and/or Cherry Grove Avenue would be suitable;
- Upgrading of Bywater Road by widening and adding curbs and sidewalks

Future impediments to traffic flow should be minimized by controlling any additional curb cuts onto Forest Drive. All new development should channel access through auxiliary roads where possible to minimize the number of traffic signals required. No additional full turning movement curb cuts should be allowed unless it can be shown that they would improve, or not adversely affect, the traffic flow.

- No new individual residential curb cuts on Forest Drive should be allowed;
- Any new curb cut should support concentrated development;

- All new curb cuts should follow State criteria for curb cut spacing on arterials

Anne Arundel County now has responsibility for the road and as such the City residents may be hampered in their efforts to expedite improvements in this area. Some resistance from county residents further south on Forest Drive could result since any safety improvements (i.e. additional traffic control devices) will result in delays potentially increasing travel time on commuter migration to Washington or Baltimore.

Resistance by the County could possibly be avoided by having the major developers pay for the installation of signals and turn lanes at the intersections adjacent to their properties. An open dialogue with County officials should be maintained.

- Joint planning with the County to develop solutions is encouraged

The State has completed preliminary design for the widening of Forest Drive and platted the necessary Right-of-Way needed.

- All future development on Forest Drive should measure their required setback from the Right-of-Way as platted by the State.
- Landscape buffer requirements on Forest Drive generally should be a minimum of 50 feet

APPENDIX 2 contains a Traffic Operations Study prepared by Lukas Associates that contains a review of traffic conditions on Forest Drive and makes recommendations for improvements.

ENVIRONMENT

Comprehensive Plan Goals

- Strengthen the regulation of storm water management and undertake special measures to assure that future development respects the unique features and natural character of each of the Creeks;
- Remaining wooded areas be preserved to the extent feasible, open wooded space be properly managed, and that new plantings be encouraged to decrease erosion and for streambank stabilization.

The Forest Drive Sector does not lie within the City's designated Critical Areas. The major environmental concern in the area appears to be in the condition of the soils as well as enhancement of the existing environment.

Existing Environment

Much of this area is undeveloped and occupies previously cleared land. As such few wooded areas remain. Those existing wooded areas should be preserved, and development on cleared land should be designed to enhance the quality of the environment through sensible landscaping and the planting of street trees.

Soils

The majority of soils in the area have moderately high runoff potential and are highly erodible. When they are thoroughly wetted the soils do not allow water to soak in and be absorbed. Resulting water runoff can potentially carry significant quantities of soil downstream. Careful soil management techniques must be employed to protect these areas from erosion problems accelerated by changes in land use.

Stormwater Runoff and Flooding

The Church Creek Watershed includes the section of the Study Area west of Greenbriar Lane extending to Rt 2 and slightly north of Forest Drive. Because of the impact of pollution loading in the Creek, stormwater runoff management "must be given thorough consideration" in any new development.

Recommendations

- Strengthen the regulation of storm water management for any future development ;
- Require wooded areas in new developments be preserved to the extent feasible, open wooded space be properly managed, and that new plantings be required to decrease erosion and for streambank stabilization.
- Require new development to landscape in such a manner that visual quality is enhanced

- Consider the development of a design overlay to achieve a unification of the various, disparate elements along Forest Drive

UTILITIES

Water and sewer systems are critical concerns in community development. In addition to supplying services to the existing population they are important planning tools to help achieve the goals and policies of the City. A comprehensive study of the water and sewage systems is being conducted by Whitman, Requardt Associates.

The City of Annapolis is supplied water through the Annapolis Water Treatment Plant. This City-owned plant is located west of the City on Rt 450. Sewage treatment is provided at the Annapolis Water Reclamation Facility, located on Edgewood Road. It is owned jointly by the City and Anne Arundel County. The County is responsible for operation and maintenance. The City pays for these services.

Water Facilities

The Annapolis Water Treatment Plant produces and treats an average of 5 million gallons per day (mgd) with a current capacity of 6 mgd. The plant is in the middle of an expansion program that will bring its capacity to 10 million gallons per day. Construction is expected to be completed in 1989.

The distribution system is adequate to meet the needs in the study area with a 16" water line running along Forest Drive. Both Chinquapin Round Road and Spa Road have 10" lines.

Sewage Facilities

The Annapolis Water Reclamation Facility was designed to handle an average flow of 10 million gallons per day (mgd). In 1985 the flow was 5.7 mgd, with approximately 80% coming from the City. The City has two main pumping stations; Second Street handles 4 mgd while Belmont on Edgewood Road at St. James Landing handles 1 mgd. Improvements to the Belmont station are in the Capital Improvement Plan and expected to be completed within the next five years. There is a 30" force main on Forest Drive. The force mains flow into gravity sewers.

Included in the study area are three small pumping stations. These were constructed to have the capacity to handle future development in the area. The pump at Whiton Court in Bywater Estates may need minimum improvements to handle an increased load.

An early draft of the section of the Whitman, Requardt Associates study addressing the water service recommends a connection between the 16" water line on Forest Drive to the 10/14" line in West Street to improve flow.

Recommendations

- It is recommended that new developments built in the study area having high water needs be required to pay a portion of the cost of the line connection to West Street.

New sewage connections are handled on a case by case basis. Recommendations regarding sewage will be based on the completed Whitman, Requardt Associates study.

COMMUNITY FACILITIES

Comprehensive Plan Goals

- Provision of additional public open space and recreation lands;
- Expansion of services for senior citizens, and day care, with future shared use of school facilities.

Schools

The Study area is located within the Parole Elementary School District. The enrollment at Parole Elementary for 1987 was 380 students. The expected enrollment for 1988 is 400. Current capacity at the school is 570.

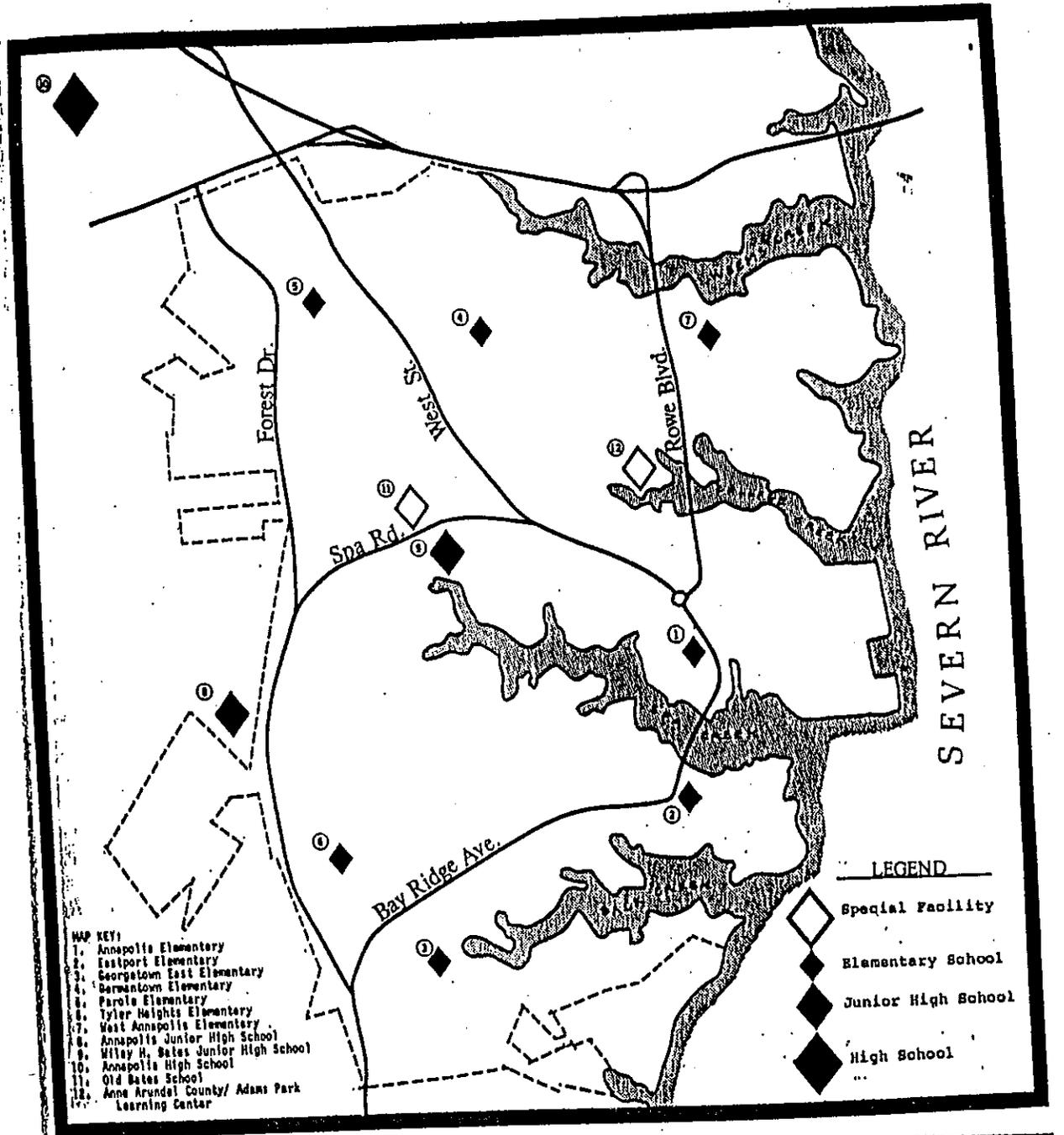
The school is due for renovation and is included in the Capital Budget for Planning in 1993 and Construction in 1994.

Annapolis Junior High located on Forest Drive at Spa Road in the county, serves both city and county residents and is currently 50% utilized. It is used as a holding school while renovations are undertaken at other schools.

Future residential development would have no adverse effects on the existing school infrastructure.

Figure 1 taken from Parks and Paths for People the Annapolis Parks, Recreation and Open Space Plan shows the location of the schools.

Figure 5- Existing Facilities-County Schools



Parks & Paths for People



Annapolis Parks, Recreation and Open Space Plan

ANNAPOLIS PARKS, RECREATION AND OPEN SPACE PLAN

EXISTING FACILITIES-COUNTY

MAP 2



GEORGE WASHINGTON UNIVERSITY
School of Government and Business Administration
Institute for Urban Development Research 1987

Recreation and Open Space

Parks and Paths for People the Parks and Recreation Department's Master Plan completed in 1987 makes several recommendations that are pertinent to the Forest Drive Sector. These recommendations are listed below and are graphically illustrated in Figures 2 and 3 from the Master Plan.

Existing limited recreation facilities do not meet the needs of the entire area. The residential areas southwest of Forest Drive are separated from the rest of the city by this increasingly heavily trafficed major arterial. Additional residential development will create even greater demand for recreational facilities, and bikeway and pedestrian paths.

The inclusion of sidewalks and bikeways along Forest Drive is strongly recommended.

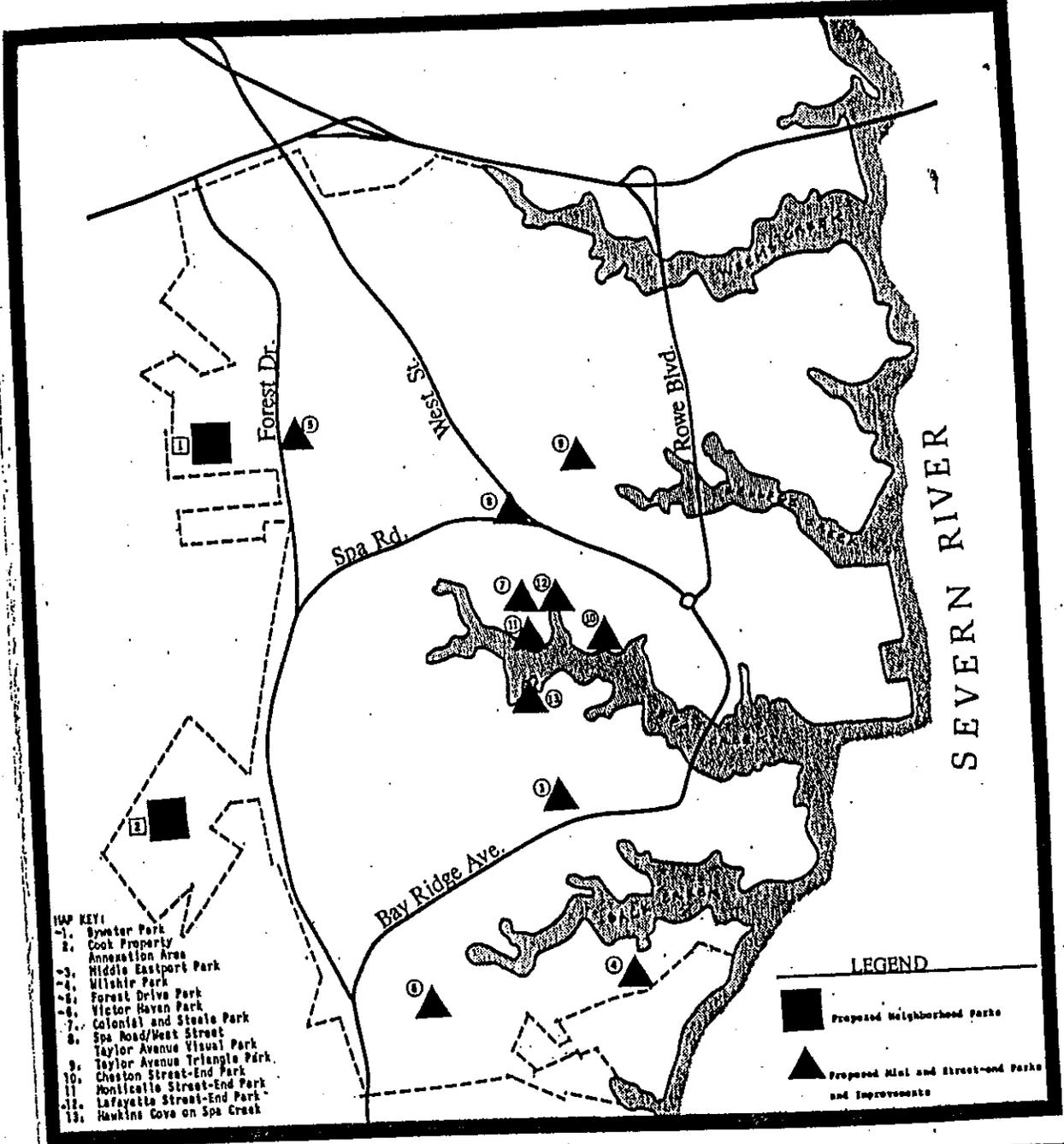
The Plan calls for bikeway and pedestrian paths each to be eight feet in width where possible. This sixteen foot pathway system is possible to construct along the major portion of the southwestern side of Forest Drive from Spa Road to the traffic light at Bywater Road. Several residences close to the road between Crystal Spring and Spa would require a narrower pathway. This pathway system would become a part of the landscape buffering along Forest Drive and be included in the setbacks required for new development.

The state has adopted a standard of 29 acres of recreation land for every 1000 residents of Anne Arundel County. The City of Annapolis cannot completely achieve the recommended standard within the City boundaries. The City could participate with the County in a program of joint development of new park land.

Recommendations

- Develop a Neighborhood Park in the Bywater Area to incorporate a playground and playing fields
- Development of pedestrian and bicycle pathways system linked to the planned city-wide path system
- Participate with the County in a program of joint development of new park land
- Upon annexation or development of any parcels in the area and south of Forest drive, the City should both:
 - A) Require that residential development include recreational areas suitable for the residents of the development, and
 - B) Through established parks and recreation committees negotiate with landowners toward the acquisition of land suitable for a neighborhood park as recommended in the Parks and Paths for People Plan.

Figure 6 - Proposed Parks



- MAP KEY:**
- 1. Brywater Park
 - 2. Cook Property Annexation Area
 - 3. Middle Eastport Park
 - 4. Millshir Park
 - 5. Forest Drive Park
 - 6. Victor Haven Park
 - 7. Colonial and Steele Park
 - 8. Spa Road/West Street
 - 9. Taylor Avenue Visual Park
 - 10. Cheston Street-End Park
 - 11. Monticello Street-End Park
 - 12. Lafayette Street-End Park
 - 13. Hawkins Cove on Spa Creek

LEGEND

- Proposed Neighborhood Parks
- ▲ Proposed Mini and Street-end Parks and Improvements

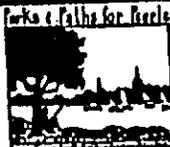
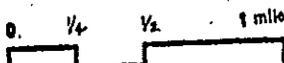
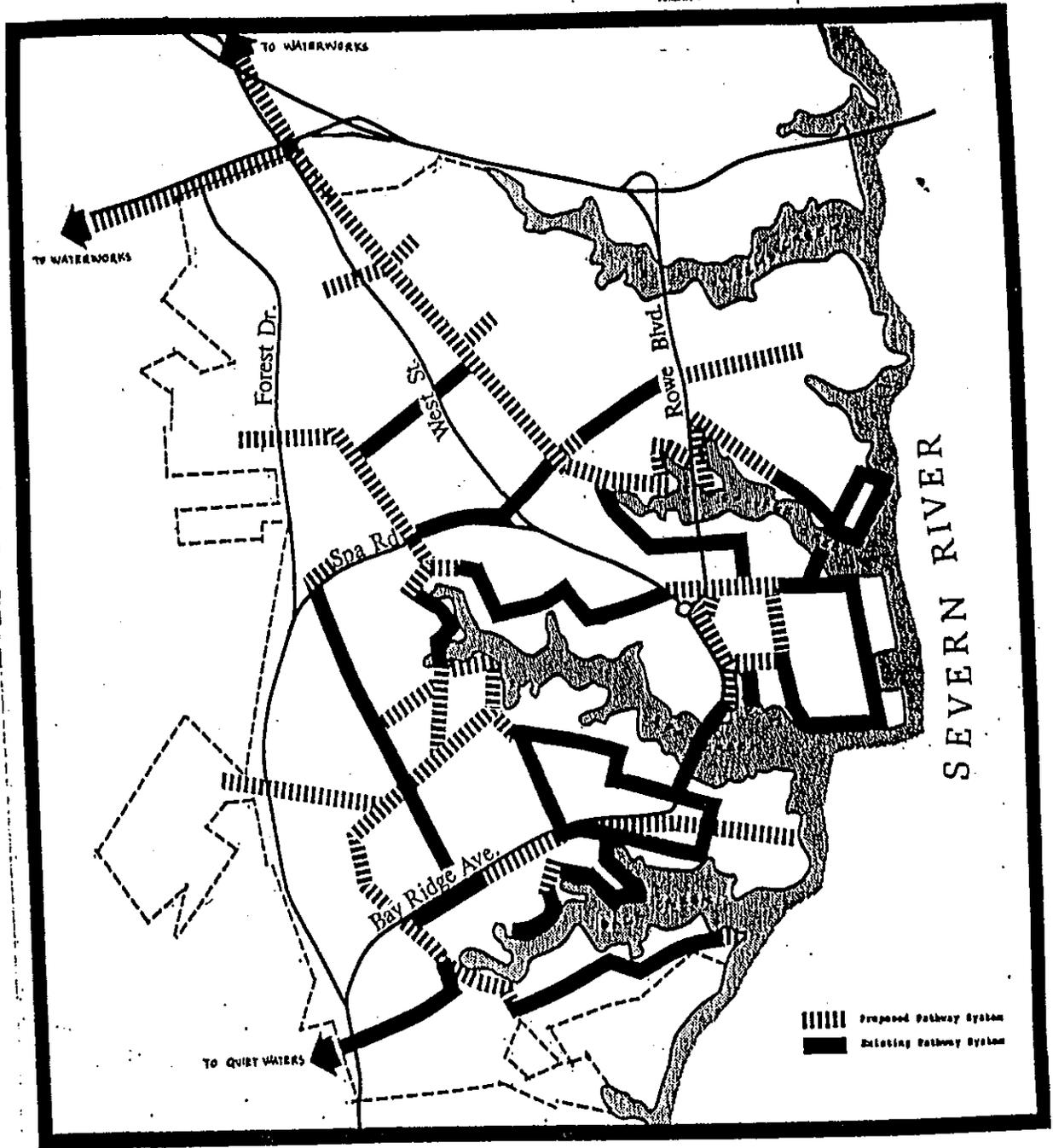
 <p>Parks & Paths for People</p> <p>Annapolis Parks, Recreation and Open Space Plan</p>	<p>ANNAPOLIS PARKS, RECREATION AND OPEN SPACE PLAN</p> <p>PROPOSED PARKS</p>	<p>MAP 10</p>  <p>0 1/4 1/2 1 mile</p> <p>GEORGE WASHINGTON UNIVERSITY School of Government and Business Administration Institute for Urban Development Research 1987</p>
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Figure 7 - Pathway System



ANNAPOLIS PARKS, RECREATION
AND OPEN SPACE PLAN
PATHWAY SYSTEM

MAP 11

0 1/4 1/2 1 mile

GEORGE WASHINGTON UNIVERSITY
School of Government and Business Administration
Institute for Urban Development Research 1987

HOUSING

Comprehensive Plan Housing Goals

- Provide a balanced housing stock for all of its citizens;
- Encourage a wide variety of market-rate housing units at a range of densities to conserve space and in support of existing and proposed neighborhoods;

The housing goals endorsed in the Comprehensive Plan encourage the development of a wide variety of market-rate housing units at a range of densities to conserve space and in support of existing and proposed neighborhoods and to provide a balanced housing stock for all of its citizens. The Forest Drive area appears to be achieving these housing goals.

The Forest Drive Sector contains several large residentially zoned vacant parcels. Two of these parcels have been platted or otherwise approved for medium density residential development.

The two main subdivisions are Baytowne Village--platted into duplex lots with a total of 240 dwelling units--and Greenbriar--an approved conditional use (now expired) for over 365 townhouse dwelling units (of which 110 have been built). At one time between Baytowne Village and Greenbriar there were approvals to build upwards of 605 dwelling units. At the present time 110 (18%) have been built.

Proposed Residential Development

Compared to the enormous land development pressures in Annapolis, this area has been slow to develop. Recently there has been renewed interest in the larger Forest Drive corridor.

At this time the only proposed development on file in the study area is Steeplegate in Anne Arundel County. The proposed Steeplegate development is located on Forest Drive between Hilltop and Spa Road on property presently owned by Dr. Iliff. The project is to be built in stages. It will have over 600 single family, and townhouse residential units when completed.

Outside the immediate Forest Drive Study area farther east on Forest Drive (near the intersection with Tyler Avenue) two residential developments have been approved with a total of 390 dwelling units (Annapolis Overlook--324 garden condominium units and Beechwood Hill--66 townhouse units).

In all likelihood, the reason for this increased interest in residential development along Forest Drive is the imminent construction of Patuxent Boulevard linking Forest Drive to Rt. 50 (I-68) and I-97. This Patuxent connection will yield excellent access from the Forest Drive corridor to both Washington, D.C. and Baltimore--the best such access of any area in Annapolis.

It is therefore not realistic to continue to view this sector as a dormant area on the outskirts of Annapolis. With the scheduled completion of Patuxent Boulevard in 1991 this sector should witness a great deal of development pressure.

While some developers have expressed interest in properties in the City none has filed a development application as yet.

One of the pressing needs as the area develops will be access for both vehicular and pedestrian traffic to the area. The time to address this is now. A system of secondary roads and pedestrian paths should be planned to be constructed with any new development to improve the circulation patterns.

Recommendations

Given the existing residential character of the area and the encroaching traffic situation at Forest Drive it is incumbent upon the City to insure that new development enhances the residential quality of the area.

- Require new development to install landscape buffers around the perimeter where it abuts roadways or a different category of development;
- Develop standards for building setbacks along Forest Drive
- Where feasible build secondary road connector system;
- Install pedestrian and bicycle pathways through area
- Develop a Neighborhood Park in the Bywater Area to incorporate a playground and playing fields

ECONOMIC DEVELOPMENT

Comprehensive Plan Economic Development Goals

- A specific, pro-active economic and community development program be endorsed;
- Expansion of the tax base, creation of employment opportunities and retention of existing businesses;
- Cooperation with and support of businesses undertaking projects that are consistent with the Plan;

Development

The Forest Drive Sector contains the largest concentration of vacant land in the City and is a prime target for development.

As set forth in the Comprehensive Plan Office and retail uses in areas with appropriate existing public services should be encouraged. Office Uses and Community and Convenience Commercial Uses are recommended to be limited to Mixed Use Clusters such as the Forrest Drive area.

The Comprehensive Plan recommended permitted buildings in excess of four stories in height in Major Mixed Use Clusters. Forest Drive was identified in the plan as a target area for primarily office park development.

Development pressures

The traffic volumes (average daily traffic) on Forest Drive range in estimates from 21,000 VPD (vehicles per day) to 36,000 VPD. With the completion of Patuxent Boulevard, this number could increase considerably. These traffic volumes are attractive to potential commercial uses.

As traffic increases with the opening of Patuxent Boulevard, it is likely that there will be tremendous pressures for increased commercial development. Unplanned strip commercial development along Forest Drive would only serve to increase congestion through additional curb cuts, promote land uses incompatible with the existing residential uses, and would be opposite the intent of the Comprehensive Plan to discourage strip retail commercial development and encourage a smaller scale of office and retail uses serving the local community.

Conclusion

More than any other public activity, road construction has a major impact on land desirability and use. With Patuxent Boulevard, the ease of access from this sector to the Washington, D.C. and Baltimore employment centers will make it extremely attractive for residential development. In addition, traffic volumes (both existing and projected) along the Forest Drive corridor will make this sector attractive for other types of development.

Residential development should be encouraged, as should office and support commercial uses, especially if this commercial development is proposed outside of a larger planned residential or office development and is not oriented to serve the needs of immediate land uses.

Recommendations

- Limiting commercial development to office rather than shopping
- Limiting height to 4 stories
- Requiring landscaping and buffering from adjacent residential areas
- Landscaped buffer zones

RECOMMENDATIONS for ZONING CHANGES

The recommendations made to achieve the goals established for the Forest Drive Sector are stated below. They are organized into a series of issues and recommended actions by zoning categories.

1. GENERAL ZONING

In the course of the study it was found that some property boundaries did not always coincide with zoning district boundaries. It has been a long standing policy of the City to correct these situations when they are discovered.

- Rezone land where needed to align zoning districts with property boundary lines.

2. RESIDENTIAL ZONING

Retain current residential zoning classifications for existing residential development.

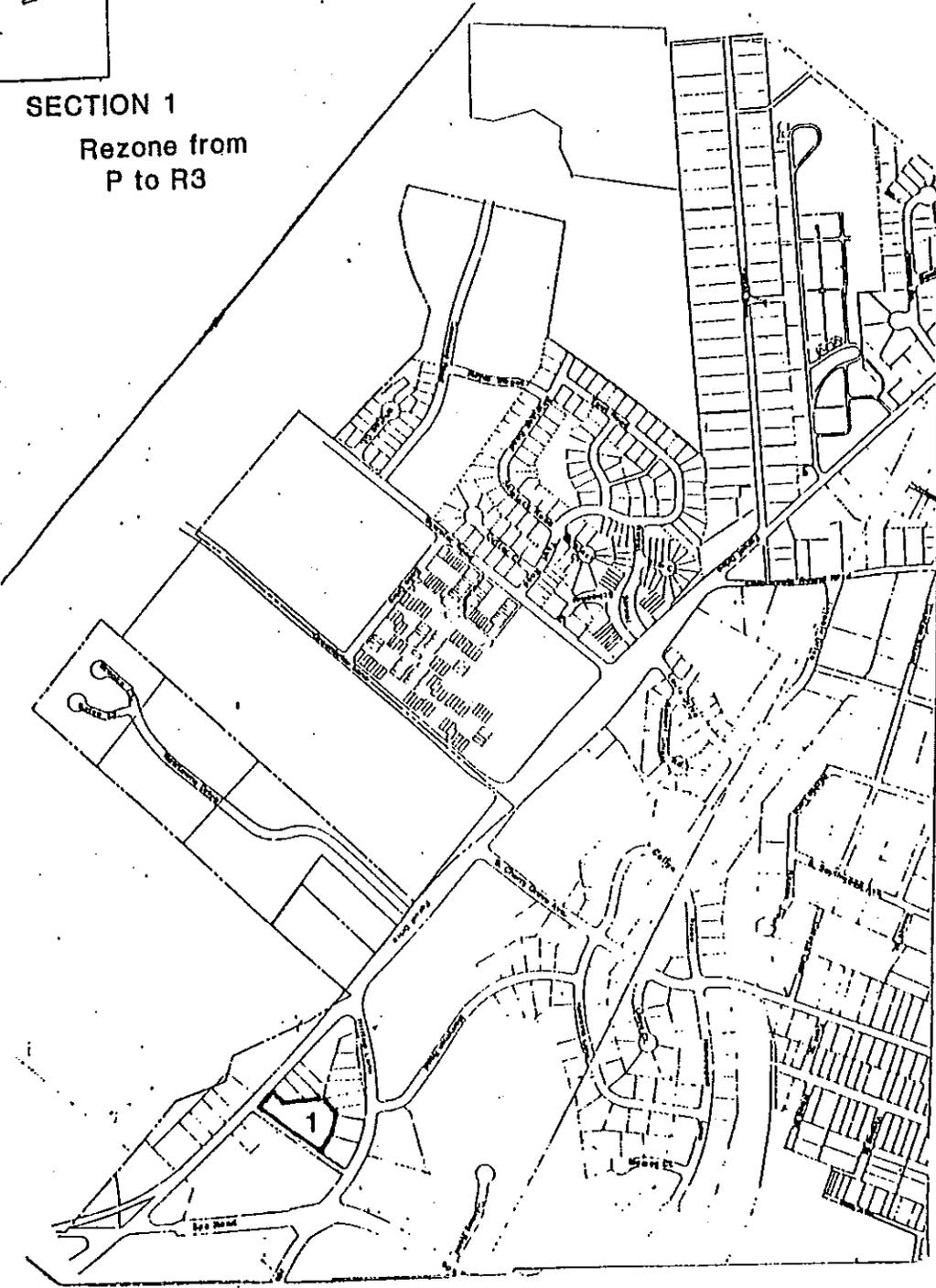
- Rezone Parcel 10 from P (Professional Office) to R3 to conform with surrounding low density residential use. In the future, the City may consider a higher density zoning provided that development plans for this parcel limit access to Forest Drive and adequately buffer adjacent land uses.

3. COMMERCIAL ZONING

To encourage commercial development in the study area the Comprehensive Plan specified Forest Drive as a mixed-use cluster and a special development area. The purpose of a mixed-use cluster is to provide a range of land use opportunities; to include a location for office development and supporting commercial use; to discourage strip commercial development and lessen negative impacts on traffic flow; minimize congestion on adjacent streets; and to provide a buffer along Forest Drive with design standards sensitive to adjoining land uses. To do this would require zoning changes and the creation of an appropriate zoning category for office development.

- Revise the zoning code to create an office zone for low density office/commercial uses compatible with existing residential land uses. This would entail the establishment of a Professional Mixed Office zoning category.

SECTION 1
Rezone from
P to R3

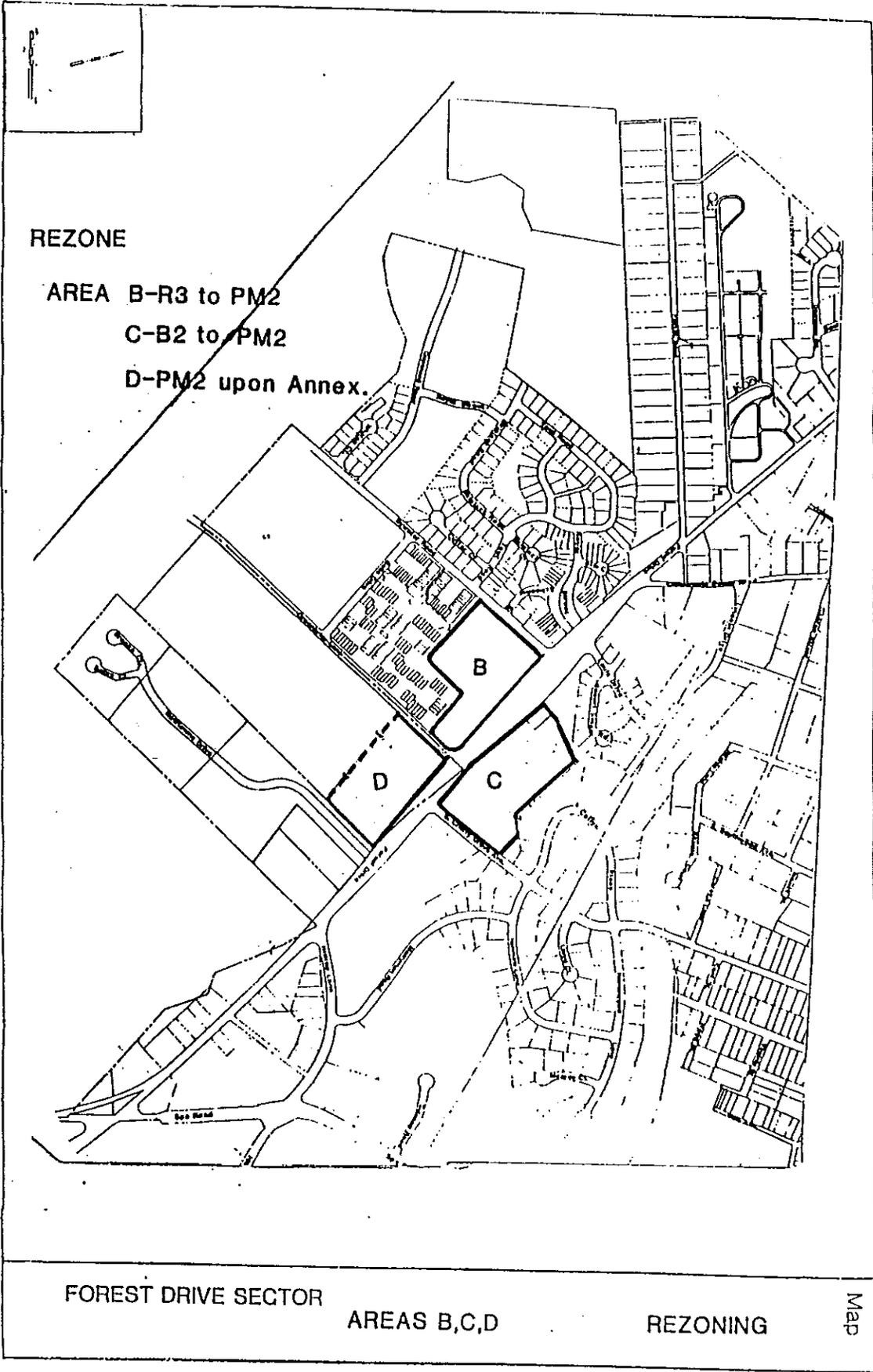


FOREST DRIVE SECTOR

AREA A

REZONING

Map



- Rezone appropriate vacant land along Forest Drive Professional Mixed Office to encourage self-sufficient office complexes developed in a manner suitable with its surroundings.

The two areas fronting on Forest Drive currently suitable for commercial rezoning are: 1) the vacant residential lot between Bywater and Greenbriar Roads; and 2) the B-2 (Community Shopping) zone containing the former shopping center owned by the State Highway Department of Motor Vehicle Administration and the 7/11.

FUTURE ANNEXATIONS

Other property suitable for inclusion in the mixed-use cluster core is located in the county and is currently zoned R10. This property is bounded by Greenbriar Road, Forest Drive and Newtowne Road.

- Any future lands considered for annexation will be zoned for uses consistent with the recommendations of this study

The City Comprehensive Plan has made clear that this area is a logical extension of the City for future office and residential growth. The extent of this property to be rezoned would depend upon a number of factors including:

- How the area is developed: as a Planned Unit Development or as a smaller single unit
- Development of a secondary road linking Greenbriar Road with a signalized intersection at South Cherry Grove
- Buffering of adjacent residential development

NEIGHBORHOOD CONCERNS

At a meeting held with residents of the area, the following general concerns were noted:

Transportation, Circulation, Access

1. Traffic on Forest Drive is steadily increasing and will increase dramatically upon the completion of Patuxent Blvd.
2. Access from side streets intersecting Forest Dr. is becoming increasingly hazardous as traffic increases on Forest Drive.
3. No safe/all weather pedestrian routes are provided along Forest Dr., e.g. sidewalks.

Parks and Recreation

1. This area is underserved by public parks and recreation opportunities.
2. Forest Drive is a barrier between residents and available recreation opportunities.
3. If/when a neighborhood park is provided (pursuant to the Parks and Paths for People Plan) care should be given to its location and to the amount of full-time supervision that can be made available.

Existing Land Uses

1. Existing residential areas seek protection from strip commercial encroachment and from Forest Drive related impacts.

Landscaping/Design

1. Forest Drive presents a flat, monotonous streetscape.
2. There is a general lack of streetscape improvements.

The land use and design concerns can be addressed through the adoption of the zoning text and map amendments proposed as a part of this sector study. Traffic concerns need to be addressed in two fashions, one, through access evaluation of new developments, and, two, through working with the county to implement the recommendations contained in both the transportation section of this report and in the Traffic Operations Study contained in Appendix 2.

The shortage of parks and recreation opportunities needs to be addressed through the capital budgeting process of the Parks and Recreation Department. This would include the extension of the pathway system into this area of the city and the development of a neighborhood park as recommended in the Parks and Paths for People Plan.

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Parks and Paths for People; Annapolis Parks, Recreation and Open Space Plan; George Washington University, School of Government and Business Administration, Institute for Urban Development Research; 1987

P4Z

CITY COUNCIL OF THE CITY OF ANNAPOLIS

ORDINANCE NO. O-14-89

Introduced by Mayor Callahan
Alderman Snowden
Alderman Gray
Alderman Gilmer

First Reader:

Referred to:

Referral Hearing:

Report and Recommendations:

City Council Hearing:

Amendments Adopted:

Second Reader:

Third Reader:

Effective Date:

AN ORDINANCE concerning

PM2, Professional Mixed Office Park District

FOR the purpose of establishing criteria and requirements applicable to and within a new PM2, Professional Mixed Office Park Zoning District in the City of Annapolis; comprehensively rezoning certain properties into the new PM2 Zoning District; and all matters relating to said district.

BY adding new
Title 21 - Planning and Zoning
Chapter 21.59 - PM2, Professional Mixed Office Park District
Sections 21.59.010 through and including 21.59.130
Code of the City of Annapolis
(1986 Edition and Supplement)

SECTION I: BE IT ESTABLISHED AND ORDAINED BY THE ANNAPOLIS CITY COUNCIL that the Code of the City of Annapolis shall read as follows:

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1
2 **SEC. 21.59.010. PURPOSE.**

3
4 TO PROVIDE A TRANSITIONAL ZONE TO BUFFER RESIDENTIAL LAND
5 USES. THE PRIMARY USE IS OFFICE, ALTHOUGH CERTAIN LIMITED
6 SUPPORT RETAIL USES MAY BE ESTABLISHED UNDER PARAMETERS DESIGNED
7 TO MAINTAIN A LOW INTENSITY AND IMPACT. IT IS ALSO THE PURPOSE
8 OF THIS ORDINANCE TO CAUSE SITES TO DEVELOP IN A WELL-DESIGNED,
9 LANDSCAPED AND EFFICIENT MANNER.

10
11 **SEC. 21.59.020. PERMITTED USES.**

12 A. RESIDENTIAL USES LIMITED TO:

- 13
14 1. DWELLINGS, SINGLE-FAMILY DETACHED;
15
16 2. DWELLING, TWO-FAMILY DETACHED.

17
18 B. OFFICES, GOVERNMENTAL, BUSINESS OR PROFESSIONAL.

19
20 C. CIVIC, NONPROFIT ORGANIZATIONS.

21
22 D. EDUCATIONAL, SOCIAL AND CULTURAL USES AS FOLLOWS:

- 23
24 1. PUBLIC SCHOOLS;
25
26 2. PUBLIC LIBRARIES, MUSEUMS AND ART GALLERIES.

27
28 E. RELIGIOUS INSTITUTIONS AS FOLLOWS:

- 29
30 1. CHURCHES, CHAPELS, TEMPLES AND SYNAGOGUES.

31
32 F. ACCESSORY BUILDINGS AND USES INCIDENTAL TO AND ON THE
33 SAME ZONING LOT AS THE PRINCIPAL USES, INCLUDING SIGNS AS
34 REGULATED IN THIS TITLE.

35
36 **SEC. 21.59.030. USES SUBJECT TO STANDARDS.**

37
38 A. THE FOLLOWING USES ARE PERMITTED IN THE PM2 DISTRICT
39 SUBJECT TO THE STANDARDS ENUMERATED IN SUBSECTION B AND SUBJECT
40 TO SITE DESIGN REVIEW AS PROVIDED IN CHAPTER 21.98.

- 41
42 1. CHILD DAY CARE CENTER;
43
44 2. INCIDENTAL USES TO PERMITTED USE "B" LIMITED TO:

45
46 A. RESTAURANTS, CLASS II

47
48 B. RESTAURANTS, CLASS III
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1 C. RETAIL AND SERVICE USES LIMITED TO:

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3 1. ART SHOPS AND GALLERIES;
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5 2. ART AND SCHOOL SUPPLY STORES;
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7 3. BARBER SHOPS AND BEAUTY PARLORS;
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9 4. BANKS AND FINANCIAL INSTITUTIONS, INCLUDING DRIVE-
10 THROUGH WINDOWS;
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12 5. BLUEPRINTING AND PHOTOSTATING ESTABLISHMENTS;
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14 6. BOOK AND STATIONARY STORES;
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16 7. BUSINESS MACHINE SALES AND SERVICE;
17
18 8. CAMERA AND PHOTOGRAPHIC SUPPLY STORES;
19
20 9. DRUG STORES;
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22 10. DRY CLEANING ESTABLISHMENTS INCLUDING PACKAGE
23 RETAIL DRY CLEANING AND/OR PICKUP;
24
25 11. FLORIST SHOPS;
26
27 12. OFFICE FURNITURE STORES;
28
29 13. GIFT SHOPS;
30
31 14. OFFICE SUPPLY STORES;
32
33 15. OPTICIANS;
34
35 16. PHOTOGRAPHY STUDIOS INCLUDING RETAIL FILM
36 DEVELOPMENT;
37
38 17. PHYSICAL CULTURE AND HEALTH SERVICES, GYMNASIUMS
39 AND REDUCING SALONS;
40
41 18. POST OFFICE;
42
43 19. TRAVEL BUREAUS.

44
45 B. USES LISTED IN SUBSECTION A OF THIS SECTION SHALL
46 COMPLY WITH THE FOLLOWING STANDARDS:

- 47
48 1. CHILD DAY CARE CENTER.
49
50
51
52

1 A. THERE SHALL BE PROVIDED 37.5 SQUARE FEET OF USABLE
 2 OUTDOOR RECREATION AREA FOR EACH CHILD THAT MAY USE THE SPACE AT
 3 ANY ONE TIME. SUCH USABLE OUTDOOR RECREATION AREA SHALL BE
 4 IDENTIFIED ON THE SITE DESIGN PLAN AND SHALL BE SUFFICIENTLY
 5 BUFFERED FROM ADJACENT RESIDENTIAL AREAS. USABLE OUTDOOR
 6 RECREATION AREA SHALL BE LIMITED TO:

- 7
- 8 1. THOSE AREAS THAT ARE NOT COVERED BY BUILDINGS,
 9 STRUCTURES, OR REQUIRED OFF-STREET PARKING SPACES;
 - 10 2. THAT AREA OUTSIDE THE LIMITS OF THE REQUIRED FRONT
 11 YARD AND ALL TRANSITIONAL YARDS;
 - 12 3. ONLY THAT AREA WHICH IS DEVELOPABLE FOR ACTIVE
 13 OUTDOOR RECREATION PURPOSES.
 - 14 4. AN AREA WHICH OCCUPIES NO MORE THAN EIGHTY PERCENT
 15 OF THE COMBINED TOTAL AREAS OF THE REQUIRED REAR
 16 AND SIDE YARDS.

17 B. THERE SHALL BE COMPLIANCE WITH ARTICLE 88A OF THE
 18 ANNOTATED CODE OF MARYLAND AND THE STATE DEPARTMENT OF HUMAN
 19 RESOURCES REGULATIONS REGARDING GROUP DAY CARE CENTERS.

20 C. ALL SUCH USES SHALL BE LOCATED SO AS TO PERMIT THE
 21 SAFE PICK-UP AND DELIVERY OF ALL PERSONS ON THE SITE.

22 2. INCIDENTAL USES TO PERMITTED USE "B".

- 23
- 24 A. PERMITTED ONLY IN A STRUCTURE WHICH CONTAINS
 25 OFFICE USES.
 - 26 B. THE GROSS FLOOR AREA OF ALL INCIDENTAL USES SHALL
 27 NOT EXCEED THE AMOUNT OF SPACE DEVOTED TO THE
 28 FIRST FLOOR OF A MULTI-STORY STRUCTURE; EXCEPT
 29 THAT IN NO CASE SHALL IT EXCEED 33 PERCENT OF THE
 30 TOTAL GROSS FLOOR AREA.
 - 31 C. RESTAURANTS MUST FURTHER COMPLY WITH THE STANDARDS
 32 AS SPECIFIED INSPECTION 21.30.025(B).
 - 33 D. DRIVE THROUGH WINDOWS ARE ONLY PERMITTED UPON THE
 34 PREPARATION AND APPROVAL OF A TRAFFIC IMPACT STUDY
 35 AND THE MITIGATION OF IDENTIFIED IMPACTS.

36 SEC. 21.59.040. CONDITIONAL USES.

37 A. THE FOLLOWING CONDITIONAL USES MAY BE ALLOWED IN THE
 38 PM2 DISTRICT SUBJECT TO THE PROVISIONS OF CHAPTER 21.72:
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1. DWELLINGS, SINGLE-FAMILY ATTACHED;
2. DWELLINGS, MULTI-FAMILY.

SEC. 21.59.050. LOT SIZE-CONFORMANCE.

A. NO USE SHALL BE ESTABLISHED OR MAINTAINED AFTER (DATE OF ADOPTION) ON A LOT RECORDED AFTER (DATE OF ADOPTED) WHICH IS OF LESS AREA THAN PRESCRIBED IN SECTION 21.59.060.

B. NO EXISTING BUILDING OR DWELLING UNIT SHALL BE CONVERTED TO CONFLICT WITH THE LOT SIZE REQUIREMENTS OF SECTION 21.59.060.

C. ON A LOT OF RECORD ON (DATE OF ADOPTION) A SINGLE-FAMILY DWELLING MAY BE ESTABLISHED REGARDLESS OF THE SIZE OF THE LOT, PROVIDED ALL OTHER REQUIREMENTS OF THIS CHAPTER ARE SATISFIED.

D. THE PROVISIONS OF CHAPTER 21.70 SHALL APPLY TO ANY EXISTING BUILDINGS OR USES THAT ON (DATE OF ADOPTION) DO NOT CONFORM TO THE REQUIREMENTS OF SECTION 21.59.060.

SEC. 21.59.060. LOT SIZE - REQUIREMENTS.

A. PERMITTED USES. FOR EACH PRINCIPAL PERMITTED USE IN THE PM2 DISTRICT, A LOT SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING TABLE:

USE	MINIMUM LOT AREA (SQ.FT)	MINIMUM LOT WIDTH (FEET)
SINGLE-FAMILY DETACHED	6,000	50
TWO-FAMILY DETACHED	7,200	50
OFFICES, PROFESSIONAL, BUSINESS, GOVERNMENTAL	3 ACRES	250
CIVIC, NON-PROFIT ORGANIZATION	6,000	50
EDUCATIONAL AND CULTURAL INSTITUTIONS	20,000	90
RELIGIOUS INSTITUTIONS	20,000	90

B. CONDITIONAL USES. FOR EACH CONDITIONAL USE LOCATED IN THE PM2 DISTRICT, A LOT SHALL BE PROVIDED AS FOLLOWS:

USE	MINIMUM LOT AREA (SQ.FT)	MINIMUM LOT WIDTH (FEET)
SINGLE-FAMILY ATTACHED	3,600	16
MULTI-FAMILY (3 DUS OR GREATER)	3,600/DU	50

SEC. 21.59.070. YARD REQUIREMENTS.

A. MINIMUM YARD REQUIREMENTS SHALL BE AS FOLLOWS:

1. RESIDENTIAL YARDS SHALL COMPLY WITH THE YARD REQUIREMENTS AS SPECIFIED IN SECTION 21.40.040.

2. NON-RESIDENTIAL USES:

A. FRONT YARD 40 FEET

B. INTERIOR SIDE YARD 25 FEET

C. CORNER SIDE YARD 30 FEET

D. REAR YARD 30 FEET

B. TRANSITIONAL YARDS. WHEN A NONRESIDENTIAL USE IN THE PM2 DISTRICT LIES ADJACENT TO A RESIDENTIAL DISTRICT, A TRANSITIONAL YARD BETWEEN THE TWO SHALL BE PROVIDED. WHERE TRANSITIONAL YARDS ARE PROVIDED THEY REPLACE THE YARD REQUIREMENTS OF SUBSECTION A OF THIS SECTION.

1. TRANSITIONAL YARDS SHALL BE BUFFERED IN AN APPROPRIATE MANNER USING DENSELY PLANTED VEGETATION DESIGNED TO PROVIDE YEAR-ROUND COVER. A FENCE OR WALL MAY BE USED IN CONJUNCTION WITH PLANT MATERIAL.

2. TRANSITIONAL YARDS SHALL SERVE AS A BUFFER AND SHALL NOT BE USED FOR STRUCTURES, UTILITIES, STORM AND SANITARY SEWERS, WATER LINES, STORMWATER MANAGEMENT SYSTEMS, AND SIGNAGE, EXCEPT THAT UPON APPROVAL BY THE DEPARTMENTS OF PUBLIC WORKS AND PLANNING AND ZONING, ACCESS ROADS OR REQUIRED UTILITIES MAY DISSECT A PERIMETER BUFFER. THIS REQUIREMENT MAY BE WAIVED IF THE DIRECTOR OF PLANNING AND ZONING AND THE DIRECTOR OF PUBLIC WORKS DETERMINE THAT EXTENUATING CIRCUMSTANCES EXIST THAT WARRANT A WAIVER, PROVIDED THAT THE DISTURBANCE TO THE BUFFER CREATED BY THIS REQUIREMENT IS MINIMIZED. BUFFERS WITH EXISTING MATURE TREES VEGETATION SHALL REMAIN IN THEIR NATURAL STATE AND SHALL NOT BE GRADED.

3. WHERE AN INTERIOR SIDE LOT LINE COINCIDES WITH A LOT LINE IN AN ADJACENT RESIDENTIAL DISTRICT, A THIRTY FOOT TRANSITIONAL YARD BETWEEN THE TWO SHALL BE REQUIRED.

4. WHERE A CORNER SIDE YARD COINCIDES WITH AN ADJACENT RESIDENTIAL ZONE, A TWENTY FOOT TRANSITIONAL YARD BETWEEN THE TWO SHALL BE PROVIDED.

5. WHERE A REAR YARD COINCIDES WITH A LOT LINE IN A RESIDENTIAL ZONE, A THIRTY FOOT TRANSITIONAL YARD BETWEEN THE TWO SHALL BE PROVIDED.

6. WHERE A FRONT YARD COINCIDES WITH AN ADJACENT RESIDENTIAL ZONE, A FIFTY FOOT TRANSITIONAL YARD BETWEEN THE TWO SHALL BE PROVIDED.

C. THE DIRECTOR OF PLANNING AND ZONING MAY REDUCE YARD AND TRANSITIONAL YARD REQUIREMENTS BY NO MORE THAN TWENTY PERCENT IN THOSE CASES WHERE IT IS FOUND THAT THERE ARE NO EXISTING WOODED AREAS WHICH WOULD BE CLEARED AS A RESULT OF THE REDUCTION AND THE REMAINING BUFFER CONTAINS LANDSCAPING SUFFICIENT TO ASSURE AN EFFECTIVE BUFFER.

SEC. 21.59.080. OPEN SPACE AND LANDSCAPING.

A. A MINIMUM OF FIFTEEN PERCENT OF THE LOT AREA SHALL BE LANDSCAPED OPEN SPACE.

B. LANDSCAPED BUFFER YARDS SHALL BE PROVIDED AS FOLLOWS:

1. ADJACENT TO ROADS DESIGNATED MINOR ARTERIAL, MAJOR ARTERIAL OR EXPRESSWAY IN THE COMPREHENSIVE PLAN A FIFTY FOOT LANDSCAPED BUFFER YARD SHALL BE PROVIDED ADJACENT TO PARKING OR PARKING CIRCULATION AREAS. HOWEVER THE DIRECTOR OF PLANNING AND ZONING MAY REDUCE THIS REQUIREMENT BY NOR MORE THAN TWENTY PERCENT WHERE THERE ARE NO EXISTING WOODED AREAS WHICH WOULD BE CLEARED AS A RESULT OF THE REDUCTION, WHERE THE TOPOGRAPHY OF THE LAND IS SUCH THAT A REDUCTION WOULD NOT IMPAIR THE SCREENING EFFECTIVENESS OF THE BUFFER, AND WHERE A LANDSCAPE PLAN IS SUBMITTED THAT PROVIDES STREETSCAPING AND SUBSTANTIAL NEW PLANTING FOR THE REMAINING AREA OF THE YARD TO ASSURE AN EFFECTIVE BUFFER.

2. ADJACENT TO OTHER ROADS, A TWENTY FOOT LANDSCAPED BUFFER YARD SHALL BE PROVIDED.

SEC. 21.59.090. BUILDING BULK REQUIREMENTS.

IN THE PM2 DISTRICT, THE FOLLOWING BULK, HEIGHT AND LOT COVERAGE RESTRICTIONS SHALL APPLY TO ALL NONRESIDENTIAL DEVELOPMENT:

1 A. FLOOR AREA RATIO. THE FLOOR AREA RATIO OF ALL
2 BUILDINGS AND STRUCTURES ON THE LOT SHALL NOT EXCEED 0.4.

3 B. HEIGHT. THE MAXIMUM HEIGHT OF BUILDINGS AND STRUCTURES
4 SHALL BE FOUR STORIES AND NOT EXCEED FORTY-EIGHT FEET IN HEIGHT
5 IN THOSE AREAS ADJACENT TO R3, R4, R5 AND OTHER ZONES, EXCEPT BY
6 CONDITIONAL USE. THE MAXIMUM HEIGHT OF BUILDINGS AND STRUCTURES
7 SHALL BE TWO AND ONE-HALF STORIES AND SHALL NOT EXCEED THIRTY-
8 FIVE FEET IN HEIGHT IN THOSE AREAS ADJACENT TO R1 AND R2 ZONES.

9 C. LOT COVERAGE. THE MAXIMUM LOT COVERAGE FOR ALL
10 BUILDINGS AND STRUCTURES SHALL BE THIRTY-THREE PERCENT.

11 SEC. 21.59.100. OFF-STREET PARKING.

12 A. GENERAL. OFF-STREET PARKING AND LOADING SHALL BE
13 PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 21.64 AND
14 THIS SECTION.

15 B. MINIMUM REQUIREMENTS. OFF-STREET PARKING ACCESSORY TO
16 USES SHALL BE PROVIDED AS FOLLOWS:

- 17 1. SINGLE-FAMILY/TWO FAMILY DWELLINGS 1 SPACE/DU
- 18 2. MULTI-FAMILY DWELLINGS 1 SPACE/DU
- 19 3. OFFICES, PROFESSIONAL, GOVERNMENTAL BUSINESS 1 SPACE/300 SF
- 20 4. SCHOOLS 1 SPACE/TEACHER AND STAFF MEMBER
- 21 5. LIBRARIES, MUSEUMS, ART GALLERIES 1 SPACE/400 SF
- 22 6. RELIGIOUS INSTITUTIONS 1 SPACE/4 SEATS
- 23 7. CHILD DAY CARE 1 SPACE/5 CHILDREN
- 24 8. RETAIL/COMMERCIAL USES 1 SPACE/200 SF
- 25 9. RESTAURANTS SPACES EQUAL TO 30% OF CAPACITY

26 SEC. 21.59.110. OFF-STREET LOADING.

27 A. OFF-STREET LOADING FACILITIES ARE REQUIRED IN THE PM2
28 DISTRICT SUBJECT TO THE REQUIREMENTS OF CHAPTER 21.64 AND
29 SUBSECTION B OF THIS SECTION.

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B. USES CONTAINING MORE THAN TWENTY THOUSAND SQUARE FEET SHALL PROVIDE ONE OFF-STREET LOADING SPACE APPROVED BY THE DIRECTOR OF PLANNING AND ZONING.

SEC. 21.59.120. DEVELOPMENT STANDARDS FOR NON-RESIDENTIAL DEVELOPMENT.

NON-RESIDENTIAL DEVELOPMENT SHALL BE SUBJECT TO THE SITE DESIGN PROVISIONS OF CHAPTER 21.98. IN ADDITION THE FOLLOWING SPECIFIC STANDARDS SHALL APPLY:

A. SPECIAL CONSIDERATION SHALL BE GIVEN TO THE SITING AND DESIGN OF THOSE STRUCTURES OR PORTIONS THEREOF THAT MAY BE VIEWED FROM ANY PUBLIC STREET OR ADJACENT PROPERTIES.

B. THE LOCATION, DESIGN AND DEVELOPMENT OF SITE ACCESS AND ON-SITE CIRCULATION SHALL BE AS FOLLOWS:

1. ON-SITE DIRECTIONAL SIGNAGE IDENTIFYING THE LOCATION OF ALL USES WITHIN THE DEVELOPMENT SHALL BE PROVIDED.

2. SITES SHALL NOT HAVE DIRECT, FULL TURNING ACCESS TO MINOR OR MAJOR ARTERIALS, OR EXPRESSWAYS AS DESIGNATED IN THE COMPREHENSIVE PLAN; RIGHT TURN ONLY ACCESS CAN BE PERMITTED.

C. LOADING AREAS SHALL BE SCREENED FROM VIEW OF ADJACENT SITES OR PUBLIC ROADS.

D. LANDSCAPING SHALL COMPLY WITH THE FOLLOWING PROVISIONS:

1. INTERNAL CIRCULATION ROADS SHALL BE LANDSCAPED WITH STREET TREES AND PLANTERS.

2. EXISTING TREES, TREE STANDS AND NATURAL VEGETATION SHALL BE INTEGRATED INTO THE SITE LANDSCAPE PLAN TO THE MAXIMUM EXTENT POSSIBLE.

SEC. 21.59.130. SIGNS.

A. PROJECT IDENTIFICATION SIGNS SHALL BE LIMITED TO ONE FREE STANDING SIGN PER MAJOR FRONTAGE. THIS SIGN SHALL BE MONUMENT-STYLE AND BE A MAXIMUM OF SIXTY-FOUR SQUARE FEET PER FACE.

B. BUILDING MOUNTED SIGNS. BUILDING MOUNTED SIGNS ARE NOT TO EXCEED ONE AND ONE-HALF SQUARE FEET FOR EACH LINEAR FOOT OF FRONTAGE OF THE USE TO BE IDENTIFIED, AND ARE TO BE NO HIGHER THAN ONE INCH BELOW THE SECOND STORY WINDOW SILL OF THE BUILDING TO WHICH THEY ARE AFFIXED.

C. SIGNS ARE TO BE OF SIMPLE DESIGN AND RELATE TO THE SCALE AND DESIGN OF THE BUILDING.

SECTION II: AND BE IT FURTHER ESTABLISHED AND ORDAINED BY THE ANNAPOLIS CITY COUNCIL that this ordinance shall take effect from the date of its passage.

ADOPTED this _____ day of _____, 1989.

THE ANNAPOLIS CITY COUNCIL

BY: _____
DENNIS CALLAHAN, MAYOR

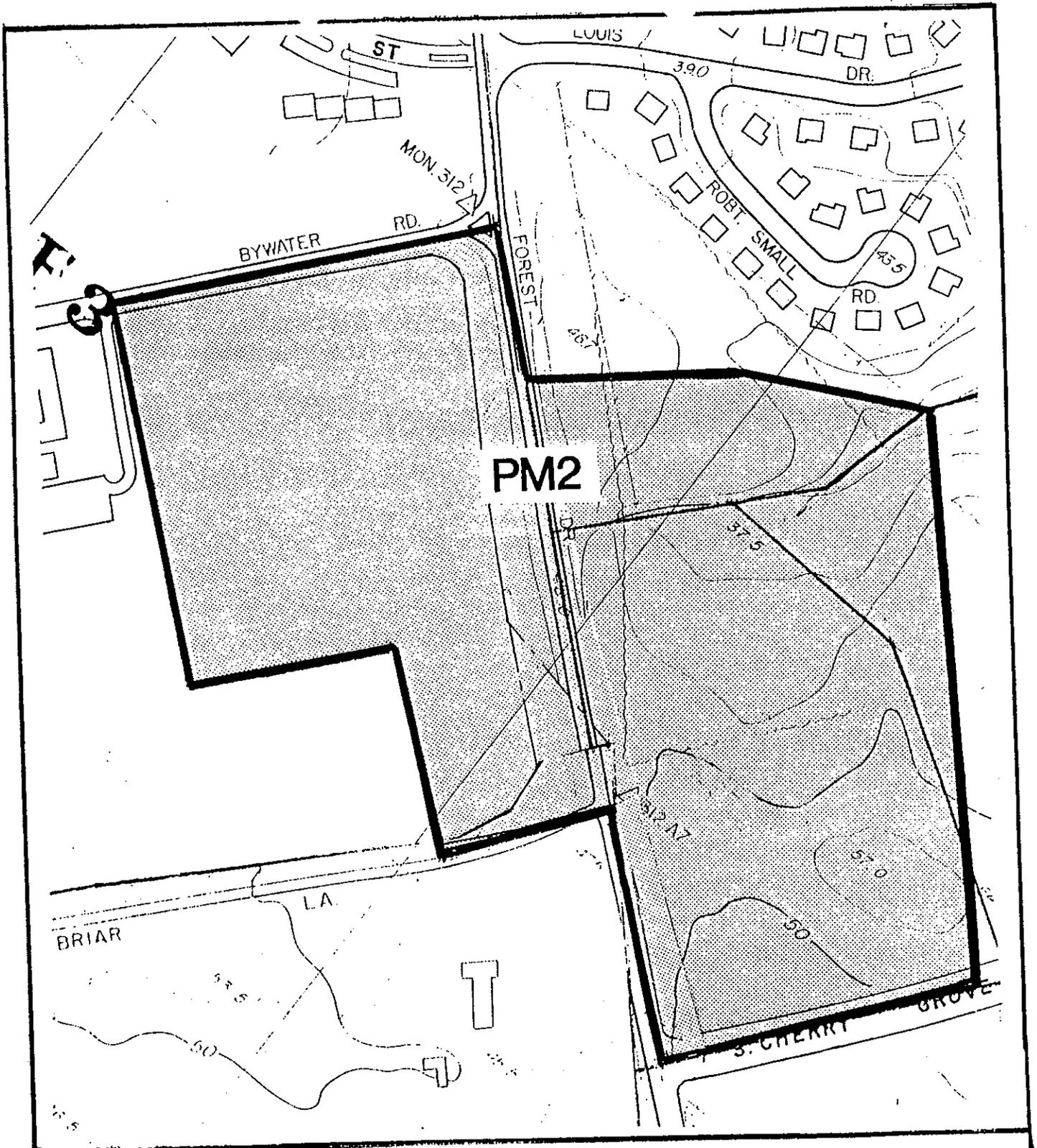
ATTEST:

Patricia L. Bembe, CMC/AE
City Clerk

EXPLANATION:

CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
((Double Parenthesis)) indicate matter deleted from existing law.
Underlining indicates amendments to the bill.
~~Strike-Out~~ indicates matter stricken from the bill by amendment or deleted from the law by amendment.

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FOREST DRIVE SECTOR STUDY

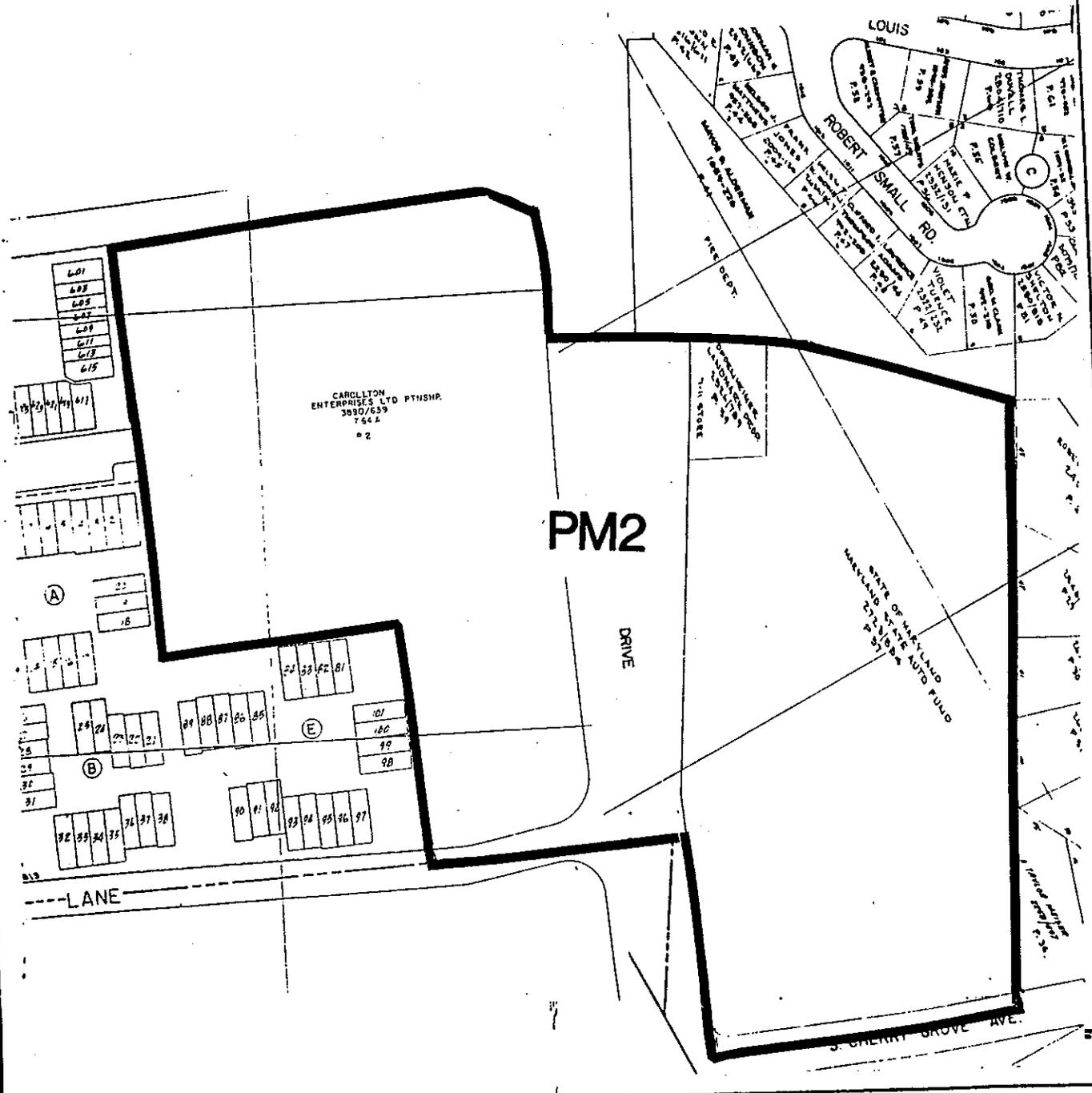
 PROPERTY

PROPOSED ZONING

TOPOGRAPHIC MAP

MAY, 1989

SCALE 1" = 200'



FOREST DRIVE SECTOR STUDY

 **PROPERTY**

PROPOSED ZONING

PROPERTY TAX MAP

MAY, 1989

SCALE 1" = 200'

TRAFFIC OPERATIONS STUDY

**Forest Drive
Between Chinguapin Round Road
and Spa Road**

Annapolis, Maryland

March 21, 1989

Prepared for:

**City of Annapolis
Planning and Zoning Department**

LUKAS Associates

416 Hungerford Drive • Suite 401 • Rockville, Maryland 20850

Telephone 301-340-9166

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- APPENDIX B - Capacity Analysis Worksheets
- APPENDIX C - Programmed Roadway Improvements

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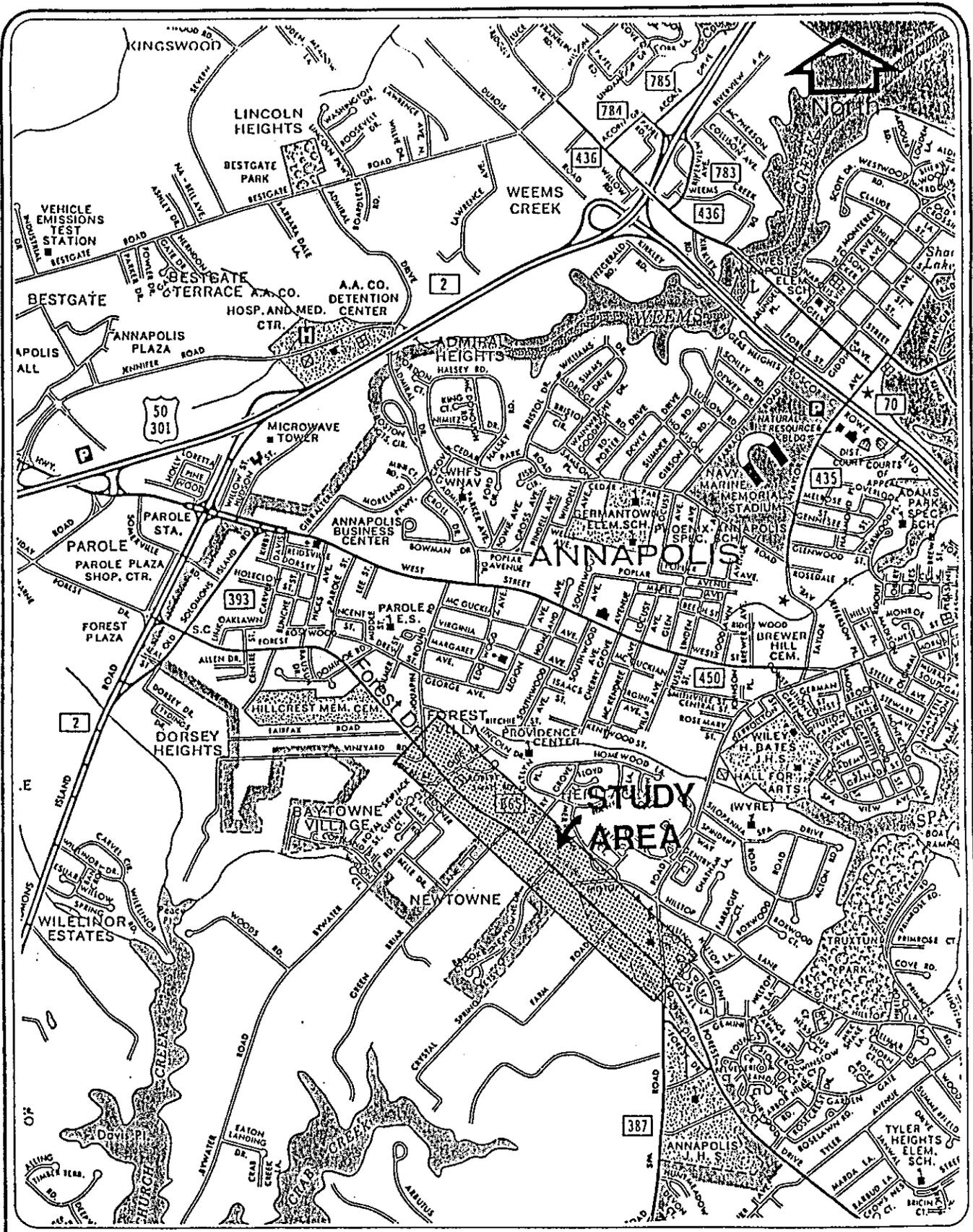
INTRODUCTION

This report summarizes the results of an assessment of the existing traffic conditions on Forest Drive (MD 665) between Chinguapin Round Road and Spa Road. See Exhibit 1 for the location of the study area.

The primary objective of this study was to perform a limited field investigation in order to respond to a number of concerns that have been expressed by the residents of the area regarding traffic congestion, pedestrian safety and excessive speed on Forest Drive. Specifically, the study focused on the following issues:

1. Lack of Safe Pedestrian Crossings;
2. Excessive Speeds on Forest Drive;
3. Right Turns on Red from Forest Drive to Bywater Road;
4. Lack of Safe and Efficient Left Turns to and From Newtowne Drive;
5. General Lack of Safe Access from Side Streets; and
6. General Increase of Congestion on Forest Drive.

The following sections discuss the factors involved in the evaluation of the traffic operation on Forest Drive and the findings and recommendations of the study.



LOCATION OF STUDY AREA

LUKAS Associates

Exhibit 1

EXISTING CONDITIONS ON FOREST DRIVE

1. Existing Lane Arrangement

Forest Drive (MD 665) is a major arterial highway connecting this study area with Solomons Island Road (MD 2) and with John Hanson Highway (US Route 50/301) by way of Riva Road. It also serves as the main arterial for the eastern end of the peninsula by way of Bay Ridge Road which is an extension of Forest Drive to the east.

Within the study area, Forest Drive is a four lane undivided roadway with a posted speed limit of 40 mph. There is a two-way left turn lane in the center of the roadway between S. Cherry Grove Avenue and Chinguapin Round Road that serves left turn movements on Forest Drive. The existing lane arrangement along Forest Drive is shown on Exhibit 2.

2. Existing Traffic Volumes

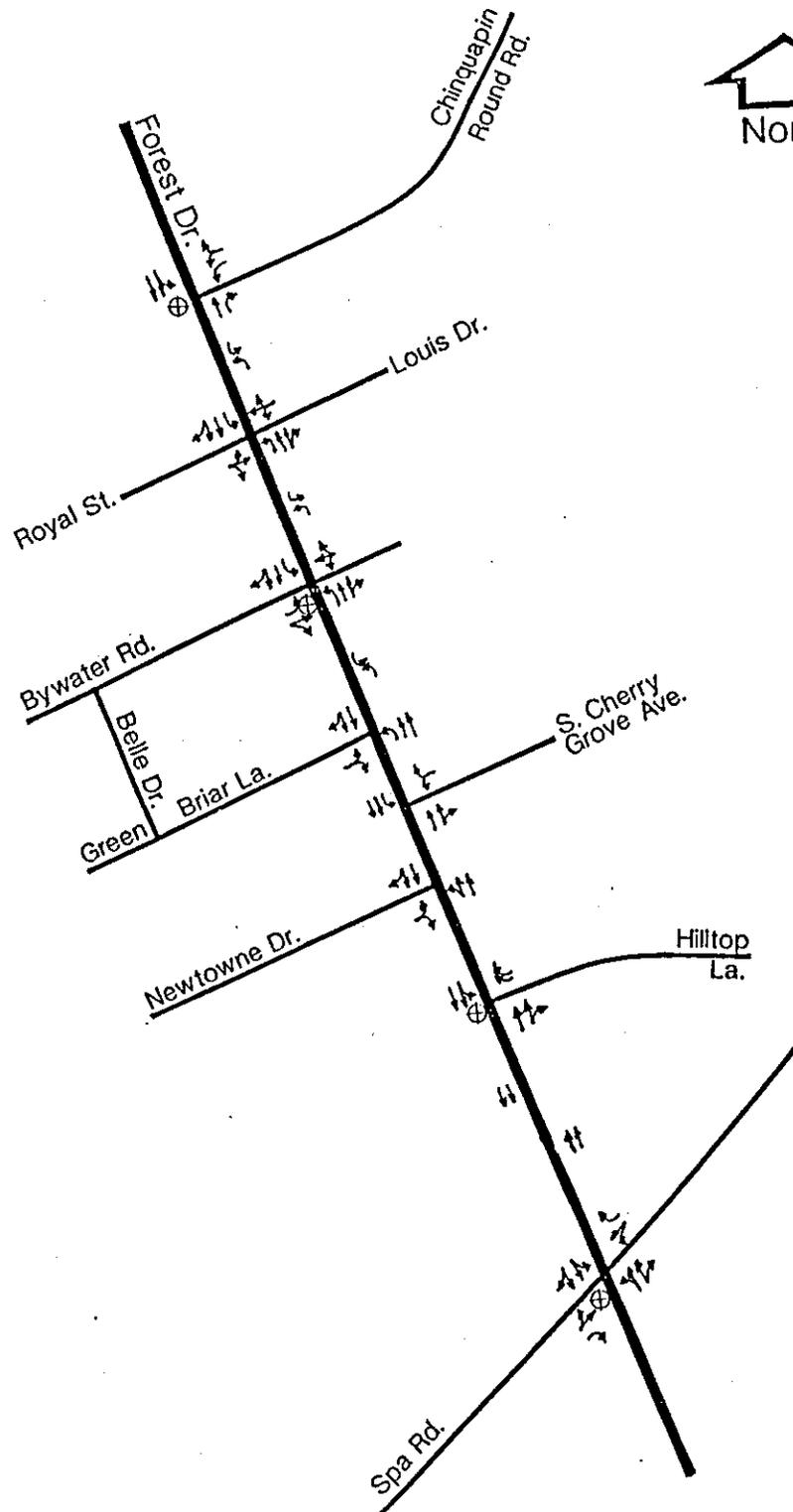
Peak hour turning movement counts were obtained by LUKAS Associates on March 9, 1989, at Forest Drive intersection with Newtowne Drive. Traffic volume counts at Forest Drive and Bywater Road intersection were available from a recent traffic study conducted in this area in January 1989.

The morning and evening peak hour traffic volumes at these two intersections are shown on Exhibit 3. The turning movement count summary sheets are included in Appendix A.

3. Existing Levels of Service

The ability of a roadway system to carry traffic is expressed in terms of "Level of Service" (LOS) at critical locations (usually intersections). Levels of service range from "A", representing very little delay or congestion, to "F", where high levels of delay and significant congestion exists. Levels of service are determined by an analysis procedure known as Critical Lane Analysis which computes the maximum number of conflicting movements per hour per lane at an intersection. The greater are the number of conflicting movements (critical lane volumes) the lower is the level of service. The various levels of service and the corresponding critical lane volumes are listed in Table 1. Definitions of Levels of Service A through F are included in Appendix B.

Capacity analyses were performed at the intersections of Forest Drive at Bywater Road and Newtowne Drive. The resulting morning and evening peak hour levels of service are listed in Table 2.

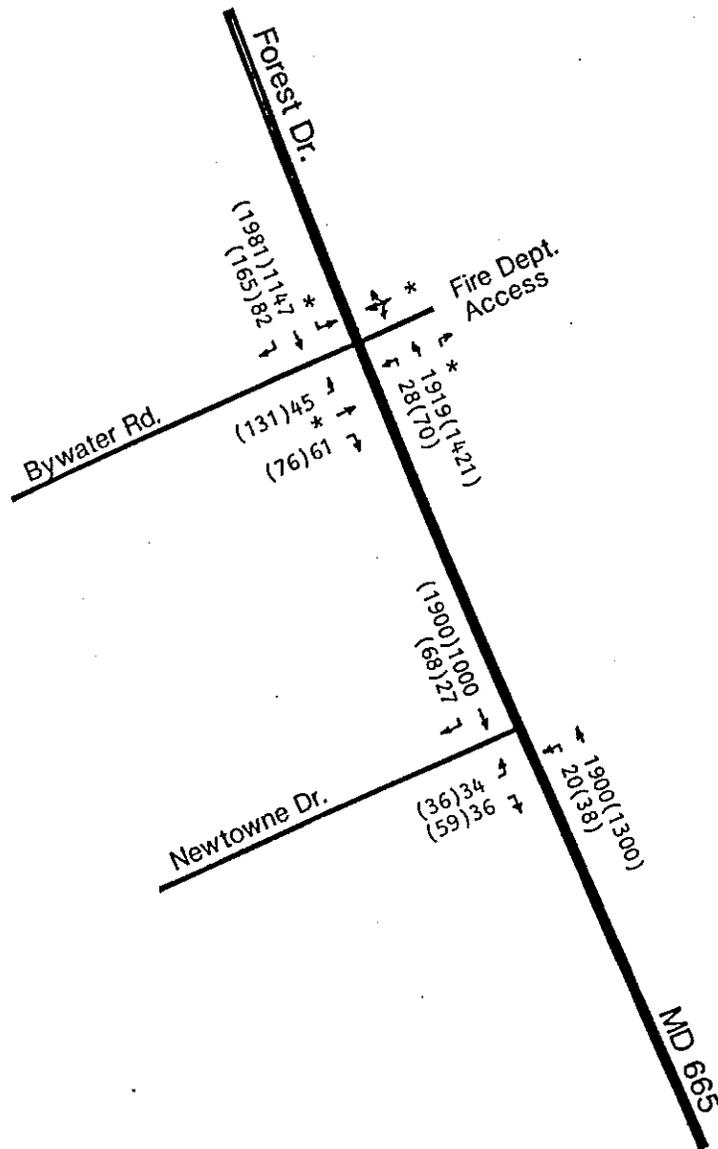


⊕ : Existing Traffic Signal
← : Travel Lane

EXISTING LANE ARRANGEMENT

LUKAS Associates

Exhibit 2



PEAK HOUR TRAFFIC

A.M. Peak = 00
P.M. Peak = (00)

* : Negligible

EXISTING TRAFFIC VOLUMES

LUKAS Associates

Exhibit 3

TABLE 1
LEVELS OF SERVICE AND
CORRESPONDING CRITICAL LANE VOLUMES

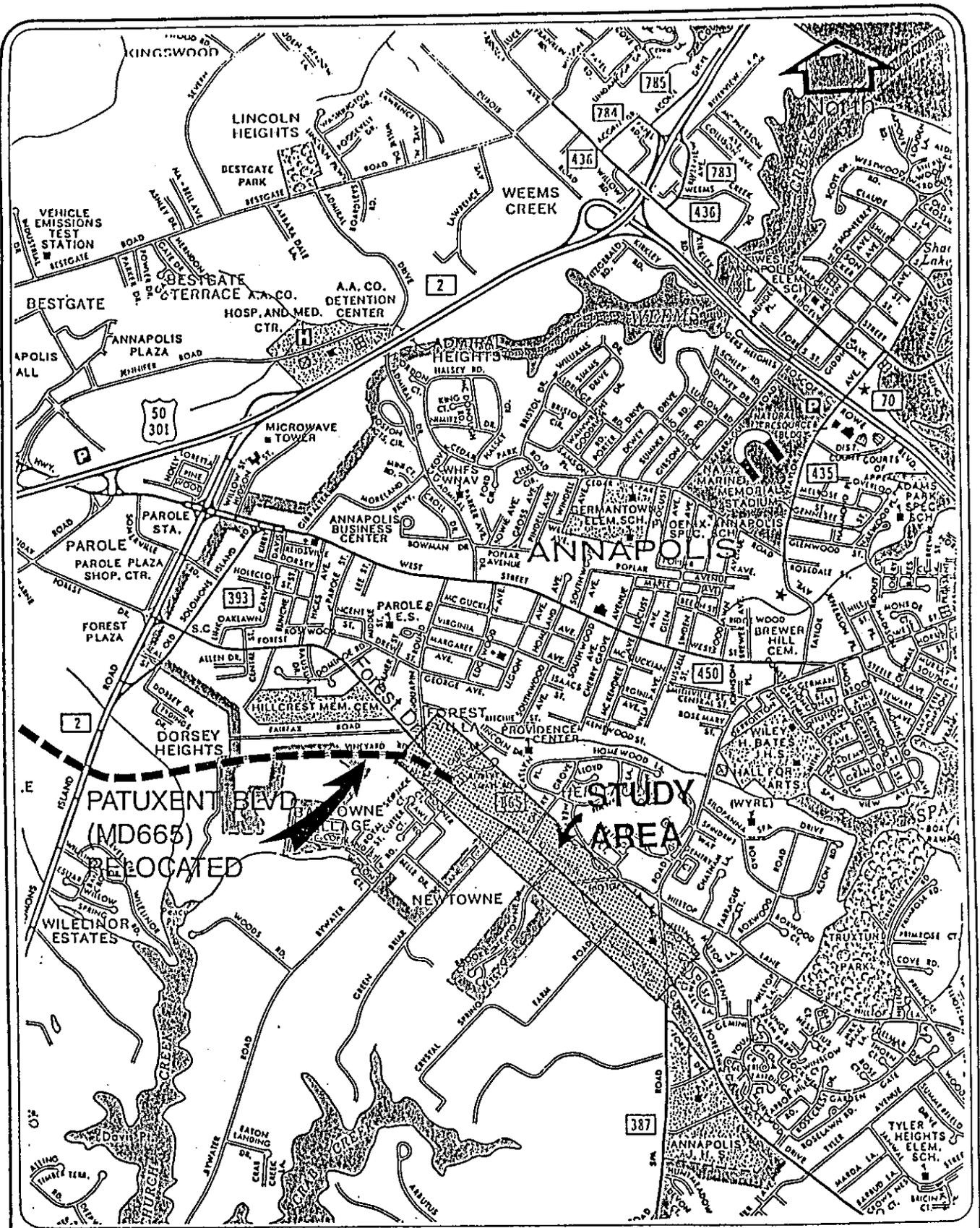
<u>Traditional Values</u>		<u>Detailed Gradation</u>	
<u>LOS</u>	<u>CLV</u>	<u>LOS</u>	<u>CLV</u>
A	0-1000	A+	0- 500
		A	501- 750
		A-	751- 985
B	1001-1150	A/B	986-1015
		B+	1016-1055
		B	1056-1095
		B-	1096-1135
C	1151-1300	B/C	1136-1165
		C+	1166-1205
		C	1206-1245
		C-	1246-1285
D	1301-1450	C/D	1286-1315
		D+	1316-1355
		D	1356-1395
		D-	1396-1435
E	1451-1600	D/E	1436-1465
		E+	1466-1505
		E	1506-1545
		E-	1546-1585
F	1601-	E/F	1586-1615
		F	1616-

LOS: Intersection "Level of Service".
 CLV: "Critical Lane Volume" (per hour of Green)

TABLE 2
EXISTING LEVELS OF SERVICE

<u>Intersection</u>	<u>Peak Hour Levels of Service</u>	
	<u>A.M.</u>	<u>P.M.</u>
Forest Drive and Bywater Road	<u>B- *</u> 1116	<u>D</u> 1381
Forest Drive and Newtowne Drive	<u>B-</u> 1126	<u>C</u> 1215

* B- : Level of Service
 1116 : Sum of Critical Lane Volumes

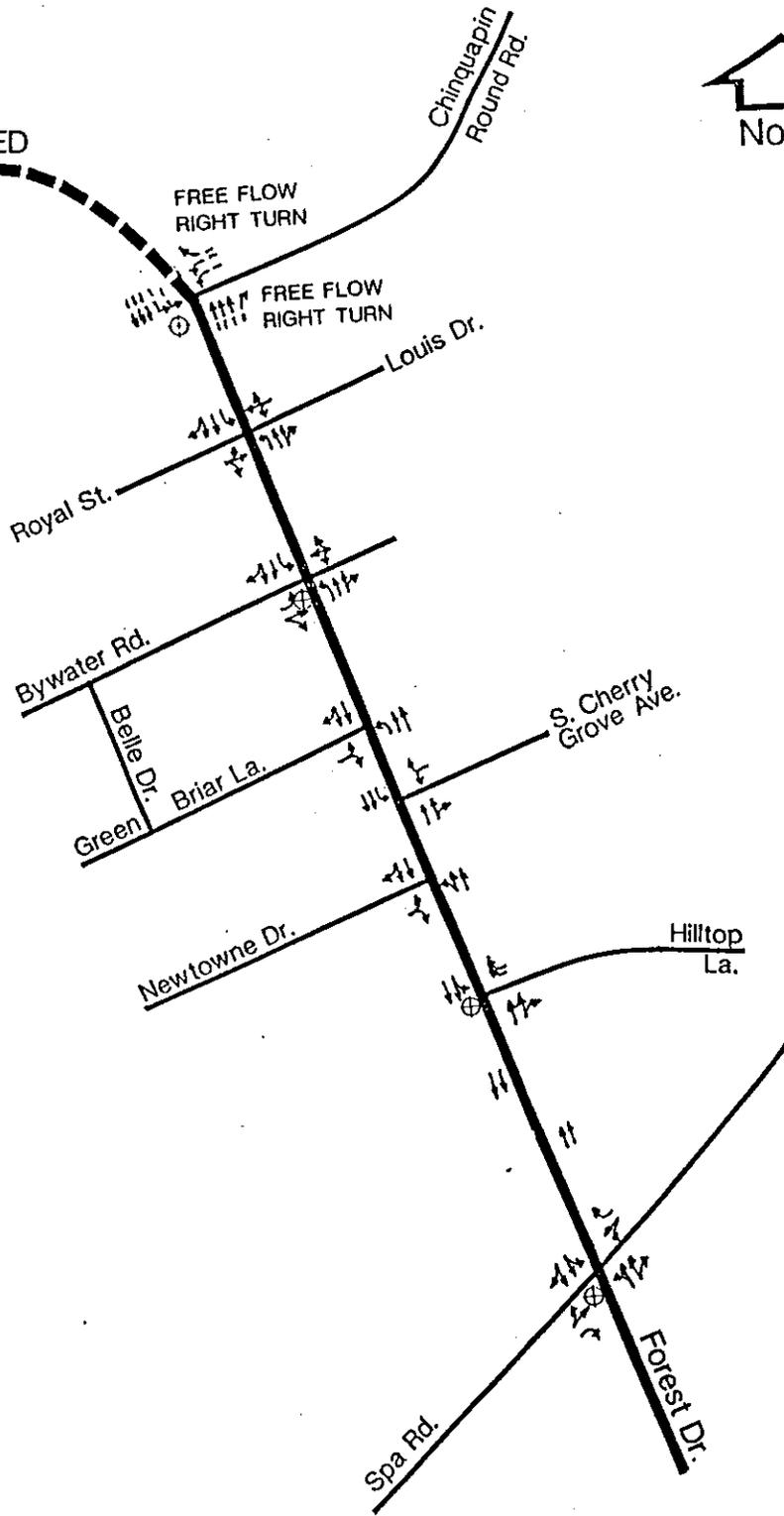


PROGRAMMED ROADWAY IMPROVEMENTS

LUKAS Associates

Exhibit 4

**MD 665 RELOCATED
(PATUXENT BLVD.)**



- : Existing Travel Lane
- - : Future Travel Lane
- ⊕ : Existing Traffic Signal
- ⊕⊙ : Future Traffic Signal

FUTURE LANE ARRANGEMENT

LUKAS Associates

Exhibit 5

Recommendation

It is recommended that pedestrian crosswalks (i.e., pavement markings) be installed on the west side of the intersection of Forest Drive and Bywater Road to supplement the existing pedestrian signals. Placement of crosswalks at this intersection would encourage pedestrians to cross Forest Drive at the designated location.

If the need for pedestrian crossings at other locations along Forest Drive is perceived, a study should be conducted to determine the appropriate traffic control devices (i.e., pedestrian signals, signs, markings) that may be required to accommodate the pedestrians.

2. Travel Speed

The posted speed limit on this section of Forest Drive is 40 miles per hour.

Speed limits for roadways are determined based on many factors. The design speed of the roadway, presence of vertical or horizontal curvatures, roadway classification, and control of access generally influence selection of the appropriate speed limit. The need to adjust the posted speed limit on existing roadway facilities may be assessed by conducting a radar speed study and examination of the physical condition of the road. Such a study would determine the speed at which most drivers would feel comfortable for the prevailing roadway conditions (85th percentile speed).

For the purpose of this study, several travel runs were made during the peak hours and off peak periods to estimate the average travel speed on Forest Drive. The results of these travel runs are summarized below:

<u>Time Period</u>	<u>Average Speed</u>
AM Peak (7-9 a.m.)	42*
PM Peak (4-6 p.m.)	43*
Off Peak (mid-day)	45**

* : Average running speed in the off peak direction.
Lower speeds exist in the peak direction due to higher traffic volumes.

** : Average of both directions.

The field observations and travel runs performed for this study found that there is a tendency to exceed the posted speed limit on this section of Forest Drive. This condition is more evident during the off peak periods when there are lower traffic volumes on Forest Drive.

Our limited observations indicated that the posted 40 miles per hour speed limit for this section of Forest Drive is not excessive. However, the appropriate speed limit for this section of Forest Drive should be reviewed in conjunction with a more comprehensive speed study of the entire Forest Drive corridor.

Recommendation

It is recommended that the travel speeds on Forest Drive be controlled through a more vigorous police enforcement of the posted speed limit.

3. Forest Drive and Bywater Road

The existing lane arrangement at this intersection is shown on Exhibit 2. Right turn on red from eastbound Forest Drive to southbound Bywater Road is permitted. Since the eastbound curb lane on Forest Drive is shared by through and right turn vehicles, the opportunity to turn right on red signal is not always available. This is particularly true during the evening peak hours.

Construction of a separate eastbound right turn lane will affect the existing traffic signal and utility poles, as well as drainage, in the southwest quadrant of the intersection. Given the relatively few right turn traffic volumes and the cost associated with construction of an eastbound right turn lane, this improvement is not recommended at this point in time.

As new developments with access to Bywater Road occur, geometric improvements should be considered to accommodate the increased traffic volumes at this intersection. An example of the geometric improvements presently being considered by the City of Annapolis is widening Bywater Road to provide an additional approach lane at Forest Drive.

Recommendation

Construction of an eastbound right turn lane at the intersection of Forest Drive and Bywater Road is not recommended at this time. However, intersection improvements of this type should be considered as new developments occur that would result in increased traffic volumes at this intersection.

4. Forest Drive and Newtowne Drive

Newtowne Drive is a 36 foot wide street with a posted speed of 25 mph. It serves as the only access from a residential community to Forest Drive. Newtowne Drive approach to Forest Drive is controlled with a stop sign.

The lane arrangement at this intersection is shown on Exhibit 2. As can be seen, Newtowne Drive intersects Forest Drive at a point where the center lane terminates and left turn lanes are not provided.

Based on the capacity analyses performed under the existing traffic volume conditions, this intersection operates at acceptable levels of service during the morning and evening peak hours (B- and C, respectively). The field observations at this intersection indicate that westbound vehicles turning left from Forest Drive to Newtowne Drive block the through lane and experience significant delay during the evening peak hour as they await sufficient gaps in the oncoming traffic. This condition has resulted in 5 accidents (4 of which involved injuries) during the 18 month period from January 1, 1987 to June 30, 1988. Similarly, vehicles exiting Newtowne Drive onto Forest Drive experienced 5 accidents (all involving injuries) during the same time period. There were a total of 13 accidents during the 18 month period at this intersection. The accident experience clearly indicates that there is a safety hazard at this intersection.

As part of this study, a preliminary analysis was performed to assess the need for installation of a traffic signal at this intersection. It was found that for the existing traffic volumes on Newtowne Drive installation of a traffic signal at this intersection is not fully justified. However, conditions at this intersection should be monitored and considerations should be given in the future to provide a westbound left turn lane on Forest Drive and alternate access to the subdivision.

Recommendation

It is recommended that conditions at this intersection be monitored and considerations be given in the future to connect Newtowne Drive to adjacent streets with access to Forest Drive at a signalized intersection.

5. Access From Side Streets

The side streets along this section of Forest Drive generally fall into two categories:

- A. "Dead End" streets with a single access to Forest Drive without a traffic signal. This category includes the following streets:

Louis Drive/Royal Street
Newtowne Drive

Louis Drive/Royal Street intersect Forest Drive just east of Chinquapin Round Road. At this intersection, a left turn lane is provided on Forest Drive to serve both side streets. Louis

Drive and Royal Street serve small residential communities and experience relatively low levels of traffic volumes during the peak hours. Justification of a traffic signal at this intersection, given the traffic volumes on the side streets, is unlikely. Conditions at Forest Drive and Newtowne Drive were discussed in the previous section.

- B. Streets with access to Forest Drive at a signalized intersection (either directly or via other streets).

All other side streets along this section of Forest Drive fall under category B. An example of these streets is Green Briar Lane with access to Bywater Road and the traffic signal on Forest Drive by way of Belle Drive. These streets have either a direct or an indirect access to a traffic signal on Forest Drive where turning movements can be accommodated.

Recommendation

It is recommended that as part of the planning efforts for this section of Forest Drive, the feasibility of connecting the dead end streets to other streets with signalized access to Forest Drive be evaluated. It is also recommended that as traffic volumes in this area of Forest Drive increase, capacity improvements at the existing signalized intersections be considered to accommodate the traffic volumes.

6. Traffic Congestion on Forest Drive

Based on the field observations, the most significant vehicle queues (i.e., back-ups) occur between Bywater Road and Chinguapin Round Road on Forest Drive. This condition is particularly evident during the evening peak hours when eastbound traffic queues extend from Bywater Road through Chinguapin Round Road.

The proposed improvements at Forest Drive and Chinguapin Round Road by the MD SHA will provide additional capacity at this intersection. The future lane arrangement is shown on Exhibit 5.

Recommendation

It is recommended that the feasibility of operating the traffic signals on Forest Drive in a coordinated signal system be evaluated. Such a system would provide progression for traffic on Forest Drive which may improve the overall traffic flow while creating longer gaps at unsignalized intersections.