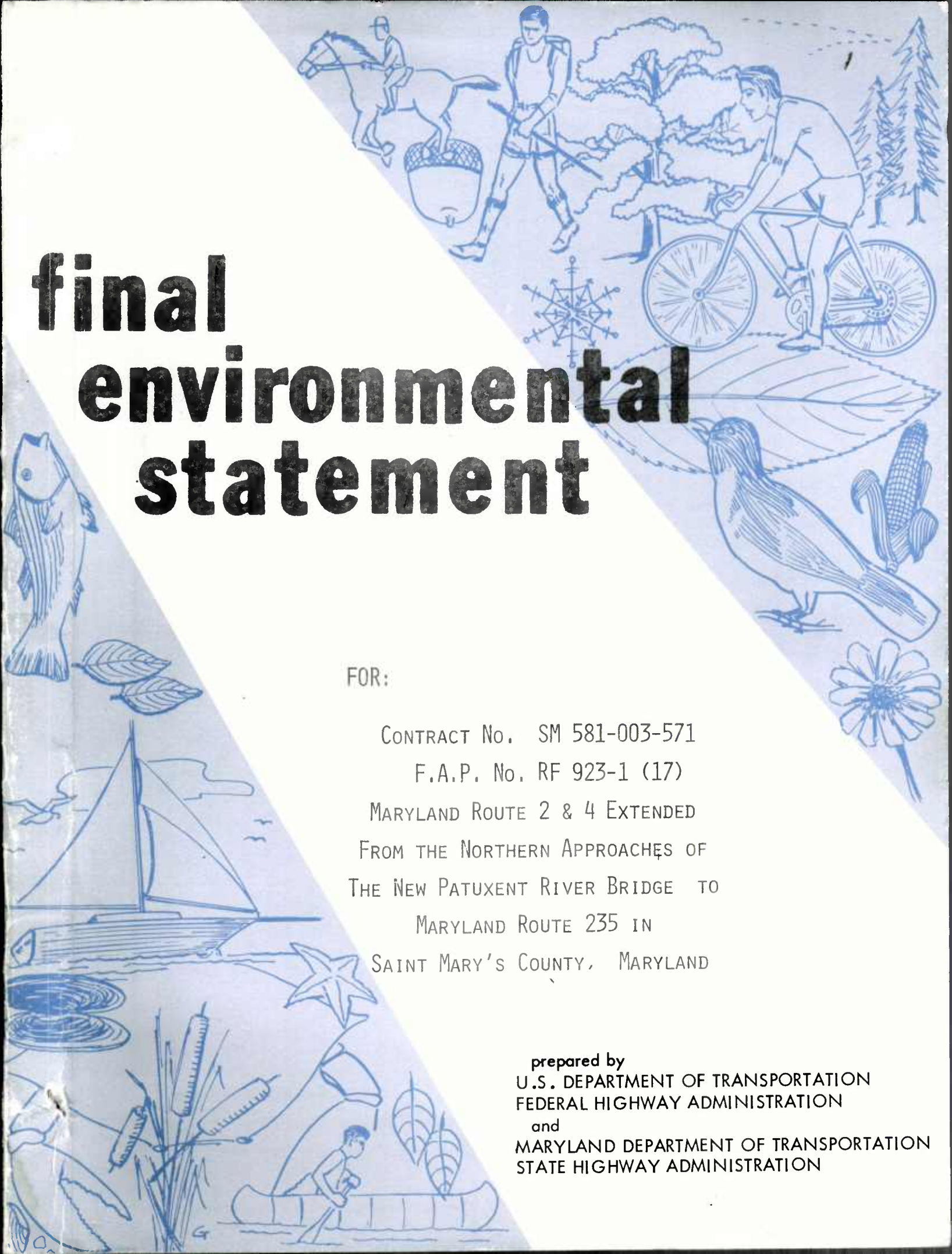

final environmental statement

FOR:

CONTRACT No. SM 581-003-571

F.A.P. No. RF 923-1 (17)

MARYLAND ROUTE 2 & 4 EXTENDED

FROM THE NORTHERN APPROACHES OF

THE NEW PATUXENT RIVER BRIDGE TO

MARYLAND ROUTE 235 IN

SAINT MARY'S COUNTY, MARYLAND

prepared by
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
and
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

REPORT NUMBER: FHWA-MD-EIS-76-07-F

Maryland Route 2 and 4 Extended From Northern Approaches of Patuxent River Bridge to Maryland Route 235 Saint Mary's County

ADMINISTRATIVE ACTION

FINAL

ENVIRONMENTAL IMPACT STATEMENT

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

and

MARYLAND DEPARTMENT OF TRANSPORTATION
State Highway Administration

Submitted pursuant to 42 U.S.C. 4332(2) (c) and 23 U.S.C. 128 (a)

Bernard M. Evans
State Highway Administrator

11 May 77
Date

by: Frederick Gottemoeller

Frederick Gottemoeller
Director, Office of Planning
and Preliminary Engineering

23 May 1977
Date

by: R W Bergeron
for

Federal Highway Administration
Regional Federal Highway
Administrator

ACKNOWLEDGEMENT

This Environmental Statement was prepared under the direction and review procedures of the Maryland State Highway Administration and the U. S. Department of Transportation - Federal Highway Administration. Assistance was provided by Greenman-Pedersen, Associates, P. C. and EcolSciences, Inc.

During the course of study, meetings were held with public officials, representatives of public and civic groups, and with private citizens. The cooperation of all is hereby gratefully acknowledged.

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LIST OF FIGURES

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SUMMARY

(1) Check appropriate box (es)

Federal Highway Adminstration

Administrative Action Environmental Statement

( ) Draft (X) Final

( ) Section 4 (f) Statement Attached

(2) Individuals who can be contacted for additional information concerning the proposed project and this statement:

Mr. Eugene T. Camponeschi
Maryland State Highway Administration
300 West Preston Street
Baltimore, Maryland 21201
Phone: (301) 383-4327
Office Hours: 8:15 A.M. to 4:15 P.M.

Mr. Roy Gingrich
Federal Highway Administration
The Rotunda - Suite 220
711 West 40th Street
Baltimore, Maryland 21211
Phone: (301) 962-4011
Office Hours: 8:00 A.M. to 4:30 P.M.

(3) Description of Action

The proposed action entails the initial construction of a two-lane highway on new alignment from the southern approaches of the Lower Patuxent River Bridge to Md. Route 235 in St. Mary's County. Right-of-way acquisition is proposed for an ultimate dual four-lane facility separated by a 30-foot wide grass median. The initial and ultimate facilities will provide partial control of access.

This project is part of a continuing program to upgrade Md. Route 2 & 4 from Md. Route 264 to the northern approaches of the Lower Patuxent River Bridge in the Johnstown area of Calvert County. In conjunction with the opening of the Lower Patuxent River Bridge, this project will provide a link from the bridge to Md. Route 235 in St. Mary's County. The roadway is proposed on new alignment following the recommended alignment designated Alternate E Modified.

The recommended alternative would improve access to the Lower Patuxent River Bridge by reducing anticipated peak hour traffic congestion and by increasing travel safety for both the inter-county and local motorist.

Air pollution levels in the study area will increase due to roadway construction and an anticipated increase in traffic volumes, however, National and State Primary and Secondary Air Quality Standards are not expected to be exceeded as a result of the build alternate.

An increase of ambient noise levels found in the the Study Area can be expected after the opening of the Lower Patuxent River Bridge as a result of an expected increase in traffic volume. Federal noise level standards will not be exceeded as a result of the build alternate, however, one area will be severely impacted.

A significant short-term decrease in existing water quality would result from roadway construction related siltation in outfall

(over)

streams. The construction of the recommended alternate would produce long-term increases in storm water run-off due to road paving, as well as the introduction of petroleum derivative pollutants from the roadway surface. However, strict enforcement of State Highway Administration sediment and erosion control practices would lessen the degree of short-term impacts.

Due to the rural character of the Study Area, losses in wildlife habitat and removal of vegetation losses would not be significant in comparison with the total acreage available in the Study Area.

No existing historic or archaelogical sites in the Study Area will be affected by the recommended alternate.

Recreational opportunities for both St. Mary's County and Calvert County residents will be enhanced by the improvement of access to the Cliffs of Calvert State Park and the Navy Recreation Center at Solomons in Calvert County.

Displacement of homes and businesses can be expected to result from the acquisition of right-of-way that would be required by the proposed build alternate. Alternate E Modified would require purchase of 79.1 acres of which 9.7 are farmland currently under cultivation. In addition two businesses and four families with approximately 16 people will be displaced.

The proposed extension of Md. Route 2 & 4 in St. Mary's County is in conformance with local and regional land use plans and no organized opposition to the need for a new road has been expressed. The Federal Highway Administration is also sponsoring

the construction of proposed improvements to Md. Route 2 & 4 in Calvert County. The roadway project in Calvert County will not significantly affect the impacts to the extension of Md. Route 2 & 4 in St. Mary's County. The Lower Patuxent River Bridge is being constructed with State funds. The bridge is tentatively scheduled to be completed in 1978. Planning and environmental considerations were made using State procedures and guidelines in effect at the time of development of the bridge. There are no other known proposed major Federal actions of other agencies in the area that affect this project or its impacts.

(4) Major Alternatives Considered

The major alternatives considered consisted of the "No-build" Alternate and the construction of the proposed improvement on three new alignment alternates.

The alternative of improving the existing road was studied and was found neither to substantially increase traffic capacity nor safety due to existing horizontal and vertical alignment constraints and the lack of opportunity for access control. Therefore, this alternative was dropped from further consideration early during the Study.

The "No-build" Alternate was studied as a basis of comparison for the proposed build alternates. If no new road is constructed after the opening of the Lower Patuxent River Bridge, Patuxent Beach Road would provide the only means of vehicular access from

the bridge to Md. Route 235. The existing road presently serves as a local collector road to abutting communities in the Study Area and the infusion of inter-county traffic generated by the bridge would tax the capacity and safety characteristics of this facility.

Alternates C, E, and F followed new alignments through the Study Area that would provide a safe and convenient connection from the Lower Patuxent River Bridge to three alternate termini at Md. Route 235. All of the proposed alternates provide a partial control of access by means of selected spacing of access points and partitioning of the existing roadway. In addition, interchanges were studied at each Md. Route 235 terminus to increase safety.

Alternate E Modified was developed following the public hearing to mitigate the undesireable effects of Alternate E and was subsequently recommended as the alternate to be constructed.

(5)

Comments Requested From:	Comments Received From:
Federal Agencies:	
U. S. Department of the Interior Assistant Secretary for Program Policy	X
Regional Director National Marine Fisheries Service	
Regional Administrator Department of Housing & Urban Development	
Office of the Secretary Department of Agriculture	

State Conservationist Soil Conservation Service, USDA	X
Deputy Assistant Secretary for Environmental Affairs U. S. Department of Commerce	
Department of Health, Education & Welfare Assistant Secretary for Health & Science Affairs	
U.S. Environmental Protection Agency Environmental Impact Statement Coordinator	X
U. S. Office of Economic Opportunity Director	
Executive Director of Civil Works Office of the Chief Engineer Department of the Army - Corps of Engineers	

Maryland State Agencies:

Department of State Planning	X
Department of Natural Resources	X
Department of Budget & Fiscal Planning	X
Department of General Services	X
Department of Economic & Community Development	X
Department of Education	
Department of Health & Mental Hygiene	X
Interagency Committee for School Construction	X
Maryland Environmental Trust	
Maryland Historical Trust	X
Maryland Geological Survey	
Department of Public Safety & Correctional Services	X

Elected Federal Officials:

Honorable Robert E. Bauman
United States Congress
House of Representatives

Honorable J. Glenn Beall, Jr.
United States Senate

Honorable Charles Mc C. Mathias
United States Senate

St. Mary's County Officials:

Honorable James C. Simpson State Senator	X
Honorable John Hanson Briscoe, Delegate	X
Honorable Royden P. Dyson, Delegate	X
Honorable James M. McKay, Board of County Commissioners	X
Honorable Ford L. Dean Board of County Commissioners	X
Honorable J. Patrick Jarboe, Board of County Commissioners	X
Honorable J. Lawrence Millison, Board of County Commissioners	X
Honorable John K. Parlett, Board of County Commissioners	X
John B. Norris, Jr., County Engineer	
John V. Baggett, Director of Recreation and Parks	
Gerald C. McKinney, Executive Director Tri-County Council of Southern Maryland	X
Commander, Naval Air Test Center/Naval Air Station Patuxent River, Maryland	

6. The Draft Environmental Impact Statement was mailed to the Council on Environmental Quality on October 21, 1976 and a period of 45 days from that date was established for review and comment.

SECTION I

PROJECT LOCATION AND DESCRIPTION

I. PROJECT LOCATION AND DESCRIPTION

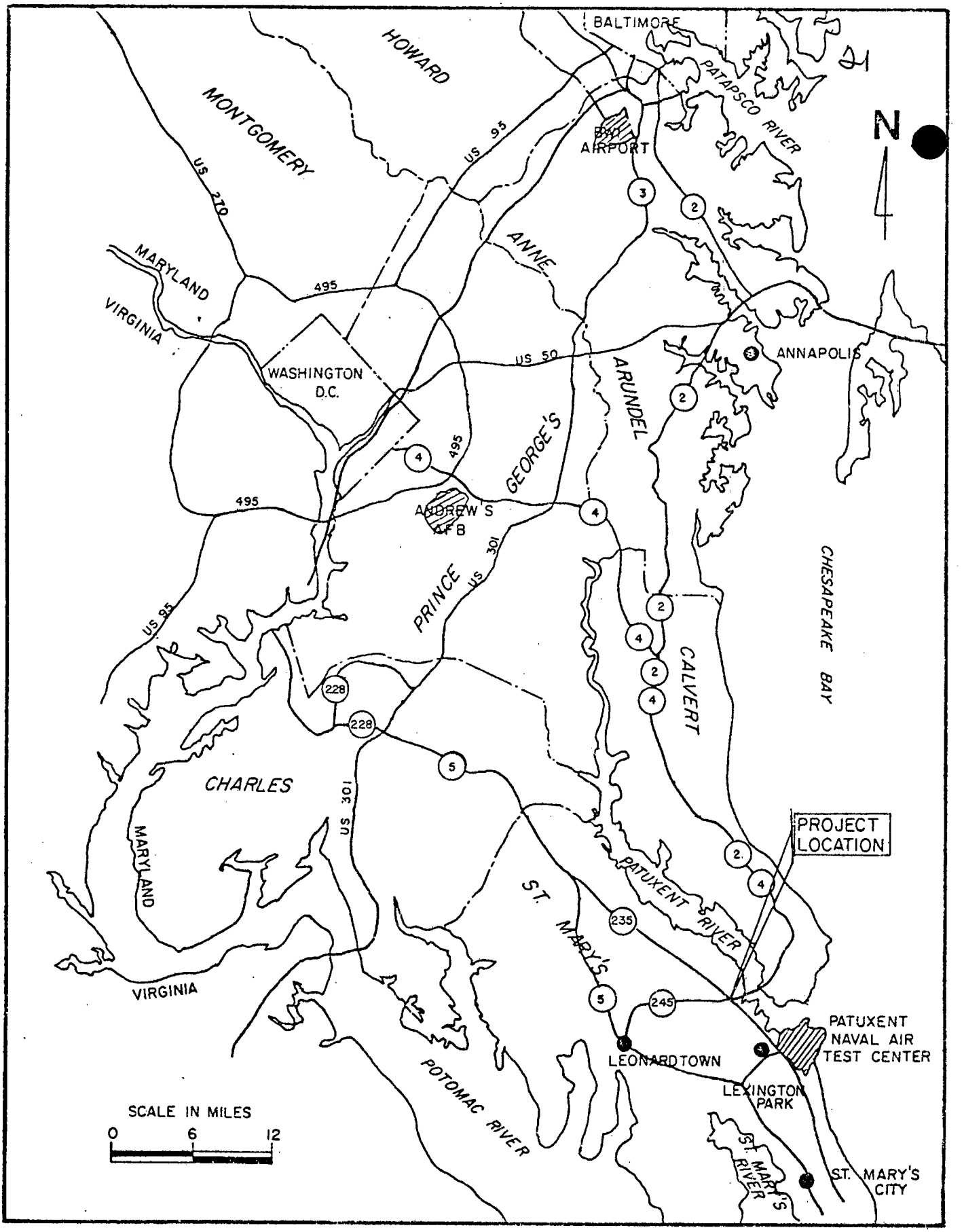
St. Mary's and Calvert Counties are located in Southern Maryland and are bounded by the Chesapeake Bay, the Patuxent River, and the Potomac River (See figure 1). This study begins at an intersection with Md. Routes 2 & 4 in the Johnstown-Solomons area of Calvert County and terminates at Md. Route 235 in St. Mary's County. The study area is generally located in St. Mary's County Election District VIII, approximately three miles north of the Patuxent Naval Air Test Center in Lexington Park, and one-half mile south of the St. Mary's County Airport. The study area can be described as a triangular shaped area (See figure 2).

EXISTING FACILITY

Patuxent Beach Road presently provides the only vehicular access from Md. Route 235 to the Lower Patuxent River Bridge and several existing residential and commercial developments in the study area. This facility consists of a two-lane asphalt roadway beginning at the Md. Route 235 intersection and ending at Town Point, a commercial development situated along the Patuxent River east of the southern approaches to the Lower Patuxent River Bridge.

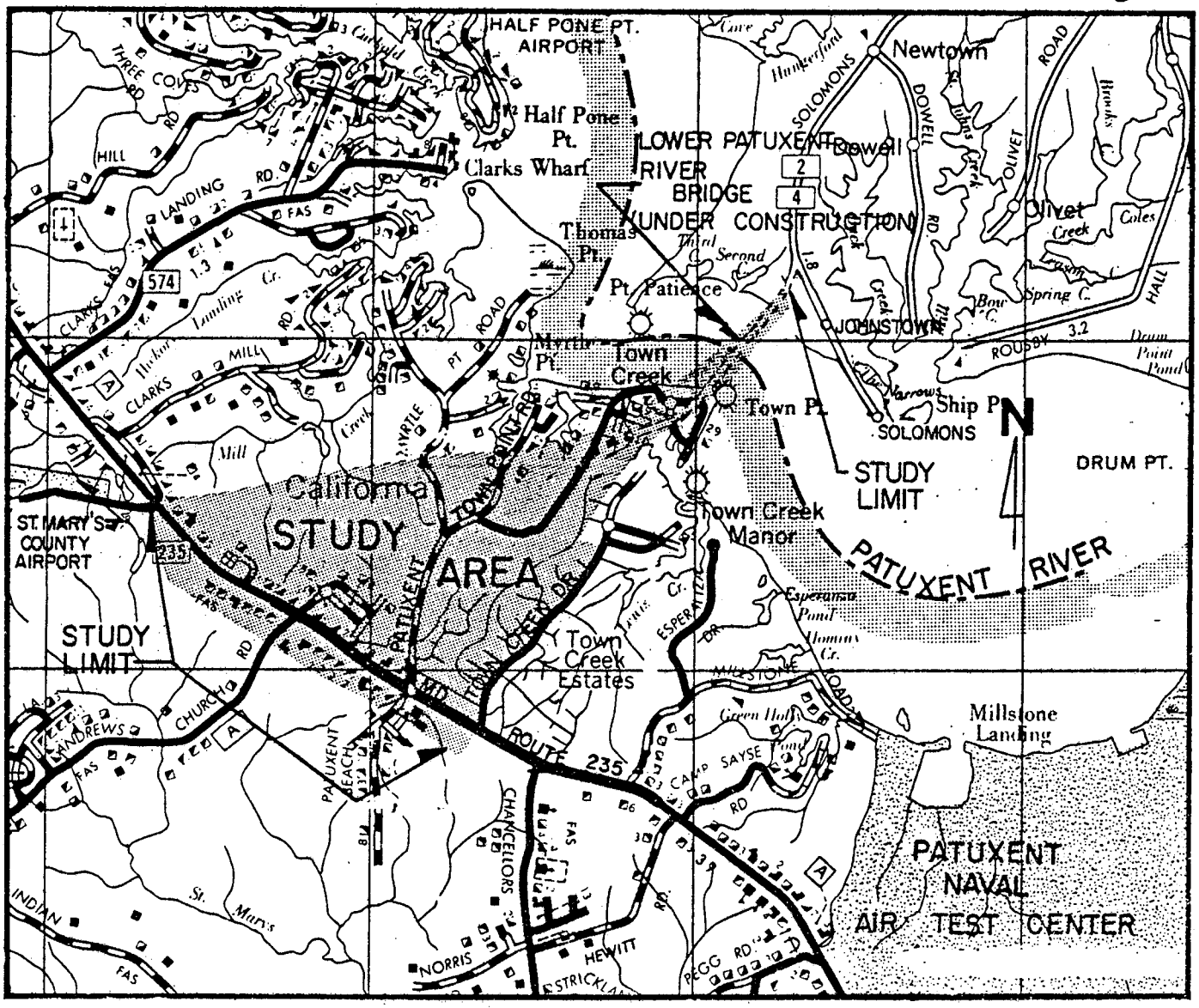
The existing roadway consists of a 20-foot wide asphalt pavement, two 10-foot travel lanes, and no shoulders.

A drainage ditch follows the existing roadway alignment on each side at a distance of four feet from each edge of pavement. This ditch is usually covered with dense vegetation and may constitute



REGIONAL MAP

FIGURE I



VICINITY MAP

MARYLAND ROUTE 2 & 4 EXTENDED

ST. MARY'S COUNTY

FIGURE 2

a hazard to any unsuspecting motorist pulling off the pavement during an emergency. Also, trees and utility poles are generally closely situated on both sides of the roadway, approximately four to nine feet from the edge of pavement.

The existing road generally follows a meandering horizontal alignment from Md. Route 235 to Town Point. Two sharp horizontal curves occur at the Myrtle Point Road and Kingston Creek Road intersections with Patuxent Beach Road which present potentially hazardous conditions due to restricted sight distances.

The vertical alignment of Patuxent Beach Road follows a "roller coaster" profile consisting of a series of vertical curves with short tangents. The tangent grades vary between one and two percent with a six percent grade occurring in an isolated section of the road approximately one-half mile south of the Lower Patuxent River Bridge.

The posted speed limit of Patuxent Beach Road, from Md. Route 235 to Kingston Creek Road, is presently 30 MPH. From Kingston Creek Road to the vicinity of the Lower Patuxent River Bridge, the posted speed limit increases to 40 MPH. North of this location to Town Point, the speed limit decreases again to 30 MPH.

The existing roadway affords very little control of access. In addition to intersecting local roads, Patuxent Beach Road provides direct access to numerous residential dwellings fronting on the roadway.

Due to the restrictions to sight distance imposed by the existing horizontal and vettical alignments of the roadway, it was determined that approximately four percent of the total two-mile length of roadway evaluated allows a "passing sight distance" greater than 1,500 feet. The availability of "passing sight distance" affords the motorist relative freedom to maneuver as well as increases the overall traffic capacity and safety of a two-lane road.

PROPOSED IMPROVEMENT

The design of the proposed road is based on a 60 MPH design speed originally established by the State Highway Administration and is in accordance with latest State Highway Administration design criteria. Engineering and safety practices recommended by the American Association of State Highway and Transportation Officials (AASHTO) were incorporated into the design of this proposed facility.

After carefully weighing future planning and safety considerations against the practical aspects of economic justification, it was determined that the proposed facility should consist of the initial construction of a two-lane road, with right-of-way acquisition to accommodate an ultimate dual four-lane facility.

The proposed typical section of the initial facility consists of a 24-foot readway with 10-foot shoulders, and the incorporation of safety grading (See figure 3). The proposed typical section of the ultimate dual facility consists of adding a parallel 24-foot roadway with a 10-foot outside shoulder and safety grading. This ultimate

→ 44' of impervious surface. This is equal to approx. 5 acres of impervious surface per mile of roadway.

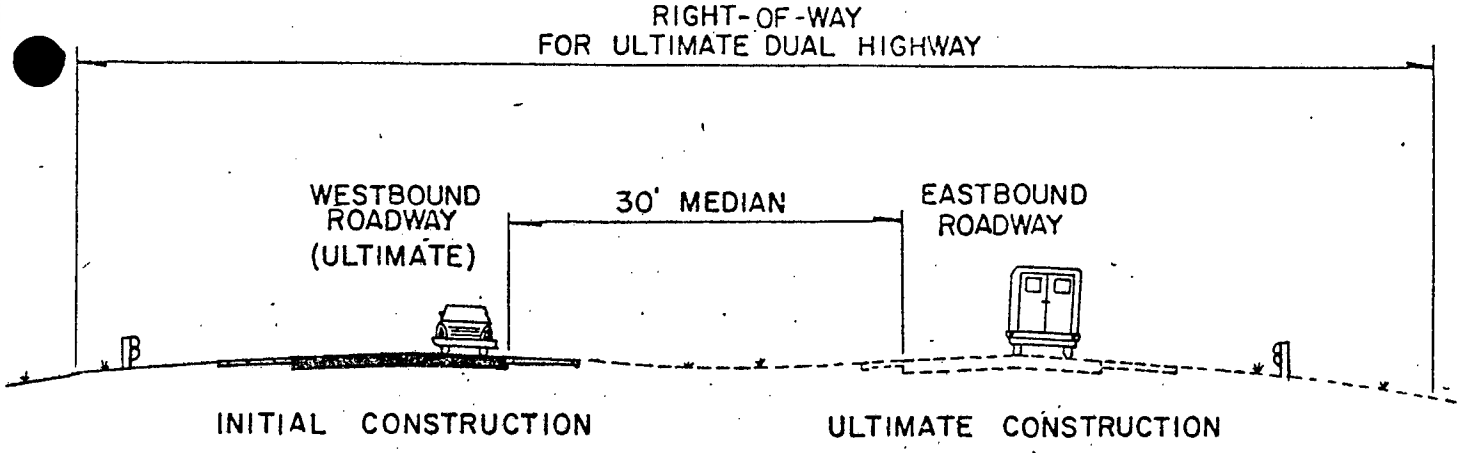
(The road section through Kingston Creek Watershed appears to be prox 3500')

construction would, for the most part, serve as the eastbound roadway of the dual facility and would be separated from the initial roadway by a 30-foot median, including 4-foot inside shoulders.

Clearing and grading of the right-of-way corridor would be confined to the sloping and drainage limits required to construct the initial roadway section only. When future traffic volumes indicate that the construction of the ultimate dual facility is warranted, the remainder of the roadway section would be constructed.

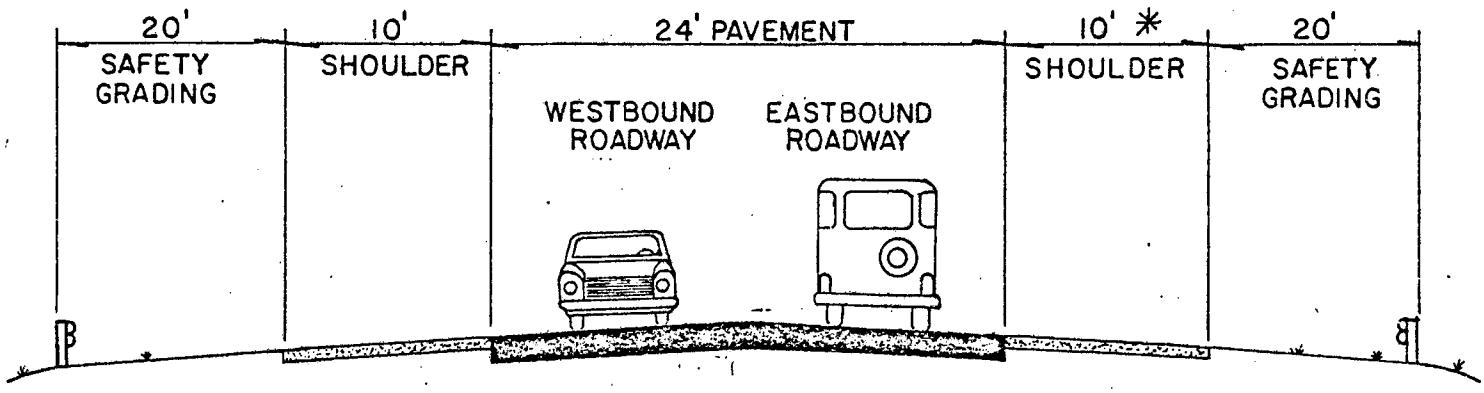
Additional consideration was given to right-of-way acquisition to provide full access control, i.e. grade separation structures at all intersecting roads with provisions for access only at selected points. After careful evaluation of anticipated traffic demand, it was determined that partial control of access is justified for the proposed facility. At-grade intersections at selected crossings with Patuxent Beach Road will provide the desired level of service to through traffic using the new road as well as accommodate traffic turning movement volumes to and from Patuxent Beach Road.

In addition, an interchange at the intersection of each alternate and Md. Route 235 was studied. It was found than an at-grade intersection would accommodate the anticipated traffic demand until the year 2000 at a level of service "D." At the time this intersection reaches its capacity an interchange could be built. It was originally felt that the right-of-way to accommodate this future interchange should be purchased initially to provide



ULTIMATE DUAL HIGHWAY

NOT TO SCALE



PROPOSED INITIAL CONSTRUCTION
2 LANE HIGHWAY

NOT TO SCALE

* 10' SHOULDER CONSTRUCTED INITIALLY.

4' INSIDE SHOULDER UTILIZED FOR ULTIMATE DUAL DIVIDED HIGHWAY SECTION.

FIGURE 3

Maryland Department of Transportation	TYPICAL SECTION MD. RTE. 2 & 4 EXTENDED LOWER PATUXENT RIVER BRIDGE TO MD. RTE. 235, ST. MARYS COUNTY	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

a countermeasure against additional roadside interference. Further studies indicated, however, that disruption of the community caused by the initial purchase of the additional right-of-way outweighed the advantages gained by this action. Therefore, only right-of-way required for an at-grade intersection would be purchased.

TRAFFIC DATA

The State Highway Administration provided all existing and projected traffic data for the roadway network affected by the proposed roadway. This roadway network consists of Md. Route 2 & 4, Patuxent Beach Road, Md. Route 235, and St. Andrew's Church Road. The traffic data for each link of the roadway system is shown as follows:

Average Daily Traffic, vehicles per day

Year	1975	1980	1982	1990	2000
Md. Route 2 & 4- Md. Route 497 to Johnstown-Solomons (Calvert County)	5,200	6,250	6,670	9,330	12,700
Md. Route 2 & 4 Extended- Northern approaches of Lower Patuxent River Bridge to Patuxent Beach Road	0	2,375	2,795	5,455	8,825
Md. Route 2 & 4 Extended- Md. Route 235 to Patuxent Beach Road	0	4,175	4,800	8,875	13,225
Patuxent Beach Road (No Build)	2,650	5,925	6,400	8,575	11,275
Md. Route 235 Patuxent Beach Road South	13,255	17,450	19,200	22,600	30,050
Patuxent Beach Road to St. Andrew's Church	10,150	13,200	14,575	16,425	22,025
St. Andrew's Church Road Road North	10,850	14,300	15,800	18,000	24,000
St. Andrew's Church Road	2,150	2,925	3,075	4,225	5,675

Design Hourly Volume	13% of ADT for 1975 and projected
Directional Distribution of Design Hourly Volume	55% north for 1975 and projected

SECTION II

PROJECT HISTORY AND NEED FOR THE PROPOSED ACTION

II. PROJECT HISTORY AND NEED FOR THE PROPOSED ACTION

The study of Md. Route 2 & 4 Extended covers the proposed link between Md. Route 2 & 4 in the Johnstown Solomons area and Md. Route 235 that will provide improved inter-county travel between St. Mary's and Calvert Counties. This imporved accessibility to both the north-south travel corridors in both Counties (Md. Route 2 & 4 in Calvert County and Md. Route 235 in St. Mary's County) will form an integrated network providing inter-regional and inter-county service meeting the desired standards set forth by both Federal and State Primary classifications.

PROJECT HISTORY

The proposed corridor first appeared in the 1971-1990 Twenty-Year Needs Study which primarily included the construction of the Lower Patuxent River Bridge, from Town Point in St. Mary's County to Solomons in Calvert County. The Lower Patuxent River Bridge portion was advanced to the construction stage by the State in 1971. This portion was 100 percent State Funded and is scheduled for completion in 1978. In the 1977-1996 Twenty-Year Needs Study this proposed construction is listed as a New Patuxent River Bridge Approach from Md. Route 235 to Myrtle Point Road which includes an initial two-lane and ultimate four-lane divided facility.

The study of Md. Route 2 & 4 Extended is presently listed in the 1976-1980 State Primary Highway Improvement Program which includes the construction of a two-lane facility from the Lower Patuxent River Bridge to Md. Route 235. In accordance with the action plan,

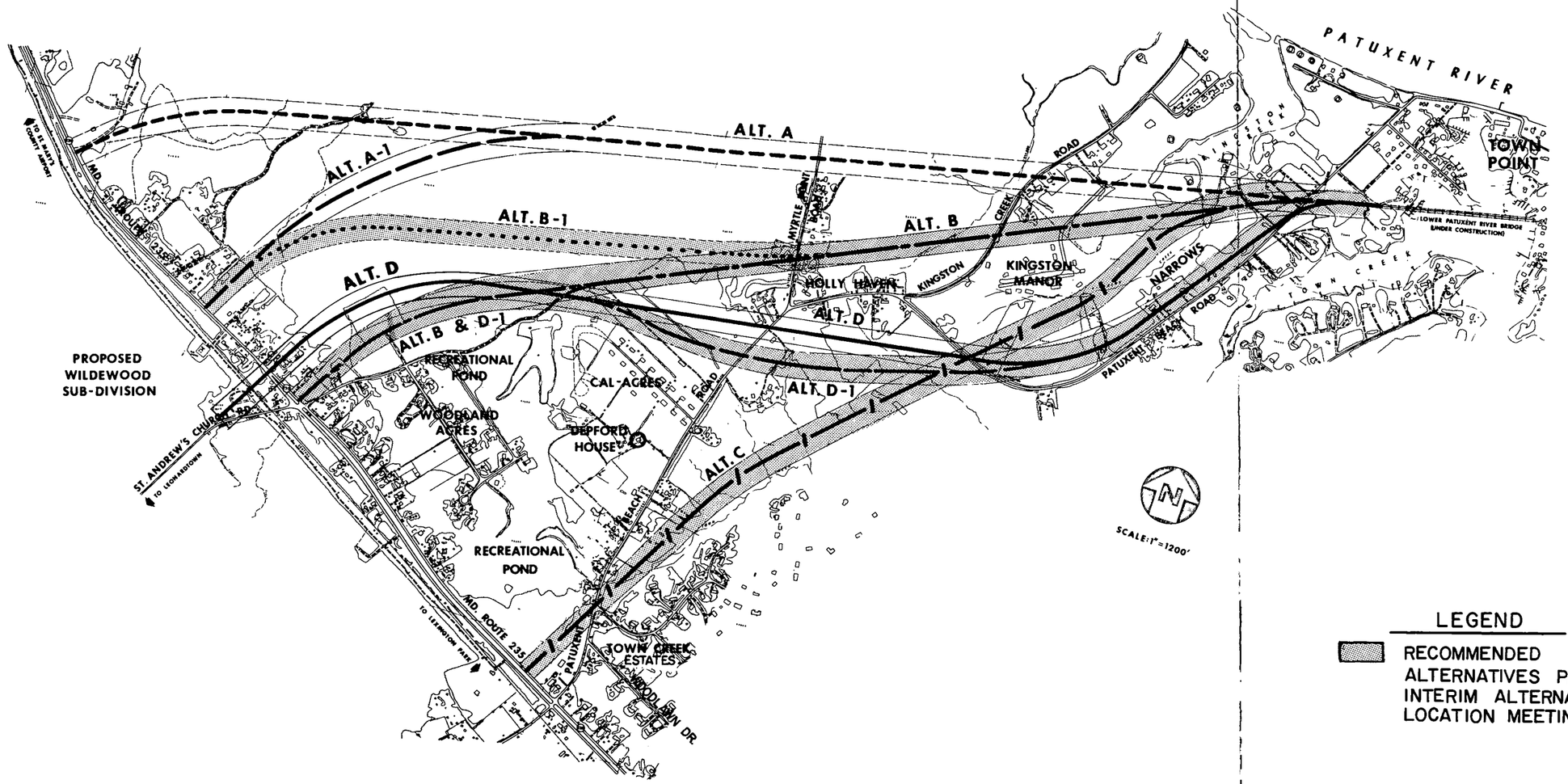
Phase II Project Planning Activities commenced in January, 1975. Previous studies undertaken by the State Highway Administration were considered and incorporated where practicable. In addition, contact with St. Mary's County officials as well as affected State agencies was maintained in order to incorporate local and regional planning goals into the development of alternates.

A Project Initiation Meeting was held in March, 1975 to inform the citizens and officials of St. Mary's County of the beginning of study activities. A summary of this meeting and public response is presented in Section IX.

During the study of interim alternatives, a total of seven alignments were developed and presented to the public along with the "no-build" alternative during the Interim Alternatives Meeting held in March, 1976 in St. Mary's County. The State Highway Administration recommended Alternates B, B-1, C and D-1 for further study (See figure 4). A summary of this meeting is presented in Section IX.

The State Highway Administration conducted an "In-house" project evaluation meeting on April 20, 1976 to review public comments on the Interim Alternatives Location Meeting and to formally select alternate alignments for detailed study.

As a result of this meeting and the public meeting, three alternate alignments were selected and subsequently developed during the next phase of this project (See figure 5). These three



LEGEND

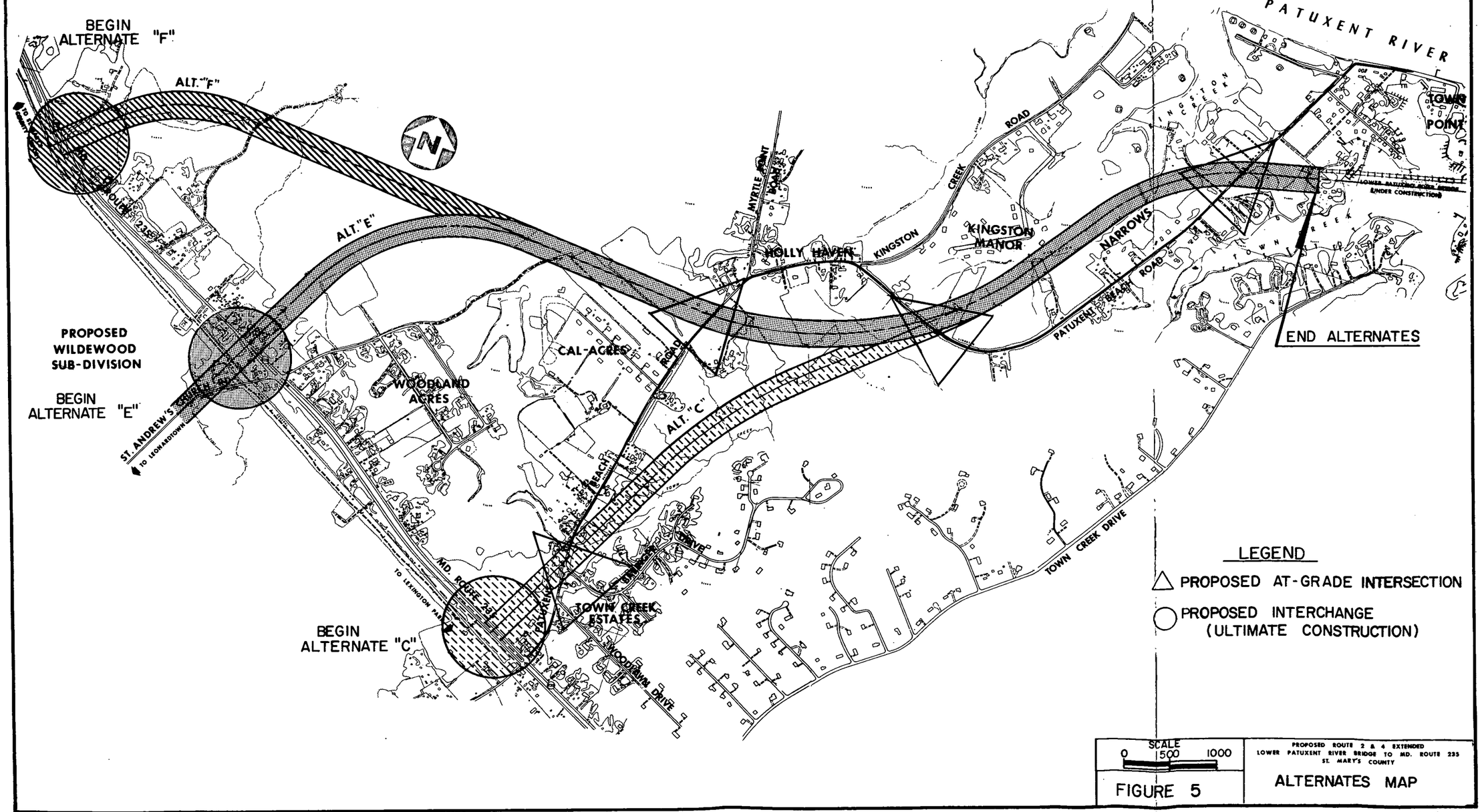
RECOMMENDED ALTERNATIVES PRIOR TO INTERIM ALTERNATIVES LOCATION MEETING.

SCALE
0 600 1200

FIGURE 4

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

INTERIM
ALTERNATIVE ALIGNMENTS


BEGIN ALTERNATE "F"
ALT. "F"
ALT. "E"
PROPOSED WILDEWOOD SUB-DIVISION
BEGIN ALTERNATE "E"
BEGIN ALTERNATE "C"
ST. ANDREW'S CHURCH
TO LEONARDTOWN
MD. ROUTE 235
TO LEXINGTON PARK
WOODLAND ACRES
CAL-ACRES
ROAD
ALT. "C"
BEACH
DRIVE
TOWN CREEK ESTATES
WOODRAWN DRIVE
MYRTLE POINT ROAD
HOLLY HAVEN
KINGSTON
CREEK
KINGSTON MANOR
ROAD
NARROWS
PATUXENT BEACH ROAD
PATUXENT RIVER
TOWN POINT
LOWER PATUXENT RIVER BRIDGE (UNDER CONSTRUCTION)
TOWN CREEK
TOWN CREEK DRIVE
END ALTERNATES
LEGEND
PROPOSED AT-GRADE INTERSECTION
PROPOSED INTERCHANGE (ULTIMATE CONSTRUCTION)
SCALE
0 500 1000
PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY
FIGURE 5
ALTERNATES MAP

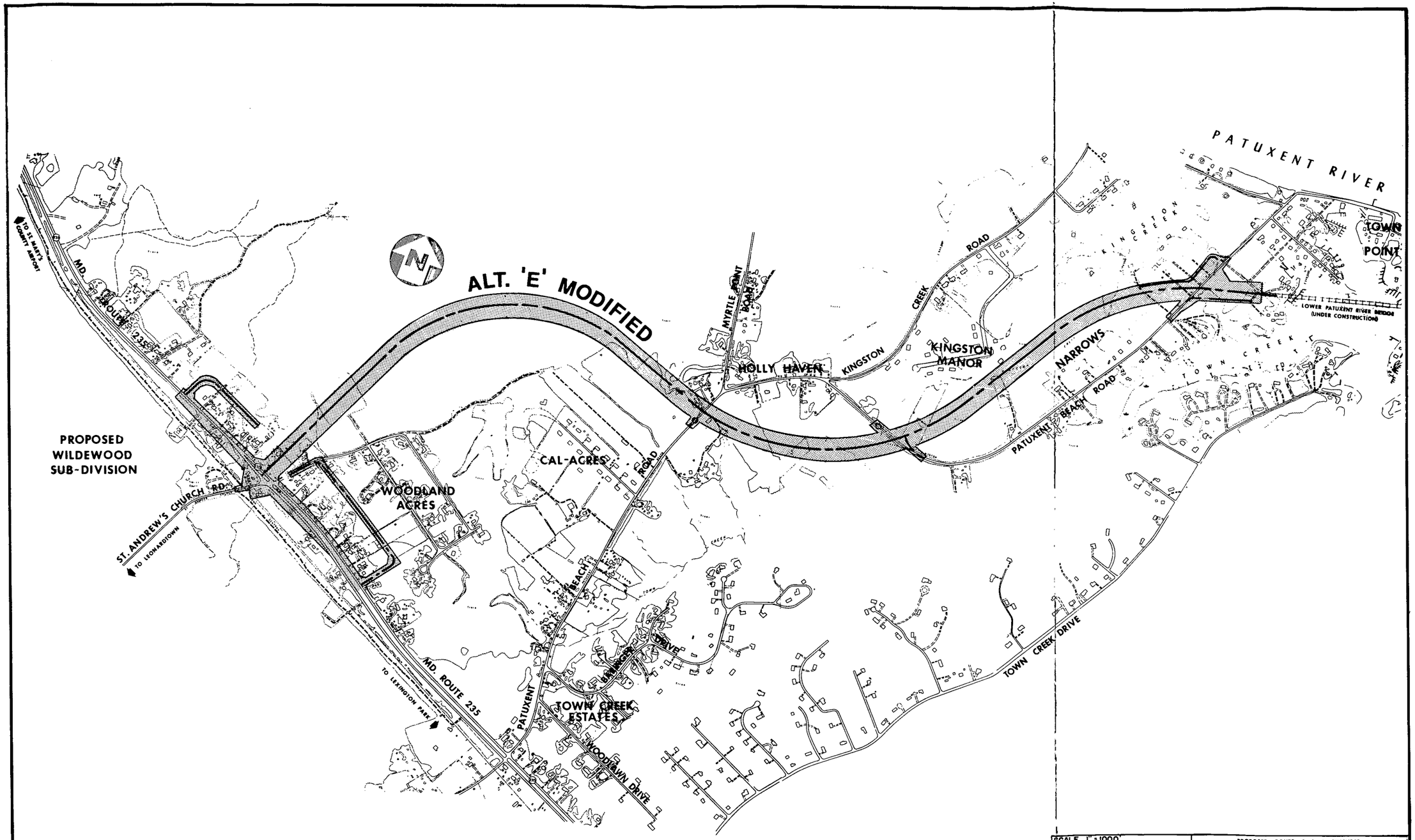
alternates: C, E, and F followed a common alignment from the southern approach of the Lower Patuxent River Bridge to a point approximately 1,000 feet east of the intersection of Kingston Creek Road and Patuxent Beach Road. At this point, Alternate C continued south, intersecting Md. Route 235 in the vicinity of Patuxent Beach Road, following the general alignment of the original Alternate C presented at the Interim Alternatives meeting.

From the point of common alignment, Alternate E and F curved westward through the middle of the study area. Alternate E intersected Md. Route 235 in the vicinity of St. Andrew's Church Road and Alternate F intersected Md. Route 235 in the northern section of the study area near an existing sand and gravel plant.

These three alternates were presented at the Location Public Hearing held in November, 1976 in St. Mary's County. A summary of this meeting and the public correspondence is also presented in Section IX.

An In-house meeting was held on January 7, 1977 by State Highway officials to review public comments on the Location Public Hearing. At this meeting, as a direct result of Agency and Citizen input, Alternate E Modified was recommended as the alignment for location approval to proceed to the design phase of the project. Beginning at the Lower Patuxent River Bridge, Alternate E. Modified (See figure 6) extends westward through the approximate middle of the study area following the same alignment as Alternate E. In the vicinity of the intersection of Kingston Creek Road and Patuxent Beach Road, the alignment would be shifted north of Alternate E to

(See Eg. memo from Konerva To Knapp dated 12/2/76. in Appendix.)



SCALE 1" = 1000'
0 1000

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

FIGURE 6

ALTERNATE 'E' MODIFIED

lessen the impact on an existing agricultural operation. From this point Alternate E Modified would curve southward intersecting Md. Route 235 in the vicinity of St. Andrew's Church Road approximately 400 feet south of the intersection of Alternate E and Md. Route 235. This modification would avoid impacting an existing trailer park located on the east side of St. Andrew's Church Road approximately 400 feet from Md. Route 235. This alternate is described in detail in Section V and will be presented to the public at the Design Public Hearing which will be held during the design phase of the project.

In conjunction with this project, a study of the dualization of Md. Route 2 & 4 in Calvert County has been completed by the State Highway Administration (See figure 7). The study limits are from Md. Route 264 to the Johnstown-Solomons Area in the vicinity of the Lower Patuxent River Bridge, a distance of approximately 15 miles. The proposed action consists of a dual four-lane facility with two 24-foot lanes, 10-foot shoulders, and a 30-foot wide median. Study efforts were made to consider the salvaging of portions of the existing roadway for utilization as one roadway of the proposed dual facility and feasible combinations of new alignment.

The Corridor Public Hearing was held on July 23, 1975 at the Appeal Elementary School in Calvert County and the Final Environmental Impact Statement has been approved and adopted by the Federal Highway Administration. Location approval for this project was received on June 11, 1976.

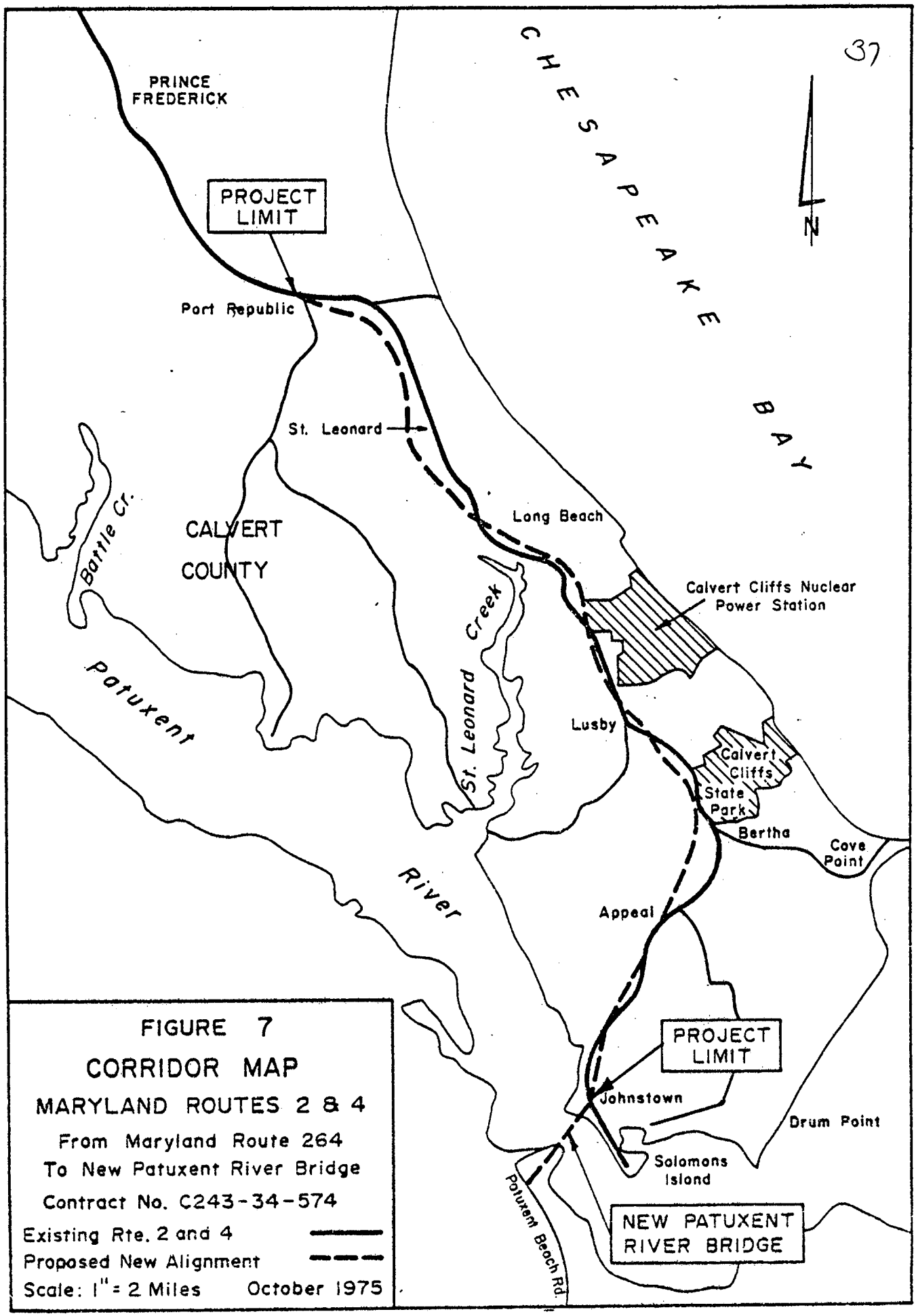


FIGURE 7

CORRIDOR MAP

MARYLAND ROUTES 2 & 4

From Maryland Route 264

To New Patuxent River Bridge

Contract No. C243-34-574

Existing Rte. 2 and 4 ——

Proposed New Alignment - - -

Scale: 1" = 2 Miles October 1975

This proposed improvement is intended to accommodate the projected traffic demands of southern Calvert County. The major traffic generators include the various beaches along the Chesapeake Bay and Patuxent River. The improved facility should also encourage economic development of Calvert County by improving commercial access to major industrial attractions which include the Calvert Cliffs Nuclear Power Plant, the Columbia Gas Company proposed Liquid Natural Gas (LNG) unloading depot, and the Naval Ordnance Laboratory and adjacent recreation center in Solomons, Maryland.

NEED FOR THE PROPOSED ACTION

The proposed construction will provide a new road connecting the Lower Patuxent River Bridge to Md. Route 235 in St. Mary's County diverting traffic from substandard existing roadway to meet the anticipated increase in traffic volumes due to the opening of the bridge to inter-county travel and the expected suburban growth of the area.

In addition to improved inter-county service, the new bridge may also attract through movements from St. Mary's County to Annapolis and Baltimore urban centers. The opening of the Lower Patuxent River Bridge and improvement to the existing Md. Route 2 & 4 in Calvert County will make the southern Maryland Waterfront area more accessible to the State and region.

The extension of Md. Route 2 & 4 in St. Mary's County is recognized at both the local and regional levels. In the short-range Transportation Plan described in "A Comprehensive Plan for St. Mary's County," it is recommended that a connection of an

access road from the Lower Patuxent River Bridge to Md. Route 235 be made at the St. Andrew's Church Road intersection. A connection with this County improvement would provide a continuous arterial highway connection between the new bridge and Leonardtown.

In the regional level, the draft comprehensive Regional Plan (May, 1973) for Southern Maryland, incorporates an improved Route 2 & 4 into two regional roadway systems--the Vertical System and the peripheral System.

The proposed road in St. Mary's County is included in the Maryland Primary System and is classified as an intermediate arterial in the Maryland Functional Classification System. Highways in this class are generally characterized by general continuity and as serving as extensions of the arterial system.

The proposed road also is included in the Federal Aid Primary System and is classified as a rural minor arterial in the Federal Functional Classification system.

The rural minor arterial road system is intended to form a rural network in conjunction with the principal arterial system and having generally the following characteristics:

1. Provide a link between cities and larger towns and form an integrated network providing inter-regional and inter-county service;
2. Be spaced at such intervals, consistent with population density, so that all developed areas of the State are within a reasonable distance of an arterial highway; and

3. Provide service to corridors with trip lengths and travel densities greater than those predominately served by rural collector or local systems. Therefore, minor arterials constitute routes whose design should be expected to provide for relatively high overall travel speeds with minimum interference to through traffic movement.

If no new road is constructed after the opening of the Lower Patuxent River Bridge, Patuxent Beach Road would provide the only means of vehicular access to the bridge and existing residential and recreational developments located within the study area. The existing road presently serves as a collector road for local traffic to existing residences along the road and waterfront recreational areas located at Town Point. Numerous private driveway entrances abut the road and would further impede through traffic flow as well as increase the risk of traffic accidents.

During the years of 1973 and 1974, the study section of Patuxent Beach Road experienced 21 accidents. If no improvements are made to the subject roadway, it can be expected than in addition to the normal traffic growth, an increase in vehicular conflictions, which are normally associated with congestion on highways of this design, would occur. The accident rate will undoubtedly continue to rise with a corresponding increase in motor vehicle accident costs exceeding the present cost of

approximately $ 2,511,000/100 Million Vehicle Miles of travel for the motorist now using Patuxent Beach Road.

More important than monetary savings to be realized by construction of the proposed facility is the corresponding anticipated decrease in the loss of life and human misery brought about by the reduction in accidents.

The accident cost, as indicated, includes present worth of future earnings of persons killed or permanently disabled, as well as monetary losses resulting from injury and property damage accidents. The unit cost utilized in the above computations is based on actual cost values obtained from three independent accident cost studies conducted in Washington, D.C., Illinois and California, and were updated to 1973 prices.

Upgrading of the existing roadway to increase capacity and safety characteristics was found not to be a viable alternative. Due to the configuration of the existing horizontal roadway alignment, any upgrading to increase capacity such as roadway widening and improvement to existing curves would require extensive relocation of the existing pavement particularly in the vicinity of Myrtle Point Road and Kingston Creek Road intersections with Patuxent Beach Road. Improvement to the existing roadway profile to increase sight distances would also entail adjustment and relocation of numerous driveway entrances abutting Patuxent Beach Road. Moreover, since the existing road serves as a collector road to local traffic, any upgrading of Patuxent Beach Road to increase capacity would not, at the same time, substantially improve safety characteristics due to the limited control of access that would be imposed by existing abutting driveway entrances.

On the other hand, the initial construction of a new two-lane road with improved horizontal and vertical alignments, shoulders, safety grading, and a partial control of access would provide both increased capacity and safety. Partial control of access would be provided by the selected spacing of intersections with Patuxent Beach Road. In addition, a new road connecting the bridge to Md. Route 235 would allow the alternative of partitioning Patuxent Beach Road by means of cul-de-sacs in order to maintain the local character of this road and adjacent communities.

SECTION III

EXISTING ENVIRONMENTAL CONDITIONS

III. EXISTING ENVIRONMENTAL CONDITIONS

NATURAL ENVIRONMENT

Climate

The National Oceanographic and Atmospheric Administration (NOAA) operates a weather monitoring station at the Patuxent Naval Air Test Center in Leonardtown, Maryland. Data for this report are from the NOAA summary sheet for the 28-year period from March, 1945 through December, 1972.

The climate of St. Mary's County is influenced by the large nearby open water masses and the Appalachian Mountains to the west. These natural features have a moderating effect on the weather. The Chesapeake Bay and the Atlantic Ocean produce an oceanic breeze and the mountains obstruct the movements of advancing weather fronts.

The prevailing wind direction from October through March is from the northwest, as Canadian high pressure systems dominate the weather. From April through September wind direction is from the south-southwest as Bermuda high pressure systems dominate.

The mean annual temperature at Leonardtown is about 56°F. July is the warmest month of the year with an average temperature of 77.4°F. January is the coldest month with an average temperature of 35.5°F. Annual precipitation as measured at Leonardtown is about 40 inches. July is the wettest month and October is the driest, but in general, precipitation is fairly evenly distributed throughout the year.

Summers are very warm and humid and winters are generally mild. Thunderstorms are frequent during the summer. Snowfall is

Time of year restriction based on likelihood of least amounts of rainfall and subsequent reduced potential for heavy erosion. See p. IV-21

quite variable. Tropical storms threaten the area every year, but only about one storm every five years will be close enough to seriously effect the area.

Air Quality

St. Mary's County is included within the Southern Maryland Interstate Air Quality Control Region (AQCR) along with Charles and Calvert Counties. The area has not been identified as an Air Quality Maintenance Area (AQMA) for any pollutants. An AQMA designation would indicate that EPA feels that there exists the potential that the primary air quality standards may be violated within the next ten years.

Air quality within the Study Area is representative of its rural nature. There are no major point sources within the vicinity. Measured air quality data is available for Choptican High School, about 5 miles south of the Study Area, and at Cove Point, 8 miles to the northeast. Pollutant concentrations are shown in Table 1 for 1974, the last full year for which all data is compiled. No Federal Standards were violated in 1974 (Table 2).

Table 1. Ambient Air Quality Near the Study Area. (Source: Maryland Department of Health and Mental Hygiene, 1974).

Pollutant	Measurement Period	Concentration (Mg/m^3) Choptican H.S.	Cove Pt.
Total Suspended Particulates	Arithmetic mean	42	39
	24-hour maximum	110	125
	Second highest	94	122
SO_2	Arithmetic mean	4	4
	24-hour maximum	18	17
	Second highest	13	12
NO_2	Arithmetic mean	16	20

Table 2. Ambient Air Quality Standards. (Sources: 40 CFR 50, 36 FR 22384, Nov 1971, EPA Regulations; Maryland Department of Health and Mental Hygiene, 1974).

	National		Maryland	
	Primary	Secondary	Serious	More Adverse
Sulfur Oxides				
Annual Arithmetic Mean, ug/m^3	80		79	39
24-hour maximum[b], ug/m^3	365		262	131
3-hour maximum[b], ug/m^3		1,300		
1-hour maximum[b], ug/m^3			525	262
Particulate Matter				
Suspended				
Annual Arithmetic Mean, ug/m^3	75[a]	60[a]	75	65
24-hour maximum[b], ug/m^3	260	150	160	140
Settleable				
Annual Arithmetic Average, mg/cm^2/month			0.5	0.35
Monthly maximum			1.0	0.7
Carbon Monoxide				
8-hour maximum[b], mg/m^3	10	10	10	10
1-hour maximum[b], mg/m^3	40	40	40	40
Hydrocarbons				
3-hour maximum (6-9 AM) maximum[b], ug/m^3	160	160	160	160
Nitrogen Dioxide				
Annual Arithmetic Mean, ug/m^3	100	100	100	100
Photochemical Oxidants				
1-hour maximum[b], ug/m^3	160	160	160	160

[a] Annual geometric mean.

[b] Not to be exceeded more than once per year.

[c] Not to be exceeded more than once per month.

Geology

The geologic formations in St. Mary's County range in age from Pre-Cambrian to Recent. All of the formations are not known from outcroppings in St. Mary's County, but they have been observed in wells which were drilled throughout the county. The crystalline basement rocks lie at a depth of about 2200 feet below the surface at the western edge of the county and about 3,400 feet in the extreme southeastern part. The formations above the basement rocks vary in thickness and may be absent from samples from different parts of the county. The geologic formations and their properties are listed in table 3. A geologic cross-section of the Study Area is shown in figure 8. Figure 9 shows the surficial geologic formations within the Study Area.

Topography

St. Mary's County is located on the Western Shore of Maryland near the confluence of the Patuxent and Potomac Rivers with the Chesapeake Bay. The Patuxent River and the Bay form the eastern boundary of the county and the Potomac River forms the western and southern boundary. St. Mary's County is bordered on the north by Charles County.

St. Mary's County lies completely within the Atlantic Coastal Plain. There are two topographic features evident in the county. The upland plateau, in the central portion of the county, is moderately dissected and ranges in elevation from 170 feet in the northwestern portion of the County to about 70 feet in the southeastern section. Slopes bordering creeks in the upland plateau

Table 3. Geologic Formations in St. Mary's County. (Source: Ferguson, 1953).

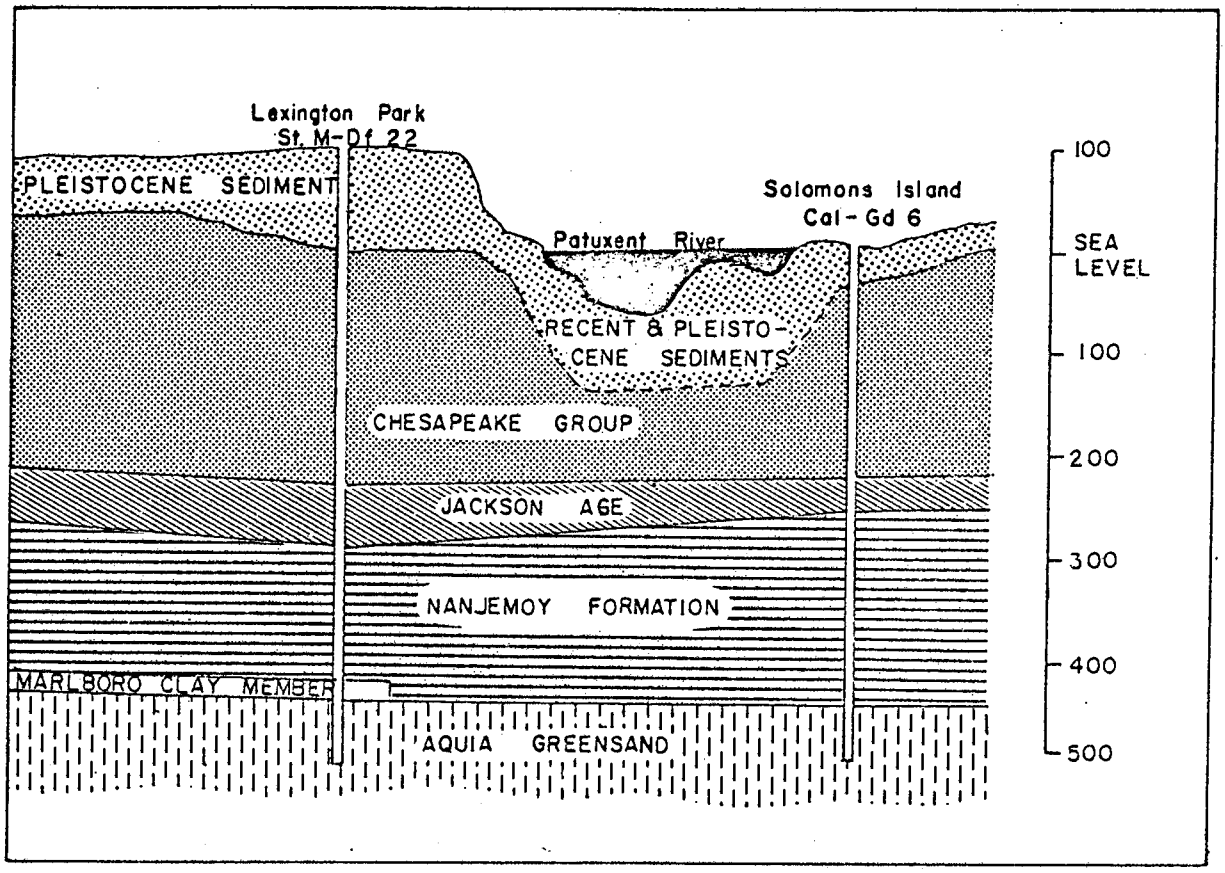
System	Series	Group	Formation	Thickness	General Character	Water-bearing Properties
Quaternary	Pleistocene		Lowland Sediments	1-150	Gravel, sand, silt, and clay.	Yields water to dug wells and locally to deeper drilled wells. A potential source of artesian water from basal water-bearing gravel
			Upland Sediments	0-100	Gravel, sand, silt, and clay.	Chief source of water for shallow domestic and farm wells.
Tertiary	Miocene	Chesapeake	St. Mary's formation	0-50±	Fossiliferous sandy blue clay.	Probable source of water for some small domestic wells in southern part of county.
			Choptank formation	30-100±	Very fine sandy clay.	Not a water-bearing formation in St. Mary's County.
			Calvert formation	150±	Gray and greenish-gray distomaceous sandy clay. 10-20 feet of sand locally present at base.	Yields water locally from basal sand.
	Eocene		Sediments of Jackson age	0-60	Gray sand and some glauconite, with intervedded indurated calcarous layers.	Excellent source of water for small domestic wells. Main source of water for small domestic drilled wells in eastern and southern sections of county.

Table 3. (Contd.)

System	Series	Group	Formation	Thickness	General Character	Water-bearing Properties
		Pamunkey	Nanjemoy for formation	150-200	Highly glauconitic dark greenish-gray clayey sand; tough red or gray clay at at base (Marlboro clay member).	Locally an excellent source of water for drilled wells. Generally forms a single water-bearing unit with overlying sediments of Jackson age.
Tertiary	Eocene	Pamunkey	Aquia greensand	100+	Glauconitic yellowish-brown medium sand.	Main aquifer utilized in St. Mary's County. Yields small to large quantities of water for domestic, public and industrial supplies.
	Paleocene		Brightseat formation	50±	Dark-gray, micaceous, silty and and sandy clay.	Not considered a water-bearing formation.
Cretaceous	Upper		Monmouth formation	100+	Gray to dark-gray, glauconitic, micaceous silty and sandy clay.	Probably not an important water-bearing formation; a few wells in adjacent counties yield moderate supplies from lenticular sands.
			Matawan formation			
			Magothy formation		Irregularly-bedded sand, clay, and sandy clay.	Two wells in St. Mary's County tap the uppermost part; potentially an

Table 3. (Contd.)

System	Series	Group	Formation	Thickness	General Character	Water-bearing Properties
			Raritan formation	500+		excellent water-bearing formation.
		Potomac	Patapsco formation		Sand, gravel, variegated clay, and sandy clay.	Not utilized in St. Mary's County, potentially an excellent water-bearing formation.
			Arundel Clay	1500-2500		
	Lower		Patuxent formation			
Pre-Cambrian					Chiefly schist, granite, and gneiss in outcrop area.	Not considered a water-bearing formation in St. Mary's County.



SOURCE: MARYLAND GEOLOGICAL SURVEY, 1953

A CROSS SECTION OF THE GEOLOGIC FORMATIONS WITHIN THE STUDY AREA

FIGURE 8

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

GEOLOGIC FORMATIONS

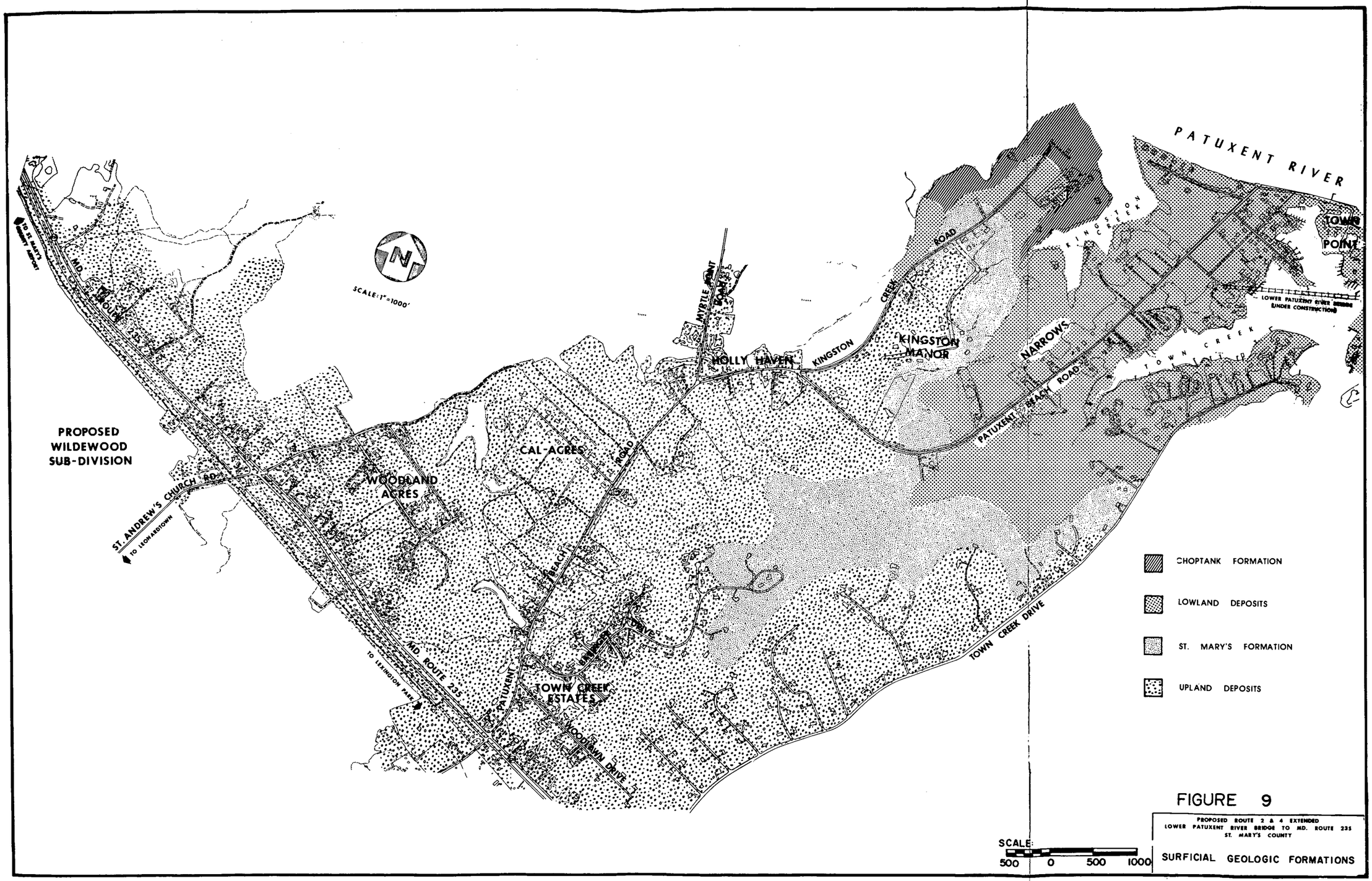


FIGURE 9

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

SURFICIAL GEOLOGIC FORMATIONS

See NOTES Throughout This Section. 63

range from 9% to 35%. The Plateau is bordered by a low, flat plain, which lies between sea level and 50' in altitude. It is best developed along the Potomac River and Chesapeake Bay, and is absent along portions of the Patuxent River. Slopes are generally less than 5%.

Maryland Route 235 marks the approximate drainage divide in St. Mary's County. Streams south and west of the divide are the larger streams of the county, and they may be tidal for several miles above their confluence with the Potomac River. These streams are low gradient. Streams north and east of the divide drain into the Patuxent River. They are relatively short and occupy valleys of steep gradient. Topographic features of St. Mary's County are shown in Figure 10.

Soils

The Soil Conservation Service (SCS) of the U.S. Department of Agriculture has analyzed soil samples from St. Mary's County. These are to be compiled in a county-wide soil survey for publication in 1977. For the purposes of this study, direct contact was made with the SCS office in St. Mary's County. In addition, the Soil Survey of Charles County (SCS, 1974) was used.

There are two major soil associations within the Study Area; the Matapeake-Mattapex-Sassafras Association and the Sassafras-Beltsville Association. These associations are named by those major soil types which occur in each. Thus, the first soil type in an association makes up the greatest portion of the association, the second name is the next major constituent and so on. There

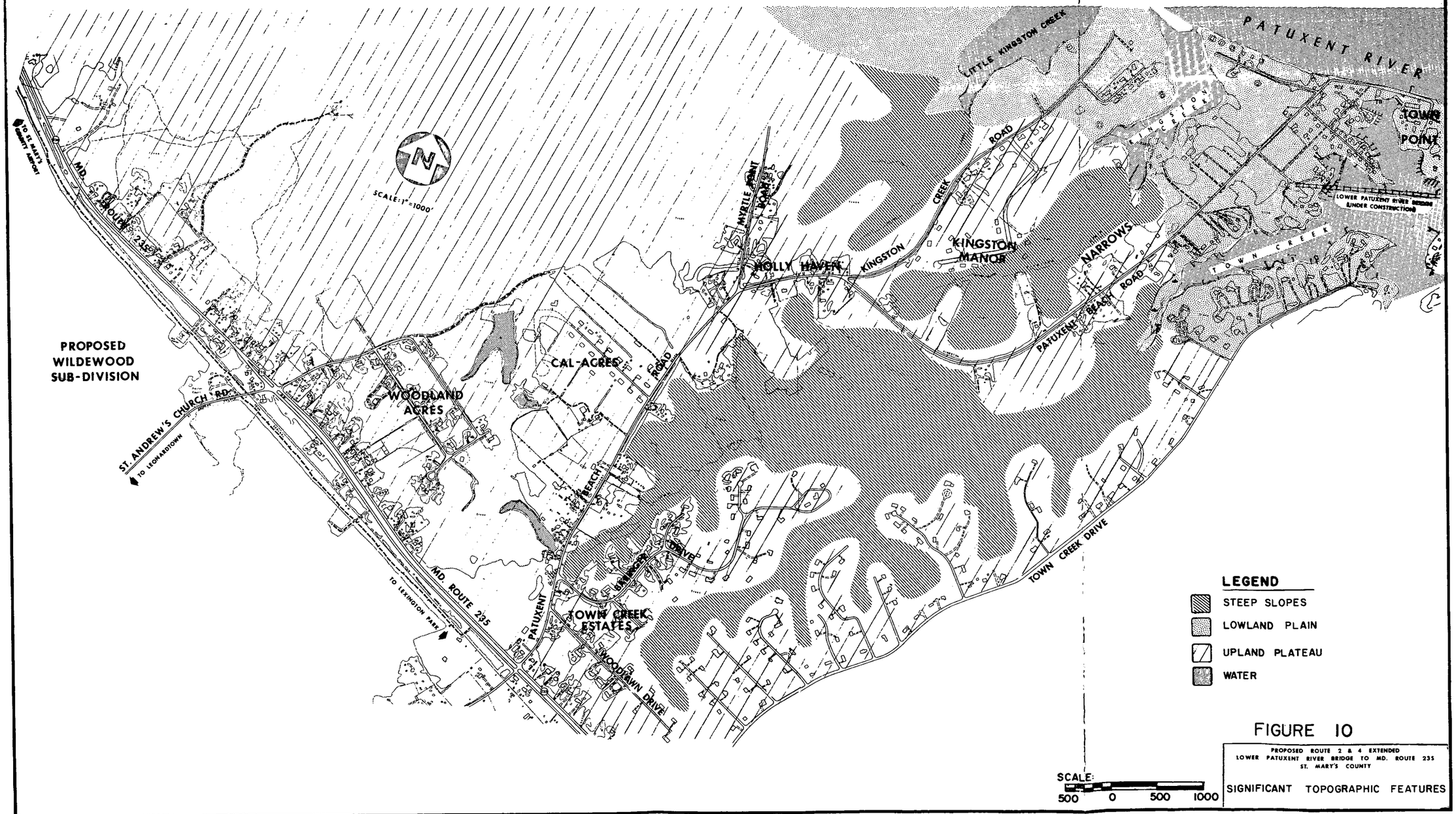


FIGURE 10

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

SIGNIFICANT TOPOGRAPHIC FEATURES

may also be minor soil types in each association. Physical and engineering characteristics of the soils in the Study Area are listed in Table 4.

The Matapeake-Mattapex-Sassafras Association is found along the lowlands bordering the Patuxent River. This association is underlain by a sandy substrate and is subject to a seasonally high water table. Matapeake soils are found along the terraces of rivers and streams and also on uplands. They are deep, well drained, level to moderately sloping soils. Matapeake soils have a high available moisture capacity. Mattapex soils are found in the low-lying areas bordering rivers and streams. These soils are deep, moderately well drained and level to moderately sloping. Mattapex soils have a high available moisture capacity and moderately slow permeability. A high water table is present in winter and spring. Sassafras soils are found on uplands. They are deep and well drained soils which are level to moderately sloping. These soils have a moderate available moisture capacity and have moderate permeability.

The Sassafras-Beltsville Association is found on the upland plateau portion of the Study Area. This association is underlain by a slowly permeable fragipan*. The Beltsville soils are moderately deep, moderately well drained and nearly level to moderately

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* fragipan - A dense and brittle pan or layer in soil that owes its hardness mainly to extreme density rather than to high clay content or cementation. Removed fragments are friable, but the material in place is so dense that water moves through it very slowly.

Table 4. Physical and Engineering Characteristics of Soils in the Study Area (Source: Soil Survey, Charles County, Md. SCS, 1974).

Soil Type	Depth to High Water Table (ft.)	Depth from Surface (in.)	Permeability (in./hr.)	Available Water Capacity (in./in. of soil)	pH
Beltsville	1.5 - 2.5	0 - 54	.20 - 2.0	.10 - .24	4.0 - 5.0
Matapeake	4	0 - 60	.20 - 6.3	.06 - .24	4.5 - 5.5
Mattapex	1.5 - 2.5	0 - 72	.20 - 6.3	.06 - .24	4.0 - 5.5
Sassafras	4	0 - 38	.63 - 6.3	.12 - .24	4.0 - 5.5

Soil Type	% Slope	AASHE Rating	Erodibility	Shrink - Swell Potential
Beltsville	0 - 10	A-4 - A-6	Negligible - Severe	Low
Matapeake	0 - 10	A-2 - A-7	Negligible - Severe	Low
Mattapex	0 - 12	A-2 - A-6	Negligible - Moderate	Low
Sassafras	0 - 15	A-2 - A-6	Negligible - Severe	Low

sloping. They are strongly acidic and slowly permeable with a fragipan usually less then 30 inches below the surface. The moisture content of the Beltsville soils is variable throughout the year. The Sassafras soils have been described above.

Another rating of soils was prepared by the Maryland Department of State Planning in 1973. This report placed soils into Natural Groups based on their capabilities for many land uses. This system has forced generalizations for specific soils within the groups, but the system is a useful tool for general planning. These Natural Soil groups will be used in the impacts evaluation, and are shown in Figure 11. The soils within the Study Area fall within three groups. These are the B1, B2, and E2. These are divided further into subgroups according to slopes.

Group B1

Group B1 soils have a silty or loamy surface with a clay subsoil. They are well drained with moderate to moderately rapid permeability. The B1 group has a high available moisture capacity and very few rock fragments. There are two subgroups within the Study Area. Subgroup B1a has slopes of less than 10%, while subgroup B1b has slopes from eight to 15%. The only problem facing road construction on soils of the B1 group is the moderate erosion problem of subgroup B1b.

Group B2

This is the soil group which occupies the area of our present concern.

Group B2 contains acid soils which are well drained in spite of slowly permeable layers beneath the surface. Permeability is moderately slow and the available moisture capacity is moderate or,

i.e. greater potential for the sheet runoff from the road surface to reach the stream.

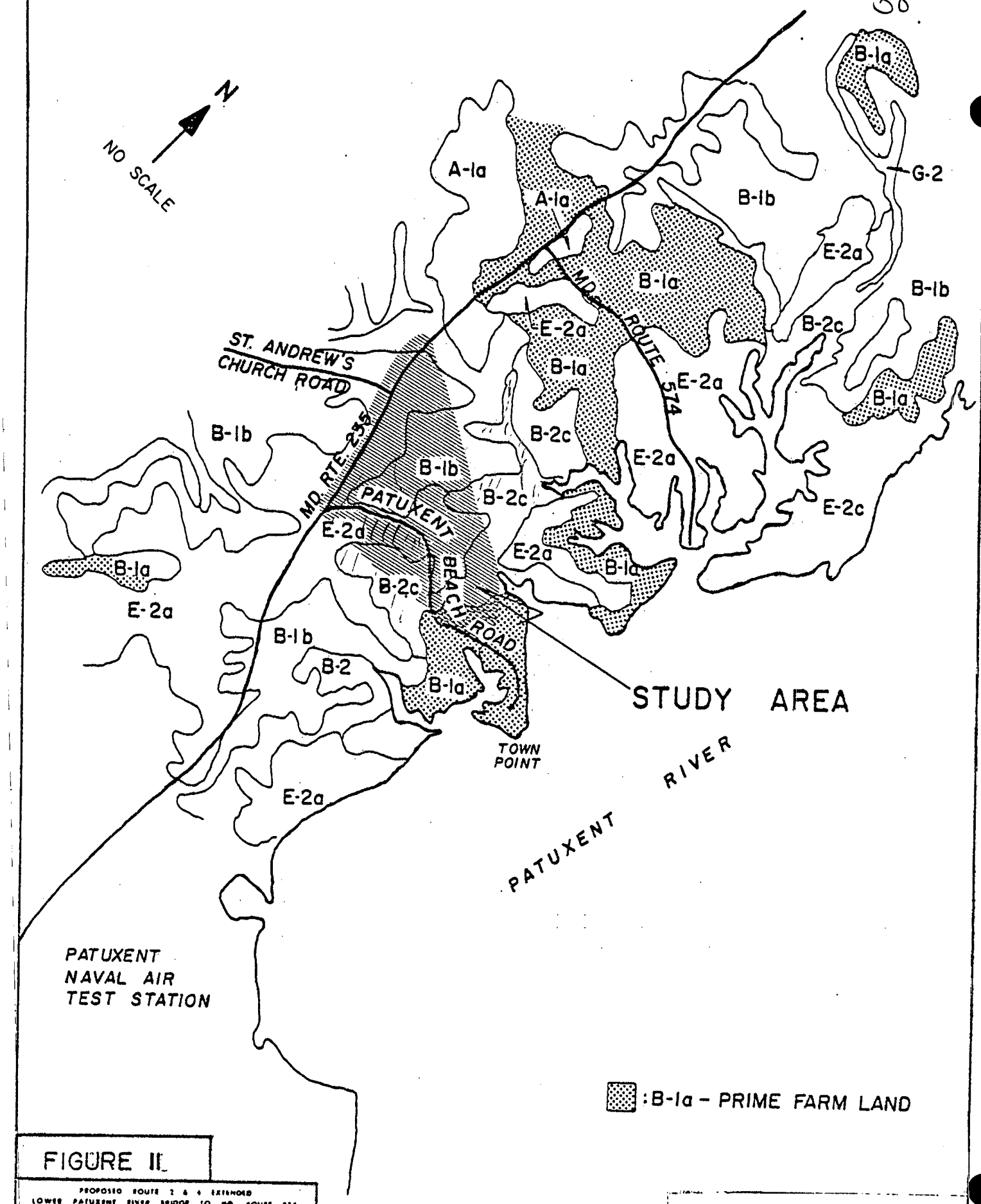


FIGURE II

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD ROUTE 235
ST. MARY'S COUNTY

NATURAL SOIL GROUPS

if the scils have been severely eroded, low. The only subgroup which occurs in the Study Area is B2c. These are soils of greater than 15% slope and therefore present a severe problem to road construction.

Group E2

Group E2 soils are strongly acid and generally wet for a large part of the year. They have a perched water table because of a clayey hardpan subsurface. E2 soils are highly susceptible to frost action and to erosion. Subgroup E2a is found within the Study Area and this type presents special problems to road construction. Excavations made in the spring are likely to fill with water because of lateral seepage over the hardpan. Also, road cuts are likely to have continual seepage problems.

Hydrology

Water Supply

St. Mary's County is underlain by deposits consisting chiefly of sand, gravel and clay. The principal aquifers used for water supply in the County are the Aquia Greensand and Nanjemoy/Jackson complex (Nanjemoy formation and Jackson age sediments), both containing water of generally satisfactory quality. Most wells within the Study Area tap the Nanjemoy/Jackson formation, with a few shallow, dug wells tapping the Pleistocene formation.

Much of the Study Area is served by the Town Creek Water Company, which obtains its water from six wells in the Town Creek vicinity. These wells range in depth from 300 to 378 feet. Water from these wells is chlorinated prior to distribution to the Town

Creek Water Company customers. The depths of these wells indicate that all six draw from the Nanjemoy/Jackson aquifer. Other residents of the Study Area not served by the Water Company draw from shallower, individual wells.

Surface Water Flows

The water budget for the lower Patuxent River Basin is characterized by 43.4 inches (366 mgd)* average annual precipitation, with 20.5 inches (173 mgd) leaving as runoff and the remaining 22.9 inches (193 mgd) comprising evapotranspiration and consumptive uses. Groundwater recharge is included in the runoff total. It has been estimated that the average recharge to the aquifers of St. Mary's County is about 30 percent of precipitation.

per Forest Service; 60% of rainfall is evapotranspired. That is taken up and held by vegetation with transpiration taking place through leaf surfaces.

No streamflow data are available for any of the streams within the Study Area. For 177 square miles of the lower Patuxent basin, some general ranges of streamflow characteristics have been calculated and are presented in Table 5.

The Patuxent River is the receiving body of water for the four streams draining the Study Area: Town Creek, Kingston Creek, Little Kingston Creek, and Mill Creek. These creeks all form wide embayments at their mouths. Above the limits of tidal influence, these streams rapidly diminish in size, becoming intermittent in much of their headwaters sections. During dry periods, any streamflow evident derives almost exclusively from groundwater discharge.

The topography of the Study Area is characterized by low hills dissected by comparatively steep stream valleys. Drainage

*mgd - million gallons per day

Table 5. General Runoff Characteristics of Streamflow in the Lower Patuxent Drainage Basin (Crooks, et al, 1967).

	Low Flow (99% duration) mgd/mi.^{2}	Average Flow^1 mgd/mi.^{2}	HighFlow (1% duration) mgd/mi.^{2}
Groundwater	0.084 to 0.140	0.35 to 0.43	0.56 to 0.59
Total Runoff	0.084 to 0.140	0.89 to 1.07	4.85 to 5.40

[1]About 50 percent duration for contribution by groundwater and about 30 percent duration for total runoff.

is both rapid and effective, resulting in little natural accumulation of surface water. Three artificial impoundments are located within the Study Area; one at the headwaters of Town Creek, and two in the headwaters section of Mill Creek. Information regarding these three impoundments was supplied by the St. Mary's County Soil Conservation Service. The privately-owned impoundment in the Town Creek headwaters is in excess of 20 years old. Although no data are available on water quality, no pollution is evident. Water supply is from surface runoff and springs. The two impoundments at the headwaters of Mill Creek, in the Cal-Acres development area, were constructed as farm ponds by the St. Mary's SCS, at the time of excavation. These ponds are characterized as follows:

	Smaller Pond	Larger Pond
Surface Area	1/2 acre	3+ acres
Maximum Depth	6' at dam	9' at dam
Minimum Depth	3'	0'
Water Supply	Runoff/Springs	Runoff/Springs
Date of Construction	1971	1966
Breastwork	Earthen	Earthen

Overflow from both ponds is via coated corrugated metal pipes. Although no data are known to exist, water quality in both appears adequate to support fish and other aquatic life (invertebrates and aquatic macrophytes). The larger pond is apparently suffering from accelerated rates of siltation resulting from vegetation removal and land disturbances in the adjacent Cal-Acres development.

Primarily as a result of the good drainage and relatively high topography, flooding is not a problem in the Study Area. Hazard areas have not as yet been completed for the Study Area. Until such mapping is complete, the U.S.G.S. Flood Plain Management Section considers the highest recorded tide (maximum recorded high water) to be approximately synonymous with the 100-year frequency flood. To compute the extent of the Study Area thus affected, records from the National Ocean Survey's recording station on Solomon's Island (Directly across the River from the Study Area) were consulted. The maximum recorded high water level from 1937 through the present (the period of record) was 8 feet, corrected to height above mean low water (average of all low tides for a month, accumulated over a 19-year "reference epoch"),

a figure of 4.57 feet. Due to the relatively high topography of the Study Area and the rapid landward increase in elevation from the River, very little of the Study Area is affected. This small portion of "flood prone" area is shown in figure 17.

Water Quality

Patuxent River

The water quality standards have been established by the State of Maryland. The lower Patuxent River is listed by the Maryland Department of Water Resources, Water Quality Investigation Division, in water use categories I, III and IV. Because of the shellfish harvesting permitted for the lower River (from Deep Landing to the mouth at the Chesapeake Bay), this section of the River (14,804 acres) falls under Group "A" in the bacteriological standards section.

Generally speaking, bacteria, dissolved oxygen (DO), and nutrient levels (nitrogen and phosphorus) in the lower River in the vicinity of the Study Area are satisfactory; however, some deterioration has been detected in recent years.

Approximately 0.7 percent of the Patuxent River shellfish harvesting area (106 of the 14,804 acres) has been closed recently due to high levels of bacteria. This area is located directly across the River from the Study Area, in the embayment behind Solomon's Island, and includes the mouths of Back Creek, Mill Creek and St. John Creek. Conditions in the middle and upper River have deteriorated, and low DO's, high coliform counts, high nutrient levels, and high BOD's* are often encountered, especially

*BOD - Biochemical Oxygen Demand

near the large wastewater outfalls between Laurel and Bowie, Maryland.

Similar localized deteriorations of water quality have been identified from other point sources in the upper and middle River, resulting in recent excessive algal blooms (in response to increased nutrient levels) in the upper estuary (Metzgar, 1973). Similar blooms have been reported in the lower Patuxent.

At present, there are no water quality standards for sediment, and turbidity is not considered to be a pollutant unless it interferes with the beneficial uses of the water.

The Patuxent estuary contains a turbid sediment trap which occurs at the head during periods of high freshwater discharge or in the central portions of the estuary at all other times. Sedimentation is a historical and continuing problem of major importance in the Patuxent River basin which has effected both navigation and aquatic organisms (McElroy, 1975). A wide variety of estuarine organisms may be adversely affected by high sediment loads. Shellfish areas require the presence of suitable substrate for their maintenance, and can be severely disrupted if they are coated with sediments. Many planktonic larvae of benthic organisms are sensitive to sediment characteristics during settling, and will not establish in unsuitable areas. Filter feeding organisms, both benthic and free-swimming are adversely affected by sediment loading since it directly interferes with their feeding efficiency.

For the shoreline of St. Mary's County, erosion and deposition rates have been calculated for the 5.3 miles of shoreline upstream from Town Point and the 5.4 miles downstream. These figures are presented in Table 6 for a 94-year period through 1973. In this 10.7 mile stretch of the Patuxent, net erosion has been nearly cancelled by net deposition. The Patuxent River is listed on the State of Maryland Scenic River System.

Table 6. Shore Erosion in St. Mary's County (Source: U.S. Army, 1973b).

Locality	Time Internal (Years)	Miles Measured	Erosion (Acres)	Deposition (Acres)	Net Loss (Acres)	Rate of Loss (Ac/Mi)	Annual Rate of Loss (AC/Mi/Yr)
PATUXENT RIVER							
Harper Creek to Town Point	94	5.4	24	23	1	0	0
Town Point to 1 mile northwest of St. Cuthbert Wharf	94	5.3	35	17	18	3.3	0.03

Information on heavy metal concentration in the lower River is limited. However, present indications are that heavy metals do not constitute a threat to water quality at the present time, and are comparable to levels in other major North American Rivers.

Study Area

The Maryland Water Resources Administration reports no data available for water quality in streams draining the Study Area, and no data are known to exist from other sources. Observations by technical staff in 1976 failed to detect any gross evidence of pollution, but physico-chemical determinations were not conducted.

Study Area Streams

As mentioned previously, all streams in the Study Area are small, and become largely intermittent rather quickly after gaining sufficient landward elevation to escape the influence of water levels of the Patuxent. Owing to the comparatively steep topography which results in rapid runoff following precipitation, siltation is likely to be the most serious limitation on water quality of streams in the Study Area.

Biology

Aquatic Biology

The Fisheries Administration, Maryland DNR, has conducted anadromous fish surveys of the Patuxent River mainstem and mouths of various tidal tributary streams from 1966-1970. Species collected from the River mainstem are listed in Table 7. Fish species collected from mouths of 20 tributary systems are summarized in table 8. This is a composite list, with regard to particular streams surveyed, and is meant to characterize the assemblage of species to be expected in tidal tributaries. No streams in the Study Area were sampled in preparing this list.

Table 7. Anadromous Fish Species Reported from the Patuxent River Mainstem, 1966-1970. (Md. DNR, Fisheries Administration, 1976).

Species	Common Name
Alosa pseudoharengus	Alewife Herring
Alosa aestivalis	Blueback Herring
Alosa mediocris	Hickory Shad
Alosa sapidissima	American Shad
Morone saxatilis	Striped Bass
Morone americana	White Perch
Perca flavescens	Yellow Perch

Four of the seven anadromous species reported from the River were also recorded from the tidal mouths of the selected tributary streams. Striped Bass and Hickory and American Shad were not reported from any of the tributary streams, but it is expected that they also could be found in at least certain tributary streams for at least part of the year for spawning purposes.

Table 8. Anadromous Fish Species Reported from the Tidal Mouths of 20 Streams Tributary to the Patuxent River, 1966-1970. (Md. DNR, Fisheries Administration, 1976).

Species	Common Name
Alosa pseudoharengus	Alewife Herring
Alosa aestivalis	Blueback Herring
Morone americana	White Perch
Perca flavescens	Yellow Perch

Various non-anadromous resident fish species are also common to the Patuxent River system. These include the Brown Bullhead (Ictalurus nebulosus); White Sucker (Catostomus commersoni); American Eel (Anguilla rostrata), and Chain Pickerel (Esox niger) (Maryland D.O.T., 1975), as well as catfish (various species of the family Ariidae); Mehhaden (Brevoortia tyrannus), and Spot (Leiostomus xanthurus). These last three, together with the Alewife, Shad and Striped Bass already listed, represent a commercial fishery on the Patuxent River which is summarized in Table 9.

Table 9. Summary of Commercial Fish Harvest: Average Annual, 1966-1970 (U.S. Army, 1973b).

Fish	Pounds of Catch*	Value in Dollars* (1966-1970)	1977
Alewives	10	negligible	
Catfish	7	1	Same
Menhaden	5	negligible	
Shad	6	negligible	
Spot	14	2	Same
Striped Bass	125	25 (20/lb)	.56/lb (but catch is dropping and a ban has now been proposed)
Others	98	11	
TOTALS	265	39	

*in Thousands

* Old figures 1977 values were obtained from Fisheries Administration and reflect values as of Nov. 1977.

Finally, a population of undetermined size of bass, sunfish, and probably several additional groups, exists in the impoundments in the Study Area. No data are known to exist which lists the species assemblages, their relative numbers, or their distribution in the ponds.

The Patuxent supports a commercially important industry maintained by crab, clam and oyster harvesting. These three invertebrate groups are harvested primarily from the River itself, as well as the mouths of tidal tributary streams. The economic importance of this industry is even greater than that for finfish harvesting, as shown in a comparison of Table 9 and Table 10.

* Flushing of the marsh system via tidal action provides the nutrition for growth and development of both shellfish & finfish.

Table 10. Summary of Commercial Shellfish Harvest: Average Annual, 1966-1970 (U.S. Army, 1973b).

Shellfish	Pounds of Catch	Value in Dollars[1] (1966-1970)	1977
Crabs	65,000	7,000	10.1¢/lb	~~70~~ .29/lb
Clams	85,000[1]	23,000	27¢/lb	1.62/lb
Oysters[2]	746,000[1]	470,000	.63/lb	1.05/lb.
TOTAL	896,000	500,000		

[1]As pounds of meat

[2]Seed oysters included in value, but not in weight.

Wetlands represent a very important interface between the terrestrial and aquatic systems and may be influenced by changes in either. All of the wetlands of the Patuxent River are a valuable natural resource. They are heavily used by wildlife,

The area along the creek would be used for movement of terrestrial wildlife to and from the marsh area. Especially when stream is intermittant and thus dries

especially waterfowl. They are essential in the life history of many estuarine and marine organisms. Marsh detritus forms the basis of much of the estuarine food web, and marshes act as sediment and water traps protecting the shore zone. Marshes are also highly sensitive to disturbances, particularly dredging and filling. The unique vegetation of marshes is dependent upon their unique elevational character, and any change in this factor may lead to their replacement by other vegetation types. Such alterations often require years to disappear. – if at all.

In St. Mary's County, 132 wetland locations of five acres or more, totalling approximately 4,500 acres have been inventoried. No wetlands in the Study Area are included in this inventory. During the course of field survey work, technical personnel identified a small (less than five acres) freshwater marsh on Kingston Creek, just above the reach of the estuarine portion of the Creek (figure 17.) This is the only wetland in the study area. The vegetation consists primarily of cattail, rushes, sedges and knotweed. This wetland is probably Type 12 (Coastal Shallow Fresh Marsh).

The Wetlands Permit Section of the Water Resources Administration (Maryland DNR) has confirmed the existence of this tidal marsh, which has been estimated to contain 21,000 square feet. They further recommend that this marsh be avoided, if possible. If not, necessary authorizations and permits must be obtained from the Maryland Board of Public Works and the U. S. Army Corps of Engineers.

Up to a point! There is a definite carrying capacity involved in performing these functions. To great a burden will incriminate success on turning the marsh into an upland site. Upland sites cannot provide the steady flow of nutrition needed by aquatic life

While the marsh is small, so is the watershed which drains to it. Thus changes in the watershed need not be large to create changes in the marsh ecosystem.

post 1/3 acre

Could be a long process. Longer than it may take to initiate our proposed measures.

Terrestrial Biology

The vegetation pattern in the Study Area reflects the topographic variation which is evident in St. Mary's County. There are specific forest communities found along the creeks, steep slopes and uplands. Most of the uplands have been cleared in the past for agricultural purposes and today are either cultivated or abandoned. The extent and location of each community type is shown in Figure 12. Ornamental species are generally native trees or shrubs which were not removed when houses were constructed.

Forests on steep slopes have been relatively undisturbed because of their unsuitability for agricultural use. These steep sloped forests support mature hardwood stands dominated by oaks and hickories. Large beech and yellow poplar trees are common associates. The understory usually includes holly and dogwood. Laurel and rhododendron are locally abundant.

Pine forests have become established on abandoned upland sites. Typical Coastal Plain hardwoods usually are interspersed with the pines. Two species of pine, loblolly pine and Virginia pine, are common. Chestnut, white, red, southern red and blackjack oaks, sweetgum, red maple and yellow poplar are frequently encountered hardwood species on upland areas. Edges of upland forests often produce a hearty growth of vines and shrubs in response to more abundant sunlight.

True bottomland forests are generally not very extensive because of their close proximity to steep slopes. Where they are found, bottomland vegetation consists mainly of river birch,

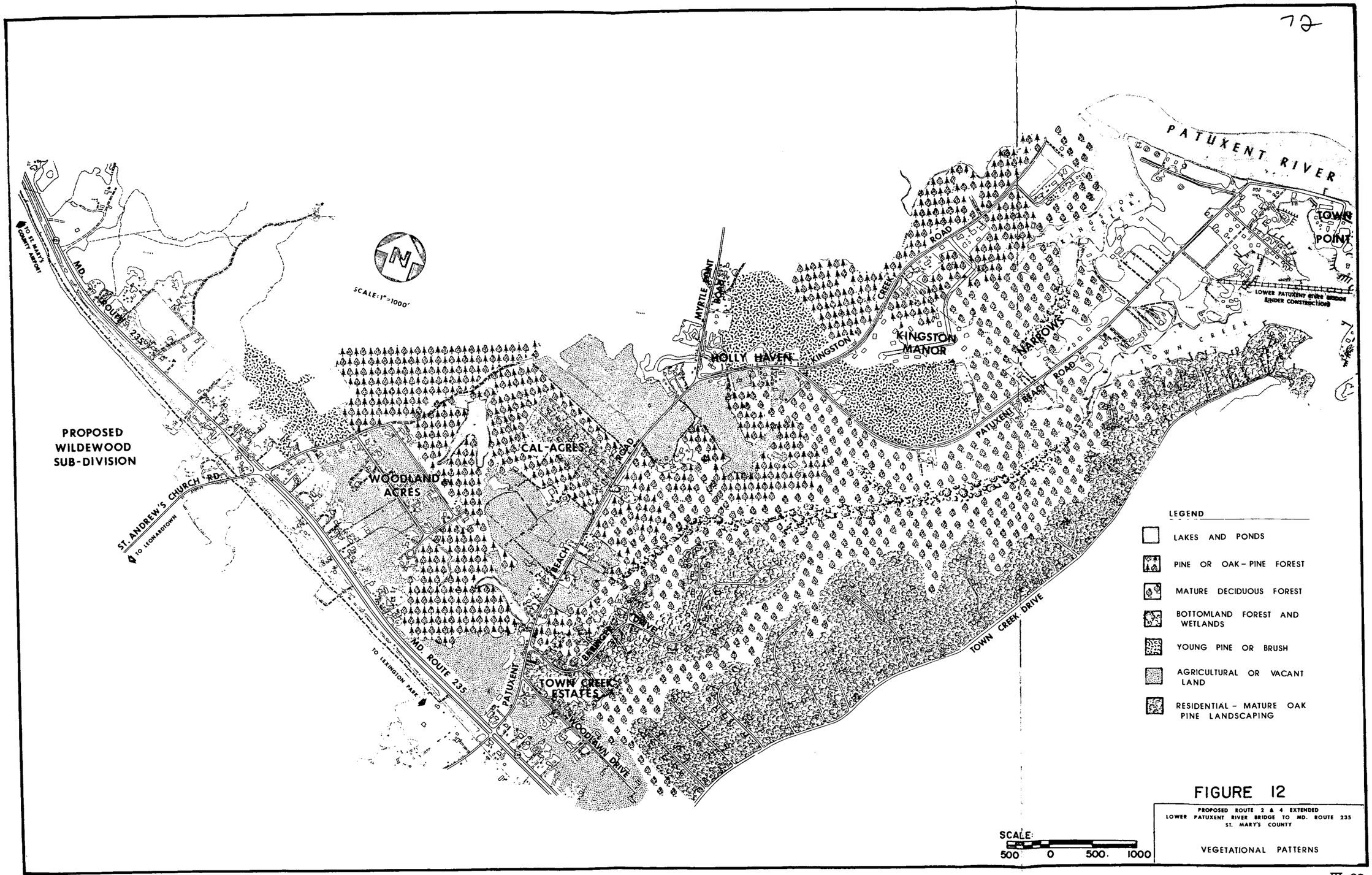


FIGURE 12

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

VEGETATIONAL PATTERNS

red maple and sweetgum along with some sycamore and yellow poplar.

Ground cover throughout the forested area consists mainly of ground pine, virginia creeper, honeysuckle, some grasses, and numerous herbs.

The forests along steep slopes are continuous and extensive. Trees are very large with heights reaching approximately 120 feet. Diameters of some of the largest trees were estimated to be approximately 30 inches. The average diameter of canopy trees on forested slopes was estimated between 15 and 18 inches. Forests of this magnitude have a pleasant appeal to those who desire an escape from their daily routine. — They also have appeal to the organisms which depend on them for more than merely aesthetic reasons.

Approximately 35 species of mammals may occupy the diverse habitats in the Study Area. Most are small mammals including mice, rats, shrews, voles and bats. Important game species in the Study Area are western? cottontail rabbits, squirrels and white-tail deer.

Reptiles and amphibians occupy several habitats. The non-brackish reaches of Kingston Creek and Town Creek provide habitats for frogs and toads and banded water snakes. Woodland habitats are available for box turtles and other forest reptiles. Seepage along ravines are an appropriate habitat for salamanders. Small ephemeral ponds are infrequent, so that those salamanders which are restricted to shallow ponds for breeding are scarce. The Study Area is within an important flyway for migrating birds and also attracts resident species. Upland game fowl include quail and woodcocks. Waterfowl are more abundant, however.

MOST mammals in the study area are small with correspondingly small home ranges. (except for deer). While we should always push for unobstructed passage of wildlife / A better case for stringent mitigation measures should be developed around the hydrological effects on the MARSH brought about by channeling and piping both groundwater + increased road run off. Prox. 250,000 cubic feet of additional water per year will be flushed through THAT MARSH JUST AS A RESULT of clearcutting for an impervious [illegible]

Mallards, American Widgeons, scaup and black ducks occur regularly in the Lower Patuxent River. The Kingston Creek impoundment provides a sheltered stopover for migrating waterfowl. The marsh creates these beneficial conditions

Extensive undisturbed forests are available for non-game bird species. Brush and vegetation along fence rows and shrubby growth along the edge of woodlands support sparrows, finches and other songbirds.

The United States Department of the Interior (USDI) and the Maryland Department of Natural Resources (DNR) have identified several species of animals as being threatened by extinction. As of July 1, 1976, DNR was in the process of determining if the eastern narrow-mouthed toad was found in the area. This issue was studied by DNR on August 18, 1976 when their field survey was completed with negative results. However, an additional survey will be undertaken in the spring of 1977 to confirm the original results. Other endangered species which may be found in the area are the Southern Bald Eagle, the eastern tiger salamander and the rainbow snake. While these animals have a range which includes the Study Area, habitat may not be available or the population size of the organism may be so reduced that their occurrence in this small area is unlikely.

Noise

The noise environment in the Study Area is determined by its rural character. The lack of any urban factors usually associated with high noise levels would indicate a relatively quiet environment except for locations near existing highways. A total of twenty-one noise sensitive areas have been identified for the build alternates. These are residential properties and are described as follows.

An additional 22 noise sensitive areas have been identified for the No Build Alternate. (See figure 17).

1. A single family residence on the west side of Patuxent Beach Road approximately 250' north of Baringer Drive. Ambient noise consists of traffic noise from Patuxent Beach Road and sounds from birds, wind, etc.
2. Two single family residences on the east side of Patuxent Beach Road, one north and one south of Baringer Drive. Ambient noise is the same as NSA 1.
3. Single family residence 500' north of NSA 2 on Patuxent Beach Road.
4. Single family residence on Baringer Road east of NSA 3.
5. Single family residence on the east side of Patuxent Beach Road 400' north of NSA 3.
6. Two single family residences on Patuxent Beach Road 500' north of NSA 5.
7. Three residences located off of Baringer Drive east of NSA 6.
8. Residential development on Baringer Drive northeast of NSA 7. Only one or two homes in the development would be impacted.
9. Single family residence in the development of Kingston Manor.

10-11. Single family residences on Patuxent Beach Road east of NSA 9.

12. Single family residence on Patuxent Beach Road north of NSA's 10-11.

13-14. Single family residences located at the end of the new Patuxent River Bridge presently under construction, one north and one south of the bridge.

15. Single family residence on the east side of Maryland Route 235. This area would be adjacent to the proposed interchange between Maryland Routes 2 & 4 and Maryland Route 235 of Alternate E.

16. Several single family residences northeast of Maryland Route 235 south of the proposed interchange between Maryland Routes 2 & 4 and Maryland Route 235 on Alternate E.

17. Single family residence in the Cal-Acres development.

18. Single family residence east of Patuxent Beach Road 700'$\pm$ from the intersection of Myrtle Point Road and Patuxent Beach Road.

19. Single family residence on Patuxent Beach Road east of NSA 18.

20. Single family residence south of Patuxent Beach Road in the development of Holly Haven.

21. Single family residence on Maryland Route 235

south of the proposed interchange Alternate F. Ambient noise levels are controlled by traffic on Maryland Route 235.

Figure 17 in this section indicates the location of each noise sensitive area and its relationship with the recommended alternate. Twenty-two noise sensitive sites occur along the existing Patuxent Beach Road. All are residential uses and are shown in Figure 17.

In order to establish base line data from which to evaluate impact of noise from each alternate including the No-Build Alternate, an ambient noise level measurement survey was conducted at the noise sensitive areas. Ambient noise levels in the Study Area are in general low, representative of the rural character of the area. Exceptions to this occur at the sensitive areas along Maryland Route 235. This highway carries greater volumes of traffic than others in the Study Area and thus generates higher levels of noise. Table 11 presents a tabulation of ambient noise levels at each area.

Aesthetics

The visual quality of the Study Area in the vicinity of Maryland Route 235 is unremarkable. Scattered homes and businesses, interspersed with cultivated fields are located along the highway.

Toward the Patuxent River, however, the character of the landscape changes. The wooded ravines of Town Creek, Kingston Creek and their small tributaries contribute to the scenic quality. Many homes in Town Creek Estates, along Myrtle Point Road and Kingston Road have been sited to afford views of the wooded slopes.

Table 11. Summary of Readings in Noise Sensitive Areas.

Noise Sensitive Area	Time of Measurement	L_{10}
1	11:40 a.m.	63dBA
2	12:45 p.m.	55dBA
3	11:40 a.m.	63dBA
4	12:50 p.m.	46dBA
5	1:10 p.m.	63dBA
6	1:00 p.m.	48dBA
7	12:50 p.m.	46dBA
8	12:50 p.m.	46dBA
9	2:25 p.m.	41dBA
10	1:30 p.m.	55dBA
11	4:00 p.m.	48dBA
12	1:00 p.m.	51dBA
13	10:15 a.m.	58dBA
14	10:15 a.m.	58dBA
15	10:45 a.m.	66dBA
16	10:45 a.m.	66dBA
17	2:00 p.m.	41dBA
18	10:30 a.m.	56dBA
19	11:15 a.m.	54dBA
20	11:00 a.m.	53dBA
21	9:25 a.m.	71dBA
22	11:40 a.m.	63dBA

Table 11. (cont.)

Noise Sensitive Area	Time of Measurement	L_{10}
23	11:55 a.m.	65dBA
24	12:45 p.m.	55dBA
25	12:45 p.m.	55dBA
26	11:40 a.m.	63dBA
27	11:40 a.m.	63dBA
28	12:50 p.m.	46dBA
29	12:50 p.m.	46dBA
30	2:25 p.m.	41dBA
31	12:45 p.m.	55dBA
32	12:50 p.m.	46dBA
33	2:25 p.m.	41dBA
34	12:45 p.m.	55dBA
35	12:45 p.m.	55dBA
36	12:45 p.m.	55dBA
37	12:30 p.m.	51dBA
38	12:50 p.m.	46dBA
39	1:30 p.m.	55dBA
40	4:00 p.m.	48dBA
41	12:30 p.m.	51dBA
42	1:00 p.m.	51dBA
43	1:30 p.m.	55dBA

Patuxent Beach Road near Town Point offers an expansive view across the Patuxent River toward Solomons, Maryland. From the road, the river is nearly hidden from view to within a few hundred feet of the shore. The abrupt approach contributes to the impact on the viewer. The dramatic view includes the span of the Patuxent River Bridge. Sailboats and larger vessels are often a part of the scene.

The river and the creeks are focal points for many of the homes which have been built in the vicinity of Town Point.

MAN-MADE ENVIRONMENT

Existing Land Use

The Study Area is located on the fringe of a linear development pattern which has extended outward from Lexington Park to the northwest along Route 235 (Figure 13). Existing land use reflects this relation. Primary land uses are residential, agricultural, and undeveloped woodland, characteristics of areas experiencing pressures for conversion from lower-intensity to higher-intensity uses.

Residential

Several single-family residential subdivisions are entirely or partially within the Study Area. The most extensive subdivision is Town Creek Estates, which straddles the southwestern boundary of the Study Area. Most of the dwellings in this development are from 15 to 20 years old, and range in value from $30,000 to $50,000. Cal-Acres, which is located in the central portion of the Study Area, is of recent construction, with dwelling units selling in

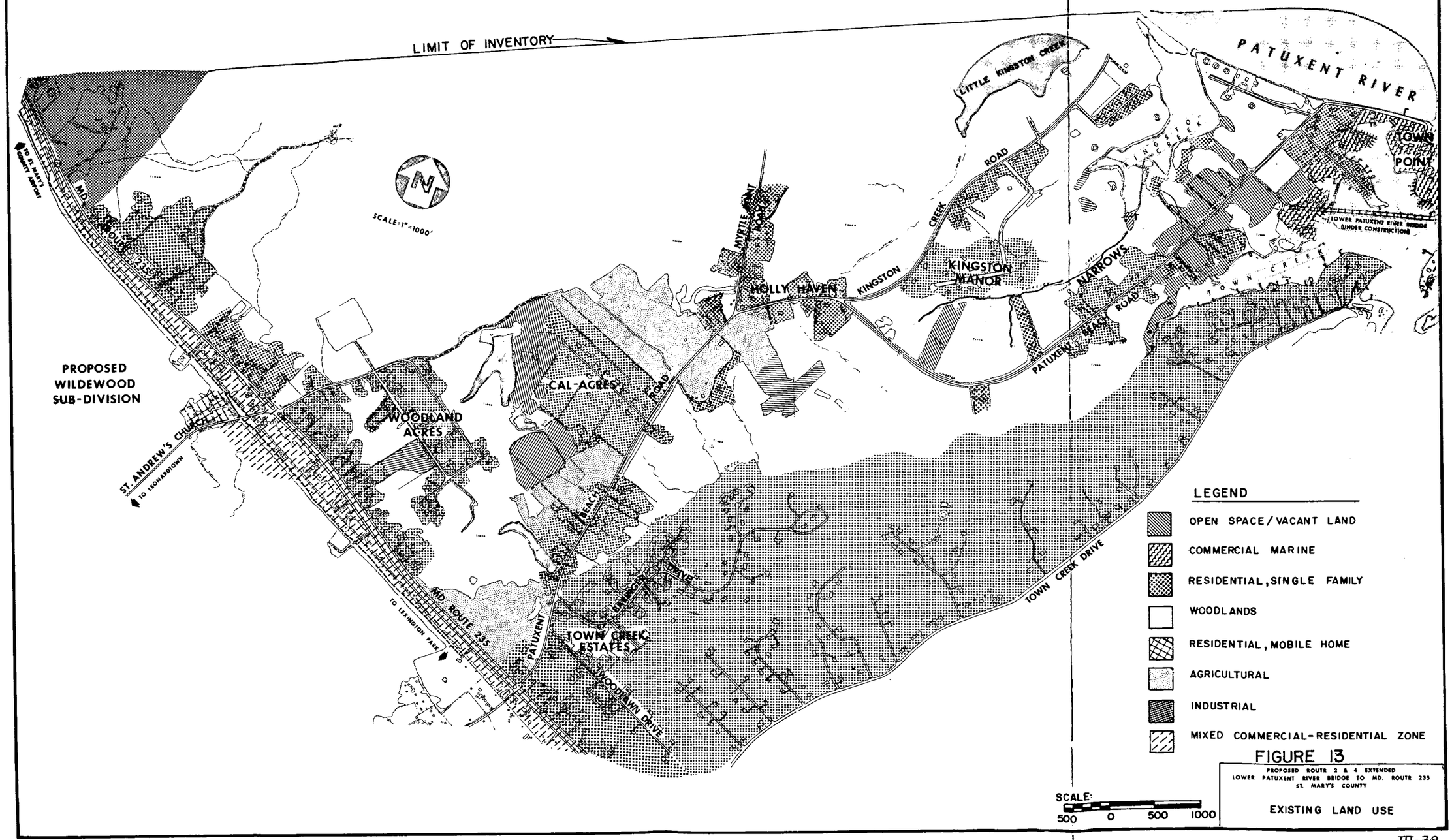


FIGURE 13

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

EXISTING LAND USE

the upper $20,000 to lower $40,000 range. Woodland Acres is situated just inside the northern boundary of the Study Area. The dwellings generally range from 10 to 20 years in age, and are valued from $20,000 to $40,000. Extensive residential development is also found on Town Point. Development consists predominantly of small cottages on small lots, many with river frontage. Dwellings vary considerably in both area and value, with recent sales from $30,000 to $70,000.

Residential development in these areas appears to be virtually complete, with the exception of Cal-Acres. Steep slopes and or lack of available land generally preclude further development.

Scattered residential development adjoins Md. Route 235 along the southwestern boundary of the Study Area. Homes are modest in appearance and from 10 to 20 years in age. Relatively exclusive residences on large lots adjoin Myrtle Point Road, Kingston Creek Road, and their side streams. The Study Area and adjacent regions in Lexington Park generally contain a wide variety of available housing. This is related in part to the transient nature of much of the population.

Commercial

A number of commercial establishments are present on the waterfront, including a marina, restaurant and tavern, and the Seven Gables Hotel, which is not currently operating. Commercial establishments along Md. Route 235 include a mobile home sales business, a fabric shop, and several highway service businesses.

Industrial

Industrial development is confined to a sand and gravel company located near Clark's Mill Road on Md. Route 235. The St. Mary's County Airport is located just outside the western boundary of the Study Area, adjacent to Md. Route 235. A number of industrial subdivisions are under construction across from the airport, just beyond the Study Area boundaries.

Agriculture

Several tracts of cultivated land, totalling approximately 64 acres, are located along Patuxent Beach Road in the central part of the Study Area.

Woodland

Woodland acreage comprises the balance of the Study Area. Estimated woodland area is 985 acres, equal to 53 percent of the total Study Area acreage. The northern part of the Study Area is heavily forested. Forested areas are also found throughout the eastern half of the Study Area, particularly along steep slopes.

Community Facilities and Services

The only major public facility located in the Study Area is a fire station, which is situated along Md. Route 235 mid-way between St. Andrew's Church Road and the St. Mary's County Airport. There are currently no plans to locate additional public facilities in the Study Area.

Community facilities serving or planned to serve residents of the Study Area are identified below:

- A primary school is located on Maple Road, one block off Md. Route 235 along the southeastern boundary of Town Creek Estates. The nearest secondary school is located directly south of the Study Area in Great Mills.
- The County hospital is located in Leonardtown.
- State and County police are headquartered in Leonardtown. The County sheriff has recently opened a branch office in Lexington Park.
- The St. Mary's County Airport is located along Md. Route 235 adjacent to the western corner of the Study Area. The State has designated this airport as a regional facility, and future expansion is planned.
- A small park and athletic field are located along the southeast side of Town Creek Road, just outside the Study Area. The Laurel Grove County Park is located along Md. Route 235 in the Hollywood area, northwest of the Study Area. Land has been and is being acquired for two state parks near the Study Area. A special State Park for the handicapped, encompassing more than 600 acres, is being established along the Patuxent River to the north. A major State Park is being created surrounding the headwaters of the St. Mary's River, located south of the Study Area between Md. Route 235 and Md.

Route 5. Several thousand acres are being acquired. The park will serve as a water catchment area, including a number of water retention ponds.

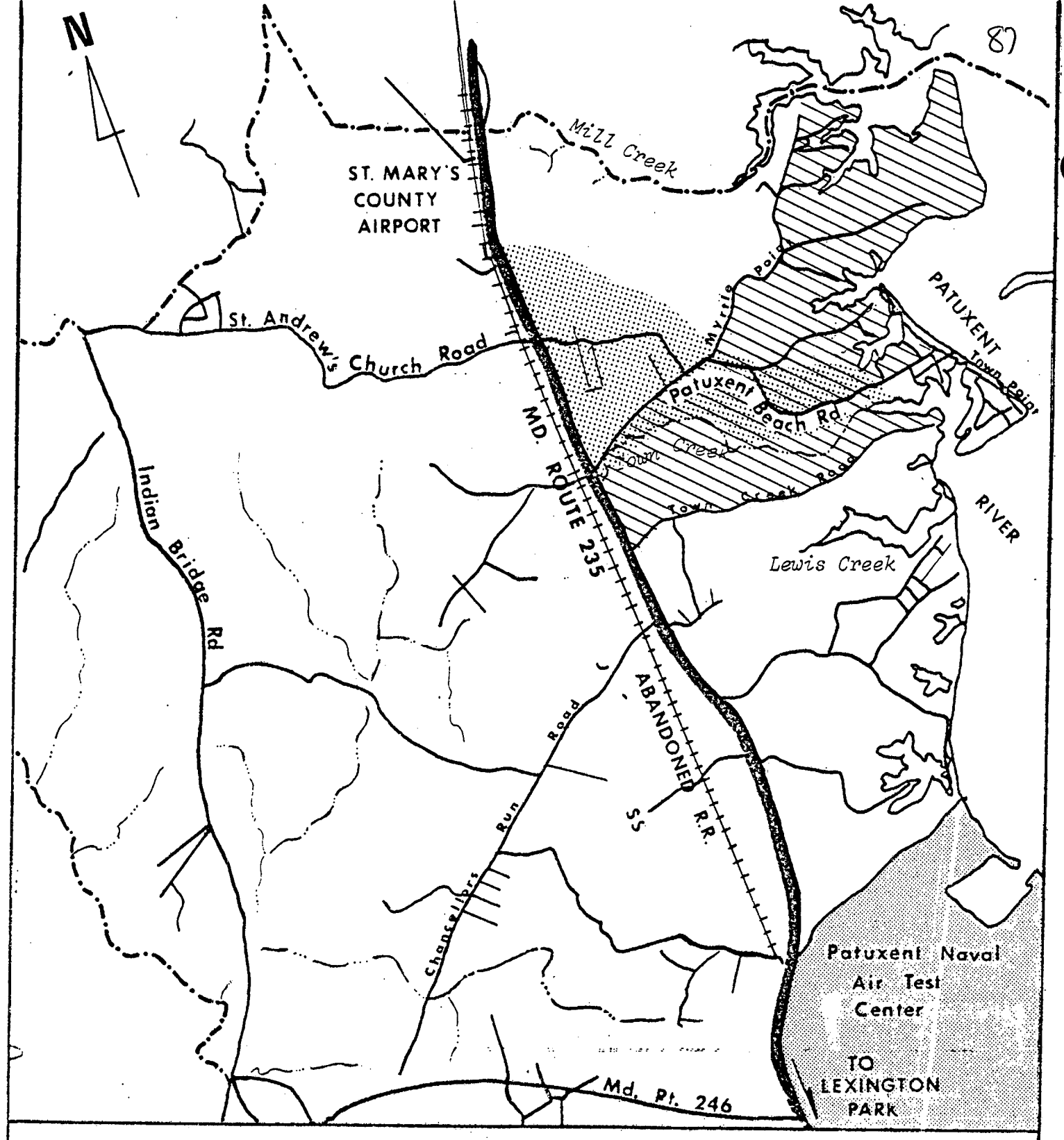
- Much of the Study Area is presently served by the Town Creek Water Company, which obtains its water from six existing wells in the vicinity of Town Creek. The remainder of the Study Area residents obtain water from individually owned wells. A water supply system consisting of a water main and water tower is planned in the Md. Route 235 right-of-way corridor. This proposed system would provide extensions to the Study Area as the demand arises.
- The Study Area is not presently served by a closed sewer system. A proposed system consisting of both gravity and force mains is planned to serve the Town Creek Estates sub-division. A branch from this system is also planned to extend north of Town Creek to serve Town Point. The proposed water and sewer facility plans mentioned above are tentative and would be implemented as the need arises and construction financing becomes available.

Demographic and Economic Characteristics

The land use, demographic and economic effects which are likely to be generated by this project are closely related to the effects of the Patuxent River bridge. Demographic and economic data are not available for an area which conforms to the Study Area. Instead, data have been obtained for Election District VIII, which encompasses both Lexington Park and the Study Area (figure 14). Where possible, data have also been obtained for Census Enumeration District 10, which provides a cross-section of demographic and economic characteristics within the Study Area (U. S. Bureau of the Census, 1975)

The estimated population of the Study Area in 1974 was 2,800. This estimate was based on a housing count of approximately 800 dwelling units and an assumed average household size of 3.5 persons per dwelling unit. Election District VIII encompassed an estimated total population of 20,654 in 1974. The Lexington Park District has grown rather steadily during the past 10 years, increasing in population at a compound average annual rate of 1.7 percent. Although the District lost population between 1970 and 1972, population increased significantly between 1972 and 1974.

Enumeration District 10 (ED10), which lies at the northern end of Election District VIII, provides a representative cross section of the Study Area population. ED10 includes characteristic waterfront and interior residential development, and comprises over 50 percent of the estimated total Study Area population.



NOT TO SCALE

FIGURE 14

LEGEND

STUDY AREA

CENSUS DISTRICT 10

ELECTION DISTRICT 8

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY
ELECTION DISTRICT VIII
CENSUS ENUMERATION DISTRICT 10
BOUNDARY AREAS

Population in this District increased from 1,244 to 1,520 between 1970 and 1974 (Table 12), exhibiting a compound average annual growth rate of 5.1 percent. The study does not include any identifiable minority communities.

Table 12. Population Densities, 1970 and 1974, ED10. (Sources: TCC, 1974; EcolSciences).

	1970	1974
Population	1,244	1,520
Area	2.65 sq. mi.	2.65 sq. mi.
Density	469 people/sq. mi.	574 people/sq. mi.
Occupancy Rate	3.8 people/dwelling	3.5 people/dwelling[1]

[1]Occupancy rate was assumed to decrease at a rate equivalent to the observed rate of decline in the national occupancy rate between 1970 and 1974.

Median family income in the Lexington Park district in 1969 was $8,249, a figure which closely approximated the St. Mary's County median of $8,267. Per capita income in St. Mary's County increased by 29 percent between 1969 and 1972.

Median house value in the Study Area in 1974 - 1975 was estimated within the range from $34,650 to $40,250. Sampling of assessed valuations and sale values of residential property within the Study Area revealed compound average annual appreciation rates in the range from five to nine percent. Such

significant increases in residential property values indicate the increasing attractiveness of residential development in this area. Strong growth pressures have been experienced within the Study Area as development has shifted outward from Lexington Park, moving in a northwestward direction along Route 235. The Study Area appears to be straddling the fringe of this development pattern, where increases in property values are comparatively most significant.

The occupational structure of the Lexington Park District is characterized by higher employment in professional and technical occupations and lower employment in farm occupations relative to St. Mary's County (Table 13). The Lexington Park District

Table 13. Employment by Major Industry, Election District VIII and St. Mary's County, 1970. (Source: TCC, 1974).

Industry	Percent Distribution	
	Election District VIII	St. Mary's County
Manufacturing	4.1	5.0
Non-manufacturing		
Construction	6.4	11.2
Trade	21.3	17.8
Services	15.3	21.7
Transportation, Communication, Utilities	3.1	NA
Finance, Insurance, Real Estate	2.7	2.5
Government (civilian)	45.2	32.7
Agriculture, etc., Forestry and Fisheries	1.8	9.0
Mining	0.0	0.0

encompasses the major share of the County's economic base, largely as a result of the location of the Patuxent Naval Air Test Center (PNATC) in Lexington Park. More than 70 percent of the total income generated in St. Mary's County between 1959 and 1969 has been attributed to the government sector. Over 60 percent of the total government employment was related to the Patuxent Naval Air Test Center, in addition to comparatively high levels of government employment in retail and wholesale trade. Employment in this sector reflects Lexington Park's status as the major commercial district in the County.

Current Status of Comprehensive Planning and Growth Management Controls

St. Mary's County is expected to grow slowly, but at a rather steady rate, during the next several decades, approximately doubling its total population. The Lexington Park District is expected to absorb the major share of County population growth. The growth pressures now apparent within the Study Area can therefore be expected to continue as development extends outward from Lexington Park.

The Comprehensive Plan for St. Mary's County proposes a medium- to high-density urban development district to span the interior of the County from Lexington Park to Leonardtown (Figure 15). Route 235 forms the northeastern boundary of the proposed urban development district. Most of the Study Area lies outside the urban development district and inside a waterfront protection district, where development is planned to be more strictly controlled.

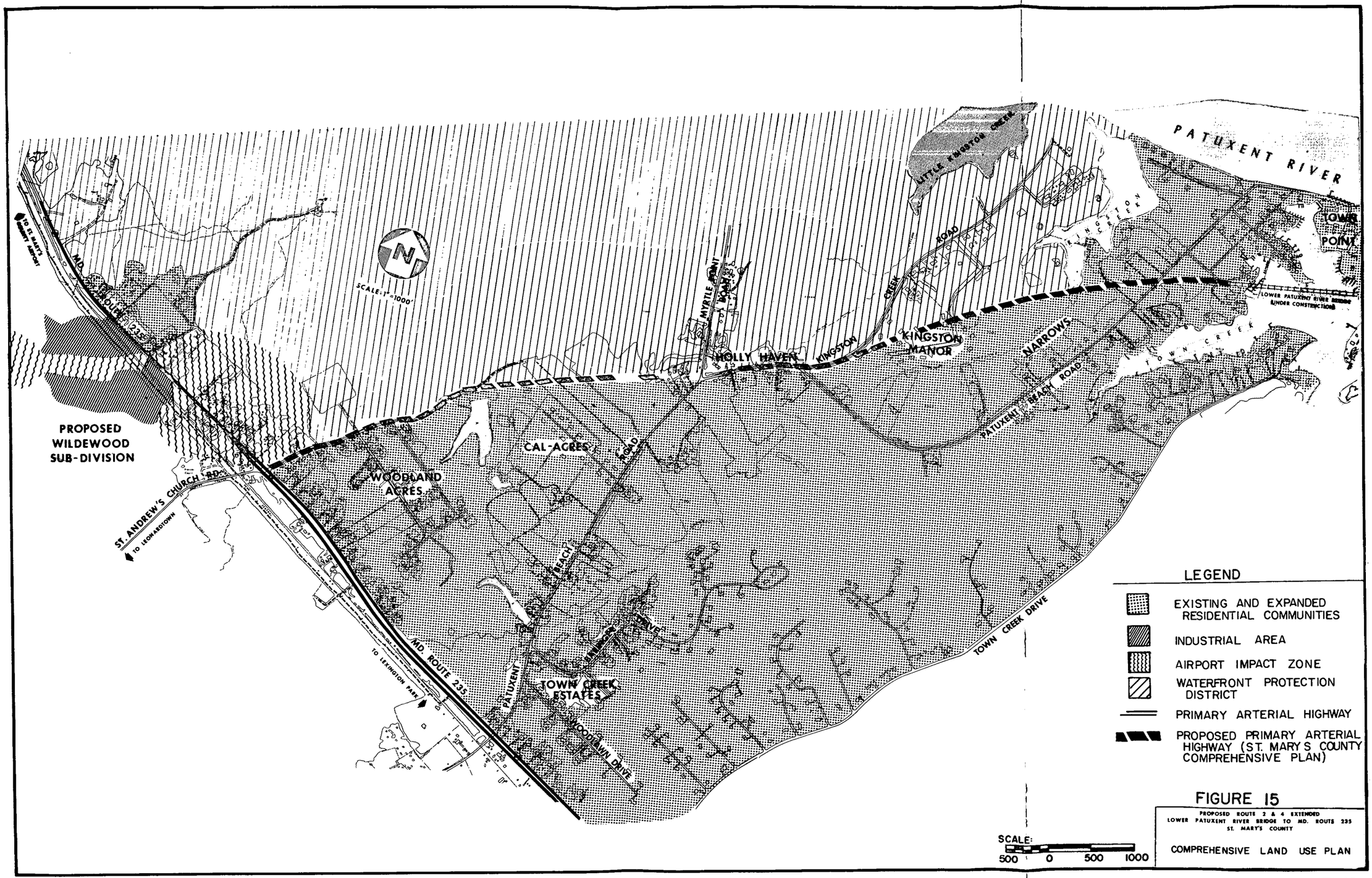


FIGURE 15

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

COMPREHENSIVE LAND USE PLAN

A major objective of the Comprehensive Plan is to contain expected future development within the urban development district, thereby accentuating the consolidation of the County's economic and population bases around Lexington Park. Concentration of future growth around Lexington Park is designed to heighten the range and level of urban services which the area can feasibly provide, thereby improving the quality of life for the resident population and increasing the attractiveness of the area for potential commercial and industrial development. The realization of this objective would be likely to contribute to the diversification of the St. Mary's County economy, improving the long-term economic prospects for the County.

The Comprehensive Plan's objective to contain future development within the urban development district appears unlikely to be realized. The dominant growth pressure in St. Mary's County are currently generated by two major forces. The first is the southward extension of commuter traffic from Charles County into northern St. Mary's County, particularly in the Golden Beach area. The second is the northwestward push of development out from Lexington Park along Route 235, a linear pattern which extends considerably beyond the Study Area. These dominant growth pressures are likely to continue to exert significant development pressures in the foreseeable future. Powerful development controls will be necessary to guide future development in a pattern consistent with the Comprehensive Plan. The Plan calls specifically for severe limitations on future development in the north of the County,

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FIGURE 16

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

EXISTING ZONING

Historic and Archaeologic Resources

Sites of both historical and archaeological significance occur in the vicinity of the Study Area. Three sites are listed on the State inventory maintained by the Maryland Historic Trust. One of these has been identified as worthy of consideration for inclusion in the National Register of Historic Places. Their locations are shown in Figure 17.

Kingston has been identified as potentially eligible for inclusion in the National Register of Historic Places by the Maryland State Historic Preservation Officer. Kingston is a small brick house built in the early 18th century. It has several features that differentiate it from other similar structures along the Patuxent River. The house is L-shaped, one and one-half stories in height and possesses a steeply angled roof with dormer. Narrow chimneys are enclosed within the gable walls.

Depford is a house probably built in the 18th century. The only exterior indication that this house may be of an early date is the brick end wall and flushed beaded weather-boarding. The structure appears to have been completely renovated in the late 19th century.

St. Joseph's Manor House Site is an historic archaeologic site identified by local tradition. The site dates back to the 18th century.

On June 9, 1976 members of the Division of Archaeology, Maryland Geological Survey, conducted a field trip to the Study Area. The survey was an attempt to find and study any archaeological

sites within the area. The survey team concluded that potential archaeological sites may exist along the Patuxent River but that there are no such areas in the immediate Study Area. They further concluded that any sites that may have existed have been destroyed by houses, docks, marinas and by construction of the Lower Patuxent River Bridge. The survey team concluded that construction would have no impacts to archaeological sites. The Maryland Historical Trust in a letter dated March 1, 1977, indicated that the proposed project will have no effect on any historical sites.

ENVIRONMENTALLY SENSITIVE AREAS

Environmentally sensitive areas are those containing valuable natural and/or cultural resources. In the continuing planning and development of an area, preservation of these resources is an important consideration. Development or disturbance of certain environmentally sensitive areas may result in significant environmental, social and economic costs. Loss of environmentally sensitive areas to development often represents irretrievable loss of limited, non-renewable resources. Many environmentally sensitive areas are also important recreational resources. Natural, scenic and historic areas which merit protection provide ideal opportunities for passive recreation. Environmentally sensitive areas, as they pertain to the Study Area, are addressed in the following section. Those types of areas which do not require special consideration in the Study Area or are not affected by the project are not discussed in detail. These include:

- Floodplains
- Groundwater recharge areas
- Habitat for endangered or threatened species
- Historic and Archaeologic Resources
- Recreation Areas

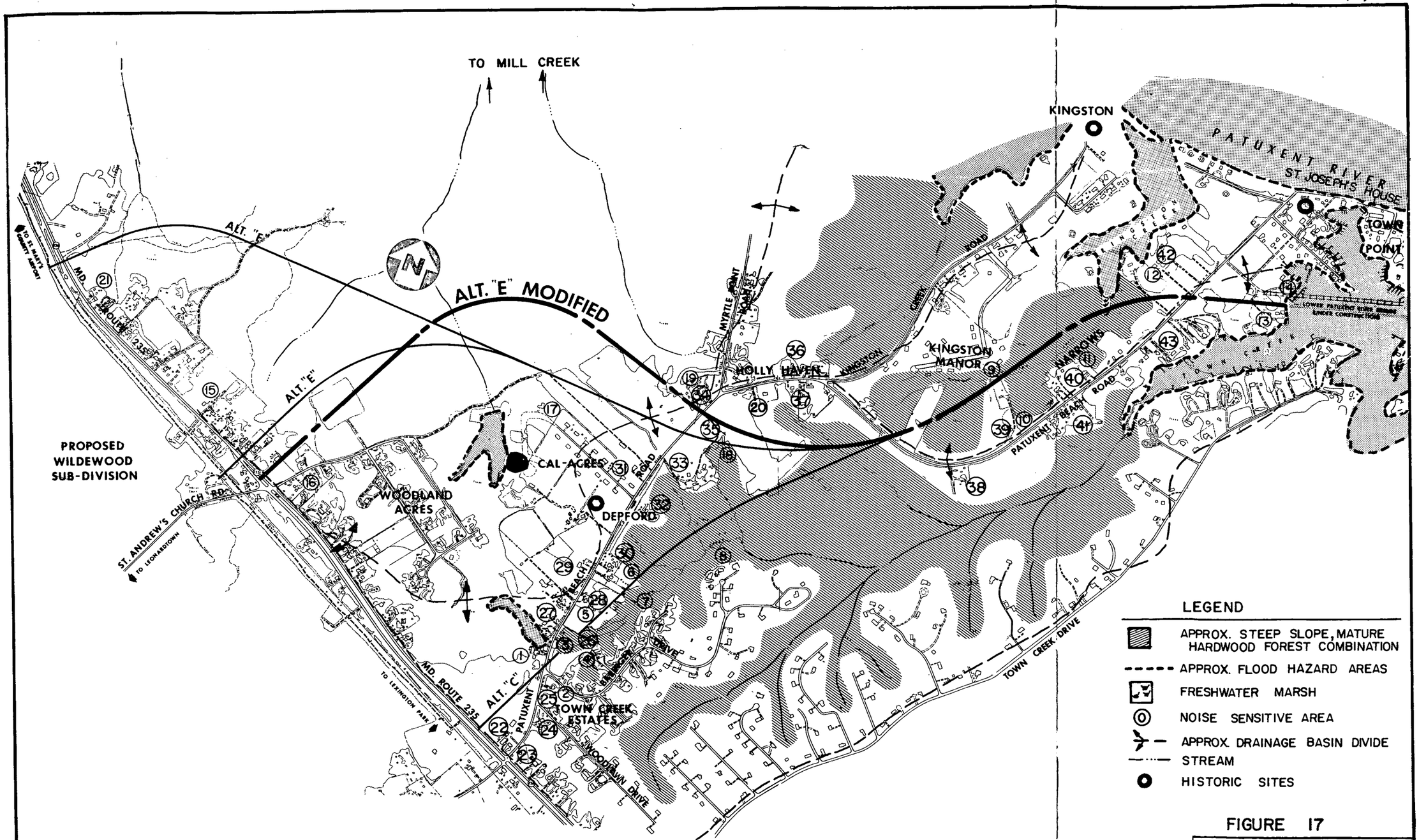


FIGURE 17

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

ENVIRONMENTALLY SENSITIVE AREAS

Prime Agricultural Land

Prime agricultural land is identified by the symbol Bla on Figure 11. Although this classification encompasses a large portion of the Study Area, farming is not extensive due to the numerous, deep stream valleys, and is largely confined to the larger, flat hilltops away from the River. The large farm located along Patuxent Beach Road near the Myrtle Point Road merge is primarily E2a soils. This soil type is not considered prime because of the slow permeability, however, farming may be productive with good management practices. Much of the land in the Study Area listed as prime (Bla) agricultural land is currently either in residential development or forested.

Forests and Woodlands

Forested areas encompass large portions of the Study Area, and are associated with the steep slope areas that are not well-suited to residential development. The forest types show wide variability, but mature hardwood associations are primarily in the steep slope valleys as shown in Figure 17. A total of 985 acres, or 53 percent of the Study Area, is included in this category. Some upland areas have been extensively disturbed, but the mature steep slope areas remain little affected by development. Logging activities have occurred in some areas.

Fish and Wildlife Habitat

A wide diversity of animal types may be associated with the forested segments of the Study Area, and recreationally important species such as squirrels and deer are present. The wide variety

of forest conditions present also provide habitats utilized by many aesthetically important species of birds and small mammals.

Many species of fish are present in the Patuxent River and estuarine portions of creeks. These include recreationally and commercially important species of anadromous fish. Other species of resident fish are also found. Fish distribution in the small streams is limited to the estuarine portions.

Again, marshes provide breeding grounds and are an area where early growth takes place for many of these species.

Marsh habitat areas exists at the freshwater/estuarine interfaces of Town and Kingston Creeks. These marshes, although small, provide a select habitat type necessary for many species of aquatic, semi-aquatic and terrestrial animals. Marshes are particularly sensitive to manipulation, and are an extremely fragile natural resource.

Many species of shellfish are also present in the Patuxent River. These support a recreational and commercial fishery economically more significant than that for finfish. They are particularly vulnerable to problems associated with sedimentation.

Steep Slope Areas

Steep slope areas limit most types of development. Extensive areas of steep slope conditions exist, especially in association with the Town Creek watershed. These areas remain forested, as residential development has centered on the comparatively level upland areas between forks of streams and along watershed divide ridges. The combination of steep slope/mature hardwood forest areas are shown on Figure 17. As erosion is a hazard on steep slope areas, precautions should be taken to minimize construction related erosion for alignments crossing these areas.

SECTION IV

ENVIRONMENTAL IMPACTS

IV. ENVIRONMENTAL IMPACTS

In this section all of the identifiable impacts, both beneficial and adverse, that are associated with the project are discussed. In so far as is possible, the magnitude of each is assessed quantitatively. While the proposed action is intended to be strictly desirable, some adverse impacts will occur.

Many of the adverse impacts can be minimized or mitigated through careful planning and enforcement of regulations designed to protect environmental quality.

An assessment of environmental impacts resulting from the proposed project is summarized in Table 14. Each of the impacting actions included in the table is discussed in greater detail in the following analyses. In the Table impacts are identified as "primary" or "secondary." Primary impacts result directly from the construction and/or operation of the proposed project. Secondary impacts result from activity which follows completion of the proposed project. Impacts have also been assessed as being "short-term" or "long-term" and "beneficial" or "adverse." Short-term impacts are defined as impacts which will be alleviated with the passage of time while long-term impacts will be permanent. The degree of impact has also been projected. Minimal impacts have the least effect upon the environment. Major impacts are termed "significant" and intermediate impacts are "moderate." Many of the decisions concerning the degree of an impact and its nature, beneficial or adverse, are discretionary. The decsions listed in the Table were formulated after extensive analysis and include both environmental, social, and

Table 14 Summary of Environmental Impacts Resulting from the Construction of the Alignment E Modified Alternative.

Parameter Impacted	Impacting Action	Type of Impact	Assessment of Impact	Degree of Impact	Mitigating Measures
Surface Water Quality	Increased Siltation in Town, Kingston and Mill Creek Watersheds and Mill Creek Pond	Primary; Short term	Adverse	Significant to Moderate in streams; Moderate to Minimal in Bays	Observance of Erosion Control Practices During and After Construction
	Vehicular Related Chemical Runoff	Secondary; Long-Term	Adverse	Minimal to Moderate	None
Surface Water Flows	Base Flow to Streams Reduced in Fill Areas	Primary; Long-Term	Adverse	Minimal	None
	More Rapid Runoff Following Precipitation	Primary; Long-Term	Adverse	Minimal to Moderate	None
Groundwater	Reduction of Infiltration to Shallow Groundwater Resulting from Increase Impervious Surface Area	Primary; Long-Term	Adverse	Minimal	None
	Reduction in Deep Water Tables from Increased Water use in Area	Secondary; Long-Term	Adverse	Minimal to Moderate	None
Water Supply	Growing Demands Exceeding Aquifers Potentials	Secondary; Long-Term	Adverse	Minimal to Moderate	Augment Water Supply from Surface Sources
Air Quality	Deterioration Due to Increased Vehicular Traffic	Secondary; Long-Term	Adverse	Minimal	None

These are the areas where our suggestions would be best put to use.

↑ without quantitative data these determinations should considered as being arbitrary

Table 14. (Contd.)

Parameter Impacted	Impacting Action	Type of Impact	Assessment of Impact	Degree of Impact	Mitigating Measures
Aquatic Biology	Disruption of Freshwater Marsh	Primary; Short-Term (also Long Term)	Adverse	Significant	Bridging Marsh, no piers in marsh.
	Habitat Degradation from Siltation and Highway Related Chemical Runoff	Primary; Long-Term	Adverse	Minimal to Moderate	Erosion Control Practices During and After Construction
Terrestrial Biology	Subdivide Areas of Otherwise Continuous Forest Habitat	Primary; Long-Term	Adverse	Significant to Moderate	None
	Loss of Habitat Acreage, Destruction of Flora and Fauna	Primary; Long-Term	Adverse	Moderate	Minimize clearing operations
	Habitat Degradation near Road	Primary; Long-Term	Adverse	Moderate	Landscaping
Natural Resources	Immediate Loss of Trees and Animals	Primary; Long-Term	Adverse	Moderate	None
	Potential Later Loss of Aquatic and Terrestrial Flora and Fauna from Habitat Degradation	Secondary; Long-Term	Adverse	Minimal to Moderate	Erosion Control Practices and Design
Aesthetics	Degradation of "Style" or "Character" of Region	Primary; Long-Term	Adverse	Moderate	None

Table 14. (Contd.)

Parameter Impacted	Impacting Action	Type of Impact	Assessment of Impact	Degree of Impact	Mitigating Measures
Recreation	Decreased Hunting Potential	Primary; Long-Term	Adverse	Minimal	Joint development of recreational uses will be investigated.
	Increased Regional Accessibility	Primary; Long-Term	Beneficial	Minimal	
	Damage to Fishing in Bays and Pond	Primary; Long-Term	Adverse	Minimal to Moderate	Erosion Control
Archaeologic and Historic	None	---	---	---	---
Public Health	Air Quality Degradation	Secondary; Long-Term	Adverse	Minimal	None
	Water Quality Degradation	Primary; Long-Term	Adverse	Minimal to Moderate	Erosion Control Measures
Socio-Economics	Increased Property Values	Secondary; Long-Term	Beneficial	Minimal to Moderate	---
	Decreased Tax Base	Primary; Short-Term	Adverse	Minimal to Moderate	None
	Displacement of Farms; Homes; Businesses	Primary; Short-Term	Adverse	Moderate	None
	Increased Tax Base	Secondary; Long-Term	Beneficial	Moderate to Significant	---
Land Use	Loss of Commercial, Agricultural and Residential Property	Primary; Long-Term	Adverse	Minimal to Moderate	None

Table 14. (Contd.)

Parameter Impacted	Impacting Action	Type of Impact	Assessment of Impact	Degree of Impact	Mitigating Measures
Safety	Reduced Traffic Congestion and Accident Rates on Patuxent Beach Road	Secondary; Long-Term	Beneficial	Moderate to Significant	---
	Increased Traffic Rates and Accident Rates on Route 235	Secondary; Long-Term	Adverse	Minimal to Moderate	Improved Traffic Control, Development of Interchange
	Strain on Community Facilities - Urban Growth	Secondary; Long-Term	Adverse	Minimal to Moderate	None
Implementation Problems	Permit Requirements	Primary; Short-Term	Adverse	Moderate to Significant	Design Considerations
	Property Acquisition	Primary; Short-Term	Adverse	Moderate to Minimal	Route Variations
	Endangered Species Habitat	Primary; Short-Term	Adverse	Moderate to Significant	Same as Above
Costs	5,300,000- Right-of-Way and Construction Acreage - 79.1 11,420/year Tax Loss				

engineering considerations. In many cases, the degree of impact cannot be accurately projected. Quantitative data concerning the effects of many of the impacting actions listed are not generally available. For some issures, definitive information concerning their environmental impact is not available. In these cases, the degree of impact can only be listed as "potential." Mitigating measures to reduce adverse impacts are also included. Many of these mitigating measures are normally practiced.

Impacts of the project upon the environment of the Study Area are discussed in the following order:

Natural Environment

- Surface Water Quality
- Surface Water Flows
- Ground Water
- Water Supply
- Air Quality
- Biology (Aquatic and terrestrial)
- Natural Resources
- Visual Aesthetics
- Noise

Man-Made Environment

- Recreation
- Historical and Archaeological
- Public Health
- Socioeconomics
- Land Use
- Safety
- Implementation Problems

NATURAL ENVIRONMENT

Surface Water Quality

Degradation of streams will occur during construction. This impact is short-term, adverse, and severe, unless strong controls are maintained. The most severe water quality problem is siltation. The total amount of sediment transported from a construction site is dependent on slope, soil type, climate, season, type and extent of construction activity, controls used to minimize erosion, and the length of time the construction continues. However, the tonnage of sediment derived by erosion from an acre of ground under construction may exceed 200 times the amount eroded from farms and woodlands in an equivalent period of time (Wolman, 1964). While the major pollutant generated on construction sites is suspended sediment (both mineral and organic solids) other potential pollutants include pesticides, solid wastes, construction chemicals, waste water, garbage, cement, lime, sanitary wastes, and fertilizers (EPA, 1972).

Many of the pollutants of concern are directly associated with sediment particles, due to the affinity of positively charged particles for clay particles. Some pollutants, however, such as inorganic nitrogen compounds and some metal ions are highly water soluble, while others have an affinity for oils and grease (e.g., pesticides).

The effects of sediment in the aquatic habitat are varied

and include deposition in the channel, bank erosion induced by changes in channel configuration, obstruction of flow, increased flooding, blanketing of bottom fauna and flora, and changes in higher levels of the trophic web due to the elimination of food organisms.

The effects of construction-related pollution will be felt in all areas of the watershed below the construction site, but will be most obvious in the lower estuarine portions of the streams, where their velocity and carrying capacity is reduced, and in the Patuxent River adjacent to the mouths of these streams.

The severity of the impact is directly related to the amount of material discharged to the receiving streams. It is not possible to estimate loads for all of the potential pollutants listed above. It is however, possible to draw some conclusions concerning sediment transport.

Vice, Guy and Ferguson (1969) reported on an extensive survey of runoff and sedimentation characteristics of the highway construction area in Northern Virginia. The area they studied is not similar in topography to the Study Area, as it was much less hilly. This would indicate that their conclusions can be considered conservative for the Study Area. They found that highway construction areas, varying from less than 1 to more than 10 percent of the basin area, contributed 85 percent of the sediment. The sediment yield per acre for an average storm

very conservative

event in construction areas was about 10 times greater than for cultivated land, 200 times greater than for grass areas and 2,000 times greater than for forest areas.

A study of the environmental effects of development by the Real Estate Research Corporation (RERC, 1974) provided the following data concerning sediment derived from different land uses:

Land Use	Sediment (tons/mi^2/yr)
Wooded Areas	100
Agricultural Areas	300
Vacant Land and Open Space	200
Developed, Urban Areas	700
Construction Areas	2,300

These data are presented to indicate the magnitude of differences resulting from various land uses, and indicate that construction will significantly increase sediment transport. Strict enforcement of state and local erosion and sediment control ordinances will minimize these undesirable effects.

A secondary, long-term adverse impact with a potentially significant degree of impact is the degradation of water quality associated with increased development in the area, and increased traffic. It is unclear what effect the proposed project will have on these problems, but it is assumed that the presence of the road is not the controlling factor.

The problems of sediment and erosion control have been recognized by the State of Maryland, Department of Transportation.

It is the procedure of the Department to require conformance with Maryland laws concerning erosion control, and to institute control procedures similar to those outlined in the following documents as required:

1) State of Maryland, Department of Water Resources, B. C. Becker and T. R. Mills, Hittman Associates, Inc., 1972. Guidelines for Erosion and Sediment Control Planning and Implementation. EPA-R2-72-015. Environmental Protection Agency, Washington, D.C.;

2) U. S. Environmental Protection Agency, Office of Air and Water Programs. 1973. Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity. EPA Report No. 430/9-73-007. Superintendent of Documents, Washington, D.C.

The procedures used fall into three major categories:

- Control of Pollutants on the Site
- Erosion Control
- Sediment Control

Each of these are discussed below, based on a summary of information provided by EPA (1973).

Many pollutants, other than sediment, become almost impossible to control once they are present in runoff. The best procedure for control of these materials is to restrict their use on the site, and to exercise "good housekeeping" procedures when their use is necessary. Many chemicals which are non-toxic

to humans and petroleum products must be handled with the same care as toxic compounds, in terms of their impact on the aquatic environment. The fertilizers sprayed on banks to encourage the growth of replanted vegetation is not beneficial once it leaves the application site. The problems inherent in the use of herbicides and pesticides are obvious, since their effects on non-target organisms are well known.

Erosion control procedures perform one or more of the following functions: minimize soil exposure, control runoff, shield the soil, and bind the soil. These goals may be accomplished by:

- o Staging Grading and Revegetation
- o Staging Construction Activities
- o Preservation of Barrier Vegetation
- o Surface Covers (mulch, etc.)
- o Use of Chemical and Natural Binders
- o Good Site Planning
- o Surface Roughening
- o Interception and Diversion to Reduce Flow
- o Vegetative Soil Stabilization

Sediment control involves procedures to deal with material generated by unpreventable erosion. It must be understood that total erosion prevention is impossible, and hence sediment control is a "second line of defense". There are two basic types of control, vegetative and structural.

Vegetative controls are intended to filter and retard overland flow so that deposition occurs. When vegetative practices will not by themselves provide the desired degree of protection, or when flow becomes concentrated as it does in drainage structures, structural controls must also be utlilized.

Sediment control structures include filters, traps, basins and diversion structures. The choice of structures depends on the degree of erosion and runoff expected, and the degree of sediment removal desired.

Since erosion potential here is severe, most of these mitigation measures will have to be used in conjunction with each other. Coordination with the SCS may help in the design. A sediment pond near the confluence with the marsh may be a multi purpose benefit.

Strict enforcement of sediment and erosion control procedures will minimize the problems associated with water quality due to construction activity, but they cannot be eliminated. Many of the areas through which the project will pass are very steep and involve stream crossings. In many of these areas fill must be deposited to elevate the roadbed, which will aggravate the problem. Sediment control structures will be difficult to construct in many of these areas due to the terrain, and in many erosion control procedures will be less effective due to the steep slope.

The extent of the problem is related to the extent of construction. Since the initial construction is of a 24-foot wide road with 10-foot shoulders, it is assumed that the construction corridor is 150 feet wide. Severity of the impact also varies depending on the number of stream crossings, and on the number of streams impacted.

The selected alignment will impact the Town Creek, Kingston Creek, and Mill Creek Watersheds. It also crosses a stream feeding Mill Creek Pond so that sediment and pollutants will enter the pond. There are three stream crossings. The construction area is approximately 50 acres.

Traffic related pollutants contained in direct runoff will exert a long-term, moderate, adverse impact on the local streams. Shaheen (1975) has estimated rates of deposition of pollutants on roadways as shown in Table 15. Much of the pollutants accumulate on the road surface until periods of precipitation. The polluted runoff may cause a significant shock loading of the receiving waters.

Surface Water Flows

Reduced base flow discharge to streams will result as a consequence of filling stream valleys and replacing portions of the streambed, now subject to seepage, with impervious conduit pipe. Increased impervious surface areas will also promote more rapid runoff of precipitation, causing higher peak flows. The actual increase will be somewhat less than 1 percent of the Study Area. Increased peak flows will further the siltation/erosion potential created by construction activities.

Urban development, causing corresponding increases in impervious surfaces and runoff rates, will combine with the effects of the impervious road surface to promote peak flow problems. These problem areas would probably be localized, however.

Table 15. Deposition Rates and Composition of Traffic-Related Roadway Deposits (From: Shaheen, 1975).[a]

Parameter	Deposition Rate lbs/axle-mile	Composition (% by Weight Unless Otherwise Stated)
Dry Weight (Dust and Dirt)	2.38×10^{-3}	-
Volume	6.33×10^{-4} (quarts/axle-mile)	-
Volatile Solids	1.21×10^{-4}	5.1
BOD	5.43×10^{-6}	0.23
COD	1.28×10^{-4}	5.4
Grease	1.52×10^{-5}	0.64
Total Phosphate-P	1.44×10^{-6}	0.061
Nitrate-N	1.89×10^{-7}	0.0079
Nitrite-N	2.26×10^{-8}	0.00095
Kjeldahl-N	3.72×10^{-7}	0.016
Chloride	2.20×10^{-6}	0.092
Petroleum	8.52×10^{-6}	0.36
n-Paraffins	5.99×10^{-6}	0.25
Asbestos	$3.86 \times 10^{+5}$ (fibers/axle-mile)	3.6×10^{5} (fibers/gram)
Rubber	1.24×10^{-5}	0.52
Lead	2.79×10^{-5}	1.2
Chromium	1.85×10^{-7}	0.008
Copper	2.84×10^{-7}	0.012
Nickel	4.40×10^{-7}	0.019
Zinc	3.50×10^{-6}	0.15
Magnetic Fraction	1.26×10^{-4}	5.3

(a) Numerous other pollutants were found in urban roadway samples; however, those listed in the table were the only ones related to motor vehicular traffic.

Groundwater

Increased amounts of impervious surface areas associated with the highway will reduce infiltration to shallow, unconfined groundwater supplies. The amount of reduction will be proportional to total amounts of impervious surface area. This is a primary, long-term impact of minimal significance.

No deterioration in groundwater quality in any of the aquifers is anticipated, as no recharge areas exist in the Study Area. Some deterioration in the shallow groundwater could occur as a secondary consequence of increased urbanization.

Water Supply

Secondary urban development resulting would place increased stress on water supplies. It is unlikely that the increased water demand will exceed the potential of the aquifers, and the degree of impact is anticipated to be minimal. Should the supply potential of the aquifers become inadequate to meet increasing demands, surface water sources could be developed to mitigate the problem. This impact, should it materialize, would be secondary, long-term, and adverse. No other impacts on water supply would be anticipated.

Air Quality Impacts

The concentration of pollutants near a highway can be estimated with the California Line Dispersion Model as described by U. S. Department of Transportation, (1972). The model assumes that highway traffic constitutes a continuous line source of

gaseous pollutants and that the concentration decreases with distance from the roadway according to a Gaussian distribution. Normally only the Carbon Monoxide (CO) concentration is calculated because it is a non-reactive primary automotive pollutant.

The two main inputs required for the model are meteorological conditions and traffic characteristics. The worst conditions for the dispersal of gaseous pollutants occur during a period of atmospheric stagnation when the volume of air available for diluting the pollutants is minimal. In meteorological terms this is Class "F". Maximum pollution concentrations near a highway will be measured when Class "F" occurs simultaneously with very low velocity winds nearly parallel to the highway. This analysis will assume worst case conditions which are Class "F", wind speed of 1 meter/sec., and a 22.5 degree angle between the roadway and the wind direction.

Traffic characteristics are the other main input to the analysis. Pollutant concentration depends upon both the number of vehicles and the per vehicle emission rate. Vehicle emission rates were calculated based upon the vehicle age and travel distribution for the Washington Metropolitan area and Compilation of Air Pollutant Emission Factors (EPA, 1975). Traffic data indicate that trucks comprise 4.4 percent of the average daily traffic and 1.3 percent of the traffic during the peak hour. The heavy duty vehicles are 31 percent gas powered and 60 percent diesel powered. Based upon this traffic mix, emission

factors were calculated at 35 mph as follows:

1980	5.39 gm/veh - mi.
2000	1.86 gm/veh - mi.

Traffic volumes on the project road have been predicted by the State Highway Administration. The maximum Average Daily Traffic (ADT) in any one section of the road is estimated at 5,925 veh/day by the year 1980 and 11,275 veh/day by the year 2000. The design hourly volume traffic is 13 percent of the ADT and there is a summer peaking factor of 1.10. The maximum hourly traffic is then estimated as follows:

1980	850 veh/hr
2000	1,610 veh/hr

Carbon monoxide concentrations were calculated based upon these data and are shown in Table 16. Pollutant concentrations due to the proposed road would be in an order of magnitude less than the background concentration and two orders of magnitude less than applicable air quality standards.

Eight-hour peak concentrations would be less than those shown in Table 16 due to two factors.... The meteorological conditions assumed for the one-hour peak are not likely to persist for eight consecutive hours and average traffic over the busiest eight hours is only 63 percent of the peak hourly traffic.

Air quality in the area is generally good and the construction of the project is not expected to cause any significant deterioration. There are no measurements of CO or HC concentra-

tions in the Study Area. Background concentrations of CO were estimated by the Maryland Bureau of Air Quality and Noise Control as:

1 Hour Background CO $5mg/m^3$

8 Hour Background CO $2mg/m^3$

The estimated background levels (5ppm for the one-hour averaging period and 2ppm for the eight-hour averaging period) assumed for the purpose of this analysis are based on monitoring in areas of the State which are not in the immediate vicinity of the project, but which are in areas of similar land use (emission density) and topography.

The monitoring program most applicable to the analysis of Md. Route 2 and 4 Extended was conducted at Crownsville, Maryland on the property of the Crownsville State Hospital from January to March 1976. Carbon monoxide concentrations were measured using a Beckman Model 865 Non-Dispersive Infrared Analyzer, utilizing the quality assurance guidelines[1] published by the Environmental Protection Agency. Wind speed and direction were measured using a Climet Instruments CI-25 Wind Recording System.

The monitoring site and the project area are both classified as Rural-Agricultural as defined in the U.S. Environmental Protection Agency Document Volume V-AEROS Manual of Codes, Section 4, Chapter 11, Site Description Definition. The topography of both areas may be described as Coastal Plain, the Crownsville monitoring site being located 140 feet above sea level while the project area varies from 50 feet to 100 feet above sea level.

The maximum one-hour average recorded was 3ppm, the maximum eight-hour average recorded was 2.5ppm; both maximums occurring on February 4,

[1] Guidelines for Development of a Quality Assurance Program Reference Method for the Continuous Measurement of Carbon Monoxide in the Atmosphere, EPA, June 1973.

1976. If these concentrations were adjusted to 1980 levels using the rollback method, they would be reduced by approximately 50 percent, therefore, the use of 5ppm and 2ppm for all future years provides a very conservative background concentration for the project air analysis.

The Maryland Bureau of Air Quality and Noise Control, Division of Program Planning was consulted (by phone conversation of October 11, 1976) regarding that Bureau's comments relative to the proposed facilities and the project air quality analysis. The Bureau indicated that they concur with the findings that the proposed project will not cause a violation of State or Federal Ambient Air Quality Standards.

As St. Mary's County is located within the southern Maryland IntraState Air Quality Control Region, the determination of consistency is based on microscale CO impact and the impact of construction activities. The project Air Quality Analysis determined that no violation of State or Federal Ambient Air Quality Standards for Carbon Monoxide will occur adjacent to the project during the completion design years. As a result of this conclusion, the project may be considered consistent with this apsect of the State Implementation Plan.

The consistency of the project in relation to construction activities was addressed through consultation with the Maryland Bureau of Air Quality and Noise Control. The State Highway Administration has established Specifications for Materials, Highways, Bridges and Incidental Structures, which specifies procedures to be followed by Contractors involved in State work. The Maryland Bureau of Air Quality

and Noise Control has reviewed these specifications and has found them consistent with the Regulations Governing the Control of Air Pollution in the State of Maryland.

Table 16. One-Hour Maximum CO Concentrations (Assumptions Provided by SHA).

Concentration Due To Traffic	Peak CO Concentration (mg/m^3)	
Distance from Roadway (feet)	1980	2000
0	0.52	0.34
100	0.31	0.20
200 (Edge of R-O-W)	0.27	0.18
300	0.24	0.16
1 Hour Background Concentrations	$5mg/m^3$	
1 Hour State and National Standard	$40mg/m^3$	
8 Hour Background Concentrations	$2mg/m^3$	
8 Hour State and National Standard	$10mg/m^3$	

Acquatic Biology

Construction of the project will impact the small marsh located at the mouth of Kingston Creek. A bridge spanning this marsh is proposed to avoid filling of it. This marsh exists in a steep slope valley, and construction necessary to bridge this marsh will impact portions of it. The impact will

This argument is always advanced when one only looks at individual projects instead of all cumulative actions which affect marshes over a wide area. Marsh acreage is finite and can only be reduced

be primary, short-term, and adverse, as only two marshes exist in the Study Area, and both are small.

Relative to the overall area of marshland in the Patuxent River Basin, this one marsh is not significant. However, marshes are an essential portion of the estuarine food web. The marshes of the Lower Patuxent Basin are typically intertidal and are subjected to rapid diurnal change. Several environmental factors, chiefly salinity, drainage and temperature, exert a strong influence on the types of plants and animals able to exist there (Cooper, 1974).

Because of the rigorous nature of the environment, species diversity, both of plants and animals, is limited. At the same time marshes are very productive in terms of primary production and are essential in the life histories of many estuarine animals. Odum and de la Cruz (1967) were the first to demonstrate the extent to which marsh-originated organic material is exported to the estuary as detritus. Current ecological research (cf. Nixon and Oviatt, 1973) suggests that marsh detritus may form the basis for many estuarine food webs.

In general, it is the policy of most conservation agencies, including those in Maryland, to encourage the preservation of all wetlands, regardless of size. This is based primarily on the realization that while individual takings may not be significant,

the cumulative effect is.

Habitat degradation will result from the siltation and chemical pollution of streams draining the Study Area during construction, as described in the Surface Water Quality section. This is a primary, adverse impact of indeterminant duration.

This impact will be decreased by mixing with water supplied by the Patuxent River. Some changes in benthic community structure are likely in the bays.

Benthic organisms are often highly sensitive to substrate type, and many are adversely affected by mechanical covering with suspended sediment. Burrowing forms are the least sensitive, in that they require a soft substrate; however, even these forms can be eliminated if they are buried below a layer of sediment which is so thick they cannot extract themselves. Surface dwelling organisms, and particularly those which require a hard substrate, are much more vulnerable. In the aquatic biology section the economic value of the shellfish industry in this area was discussed. By far the largest portion of this income is based on the American oyster (Crassostrea virginica). Large oyster beds exist immediately below the Study Area, in the Patuxent River. No large beds occur upstream of the Study Area (Spinner, 1969). Rapid settling of suspended material may be highly destructive to an oyster community. While large amounts of sediment may bury and kill adult oysters, less noticeable, but equally significant is the effect light sedimentation may have on the setting success

of the larvae. A deposit of loose sediment only 1 or 2mm thick is enough to make the surface of shells and rocks unsuitable for the attachment of larvae and to cause failure of setting. It may also interfere with reproductive activities of adults (Galtsoff, 1964). It is not known if oysters occur in the mouths of the tidal creeks. It is likely that the existing substrate in such areas is too soft to support their growth. It is not known if the currents in the mouths of the creeks and the adjacent Patuxent River will be sufficient to keep eroded material in suspension, or if it will settle out, either in the mouths of the creeks or in the River itself.

In addition, high sediment loads may interfere with all filter feeding organisms, predators relying on visual prey identification (fish, turtles, seabirds), the respiration of gilled organisms, and the survivability of fish eggs and larvae, and can decrease primary production by decreasing light penetration.

These problems can be mitigated by instituting strict controls, as discussed in the water quality section. In addition, early spring and summer construction in areas where erosion is expected to be excessive should be avoided because most estuarine organisms spawn during that period.

The effect of siltation in the freshwater streams will be less severe than in the bays at their mouths. Since most of the streams appear to be intermittent over much of their length, permanent aquatic fauna will not be impacted. Sedimentation will re-

sult in changes in the physical characteristics of the streams. and marshes at the mouth of the streams.

Mill Pond will receive sediment from the construction of the project. This will result in the filling in of the pond, lower oxygen values in the water, and increased turbidity. This impact can be mitigated by directing runoff away from the pond.

The introduction of chemical pollutants into any of the receiving streams will effect the biota. Again, the most severe impact will be in the bays at the mouths of the creeks. Toxic chemicals released from the construction sites could cause severe problems if they were present in sufficient quantities, as could petroleum products and chemical wastes. Shellfish have the ability to concentrate many heavy metals from the surrounding sediments, and the effects could be felt long after construction ceased. It is unlikely that, with proper on-site controls of hazardous materials and good sediment and erosion controls, that this will be a problem. It must be borne in mind, however, that all of these streams enter the Patuxent River immediately above an oyster producing area.

As was discussed in the water quality section, increased traffic and development within the Study Area will degrade water quality. This impact is secondary, long-term and of indeterminate severity. Any degradation in water quality of the small creeks of the Study Area will effect the open estuary, but to a lesser extent. The two major concerns would be increased non-point pollution by sediment and plant nutrients, and the contam-

ination of shellfish beds by bacteria or heavy metals. It is not possible at this time to quantify the extent of this problem.

Terrestrial Biology

Loss of vegetation will be a significant, long-term primary impact. The most significant impact will occur to those forests located on the steep slopes in the Study Area. These areas represent climax forest and contain many large, stately trees. Approximately 20.5 acres of forest will be lost due to the construction of Alternate E Modified. However, the large number of pine trees in this forest indicate that the area has been disturbed in the recent past. Pine trees are generally the first species to invade abandoned land.

Loss of vegetation results in loss of wildlife habitat. The wildlife which is able to escape the immediate construction is forced to compete for food, cover and nesting sites with existing populations in areas of similar habitat. This can lead to an overall reduction in the numbers of wildlife present in the entire area.

Rather than disrupt migration which really does not occur with the species involved, the road will interupt the established home ranges of the species which live within the watershed.

In addition to the loss of wildlife habitat, the new road will act as a barrier to migration of wildlife. Numerous losses will occur which will be directly related to automobiles. The spring of the year can be especially damaging as young of the year animals are particularly susceptible to the dangers of the roadway. Oxley, Fenton and Carmody (1974) have demonstrated the severe effect that roads may have on local populations of small mammals. Fencing would lessen the losses due to vehicle related kills.

Natural Resources

Construction of a new roadway will require the commitment of substantial quantities of natural resources, especially asphalt, concrete, wood, and steel. In addition, considerable amounts of fuel will be used for transportation and equipment operation. As had already been mentioned, there will also be a considerable loss of forest and wildlife resources.

Visual Aesthetics

The proposed project will have a long-term, significant adverse impact upon the visual aesthetics of the area, due to the loss of visual amenities, directly related to the loss of forest. Forested areas will be replaced with pavement and very few people would find that more appealing than an undisturbed woodland. Disturbed areas will be kept to a minimum required for safety considerations. Landscaping these areas will minimize the visual impact.

Noise

Design year (2000)L_{10} noise level projections have been calculated utilizing the procedure presented in National Cooperative Highway Research Program Report #117 and as modified by Report #144. This procedure calculates noise emission levels from a traffic line source based upon vehicular volume and mix, speed, roadway grade, cross section, vegetation and shielding from or by other natural or man-made barriers.

The following is a summary of the data utilized:

Average Daily Traffic (ADT)	See Section I
Design Hour Volume (DHV)	13% of ADT
Percent Trucks (ADT)	4.4%
Percent Trucks (DHV)	1.3%
Average Running Speed	35mph

Design year peak hour L_{10} noise levels at each noise sensitive area are presented in Table 17.

Determination of impact is a function of the relationship of predicted noise levels with established standards and with ambient noise in a particular area. The applicable standard is the Federal Highway Administration's design noise level/activity relationship contained in FHPM 7.7.3. Projects which will result in noise levels exceeding the Federal design noise level shall not be approved until noise abatement measures are incorporated to attain reductions to or below the design noise levels or an exception to the design noise levels is approved.

In order to make an assessment of impact resulting from increases of ambient levels, the following categories have been established.

Table 17. Design Year Peak Hour L_{10} Noise Levels at Each Noise Sensitive Area (Source: State of Maryland).

Noise Sensitive Area	Alternate C	Alternate E	Alternate F
1	66dBA	-	-
2	66dBA	-	-
3	71dBA*	-	-
4	62dBA	-	-
5	61dBA	-	-
6	58dBA	-	-
7	54dBA	-	-
8	54dBA	-	-
9	68dBA	68dBA	68dBA
10	58dBA	58dBA	58dBA
11	55dBA	55dBA	55dBA
12	63dBA	63dBA	63dBA
13	62dBA	62dBA	62dBA
14	63dBA	63dBA	63dBA
15	-	72dBA*	-
16	-	69dBA	56dBA
17	-	53dBA	53dBA
18	52dBA	60dBA	60dBA
19	-	63dBA	63dBA
20	-	55dBA	55dBA
21	-	-	75dBA*

* Exceeds Federal Highway Administration design noise level.

Table 17. (cont.) Design Year Peak Hour L_{10} Noise Levels at Each Noise Sensitive Area (Source: State of Maryland).

Noise Sensitive Area	No-Build Alternate
22	63dBA
23	66dBA
24	55dBA
25	66dBA
26	66dBA
27	70dBA
28	61dBA
29	61dBA
30	58dBA
31	62dBA
32	58dBA
33	54dBA
34	68dBA
35	68dBA
36	62dBA
37	62dBA
38	58dBA
39	58dBA
40	55dBA
41	55dBA
42	63dBA
43	63dBA

ALTERNATE E
MODIFIED

Table 18

A COMPARISON OF PREDICTED NOISE LEVELS WITH AMBIENT AND DESIGN GOALS

NOISE NS. AREA	ACTIVITY CATEGORY	AMBIENT L_{10}	DESIGN YR L_{10} (2000)	CHANGE IN L_{10}	RELATION TO DESIGN GOAL	ASSESSMENT
9	B	51dBA	68dBA	+17	-2	Severe increase in ambient level
10	B	55dBA	58dBA	+3	-12	Negligible increase in ambient level
11	B	48dBA	55dBA	+7	-15	Minor increase in ambient level
12	B	51dBA	63dBA	+12	-7	Significant increase in ambient level
13	B	58dBA	62dBA	+4	-8	Minor increase in ambient level
14	B	58dBA	63dBA	+5	-7	Minor increase in ambient level
15	B	66dBA	72dBA	+6	+2	Minor increase in ambient level; federal design noise level exceeded
16	B	66dBA	69dBA	+3	-1	Negligible increase in ambient level
17	B	51dBA	53dBA	+2	-17	Negligible increase in ambient level
18	B	56dBA	60dBA	+4	-10	Negligible increase in ambient level
19	B	54dBA	63dBA	+9	-7	Minor increase in ambient level
20	B	53dBA	55dBA	+2	-15	Negligible increase in ambient level

Increase	Assessment
0-5dBA	Negligible
6-10dBA	Minor
11-15dBA	Significant
over 15dBA	Severe

Where ambient levels are increased by more than 10dBA it is desirable to investigate potential for noise control to minimize increases. An important component of this process must relate the size of the impacted area, i.e., number of structures impacted, visual aspects of control, type of activity at the impacted area and economic feasibility of control.

The discussion which follows relates the predicted design year L_{10} noise levels for the alternate with the two impact criteria.

Table 18 presents a comparison of design year peak hour L_{10} noise levels with ambient levels and Federal design noise level criteria.

Noise Sensitive Areas

Twelve noise sensitive areas would be impacted to varying degrees by the recommended alternate. One area would exceed the Federal design noise level of 70dBA. This area is NSA 15 and is an individual residential structure on Maryland Route 235. Maryland Route 235 traffic will generate a design year L_{10} noise level of 72dBA while the proposed improvement would only generate an L_{10} noise level of 55dBA. The Federal design noise level would not be exceeded as a direct result of this project. One area (NSA 9) containing three structures would experience a severe increase in the ambient level and two areas (NSA's 12 and 17) containing one structure would experience a significant increase. Noise control measures are considered feasible, however, the cost of these measures, which is estimated to be a minimum of

$72,000 for each area, is not considered justifiable. Therefore, no noise control measures are planned.

Alternates C, F, and the No Build affected varying numbers of noise sensitive areas. Appendix C contains a comparison of design year L_{10} noise levels with ambient levels and Federal design noise criteria for these alternates.

Exceptions to Design Noise Levels

Alternate E modified will exceed the Federal design noise levels at one noise sensitive area. If Alternate E modified is constructed, an exception to the design noise levels will be requested. The basis for this request is as follows:

Alternate E modified, NSA 15 - Design year L_{10} levels will be in excess of the Federal design noise level of 70dBA. However, the source of the noise is Maryland Route 235, not the proposed extension of Maryland Route 2 and 4. Any noise controls implemented on the proposed improvement would not solve the problem. Also, as Maryland Route 235 does not have access control in this area, effective noise control measures cannot be implemented on Maryland Route 235 due to entrance drives.

There are areas of land along the alternate which are presently undeveloped. Future land use changes could result in the development of these areas for residential, industrial, educational, religious or other use. Noise levels would increase adjacent to the alternate. The following L_{10} design year (2000) noise levels are anticipated to occur during the peak hour:

Distance from Md. Route 2 & 4	L_{10}
100'	71dBA
200'	67dBA
300'	65dBA
400'	63dBA

Activities which require a quieter environment should be restricted to other areas. A copy of the noise analysis report has been forwarded to the following agencies to assist in the efforts to develop compatible land use.

Tri-County Council for Southern Maryland
Box 301
Waldorf, Maryland 20601

Planning and Zoning Commission,
St. Mary's County
Courthouse
Leonardtown, Maryland 20650

St. Mary's County Housing Authority
Court House
Leonardtown, Maryland 20650

The sensitive areas previously identified will also be impacted to some degree by construction activities associated with the project. There will be times when noise levels from construction will exceed noise from the existing highway system. Although this will occur, it will be a short-term impact and as construction activities do not normally occur from 7:00 p.m. to 7:00 a.m. should not cause disruption during evening and sleeping hours. Due to the varying duration and location of construction noise sources, no physical controls such as temporary barriers are planned. One measure which will be utilized is to require in the construction specifications that

equipment be maintained to insure low noise levels. Construction contract specifications will involve restrictions to include noise attenuation devices for the equipment during construction.

MAN-MADE ENVIRONMENT

Recreation

No organized recreational opportunities, such as golf courses, marinas, parks, playgrounds, etc., exist in the Study Area. Certain other forms of unstructured recreation, such as fishing, hunting and hiking are possible. The project will have an adverse, long-term, primary impact on these recreational opportunities.

This impact is rated as minimal because these resources are, at present, plentiful in or near the Study Area. The amount of forest displaced would not be significant on a current regional overview. However, as was the case with the wetlands, incremental losses, when taken together often become significant, and the area is under development pressure. Joint development measures will be investigated if prudent and feasible, in concert with the development of the project's design.

Fishing in the estuarine mouths of the streams will be adversely impacted. This would be a long-term impact which would be both primary, from runoff related to highway construction activities; and secondary, from urban-related runoff generated by urban growth in the area following opening of the bridge. The degree of impact will range from minimal to moderate, depending on the amounts and characterization of the runoff. As the embayments at the mouths of the streams draining

the Study Area are at least partially isolated from the flushing potential of the river, pollutants could accumulate in these areas in concentrations sufficient to damage fin and shellfishing. This would be especially true for Kingston Creek, as it has restricted access to the bay.

A beneficial, long-term, primary impact of potential consequence to recreational opportunity in the Study Area will result from increased accessibility and ease of travel to other areas. This will provide easier and faster access for Study Area residents to both structured and non-structured recreational opportunities in other areas. This impact is not expected to exceed the minimal impact level.

Historical and Archaeological

Primary construction activities will have no adverse impacts on the historic sites in the area. The closest historic site to any construction area would be Depford, but it is not close enough to be impacted by construction. The Maryland State Historic Preservation officer has concurred in this determination and a letter to this effect is included in Section IX.

On the basis of an archaeological survey of the Study Area, members of the Maryland Geological Survey concluded that no impacts will occur to any known archaeological sites in the area.

Secondary growth impacts may adversely affect the historic sites in the area due to encroachment, but at the same time the accessibility of these sites will be increased. The state has indicated that some areas of the Study Area are potential archaeological sites, and these could be endangered by growth, even though none are known to be affected by the road alignment.

Public Health

A secondary consequence of this project will be a long-term adverse impact on air quality. This impact will result from two sources: 1) Increased vehicular traffic, with a proportional increase in hydrocarbon emissions; and 2) Increased urbanization with a concomitant increase in particulates, and potentially other pollutants as well.

This impact is projected to be minimal, as the air quality of the Study Area is currently quite good, and the area is not included in an AQMA. Also, the area is primarily residential and light commercial with little heavy industry. It is expected to remain this way. Pollutant levels from this development pattern would not be likely to create air quality problems. The most significant threat to air quality will result from increased traffic flow.

An adverse impact on water quality will result as both a primary and secondary long-term impact, and the severity could range from significant to minimal, as discussed in the Surface Water

Quality impacts analysis. Short-term impacts on surface water quality will result from siltation, with attendant bacterial and nutrient runoff, while the secondary long-term impacts will result from increased urban runoff, characteristically high in bacterial contaminants.

Socioeconomics

The construction activities and urbanization anticipated from this project will exert both long and short-term impacts on the socioeconomic structure in the Study Area. These impacts will be both adverse and beneficial. Primary, short-term, adverse impacts include a displacement of farms, homes and businesses necessary for right-of-way, as well as an initially decreased tax base because of this displacement. Secondary, long-term, beneficial impacts will include an anticipated increase in personal property values of property adjacent to the new roadway, and an increased tax base with urbanization. These beneficial impacts would be moderate.

Approximately 16 persons, from a total of 4 families, would be displaced by the proposed alignment. Two businesses and one farm will also be impacted. Two large barns and some tillable land will be taken from the farm. One of the businesses will probably relocate while the other, a grocery store may cease

operation due to unavailability of a suitable new building. Initial tax loss will be $11,420 per year.

Relocation assistance and adequate compensation for lost property will be provided in all cases. A summary of the relocation assistance program of the Maryland Highway Administration is quoted on the following pages. Long-term increases in property values and increased urbanization will more than compensate for the initial tax losses.

There are no minority families or affiliations affected by the project. Similarly, no non-profit organizations will be affected. A summary of relocation effects for the recommended alternate is included in Appendix D.

"Summary of the Relocation Assistance Program of the State Highway Administration of Maryland"

All State Highway Administration projects must comply with the provisions of the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970")P.L. 91-646) and/or the Annotated Code of Maryland, Article 21, Sections 12-201 through 12-209. The Maryland Department of Transportation, State Highway Administration, Bureau of Relocation Assistance, administers the Relocation Assistance Program in the State of Maryland.

The provisions of the Federal and State Law require the State Highway Administration to provide payments and services to

persons displaced by a public project. The payments that are provided for include replacement housing payments and/or moving costs. The maximum limits of replacement housing payments are $15,000 for owner-occupants and $4,000 for tenant-occupants. In addition, but within the above limits, certain payments may be made for increased mortage interest costs and/or incidental expenses. In order to receive these payments, the displaced person must occupy decent, safe, and sanitary replacement housing. In addition to the replacement housing payments described above, there are also moving cost payments to persons, businesses, farms, and non-profit organizations. Actual moving costs for displaced residences include actual moving costs up to 50 miles or a schedule moving cost payment up to $500.

The moving cost payments to businesses are broken down into several categories, which include actual moving expenses and payments "in lieu of" actual moving expenses. The owner of a displaced business is entitled to receive a payment for actual reasonable moving and related expenses in moving his business, or personal property; actual direct losses of tangible personal property; and actual reasonable expenses for searching for a replacement site.

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Generally, payments for the actual reasonable moving expenses are limited to a 50 mile radius. In both cases, the expenses must be supported

by receipted bills. An inventory of the items to be moved must be prepared, and two estimates of the cost must be obtained. The owner may be paid an amount equal to the low bid or estimate. In some circumstances, the State may negotiate an amount not to exceed the lower of the two bids. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business's vehicles or equipment, wages paid to persons who physically participate in the move, and the cost of the actual supervision of the move.

When personal property of a displaced business is of low value and high bulk, and the estimated cost of moving would be disproportionate in relation to the value, the State may negotiate for an amount not to exceed the difference between the cost of replacement and the amount that could be realized from the sale of the personal property.

In addition to the actual moving expenses mentioned above, the displaced business is entitled to receive a payment for the actual direct losses of tangible personal property that the business is entitled to relocate but elects not to move. These payments may only be made after an effort by the owner to sell the personal property involved. The costs of the sale are also reimbursable moving expenses. If the business is to be re-established, and personal property is not moved but is replaced at the new location, the payment would be the lesser of the replacement costs minus the net proceeds of the sale or the estimated

cost of moving the item. If the business is being discontinued or the item is not to be replaced in the re-established business, the payment will be the lesser of the difference between the depreciated value of the item in place and the net proceeds of the sale or the estimated cost of moving the item.

If no offer is received for the personal property, the owner is entitled to receive the reasonable expenses of the sale and the estimated cost of moving the item. In this case, the business should arrange to have the personal property removed from the premises.

The owner of a displaced business may be reimbursed for the actual reasonable expenses in searching for a replacement business up to $500. All expenses must be supported by receipted bills. Time spent in the actual search may be reimbursed on an hourly basis, but such rate may not exceed $10 per hour.

In lieu of the payments described above, the owner of a displaced business is eligible to receive a payment equal to the average annual net earnings of the business. Such payment shall not be less than $2,500 nor more than $10,000. In order to be entitled to this payment, the State must determine that the business cannot be relocated without a substantial loss of its existing patronage, the business is not part of a commercial enterprise having at least one other establishment in the same or similar business that is not being acquired, and the business contributes materially to the income of a displaced owner.

Considerations in the State's determination of loss of existing patronage are the type of business conducted by the displaced business and the nature of the clientele. The relative importance of the present and proposed locations to the displaced business, and the availability of suitable replacement sites are also factors.

In order to determine the amount of the "in lieu of" moving expenses payment, the average annual net earnings of the business is considered to be one-half of the net earnings before taxes, during the two taxable years immediately preceding the taxable year in which the business is relocated. If the two taxable years are not representative, the State, with approval of the Federal Highway Administration, may use another two-year period that would be more representative. Average annual net earnings include any compensation paid by the business to the owner, his spouse, or his dependents during the period. Should a business be in operation less than two years, but for twelve consecutive months during the two taxable years prior to the taxable year in which it is required to relocate, the owner of the business is eligible to receive the "in lieu of" payment. In all cases, the owner of the business must provide information to support its net earnings, such as income tax returns, for the tax years in question.

For displaced farms and non-profit organizations, actual reasonable moving costs generally up to 50 miles, actual di-

rect losses of tangible personal property, and searching costs are paid. The "in lieu of" actual moving cost payments provide that a displaced farm may be paid a minimum of $2,500 to a maximum of $10,000 based upon the net income of the farm, provided that the farm cannot be established in the area or cannot operate as an economic unit. A non-profit organization is eligible to receive "in lieu of" actual moving cost payments, in the amount of $2,500.

A more detailed explanation of the benefits and payments available to displaced persons, businesses, farms, and non-profit organizations is available in Relocation Brochures that will be distributed at the public hearings for this project and will also be given to displaced persons individually in the future.

In the event adequate replacement housing is not available to rehouse persons displaced by public projects or that available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish the rehousing. Detailed studies will be completed by the State Highway Administration and approved by the Federal Highway Administration before "housing as a last resort" could be utilized. "Housing as a last resort" could be provided to displaced persons in several different ways although not limited to the following:

1. An improved property can be purchased or leased.

2. Dwelling units can be rehabilitated and purchased or leased.
3. New dwelling units can be constructed.
4. State acquired dwellings can be relocated, rehabilitated and purchased or leased.

Any of these methods could be utilized by the State Highway Administration and such housing would be made available to displaced persons. In addition to the above procedure, individual replacement housing payments can be increased beyond the statutory limits in order to allow a displaced person to purchase or rent a dwelling that is within his financial means.

The "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" requires that the State Highway Administration shall not proceed with any phase of any project which will cause the relocation of any person, or proceed with any construction project until it has furnished satisfactory assurances that the above payments will be provided and that all displaced persons will be satisfactorily relocated to comparable decent, safe, and sanitary housing within their financial means or that such housing is in place and has been made available to the displaced person.

The Maryland State Highway Administration has estimated that there were at least 25 houses for sale in the project area. The following list has the existing available housing stock broken into categories by cost:

Cost	Number of Homes Available
$20,000 - $40,000	11
$40,000 - $60,000	14

At the time of displacement it is felt by the SHA that there will be sufficient housing available within the financial means of those being displaced by any one of the alternates under consideration.

There is not expected to be any adverse impact to existing communities by those who are displaced. The relocation of the families displaced by these various alternates should be able to be satisfactorily resolved in a normal amount of time, with the relocation being accomplished with the requirements of the Uniform Relocation Assistance and Land Acquisition Policies Act of 1970.

Land Use

Because of the loss of commercial, agricultural and residential property, the project will exert primary, long-term, adverse impacts on land use in the Study Area. However, the extent of this impact will be minimal. No changes in the existing zoning structure of the Study Area will result, and rezoning will not be required. The proposed project is consistent with the comprehensive land use plan for the area as developed by the Saint Mary's County Planning Commission.

Growth and urbanization is expected to be facilitated by increased accessibility to the Study Area. It is not expected

that these growth rates will be sufficiently rapid to create strains upon community facilities.

Safety

The greatest beneficial impacts resulting from this project will be in the category of public safety. However, the greatest impairment to public safety in the Study Area is the opening of the Lower Patuxent River Bridge, since it is the traffic generator. The project exerts a primary, long-term beneficial impact on public safety by permitting increased through traffic to pass from the Bridge to Maryland Route 235 without the necessity of traveling on the heavily residential Patuxent Beach Road. This impact is rated as moderate to significant, depending on the actual increases in through traffic volume upon opening of the Bridge.

A potential secondary, long-term adverse impact could result from an inability of local public safety/public health related facilities to keep pace with the increased demand for such facilities resulting from increased urbanization. The degree of impact is minimal to moderate, depending on the rate of urbanization.

Implementation Problems

Implementation impacts will be primary, short-term and adverse, and are not expected to create more than minimal to moderate problems. Normal difficulties associated with land condemnation, eminent domain and right-of-way easements necessary

for a project of this nature will be encountered, and need not be elaborated here. Certain acquisition problems might be mitigated by varying the alignment during the design phase of the project.

Permit acquisition could present some moderate to significant short-term adverse impacts. A sediment control plan must be approved by the St. Mary's County Soil Conservation District. This plan will require information and design considerations addressed to a number of considerations, including:

1) Basic information about the contractor and applicant;
2) Topographic considerations, including initial and final proposed topography, proposed grading, and earth disturbance. Volume of material and surface area disturbed, as well as any spoil or borrow required, will also be required;
3) Storm drainage provisions, including data on outfall areas;
4) Design and scheduling details for erosion and sediment control provisions;
5) Scheduling details for phases of the project; and
6) Certification of compliance by the developer with approved plans, and any additional information deemed necessary by the Soil Conservation District.

Most of the information required will fall under engineering considerations and only minimal problems with securing an ap-

proved sediment control plan are expected. Special engineering attention will be necessary to prevent excess sedimentation which could result from the steep slope areas disturbed by construction activities.

Significant permit problems could evolve over the wetlands disturbance issue. One segment of the roadway crosses a marsh at the point-of-entry of Kingston Creek to its estuarine bay. Plans provide for a bridge completely spanning the marsh to mitigate the effect of this crossing. Completely avoiding the marsh without destroying the streambed of Kingston Creek would require purchase of all of the homes located within the community of Narrows. This fact provides the basis for the justification of an exemption to existing state policy and a request for the required permit. In order to lessen the adverse effects of construction activity within the marsh, construction of the support structures should be accomplished during the dry months of the year and construction equipment crossing the marsh should be prohibited.

SECTION V

DESCRIPTION OF ALTERNATIVES

DESCRIPTION OF ALTERNATIVES

The development of the recommended alternate included the study of several preliminary alternatives. These alternatives included the study of several alignments on new location, improving Patuxent Beach Road, and a no build alternate. The advantages and disadvantages of each alternative were carefully weighed before the final selection was made.

THE RECOMMENDED ALTERNATE

The recommended alternate is a modification of Alternate E. This alternate was recommended due to lessened adverse environmental effects and due to having the most logical termini at Md. Route 235 following the St. Mary's County Comprehensive Plan (See Figure 18).

Description

Beginning at the Lower Patuxent River Bridge, Alternate E Modified follows the original Alternate E alignment, extending along a tangent for approximately 700 feet, crossing Patuxent Beach Road for the first time at-grade. The alignment then follows a 2^{o}-15' curve southward crossing a small freshwater marsh located at the mouth of Kingston Creek.

Various government agencies have recommended avoiding this marsh. However, a suitable alternate alignment to avoid an impact on the marsh without severely disrupting many residences does not appear to be available. Shifting the alignment eastward to avoid impacting the marsh would require either relocation of the entire subdivision of Narrows or, if the alignment was shifted to avoid

TO ST. MARYS COUNTY AIRPORT

MD. RT. 235

PROPOSED DUALIZATION (BY OTHERS)

RIGHT-OF-WAY

SERVICE ROAD

STA. 97+15.68 ℄ ALT 'E' MODIFIED = STA. 1126+67.72 NBL MD. ROUTE 235

PROPOSED WILDWOOD SUB DIVISION

ST. ANDREWS CHURCH ROAD

TO LEONARDTOWN

TO LEXINGTON PARK

Dc=2°-52'-30"

CAL-ACRES

WOODLAND ACRES

SERVICE ROAD

PATUXENT BEACH ROAD

MD. RT. 235

TOWN CREEK ESTATES

TOWN CREEK DRIVE

HOLLY HAVEN

MYRTLE POINT ROAD

KINGSTON CREEK ROAD

KINGSTON MANOR

Dc=2°-15

CUL-DE-SAC

MARIONS

PATUXENT BEACH ROAD

TOWN POINT

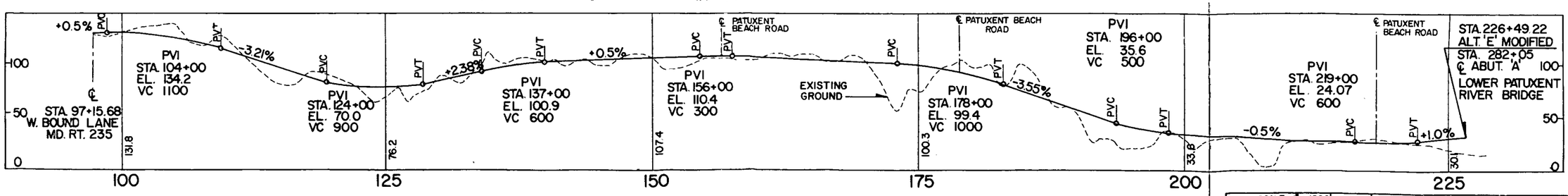
PROP BRIDGE

SERVICE ROAD

LOWER PATUXENT RIVER BRIDGE (UNDER CONSTRUCTION)

END ALT 'E' MODIFIED STA. 226+49.21 ℄ ABUT 'A' LOWER PATUXENT RIVER BRIDGE

N



PLAN & PROFILE

SCALE 1" = 1000'
0 1000

FIGURE 18

PROPOSED ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. ROUTE 235
ST. MARY'S COUNTY

ALTERNATE 'E' MODIFIED

V-2

both the marsh and Narrows, fill from the required sloping would cover much of the streambed of Kingston Creek. A structure to carry the alignment over the marsh of approximately 300 feet in length would be proposed to minimize undesirable effects of crossing the marsh.

After crossing the marsh, Alternate E Modified follows a tangent through undeveloped land for approximately 1,000 feet paralleling Kingston Creek. It then follows a $2^{\circ}15'$ curve westward passing through steep forested land in the upper reaches of the Kingston Creek Drainage Basin east of Kingston Manor. After crossing Patuxent Beach Road a second time at-grade, it crosses a deep gully characterized by steep slopes and an intermittent stream that is part of the Town Creek drainage basin.

The alternate then passes through the northern part of existing agricultural land presently under cultivation, crossing Patuxent Beach Road a third time at-grade. Alternate E Modified was shifted north of Alternate E through the agricultural land to minimize the adverse impacts to a farm. Alternate E would have divided the farm in the approximate middle with access from one side to the other being very difficult. Alternate E Modified would minimize the effect of dividing the farm to the greatest extent possible, while still maintaining a safe roadway and avoiding relocation of additional residences.

Alternate E Modified then curved southward following a 2°, 52' 30" curve intersecting Md. Route 235 at-grade directly opposite St. Andrew's Church Road. This section of Alternate E Modified was

shifted approximately 400 feet south of the original Alternate E. This shift eliminated an extension of St. Andrew's Church Road west of Md. Route 235 proposed under Alternate E which would have necessitated relocation of a trailer park housing 28 families.

An at-grade intersection at Alternate E Modified and Md. Route 235 was recommended over the proposed interchange alternate. Traffic projections supplied by the State Highway Administration indicate that an at-grade intersection would be capable of handling the traffic volumes until the year 2000 at a level of service D provided channelization and an appropriate number of lanes would be constructed. (This intersection design is explained in detail in subsequent paragraphs.) The concept of purchasing the right-of-way initially for a future interchange was rejected due to high costs and increased disruption to residences in the vicinity of the intersection.

Access Control

A partial control of access would be provided for Alternate E Modified beginning at the Md. Route 235 intersection. Each intersection with Patuxent Beach Road would be at-grade with selective access points. Access would be controlled by the use of cul-de-sacs for restricting selected turning movements and to maintain segments of Patuxent Beach Road for local access.

The proposed intersection of Md. Route 235 and Alternate E Modified would consist of a channelized four-way intersection with signalization control. At present, Md. Route 235 is a dual 4-lane roadway only up to the existing St. Andrew's Church Road

intersection. However, since design plans for the dualization of this facility are being prepared, the proposed at-grade intersection of Alternate E Modified is based on a dual Md. Route 235.

Based on anticipated hourly volumes for the year 2000, a signalized intersection with three through traffic lanes in each direction on Md. Route 235 would be required in the vicinity of the intersection. A separate left turn lane from both the northbound and southbound lanes of Md. Route 235 would be required to provide separate turning movements to St. Andrew's Church Road and Alternate E Modified respectively. These auxiliary lanes would be constructed in the existing 30 foot wide median south of St. Andrew's Church Road and the proposed median north of this intersection.

Separate right turn lanes to and from the northbound lanes of Md. Route 235 would be required to connect to Alternate E Modified east of Md. Route 235. The at-grade intersection of Alternate E Modified would require separate right turn lanes from the southbound lanes of Md. Route 235 connecting to St. Andrew's Church Road.

From the beginning of Alternate E Modified at its intersection with St. Andrew's Church Road to a point 1,100 feet east of the Md. Route 235 intersection, the proposed road would consist of a dual roadway separated by a 30 foot median. The dual roadway is required to accommodate a double 24 foot wide left turn lane and a single through traffic lane from the westbound lane of Alternate E Modified. Also channelization of the intersection of St. Andrew's Church Road and Md. Route 235 would be required.

In order to accommodate required auxiliary traffic lanes on the northbound section to Md. Route 235, access to existing dwellings fronting Md. Route 235 would be prohibited for a distance of 1,300 feet north and 1,700 feet south of the proposed Alternate E Modified intersection. Access to Woodland Acres and homes fronting on Md. Route 235 could be provided by service roads located beyond these limits. However, during the design phase of the project other means of access will be considered.

Alternate E Modified intersects Patuxent Beach Road at a point 600 feet south of Myrtle Point Road. A channelized at-grade intersection with separate right and left turn lanes to and from Patuxent Beach Road would be required to accommodate peak hour volumes. An additional eastbound lane would be required in the vicinity of this intersection to allow a storage lane for left turns.

Access to Patuxent Beach Road south of this intersection would be prohibited by means of a cul-de-sac on Patuxent Beach Road. This partition of the southern segment of Patuxent Beach Road would restrict through traffic on the new road from using the existing road as a "short-cut" to Md. Route 235 and would maintain the local character of this road. Traffic data supplied by the State Highway Administration indicates that a four-way at-grade intersection at this location would require signalization due to the anticipated traffic volumes that would desire to proceed south on Patuxent Beach Road toward Md. Route 235 instead of using the proposed intersection at St. Andrew's Church Road. This

infusion of thru-traffic to and from the bridge would tax the safety and capacity characteristics of Patuxent Beach Road and would require additional channelization at the existing Md. Route 235 and Patuxent Beach Road intersection.

Alternate E Modified intersects Patuxent Beach Road a second time, 900 feet east of Kingston Creek Road. A three-way unsignalized at-grade intersection similar to the first intersection with Patuxent Beach Road is proposed to provide local traffic access to Narrows and adjacent waterfront residences A proposed cul-de-sac would partition the western segment of Patuxent Beach Road.

Alternate E Modified crosses Patuxent Beach Road a third time 700 feet west of the Lower Patuxent River Bridge. A channelized unsignalized at-grade intersection again similar to the first Patuxent Beach Road intersection with separate right and left turns to and from Patuxent Beach Road would be required to provide access to Town Point. A separate left turn lane to Patuxent Beach Road from the northbound lane of Alternate E Modified would be required to allow through traffic to maintain speed at this intersection. Service roads, providing access to several homes located along Town Creek and Kingston Creek would be provided.

Design Considerations

Alternate E Modified would traverse for most of its length undeveloped terrain characterized by steep slopes. It will cross several drainage swales, many containing intermittent streams. Each of these drainage swales will require a pipe culvert.

Alternate E Modified would cross at the confluence of a narrow drainage swale at the south edge of Kingston Creek where a small freshwater marsh exists. This marsh has been identified as a freshwater wetland and is located within the Maryland Department of Water Resources and the U. S. Army Corps of Engineers jurisdiction. These agencies are opposed to any action that would destroy this wetland. In order to minimize the disruption, a structure spanning approximately 300 feet is proposed. A final determination of the exact length of this structure will be made during the design phase of this contract.

During the course of the construction phase of the contract, sediment and erosion control measures as developed by the U. S. Department of Agriculture Soil Conservation Service and approved by the Maryland Department of Natural Resources and the Maryland State Highway Administration, will be strictly enforced to minimize sedimentation of streams within the study area.

In accordance with Section 4(f) of the U. S. Department of Transportation Act, as amended by Section 18 of the Federal-Aid Highway Act of 1968, no land may be taken from recreation or park areas or historic sites of local, state, or national significance for highway purposes if feasible and prudent alternatives are available.

In this case, no 4(f) lands will be affected by the proposed action. There are no parks located within the study and the historical sites are located beyond the influence of the proposed alignment.

Costs

Total cost to complete Alternate E Modified is estimated to be approximately 5.3 million dollars. This would include $3.7 million for construction costs and $1.6 million for right-of-way purchase and relocation assistance.

The construction costs for Alternate E Modified would be approximately the same as Alternate E at-grade. However, the cost of right-of-way and relocation assistance would be 2.3 million dollars less than Alternate E. This saving would arise from the fact that only right-of-way required for the at-grade intersection would be purchased initially and purchase of the trailer park would not be required.

A comparison of the alternates presented at the Combined Location-Design Public Hearing and Alternate E Modified is shown on Figure 19.

Alternatives Considered

Seven alternate alignments were presented at the Interim Alternatives Location Meeting. These alternates were reviewed following the public meeting and three were recommended for further study. Alternates A and A-1 were dropped from further consideration due to their high cost and adverse environmental effects. Alternates B and B-1 were eliminated due to their adverse effects on the sub-divisions of Holly Haven and Kingston Manor. Alternates D and D-1 were eliminated because they would require relocation of the entire subdivision of Narrows.

Alternate C was recommended for further study. It minimized the impacts on the existing communities located in the northeast

section of the study area. However, a structure, approximately 300 feet long, would be required to mitigate the effects on a freshwater marsh located at the mouth of Kingston Creek.

The other two alternates recommended for further study, Alternates E and F, followed a common alignment with Alternate C through the northeast section of the study area to a point approximately 900 feet east of the intersection of Myrtle Point Road and Patuxent Beach Road. From this point, Alternates E and F curved north following a common alignment through the middle of the study area, passing through agricultural land and wooded areas. Approximately 1/2 mile north of the intersection of St. Andrew's Church Road and Md. Route 235, Alternate E curved west, intersecting Md. Route 235 400 feet north of the intersection of St. Andrew's Church Road and Md. Route 235.

The alignment then extended west of Md. Route 235, passing through a trailer park, intersecting St. Andrew's Church Road on an existing tangent.

Alternate F continued north from a point 1/2 mile north of the intersection of Md. Route 235 and St. Andrew's Church Road then curved west intersecting Md. Route 235 in the vicinity of an existing sand and gravel pit. (These alternates are shown on Figure 5).

In addition to at-grade intersections with Md. Route 235, an interchange alternate was studied with each alignment. It was proposed to purchase the land required for an interchange initially

to assure that future development in the vicinity of the intersection would not take place. This would simplify development of an interchange when the need arose.

The No Build Alternate

The No Build Alternate was included throughout the course of the study as a basis of comparison. This alternate would consist of no structural changes to Patuxent Beach Road.

The character of traffic on Patuxent Beach Road will change significantly after the opening of the Lower Patuxent River Bridge. The existing road presently serves as a collector road for local traffic bound for various residential subdivisions and single homes abutting the road. During the summer months, additional traffic uses Patuxent Beach Road to reach waterfront recreational areas at Town Point.

Based on traffic projections supplied by the State Highway Administration and the physical characteristics of Patuxent Beach Road that would impede traffic flow, the existing road would reach its theoretical capacity by the year 2000 if no new road is built. In this level of service, frequent stoppages of traffic would occur resulting in delay and inconvenience to the motorist in addition to an increase in traffic accidents.

The undesirable features of Patuxent Beach Road which would constitute hazardous driving conditions and restricted flow are summarized as follows:

1. No control of access with numerous driveway entrances abutting the road;
2. Narrow 10-foot travel lanes with no shoulders and existing drainage ditch running parallel to the road, approximately four feet from each side of pavement;
3. Substandard horizontal and vertical alignments restructing sight distances and overall operating speed;
4. At-grade intersections at Myrtle Point Road and Kingston Creek Road with large intersecting skew angles and limited sight distances; and
5. Major at-grade intersection at Md. Route 235 which necessitates turning movements across a heavily traveled dual four-lane facility without adequate traffic control.

ALTERNATE	STREAM CROSSINGS	MAJOR DRAINAGE STRUCTURES	AT-GRADE INTERSECTION	GRADE SEPARATION STRUCTURES	R-O-W REQUIREMENT (ACRES)	R-O-W COSTS ($)	BUILDINGS TO BE RAZED	RELOCATION COSTS ($)	NOISE AFFECTED DWELLINGS	LENGTH (Miles)	TOTAL CONSTRUCTION COST ($)	TOTAL COST ($)
C	5	1	4	0	AGRIC. 16.3 RES. 37.1 AGR-RES. 43.3 COM. 4.5	1,420,000	RES. 5 COM. 4	160,000	19	1.99	3,070,000	4,650,000
C INTERCHANGE	5	1	3	1	AGRIC. 16.3 RES. 37.1 AGR-RES. 43.3 COM. 4.5	1,420,000	RES. 5 COM. 4	160,000	19	1.99	4,480,000	6,060,000
E	3	1	4	0	AGRIC. 15.0 RES. 46.9 AGR-RES. 50.6 COM. 9.2	3,480,000	RES. 17 COM. 5	440,000	12	2.55	3,480,000	7,400,000
E INTERCHANGE	3	1	4	1	AGRIC. 15.0 RES. 46.9 AGR-RES. 50.6 COM. 9.2	3,480,000	RES. 17 COM. 5	440,000	12	2.77	6,650,000	10,570,000
F	3	1	4	0	AGRIC. 15.0 RES. 15.8 AGR-RES. 61.4 COM. 11.5 IND. 5.9	2,280,000	RES. 3 COM. 2	90,000	11	2.76	3,960,000	6,330,000
F INTERCHANGE	3	1	3	1	AGRIC. 15.0 RES. 15.8 AGR-RES. 61.4 COM. 11.5 IND. 5.9	2,280,000	RES. 3 COM. 2	90,000	11	2.76	6,090,000	8,460,000
E MODIFIED	3	1	4	0	AGRIC. 9.7 RES. 38.8 AGR-RES. 29.1 COM. 1.5	1,460,000	RES. 4 COM. 4	140,000		2.45	3,700,000	5,300,000
NO-BUILD	1	—	5	0	0	0	0	0	22	2.0	0	0

NOTES: 1. LAND PRESENTLY UNDER CULTIVATION IS DESIGNATED AGRICULTURAL.

SHA CONT. NO. SM581-003-570
FEDERAL AID NO. RF-923-1-(17)

COMPARISON OF ALTERNATIVES

MARYLAND ROUTE 2 & 4 EXTENDED
LOWER PATUXENT RIVER BRIDGE TO MD. RTE. 235
ST. MARY'S COUNTY

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

FIGURE 19

SECTION VI

UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

VI. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Unavoidable adverse impacts are those impacts identified previously for which there either are no mitigating measures, or for which the mitigating measures are inadequate to wholly alleviate the impact.

NATURAL ENVIRONMENT

Surface Water Quality

Temporary water quality deterioration will occur in streams impacted by construction. These impacts are associated with siltation and pollutants from the construction activities. While erosion and sedimentation control may reduce the severity, they cannot be eliminated. Secondary growth will also cause a degradation of water quality.

Increased peak flows will also be a consequence of increased impervious area, coupled with faster runoff from areas in which the vegetative ground cover has been removed.

Revegetation should reduce the ground cover loss to short-term, but runoff from impervious areas will continue as a long-term impact.

Groundwater Levels

The increased impervious surface areas resulting as a primary consequence of the road construction and a secondary consequence of increased urbanization will reduce infiltration tc shallow groundwater. This will be a minimal, long-term impact.

Air Quality

Some deterioration of air quality will result from increased traffic flow and urbanization in the area, but will be very minimal and will remain well below any Federal air quality standards currently in existence.

Aquatic Habitat

Unless moved sufficiently, the roadway will impact the marsh at the juncture of Kingston Creek and its estuarine embayment. Other habitat destruction will result from the filling of steep slope stream valleys and replacement of sections of stream bed with impervious conduit pipe.

Habitat degradation will occur in the Kingston Creek system. Similarly, Town Creek, Mill Creek, and Upper Mill Creek Pond will be adversely impacted.

These impacts will affect aquatic biology by reducing habitat area. Many sensitive aquatic organisms may be reduced in number or eliminated by degraded water quality.

Terrestrial Habitat

Physical loss of habitat will result directly from road construction. Habitat degradation will result from splitting otherwise continuous areas of forest habitat, and the disturbing effects of the roadway on nearby flora and fauna.

Natural Resources

The flora and fauna of both terrestrial and aquatic systems lost as primary and secondary consequences of the action

constitute a loss of local natural resources.

Aesthetic Amenities

The existing "style" or "character" of the Study Area and especially the Town Point area, relies in part on its isolated, secluded setting. The presence of a fast-paced modern transportation facility of the nature of this project will be out of keeping with the atmosphere of the area. The impact will be the most significant in the Town Point area, where the new roadway would join the Lower Patuxent River Bridge. Secondly, higher speed traffic on the highway will result in increased noise levels in the area.

MAN MADE ENVIRONMENT

Diminished Recreational Opportunities

The woodlands acreage loss, and wildlife loss or displacement mentioned previously, will diminish that unstructured recreational potential which is dependent on woodlands. The aquatic habitat degration mentioned may damage fishing in either the Upper Mill Creek Pond, or the estuarine stream mouths, or both. This would result in a decline in the unstructured recreational fishing potential.

Public Health Hazards Related to Air and Water Quality

Minimal air quality degradation is expected. This deterioration should not be sufficient to represent a hazard to public health.

Water quality degradation will be related to short-term

primary impacts as well as secondary impacts caused by induced development. These impacts could, in time, become sufficient to preclude water contact recreation and fishing in the estuarine stream mouths.

Socioeconomic Impacts Related to Right-of-Way Development

The displacement of farms, homes and businessess will disrupt certain segments of the Study Area. Additionally, a primary impact will result from a decreased tax base with construction of the road. This is expected to be short-term.

Public Safety Impairment Related to Increased Traffic Flow and Strain on Community Facilities

Increased traffic flow will result on Maryland Route 235 in the Study Area. Higher accident rates will likely result at the merger of the roadway and Maryland Route 235. Another potential safety hazard could result from local traffic entering the facility at access points between Maryland Route 235 and the Lower Patuxent River Bridge.

Increased urbanization, resulting as a secondary consequence of the project, could place a strain on community safety facilities. This impact is expected to be minimal, however.

SECTION VII

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

VII. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The short-term uses of the environment associated with this project, such as the destruction of vegetation, displacement of wildlife, and disruption of traffic, residents, businesses and farms, are compensated for by the long-term benefits of the project. These benefits include future savings in traveler's costs (including accident costs) and reduction in traffic congestion. Increased future land values and increased tax base resulting from the roadway improvement will compensate for the short-term economic losses caused by business relocation and loss of tax ratables. Minor deterioration of existing environmental quality in the areas of wildlife, vegetation, and air and water quality are required to attain the long-term benefits of the project. Environmental degration will be minimized through the application and enforcement of appropriate environmental regulations.

The project will attract additional development to the study area and induce some long-term land use changes. These changes will require increased public services. Present indications are that this secondary development will not be sufficient to significantly disrupt the character of the Study Area or deplete available resources. The proposed project is in accord with local and regional comprehensive plans and will not induce land use changes which are not compatible with these plans.

SECTION VIII

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

VIII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Resources which will be committed to this project and which are considered to be irretrievable include the land upon which the road is constructed and the labor and materials used in its construction and maintenance. No unique cultural resources will be required by the highway right-of-way. Some areas of mature, hardwood forest unique to the area will be lost and a small area of marsh will be adversely impacted. The land required for the highway right-of-way could be converted to other uses if future land economics would dictate a better use for this land. However, the use of this land for the highway right-of-way may be considered to be permanent. When construction is undertaken a commitment of road-building materials, fuels, and manpower will be made. Construction will require the equivalent of 100 to 150 man-years of effort. The approximately 2.5 miles of roadway will include 40,000 tons of asphalt. The use of public funds will represent a commitment of financial resources which will be returned to the economy in the form of local employment opportunities and increased access and safety in the Study Area.

SECTION IX

COMMENTS AND COORDINATION

IX. COMMENTS AND COORDINATION

Project planning activities for the study of Md. Route 2 & 4 Extended in St. Mary's County have been coordinated with Federal and State agencies. In addition, close contact has been maintained with St. Mary's County officials and planning agencies in order to incorporate local planning goals where feasible. In order to inform the public of project status and to solicit comments, three public information meetings were held prior to this document.

SUMMARY OF PROJECT INITIATION MEETING

The Project Initiation Meeting on the study of the extension of Md. Route 2 & 4 from the Lower Patuxent River Bridge to Md. Route 235, was held on March 5, 1975 at the Esperanza Middle School in California, Maryland. During this meeting, the State Highway Administration informed concerned citizens and attending officials of St. Mary's County of the beginning of study activities.

It was explained that this meeting is a new approach to preliminary planning for highway projects. This approach is part of the "Action Plan" implemented by the State Highway Administration for both Federal and State funded projects.

It was emphasized that, at this time, no preconceived alignments had been developed or were specifically favored by the State Highway Administration. However, findings and recommendations of any previous studies relative to this area would be reviewed during the Study.

At the conclusion of the informational part of the Project Initiation Meeting, the audience was invited to voice any comments or suggestions. In addition, the State Highway Administration solicited written responses to the meeting from any citizens not wishing to voice their immediate opinion at the time.

In summary, the major responses expressed by the public were concern over State Highway Administration planning goals. A representative of Citizens' Coalition of St. Mary's County expressed concern that the Lower Patuxent River Bridge and proposed Access Road may be a part of some major arterial network linking Calvert County to a future lower Chesapeake Bay crossing, thus bringing a disproportionately large influx of vehicles and people into St. Mary's County.

The representative from the Citizens' Coalition of St. Mary's County was assured that the State Highway Administration was not cognizant of any such master transportation plan.

A few citizens also expressed criticism of the apparent lack of coordination in the timing of planning activities. It was evident to them that according to the timetable presented by the State Highway Administration, the Lower Patuxent River Bridge is scheduled for completion at least two years before the scheduled completion date for the proposed Access Road (Md. Route 2 & 4 Extended.) Therefore, they expressed concern that interim improvements to Patuxent Beach Road be provided for at least the period during which the road serves as a temporary access to the Lower Patuxent River Bridge.

The State Highway Administration stated that every effort would be made to complete the access road in time for the opening of the Lower Patuxent River Bridge. However, if it later appears that completion of the access road will not coincide with the opening of the bridge, the extent of interim improvements to Patuxent Beach Road would be studied.

SUMMARY OF INTERIM ALTERNATIVES PUBLIC MEETING

The Interim Alternatives Public Meeting was held at 7:30 p.m. on Thursday, March 11, 1976, in the gymnasium of the Esperanza Middle School in St. Mary's County. The purpose of this public meeting was to enable the State Highway Administration to present preliminary alternatives for the proposed extension of Md. Route 2 & 4 from the Lower Patuxent River Bridge to Md. Route 235. A total of 165 people attended.

The State Highway Administration briefly explained the Project Planning activities remaining to date and stated that the next public meeting is scheduled for Fall, 1976. At this meeting, detailed alignment studies are to be presented for review and comment.

The State Highway Administration described each alternate alignment developed and discussed the engineering and environmental considerations involved. A broad-brush environmental overview of the study corridor was presented to identify the major environmentally-sensitive areas.

After a brief intermission period to allow the attending public to view the wall displays depicting the alternate alignments, a question and answer period was held in order to solicit public input into the planning process and to answer any questions.

Following, is a summary of the comments made during the Interim Alternatives Public Meeting or submitted in writing after the meeting:

1) It was suggested that the proposed right-of-way width be reduced;
2) It was recommended that improvements be made to Patuxent Beach Road;
3) Disapproval of all alternates passing through or in the vicinity of Kingston Manor was expressed;
4) Support was expressed for Alternate "C" and any variation of this alternate which impacts the least number of homes;
5) Concern over the impact of Alternates "B" and "D" to exisiting farmland was expressed;
6) St. Andrew's Church Road was recommended as a desirable terminus;
7) It was suggested that a dual four-lane facility be constructed now in order to avoid disruption in the future;
8) Eighty-nine (89) citizens signed a petition against Alternate "C";
9) Doubt was expressed over whether the access road would be built by the time the bridge would be opened;
10) Concern over whether the State Highway Administration was coordinating with Southern Maryland Electric Cooperative concerning a common right-of-way for the new road and a proposed transmission line .

11) Concern was expressed over the unsafe intersection existing at St. Andrew's Church Road and Md. Route 235 and that a large number of accidents have occurred there during the last year.

SUMMARY OF LOCATION PUBLIC HEARING

The Location Public Hearing was held on Monday, November 15, 1976 at 7:30 p.m. at the Esperanza Middle School in St. Mary's County. Approximately 230 citizens were in attendance. The purpose of this meeting was to present the alternates selected following the Interim Alternatives Location Meeting held in March, 1976, to the public for their comments in order to select an alternate for the design phase of the contract.

At the meeting, officials of State Highway Administration, summarized the Project Planning activities. Four alternates, "C", "E", "F" and the No Build were presented to the public along with their relative environmental and socioeconomic impacts. Officials of the State Highway Administration summarized the peoples rights under the Relocation Assistance Program and Equal Opportunity.

After a brief intermission to allow the public to view the wall displays a question and answer period was held to allow the public to express their views and to answer any questions.

Following is a summary of comments made verbally at the Location Public Hearing, or submitted in writing after the hearing. Only substantive comments related to the project have been included. Comments are paraphrased. In some cases the same comment was made by a number of people. Discussion and response to comments, where applicable, follows each paraphrased comment. Complete

comments are available for review in the Public Hearing Transcript.

COMMENT: A large number of people favored Alternate C including a petition with over 400 signatures on it because:

a. It is the shortest route to Md. Route 235 & Lexington Park;

b. It is the cheapest route;

c. It disrupts fewer people than Alternate E; and

d. It avoids disruption of a farm and the taking of 15 acres of farmland.

RESPONSE: Each alternate has certain advantages and disadvantages. Alternate C would actually take more farmland than Alternates E and F.

COMMENT: Will the State consider keeping the Lower Patuxent River Bridge closed until the Access Road is finished and if not, what improvements will be made to Patuxent Beach Road?

RESPONSE: Presently, it is planned to open the bridge at the time of its completion, using Patuxent Beach Road as the interim access to Md. Route 235 until the time that the access road is completed. Only minor improvements to Patuxent Beach Road such as signing are proposed at this time.

COMMENT: Will the State Highway Administration coordinate with the Southern Maryland Electric Cooperative to use a common right-of-way for the proposed transmission lines?

RESPONSE: The power company has been made aware of the State Highway Administration's proposals. If construction of the access road was started prior to the construction of the power line then the State Highway Administration would make the right-of-way available to them provided the standard requirements were met.

COMMENT: Has the State Highway Administration or the County Commissioners made a tentative selection of the final alternate at the time of the Location Public Hearing?

RESPONSE: No. (from the State Highway Administration and the Commissioners).

COMMENT: Do any of the Commissioners own property in the study area?

RESPONSE: No, (from the Commissioners).

COMMENT: A large number of people, including a petition with over 400 names, were opposed to Alternate C. These people felt that Alternate C adversely affected the residences of Town Creek Estates. Many people felt that Woodlawn Drive was a dangerous road that would become even more so with the increased traffic if it was used as an access road to Baringer Drive.

COMMENT: A large number of people favored Alternate E because it intersected Md. Route 235 at St. Andrew's Church Road. These people felt that this was the most logical termini because it provided a direct connection to Leonardtown which is the County seat, and this termini also conformed to the St. Mary's County Master Plan.

COMMENT: One person asked how access from one side of the farm to the other would be provided if Alternate E or F was selected and the new road was to be a limited access highway with Patuxent Beach Road cul-de-saced?

RESPONSE: At this time, the solutions available to solve this problem appear to be to allow a four-way intersection between Patuxent Beach Road and Alternate E and F which would permit motorists to use it as a shortcut to Md. Route 235; provide an underpass structure, or to require the owner to use the new access road.

COMMENT: A few people asked if the State would consider using the eastbound section of the ultimate four-lane roadway in the vicinity of Kingston Manor in order to lessen the impact on that community.

RESPONSE: This could be looked into during the design phase of the contract.

COMMENT: The majority of the people are going toward Lexington Park. Alternate E and F will add approximately 1 and 2 miles, respectively, to that trip.

RESPONSE: This is true dependent on the origin of the traveler.

COMMENT: One person stated that Alternate F would have an adverse impact on a sand and gravel pit located near its intersection with Md. Route 235.

RESPONSE: True, this impact will be assessed.

COMMENT: One person commented that the Draft Environmental Impact Statement indicated that noise control measures are not justified because of costs for a single structure. However, since noise sensitive area 9 contains three structures, would the State further investigate the possibility of some type of noise control measure at this location.

RESPONSE: Each area will be addressed in detail concerning noise levels and abatement measures during the design phase.

COMMENT: Has the State Highway Administration given any consideration to a road to the proposed deep water port?

RESPONSE: No. Plans for the port are very tentative and it would be inappropriate to do anything at this stage other than to have knowledge of the plans.

COMMENT: One person suggested that the alignment be shifted to avoid the wetlands on Kingston Creek.

RESPONSE: An alignment shift to totally avoid the wetland would incur social impacts to homes along that alternate.

COMMENTS SUBMITTED ON DRAFT EIS

The comments on the Draft EIS submitted by reviewing agencies and individuals are reproduced on the following pages. Each comment is followed by a response on the succeeding page where necessary. Comments were received from the following:

U. S. Department of the Interior

U. S. Environmental Protection Agency

U. S. Department of Agriculture

U. S. Coast Guard

Maryland Department of State Planning

Maryland Department of Natural Resources

Maryland Department of Public Safety and Correctional Services

Maryland Department of General Services

Maryland Department of Economic and Community Development

Maryland Department of Health and Mental Hygiene

Maryland Department of Budget and Fiscal Planning

Maryland Interagency Committee for Public School Construction

Maryland Department of Agriculture

The County Commissioners of St. Mary's County

Calvert County Planning Office

James C. Simpson, Senate of Maryland

John Hanson Briscoe, Maryland House of Delegates

Royden P. Dyson, Maryland House of Delegates

United States Department of the Interior

OFFICE OF THE SECRETARY
NORTHEAST REGION
JOHN F. KENNEDY FEDERAL BUILDING
ROOM 2003 M & N
BOSTON, MASSACHUSETTS 02203

ER-76/1022

December 3, 1976

Dear Mr. Elinsky:

This is in response to a request for the Department of the Interior's comments on the draft environmental statement for Maryland Route 2 and 4 extended, St. Mary's County, Maryland.

The draft environmental statement is generally adequate with a few exceptions relative to the concerns of this Department. We offer the following comments for consideration in the final statement.

Recreation:

1) Based on the information contained in the present statement, it appears that the proposed project will provide some excellent multiple use-joint development opportunities, particularly for the development of fishing and boating access facilities in the area approaching the lower Patuxent River Bridge. Pursuant to PPM 90-5, we recommend that consideration be given to the development of such facilities in conjunction with the appropriate State and/or local officials. Evidence of such consideration and consultation on this matter should be included in the final statement.

Historic Values:

2) The final environmental statement should include letters from the State Archeologist and the State Historic Preservation Officer indicating that (if such is true) all their concerns have been met regarding this project. This is especially true as regards the responsibilities of the Federal Highway Administration and the Maryland Department of Transportation in relation to archeological reconnaissance and to potential project impacts on Kingston.

Geologic - Hydrologic Resources:

Geohydrologic aspects of the report appear to be recognized and dealt with as required for purposes of the report.

Mr. Emil Elinsky, Baltimore, Maryland

3) On page III-19, and the Appendix A reference "Darling, John..." there is mention of "USGS Flood Plain Management Section." It is believed that Mr. Darling is with the Flood Plain Management Section of the Corps of Engineers. Therefore, the reference to "USGS" should be deleted in both instances.

4) Nowhere in the statement have we found any quantitative estimate of earthwork requirements or mention of proposed sources of fill. It is stated in the Summary that "The build alternates would remove a total of approximately 30 acres of existing farmland currently under cultivation" (page iii). It would be advisable to mention also the total acreage required for right-of-way, which is given later as 101 to 122 acres (page IV-25). The loss of a small tidal marsh with all three construction alternates as presently aligned also appears to belong in the Summary, but is first mentioned on page V-30. It would also be helpful to quantify the displacement of homes and businesses in the Summary, later given as 2-5 businesses, 3-17 residences, up to 28 mobile homes (page IV-25) and from 12 to 180 persons (page V-49 to V-52).

Wildlife:

The draft statement provides an adequate description of the expected project impacts on fish and wildlife habitat of the area and some discussion of the impacts on species inhabiting the area.

5) All of the build alternatives presented will result in the loss of marsh at the head of Kingston Creek and varying amounts of woodland habitat. Mitigation measures given in Section V, Tables 14-17, include bridging the marsh or moving the road. However, no discussion of the feasibility of these alternatives is included.

The selection of any alternative resulting in the loss of wetlands at the head of Kingston Creek will require an Army Corps of Engineers permit. During the review process for such permits, the U. S. Fish and Wildlife Service makes recommendations to minimize environmental

losses. It is likely that the Fish and Wildlife Service would recommend either a bridge or relocation of the highway to avoid destruction of any wetland areas.

We appreciate the opportunity to comment on this statement.

Sincerely yours,

Roger Sumner Babb

ROGER SUMNER BABB
Special Assistant
to the Secretary

Mr. Emil Elinsky
Division Administrator
Federal Highway Administration
Rotunda-Suite 220
711 West 40th Street
Baltimore, Maryland 21211

cc: Mr. Robert J. Hajzyk
Director
Office of Planning and Preliminary Engineering
State Highway Administration
P.O. Box 717
300 West Preston Street
Baltimore, Maryland 21203

COMMENTATOR: United States Department of the Interior

RESPONSE:

1. The State Highway Administration has contacted various officials during the course of the project. Land within the Study Area in the vicinity of the water has undergone extensive private development, which would make any future public development extremely difficult. The new road would, however, provide improved access to facilities located outside the study area.

2. The State Archeologists findings are presented on page III-51 of this document. A letter from the Maryland Historical Trust has been included in this section.

3. This has been modified.

4. This has been modified

5. A structure completely spanning the marsh has been considered as feasible and will be incorporated in the final design.

NOT TRUE — piers are in the marsh and would still require the permit.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
6TH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

December 14, 1976

✓ CAMPONESCHI ___ CATHERMAN ___ HOPKINS
___ HOLT ___ DONLEY ✓ HUTZLER
✓ KOLAK ___ GRANDY ___ JANATA
✓ SCHNEIDER ___ HELWIG ___ KOLLER
___ UHL ✓ HOFFMAN ___ WILLIAMSON
___ ACTION ✓ INFO ___ FILE
REMARKS:

Mr. Eugene T. Camponeschi
Chief, Bureau of Project Planning
State Highway Administration
300 West Preston Street
Baltimore, Maryland 21201

Re: Maryland Route 2 and 4 Extended; Lower Patuxent River Bridge to Maryland Route 235

Dear Mr. Camponeschi:

We have reviewed the draft Environmental Impact Statement for the above proposed project and have classified it as ER-2 in EPA's Reference Category. We have enclosed a copy of the Definition of Codes for the General Nature of EPA Comments to provide a more detailed description of this rating. Also, in accordance with our responsibilities under Section 309 of the Clean Air Act to inform the public of EPA's views on the potential environmental effects of Federally assisted actions, this rating will be published in the Federal Register.

We commend the clarity with which the DEIS has outlined the potential environmental impacts of the proposed project. However, we are concerned because the EIS has shown that the mitigating measures that are available to minimize these impacts might not be used. In order for this project to be environmentally acceptable, we believe that all reasonable mitigating measures should be implemented. Our concerns relate specifically to water quality and noise impacts, and are outlined in detail below.

Water Quality

1. The draft statement's discussion of the value of marshes was commendable, and pointed out why the 21,000 square foot tidal marsh located on Kingston Creek should not be taken. We agree that while
1) individual takings of marshland may not be significant, the cumulative effect is. Therefore, filling activity is not likely to receive favorable comments under our Section 404 review process. The mitigating measures of bridging or avoiding the marsh should be implemented, since this particular permit is likely to receive a recommendation for denial.

2. We urge the strict use of the sedimentation and erosion control techniques outlined in the DEIS. Vegetative recovery areas and sedimentation basins could be used to control pollution from runoff. Drainage structures could be used on the stream crossings to divert runoff away from the
2) streams. Cofferdams could be used to minimize siltation when working in or around the streams. EPA believes that the final EIS should outline the specific measures that will be used to control sedimentation and erosion. We acknowledge that controls which could be used to minimize the impacts are listed, but we wish to know the specific controls that will be used.

3. The final EIS should contain diagrams of the proposed stream crossings which would indicate the dimensions of the streams and the
3) design of the proposed crossing. The use of culverts should be seriously considered when crossing the smaller streams in the project area.

Noise Impacts

1. The description of "Noise Sensitive Areas" on pages III-31-34 makes it difficult to determine the actual locations of the noise sensitive
4) receptors. Page III-32 identifies NSA 1 as being north of Patuxent Beach Road and east of Barringer Drive; while Figure 16 shows NSA 1 to be west of Patuxent Beach Road and north of the western terminus of Barringer Drive. NSA 2 refers to two residences, one east and one west of Barringer Drive, while Figures 16 and 18 indicate that the two residences are probably north and south of Barringer Drive. Furthermore, NSA 3 is supposedly 500 feet east of NSA 2, while Figure 16 shows it to be approximately 500 feet north. Better site identification is needed, and all NSA's should be more precisely located on Figures 16-22. If possible, noise contours should be shown on all the maps in order to more easily determine the noise impacts of the highway.

2. It does not appear that the noise analysis examined the noise impacts associated with the interchange alternates at Maryland Route 235.
5) NSA 21 appears to be near the interchange with Route 235 for alignment F, but Figure 22 shows the existence of additional sensitive receptors in the area. Furthermore, NSA's 15 and 16 appear to be near the interchange with Route 235 for alignment E. Nevertheless, there is no indication that these sites were evaluated as to the impact of the interchange noise. Additionally, a comparison of Figures 16, 17, and 18 shows that no noise areas have been identified for the interchange alternates for alignment C. This should be remedied in the final EIS, and rationale for choosing NSA's 21, 15, and 16 should be discussed, since there appear to be other sensitive receptors in those areas.

3. With respect to the determination of ambient noise levels, we note
6) that the time of measurement is tabulated on Page III-35. However, there is no indication of any duplication of measurement, any confidence level, nor any time interval. The procedure used to determine the ambient levels should be described, as well as the location and height of the measurement point.

4. We note that noise impacts were computed using Average Daily
7) Traffic volumes. Since, as stated on pages II-6 and 7, "The major traffic generators include the various beaches along the Chesapeake Bay and Patuxent River", and "the opening of the Lower Patuxent River Bridge and improvement to the existing Maryland Route 2 and 4 in Calvert County will make the southern Maryland waterfront area more accessible to the State and Region", perhaps the use of ADT's is improper for computing noise impacts. Summer traffic levels might have given more realistic results. The final EIS should discuss why ADT volumes were used.

5. We acknowledge that the Department considers the construction of barriers too costly at the impacted sites. However, other options
8) might be available to the Department that should be discussed in the final EIS. Recent revisions to the guidelines for noise abatement seen in the preamble to Procedures for Abatement of Highway Traffic and Construction Noise (23 CFR, Part 772 of April 23, 1976) seems to indicate that Federal Funding Policy is expanded to consider noise abatement measures where noise impacts are considered to be severe, and where more conventional abatement measures are unacceptable for social, economic, environmental, or engineering design reasons. These alternative measures include: acquisition of a severely impacted property, relocation of a dwelling or other structure, and noise insulation of private structures. We believe that the EIS has shown severe impacts at several sites (3,4,9,15, and 21). Since the Department has stated that the conventional abatement measures cannot be justified due to economic reasons, the final EIS should discuss the feasibility of using the alternative measures listed above. Furthermore, the final EIS should include any requests for exceptions to the design noise levels and if possible, FHWA's determination. This would serve to make the noise analysis more complete.

We hope that this review will assist you in the preparation of the final Environmental Impact Statement. If you have any questions, or if we can be of further assistance, you may wish to contact Mr. Sam Little or Mr. William Hoffman of my staff at 215-597-4388. We would appreciate the receipt of 5 copies of the final Environmental Statement at such time as it is filed with the Council on Environmental Quality.

Sincerely yours,

Nicholas M. Ruha
Chief
EIS and Wetlands Review Section

Enclosure

COMMENTATOR: United States Environmental Protection Agency

RESPONSE:

1. A decision has been made to bridge the marsh located on Kingston Creek. Avoiding the marsh created even more severe impacts to either Kingston Creek or several residences located along Patuxent Beach Road. This bridge would be approximately 300 feet in length. An exact determination of length will be made during the design phase of this project.

2. Sediment and Erosion control measures as developed by the U. S. Department of Agriculture, Soil Conservation Service and approved by the Maryland Department of Natural Resources and the Maryland State Highway Administrations will be implemented. The exact measures to be utilized however, will be developed during the design phase of the project when more detailed survey information is available.

Since this statement has been made we should not feel pressured to solve these problems at the beginning of the design phase.

3. Exact dimensions and designs of stream crossing would be developed during the design phase of the project. Culverts would be used at all stream crossings, except Kingston Creek.

4. The descriptions of noise sensitive areas have been changed to correctly indicate the locations in relation to existing roads within the study area. Noise contours were not considered necessary for this project. A description of the noise levels is on page IV-26.

5. There are other existing residential structures adjacent to NSA 21, however they are further from the proposed interchange and would not be adversely impacted by Alternate F. Traffic noise from Maryland Route 235 would be the dominant noise source at these areas. Based on

this only NSA 21 was selected. NSA's 15 and 16 were analyzed relative to the impacts from Alternate E both mainline and interchange noise. NSA 15 would experience a design year L_{10} of 72dBA, in excess of the recommended design noise level, and NSA 16 a design year L_{10} of 69dBA. The analysis indicated that Maryland Route 235 traffic is the dominant noise source so it is not feasible to provide noise control for either area. There are no noise areas in close proximity to the proposed interchange between Alternate C and Maryland Route 235 that would be adversely impacted by traffic noise.

6. Basis for ambient noise levels are included in a separate noise report and are not considered necessary for inclusion in this environmental document.

7. Noise levels were calculated using peak hour traffic volumes, and reflect summer peaking.

8. Actual noise level impacts over ambient levels at NSA's 3,15, and 21 would be negligible to minor, with those at NSA's 4 and 9 being severe. Alternate E Modified is being recommended in the Final EIS and this would only severely impact NSA 9. Consideration will be given to use of other abatement measures such as right-of-way purchase. For Alternate E Modified, only one area will experience a design year noise level exceeding Federal Highway Administration design noise levels, and the basis for an exception request is included in the FEIS. This request has not formally been sent to the Federal Highway Administration.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE - 4321 Hartwick Rd., Rm. 522
College Park, Maryland 20740

November 4, 1976

Mr. Eugene T. Camponeschi, Chief
Bureau of Project Planning
State Highway Administration
300 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Camponeschi:

This is in response to your letter dated October 13, 1976 to the Office of the Secretary, U. S. Department of Agriculture, Washington, D. C. and to this office regarding the draft environmental impact statement for Maryland Route 2 and 4 Extended from the Northern Approaches of the New Patuxent River Bridge to Md. Route 235 in St. Mary's County, Maryland.

Our area of interest in this project is erosion and sediment control both during construction and operation of this roadway. Your discussion on these subjects is sufficient for the final statement.

Sincerely,

Gerald R. Calhoun
State Conservationist

cc: R. M. Davis, Administrator
Office of the Coord. of Envir. Quality Activities
Council on Environmental Quality (5 copies)

COMMENTATOR: United States Department of Agriculture; Soil Conservation Service.

RESPONSE: No response

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DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
COMMANDER (mep)
FIFTH COAST GUARD DISTRICT
FEDERAL BUILDING
431 CRAWFORD STREET
PORTSMOUTH, VIRGINIA 23705
PHONE: (804) 393-9611 Ext. 315

16452
13 December 1976

Mr. Eugene T. Camponeschi
Chief, Bureau of Project Planning
State Highway Administration
300 West Preston Street
Baltimore, MD 21201

Dear Mr. Camponeschi:

This letter responds to Mr. Robert J. Hajzyk's letter of 13 October 1976 requesting comments on the draft environmental statement (DES) for Maryland Route 2 and 4 Extended From the Northern Approaches of the New Patuxent River Bridge to Maryland Route 235 in St. Mary's County, Maryland.

This DES discusses alignment alternatives which cross two waterways, Kingston Creek and Town Creek. Information in this DES is not sufficient for us to determine if such crossings would require Coast Guard bridge permits. Therefore, you should contact Mr. E. Bracken, Chief, Bridge Section for a determination in this matter. Mr. Bracken's address is:

Commander (oan)
Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth, VA 23705

The opportunity to review and comment on this DES is appreciated.

Sincerely,

R. S. BIZAR
Lieutenant Commander, U. S. Coast Guard
Chief, Environmental Protection Branch
By direction of the Commander
Fifth Coast Guard District

COMMENTATOR: Department of Transportation United States Coast Guard

RESPONSE: Mr. Bracken was contacted concerning this matter on February 9, 1977. The structure required to cross the fresh water marsh located near Kingston Creek would not require a permit from the United States Coast Guard because it is a fresh water body. The same would be true for the crossing of Kingston Creek.

GREENBELT + PEDERSON

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MARYLAND
DEPARTMENT OF STATE PLANNING
301 WEST PRESTON STREET
BALTIMORE, MARYLAND 21201
TELEPHONE: 301-383-2451

MARVIN MANDEL
GOVERNOR

VLADIMIR A. WAHBE
SECRETARY OF STATE PLANNING

December 6, 1976

Mr. Robert J. Hajzyk, Director
Office of Planning and Preliminary Engineering
Maryland Department of Transportation
State Highway Administration
300 West Preston Street
Baltimore, Maryland 21203

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT

Applicant: State Highway Administration

Project: Draft EIS - Md. Route 2 & 4 Extended from Patuxent River Bridge to Md. Route 235 (SHA # SM 581-003-571)

State Clearinghouse Control Number: 77-10-385

State Clearinghouse Contact: Warren D. Hodges (383-2467)

Dear Mr. Hajzyk:

The State Clearinghouse has reviewed the above Statement. In accordance with the procedures established by the Office of Management and Budget Circular A-95, the State Clearinghouse received comments from the following:

Department of Public Safety & Correctional Services, Department of General Services, Department of Economic & Community Development, Department of Health & Mental Hygiene, Department of Budget & Fiscal Planning and the Interagency Committee for Public School Construction: noted that the Statement appears to adequately cover those areas of interest to their agencies.

1) Department of Agriculture: referenced their earlier letter included in the project documentation which notes the strong concerns of the Department regarding the rapid depletion of productive agricultural land. The Department notes that this project will have a significant impact on the land use of the area and that this impact has to be clearly addressed and justified. Alternative C seems not to affect as much farm land as the other alternatives and therefore would be the least destructive. The Department requests that the applicant further coordinate with them regarding this matter.

2) Calvert County: requested (copy attached) that the Statement be revised to include considerations on the section of the bridge approach located in their County.

3) St. Mary's County: indicated (copy attached) that alternative E appears to be the most acceptable route; however, this alternative should be modified to lessen the adverse impacts on agricultural lands. The County requested further coordination in this regard.

Department of Natural Resources: noted (copy attached) that alternative C, E, and F are untenable from a sediment control, construction disturbance and
4) water quality points of view. The Department emphasized the environmental importance of the project area and presented detailed comments on the adverse impacts associated with this project and need to minimize or eliminate such impacts. The Department indicated that continued evaluation is being conducted with the applicant concerning these regards.

Our staff reviewed the project and stressed the importance of developing an effective
5) sediment control plan, especially with regard to the Kingston Creek Marsh area. Also, the Statement should contain a better presentation of the anticipated impact of the project on the future land use patterns of the area and the desirability of creating such impacts.

We hope these comments will be helpful in the continuing evaluation of this project, and we expect that the referenced concerns of the reviewers will be properly addressed and resolved prior to development of the final statement on this project. We look forward to continued cooperation with your agency.

Sincerely,

Vladimir Wahbe

Attachments

cc: Robert Lally
Young D. Hance
George Lewis
Lowell Frederick
Donald Noren
William Landis
Frederick King
Robert McDonald
Percy Williams
Henry Silbermann
Gerald McKinney
Lawrence Bowlby
Edward Cox

Date: DECEMBER 2, 1976

Maryland Department of State Planning
State Office Building
301 West Preston Street
Baltimore, Maryland 21201

SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: State Highway Administration

Project: Draft EIS - Md. Rt. 2 & 4 from Patuxent River Bridge to Md. Rt. 235 (Calvert & St. Mary's Counties)

State Clearinghouse Control Number: 77-10-385

CHECK ONE

This agency has reviewed the above project and has determined that:

1. The project is not inconsistent with this agency's plans, programs or objectives. ____

2. The project is not inconsistent with this agency's plans, programs or objectives, but the attached comments are submitted for consideration by the applicant. ____

3. Additional information is required before this agency can complete its review. Information desired is attached. ✓

4. The project is not consistent with this agency's plans, programs or objectives for the reasons indicated on attachment. ____

Signature: [signature]

Title: DEPUTY DIRECTOR FOR OPERATIONS

Agency: WATER RESOURCES ADMINISTRATION

Henry Silberman

HERBERT M. SACHS
DIRECTOR

1899

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

December 2, 1976

M E M O R A N D U M

TO: Joseph M. Knapp

FROM: Roger A. Kanerva

SUBJ: Clearinghouse Project #77-10-385 - Draft EIS - Md. Rt. 2 & 4 from Patuxent River Bridge to Md. Rt. 235 (Calvert & St. Mary's Counties) - State Highway Administration

Alternative road alignments "C", "E" and "F" are untenable from a sediment control, construction disturbance and water quality points of view. This conclusion was addressed in more detail via a letter dated October 21, 1976 from Lester A. Levine, Assistant Chief of the Permits Division of the Water Resources Administration to Mr. Eugene T. Camponeschi, Chief of the Bureau of Project Planning of the State Highway Administration. In this same letter the Administration proposed a new alternate alignment (copy of map attached) which should be addressed in the EIS.

The Wildlife Administration, in cooperation with the State Highway Administration, will be conducting an additional evaluation during the spring of 1977 in an effort to ascertain if the eastern narrow mouthed toad is in the vicinity of the project. Obviously, the outcome of this investigation will have a direct impact on the possible alignments to be considered.

The Fisheries Administration has identified the following specific concerns with regard to the EIS:

1. The construction of any of the proposed connecting roads will eliminate a freshwater marsh area at the head of the estuarine portion of Kingston Creek. The EIS has not adequately addressed
a) the impact of osing this marsh upon the aquatic community downstream of it, nor has it adequately addressed the possibilities of bridging over the marsh or moving the road to avoid the marsh.

The marshes surrounding the estuaries are irreplaceable zones which besides being primary contributors to the estuarine detitus food webs, serve as biological filters for extraneous pollutants and as sediment traps. In the interest of the Kingston Creek estuary, this marsh would serve a beneficial function in reducing any waterborne impacts upon the estuarine community below it, both during construction and with the expected increase in urbanization.

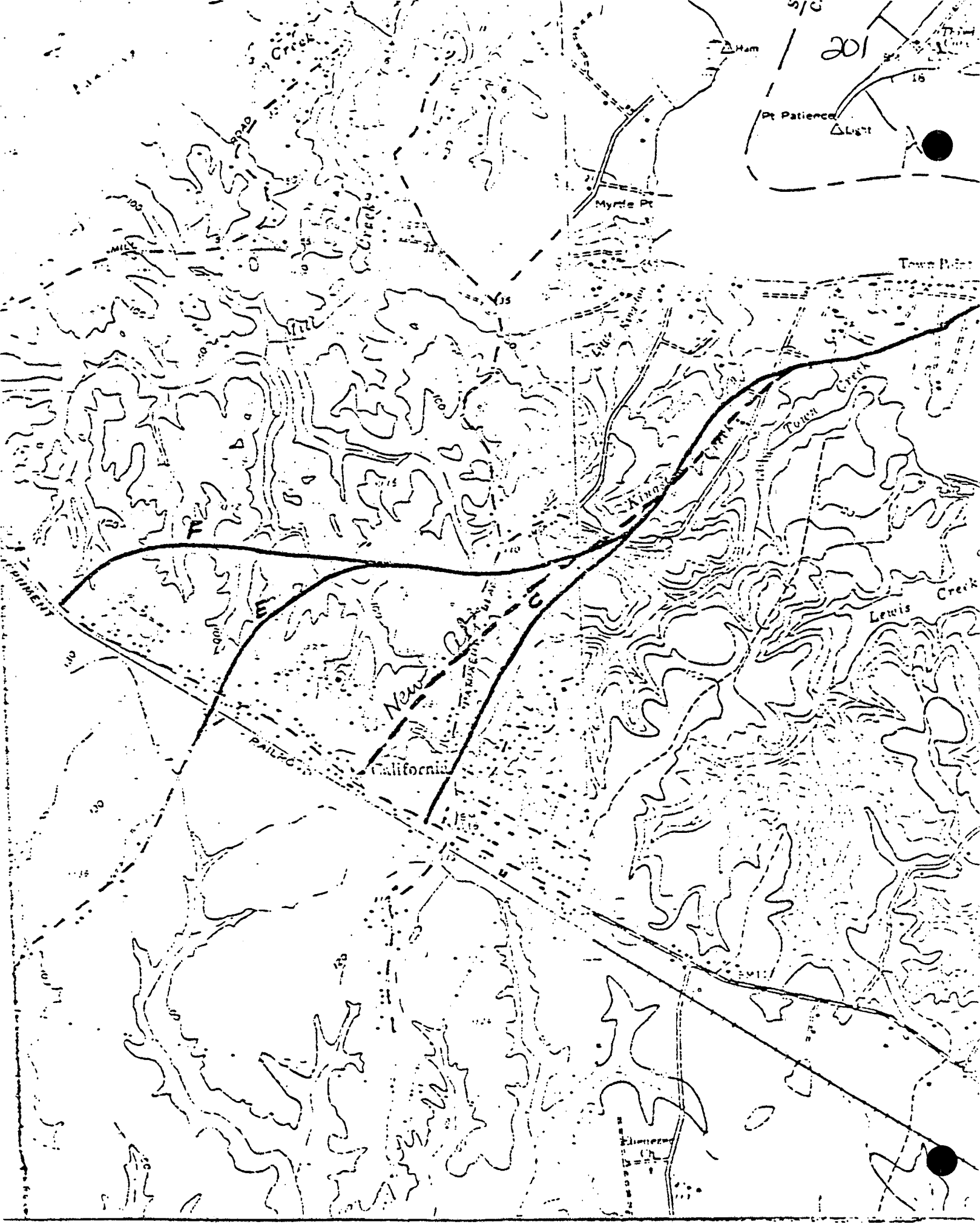
Any alternatives to taking the Kingston Creek Marsh have not been adequately addressed with respect to the marsh. Other alternatives, i.e. bridging or moving the proposed road to avoid the marsh were only given brief mention. We are of the opinion that the proposed road should be moved so to cross Kingston Creek further upstream, thus avoiding the marsh area.

2. Though the impact of sedimentation upon the aquatic community was discussed, alternate means of avoiding excessive sediment transport during construction were not addressed adequately. With construction taking place in an area of anadromous fish spawning, a spring constraint on bare ground construction should be discussed (i.e. 15 March - 15 June). The effects of sediment upon fish eggs is very significant. It has been found that sediment blanketing white perch eggs as thin as 0.5 mm to 1.0 mm caused mortalities of greater than 50%. Sediment covering of 1.2 mm over the top of the eggs resulted in 100% mortalities (Morgan, Rasin and Noe, 1973).

3. The problems associated with stormwater runoff from impervious surfaces, i.e. road surfaces and from the anticipated increase of urbanized areas were not adequately addressed with respect to the impacts upon the aquatic communities. It has been determined by numerous studies that masses of pollutants contributed by runoff often equal or exceed those contributed by point sources. Necessary precautions should be exercised to minimize surface water pollution from road runoff. The consequences of such pollution have often been neglected, however, runoff from road surfaces containing heavy metal, chlorides, PCB's, etc. can be deleterious to the quality of surface waters (Shaheen, 1975) and consequently to the fish species involved.

RAK:cfj

Attachment: Map


Pt Patience
Light
Myrtle Pt
Town Point
Town Creek
Lewis
Creek
New River
California
RAILROAD
F
E
D
201

202

November 4, 1976

Calvert County Comments Reference Draft EIS - Clearinghouse Control No. 77-10-385

1. The project location and description (page I-1) states: "This project begins at the northern approaches to the Lower Patuxent River Bridge in the Johnstown-Solomons area of Calvert County and terminates at Md. Route 235 in St. Mary's County." Also see Figure 2.

2. The draft EIS does not directly address the short section of the bridge approach in Calvert County between Route 2/4 and the bridge. While it is expected that the environmental impact on this section will be minimal, the draft EIS does not establish that fact, or any basis for eliminating that section from consideration.

3. Recommend that the draft EIS be revised to include considerations associated with the bridge approach in Calvert County, or provide a specific statement why such considerations are not required or appropriate.

LB:rec

Date: November 4, 1976

Maryland Department of State Planning
State Office Building
301 West Preston Street
Baltimore, Maryland 21201

SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: State Highway Administration

Project: Draft EIS - Md. Rt. 2 & 4 from Patuxent River Bridge to Md. Rt. 235 (Calvert & St. Mary's Counties)

State Clearinghouse Control Number: 77-10-385

CHECK ONE

This agency has reviewed the above project and has determined that:

1. The project is not inconsistent with this agency's plans, programs or objectives. _____

2. The project is not inconsistent with this agency's plans, programs or objectives, but the attached comments are submitted for consideration by the applicant. X

3. Additional information is required before this agency can complete its review. Information desired is attached. _____

4. The project is not consistent with this agency's plans, programs or objectives for the reasons indicated on attachment. _____

Signature: [signature]

Title: Director of Planning

Agency: Calvert County Planning Office

LB:rec

Encl: Comments by Calvert County reference Project, Draft EIS - State Clearinghouse Control No. 77-10-385

The County Commissioners
of St. Mary's County

Post Office Box 351
Leonardtown, Maryland 20650
Telephone 475-9121

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November 26, 1976

Maryland Department of State Planning
State Office Building
301 West Preston Street
Baltimore, Maryland 21201

Re: Draft EIS - Maryland Rt. 2 & 4
from Patuxent River Bridge to
Maryland Route 235
Clearinghouse No. 77-10-385

Gentlemen:

Attached please find our agencies' response with reference the above Clearinghouse project. As you will see, this project will need additional information furnished, as requested by the office of Land Use and Development and our Planning Commission.

Awaiting your prompt response, I am,

Very truly yours,

Edward V. Cox

Edward V. Cox,
County Administrator

EVC:avb
Enclosures (4)

Draft EIS - Md. Rt. 2 & 4 from Patuxent River Bridge to Md. Rt. 235 - (Calvert and St. Mary's Counties)

205

The Comprehensive Plan for St. Mary's County envisions that Maryland Routes 2 & 4 would be extended from the Lower Patuxent River Bridge to Maryland Rt. 235 at a point where St. Andrews Church Road presently intersects Route 235.

Previously St. Andrews Church Road was rebuilt with this Planning objective in mind.

The Project Summary Notification Review is as yet undefined as to a definite proposed route. On the contray, three alternatives are currently proposed and under consideration. Alternatives C and F are incompatible with the County Comprehensive Plan and are therefore unacceptable. Alternative E would be compatible with the Comprehensive Plan but this Alternative should be modified to lessen the adverse impacts where possible on affected property owners and lessen the taking of agricultural lands.

LRR/

1. COMMENTATOR: Department of Agriculture

   RESPONSE: The State Highway Administration has modified Alternate E to lessen the impact on the agricultural land. It would not be feasible to avoid all impacts on this land without disrupting several more residences. Alternate C, as developed in the Draft Environmental Impact Statement, would take more farmland than Alternate E or F.

2. COMMENTATOR: Calvert County Planning Office

   RESPONSE: The Environmental Impact Statement for Maryland Route 2 & 4 Extended begins at the same point that the Environmental Impact Statement for Maryland Route 2 & 4 from Maryland Route 264 to the Northern Approaches of the new Lower Patuxent River Bridge ends. The section between Md. Route 2 & 4 and the bridge was designed under standards and permit restrictions that were in effect at the time of the project development. Re-evaluation indicates no significant effects to the environment.

3. COMMENTATOR: The County Commissioners of St. Mary's County

   RESPONSE: Alternate E was recommended for design with modifications to lessen the impact on agricultural lands. This action was done through coordination with St. Mary's County officials.

4. COMMENTATOR: Department of Natural Resources

   RESPONSE:

   a) A bridge is proposed that would completely cross the marsh. The possibilities of avoiding the marsh were studied; however, any alignment that avoided the marsh would either require the

relocation of the sub-division of Narrows or required sloping would fill the stream bed of Kingston Creek. The alignment as presented by the Department of Natural Resources would severely impact Kingston Creek, a farm located in the center of the Study Area, an historical house located in the center of the Study Area, and three fresh water impoundments.

b) Sediment and Erosion control measures as developed by the U. S. Department of Agriculture, Soil Conservation Service and approved by the Maryland Department of Natural Resources and the Maryland State Highway Administration will be implemented to minimize the effects of sedimentation.

c) The problems associated with stormwater runoff have been added to the report.

5. COMMENTATOR: Department of State Planning

RESPONSE: There would be no significant change in future land use patterns since the construction of the road was included when St. Mary's County developed their Comprehensive Plan.

The Maryland Historical Trust
Shaw House, 21 State Circle, Annapolis, Maryland 21401
301: ~~267-1212~~ 269-2212 or 301: ~~267-1438~~ 269-2438

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Mr. Eugene T. Camponeschi, Chief
Bureau of Project Planning
Maryland Department of Transportation
State Highway Administration
P.O. Box 717
Baltimore, Maryland 21203

March 1, 1977

Re.: Maryland 2 & 4 Extended Contract
No. SM 581-003-571

Dear Sir:

Thank you for your letter of February 16, 1977, regarding the project listed above. I agree with your assessment that there will be no effect on any identified historic sites by Alternate E Modified.

Sincerely,

John N. Pearce

John N. Pearce
State Historic Preservation Officer

GJA:JNP:bjn
cc: George Andreve
David Roberts
Edwin Beitzell

COMMENTATOR: The Maryland Historical Trust

RESPONSE: No response

The County Commissioners
of St. Mary's County

Post Office Box 351
Leonardtown, Maryland 20650
Telephone 475-9121

210

December 8, 1976

Mr. Robert J. Hajzyk, Director
Office of Planning and Preliminary
Engineering
State Highway Administration
300 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Hajzyk:

The Board of County Commissioners, by letter dated April 21, 1976, addressed to you, previously stated its concern for the consideration of several factors in the determination of the location and design of the access road from Maryland Route 235 to the Lower Patuxent River Bridge. In keeping with the content of that letter, and upon review and consideration of information presented at the November 15, 1976, public hearing at Esperanza Middle School, as well as comments of the St. Mary's County Planning Commission and residents of the area, the Board respectfully requests that the State Highway Administration include among its other considerations the following recommendations as the final decisions for location and design are made:

1. Neither of the four alternates, identified as "C", "E", "F", and "No Build", as most recently presented is completely acceptable.

2. The intersection of Routes 2 and 4 extended with Route 235 should be at the St. Andrews' Church Road Intersection. This recommendation is based upon the consideration of the St. Mary's County Comprehensive Land Use Plan and with the realization that the potential exists for the intersection of Routes 235 and 2 and 4 to become in the future a major one.

The St. Andrews'/235 intersection likewise possesses the potential (in fact perhaps already is) to become a major intersection. Thus, from the standpoint of traffic control and flow, these two intersections should be combined, rather than have two major intersections separated only by a distance of something less than 1000 yards.

3. Within the constraints of acceptable safe design criteria, the curve of Routes 2 and 4 as it leaves the bridge should be tightened so that the wetlands located there might be avoided and that the impact on the residents of that area might be lessened.

4. It is strongly recommended that the location and design be altered within the constraints of safe design criteria, so as not to render virtually useless any working farms along the proposed route. As currently proposed, Alternate "E" does completely disrupt one farm, which we find unacceptable.

5. It is proposed by the State Highway Administration that two hundred (200) feet of right-of-way will be purchased so as to allow for future construction of additional lanes should they prove to be needed. Since it is difficult to predict when or if such will ever be constructed, would it be possible for an agreement to be made whereby individuals from whom agricultural land is purchased may continue to farm the unused portion of the right-of-way until such time as the SHA deems it is necessary to construct the additional lanes?

6. In a similar manner, it is proposed that significant property be purchased around the intersection for possible future construction of an interchange, should such be needed. Again, with something so tentative, would it be possible for either: (1) the purchase of property at the intersection be scaled down to include only immediate needs; or (2) if potential future needs are also purchased, could affected residents be given the option of remaining in residences purhcased, but not immediately needed?

Another matter which is not directly a consideration in the location and design of the new bridge access road, but is of concern to the Board of County Commissioners, is the

possibility of the use of Patuxent Beach Road as the interim access road until the new access road is constructed. It was stated by SHA personnel at the November 15, 1976, location public hearing that "ballpark estimates" for the completion of the bridge was in the Spring of 1978; for construction of the access road -- either the Fall of 1978 or Spring of 1979. It is thus reasonable to assume that the SHA is contemplating using Patuxent Beach Road on an interim basis for at least one year.

Patuxent Beach Road is currently used only for local traffic and can be considered at best only suitable for such. It is a road characterized by narrowness in width, blind corners, highly crowned, surface treatment in fair to poor condition over a poor sub-base in certain locations, poor vertical and horizontal alignment in certain locations, poorly drained, and with a number of trees and deep culverts within four (4) feet of the edge of the pavement. Needless to say it is unsuitable in its present condition to serve as the bridge access road, even on an interim basis. It is the opinion of this Board that there are only two acceptable alternatives with regard to the Patuxent Beach Road. Either: (1) the Bridge is not opened until the new access road is constructed; or (2) adequate improvements are made by the SHA to Patuxent Beach Road to make it suitable for use as the access road on an interim basis. It is assumed that these improvements would be completed prior to any bridge traffic utilizing Patuxent Beach Road. Improvements deemed to be necessary include: an asphalt overlay to effect a minimum of twenty (20) feet in pavement width, construction of four (4) feet earth shoulders, construction of adequate drainage, and satisfactory improvements of horizontal and vertical sight distance. Realizing that construction projects seem to invariably take longer to complete than original estimates, the Board would also request that the SHA give good faith assurances that Patuxent Beach Road use would truly be on an interim basis only and that construction of the extension of Routes 2 and 4 will continue to move forward.

This letter is being hand delivered by the County Engineer, Mr. John Norris, and the Board respectfully requests that

feasible alternates to accomplish the above indicated considerations might be explored with Mr. Norris. Your continued cooperation in this matter is appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
ST. MARY'S COUNTY, MARYLAND

James M. McKay, President

Ford L. Dean, Commissioner

J. Patrick Jarboe, Commissioner

Larry Millison, Commissioner

John K. Parlett, Commissioner

CCRS:FLD:jam

COMMENTATOR: The County Commissioners of St. Mary's County

RESPONSE:

2. The recommended alignment, Alternate E Modified, intersects Md. Route 235 in the vicinity of St. Andrew's Church Road.

3. Altering the alignment to avoid the wetlands would create a severe problem to either Kingston Creek itself or the community of Narrows.

4. Alternate E Modified was altered from the original Alternate E to minimize the extent of disruption to the farm.

5. The State Highway Administration is investigating the possibility of allowing the continued use of the unused portion of the right-of-way by the public. A final determination will be made during relocation negotiations.

6. The purchase of property at the intersection of Alternate E Modified and Md. Route 235 has been re-evaluated and at this time only property required for the initial at-grade intersection will be purchased.

7. The State Highway Administration recognizes the fact that Patuxent Beach Road is presently substandard. However, it is their opinion that extensive improvements should not be undertaken. A smoother riding surface tends to give the motorists a false sense of security and an increase in driving speed. When motorists are aware of the substandard character of a road they will drive slower. Should Patuxent Beach Road be utilized as an interim access to the bridge, the State Highway Administration would favor the incorporation of extensive signing to warn the motorists of existing conditions.

P.H.

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SENATE OF MARYLAND

ANNAPOLIS, MARYLAND 21404

JAMES C. SIMPSON
STATE SENATOR
29TH LEGISLATIVE DISTRICT
CHARLES & ST. MARY'S COUNTIES

December 20, 1976

DISTRICT OFFICE:
P. O. BOX 158
WALDORF, MARYLAND 20601
645-2255

Mr. Robert J. Hajzyk, Director
Office of Planning and Preliminary Engineering
State Highway Administration
300 W. Preston Street
Baltimore, Maryland, 21201

Dear Sir:

I am writing to you with respect to St. Mary's Contract No. SM 581-3-570 (Patuxent River Bridge Approaches).

As you are aware, the majority of the St. Mary's County Commissioners have recommended Alternate "E" for the approach road. I concur with the Commissioners in this decision, if the Tarleton Farm is undisturbed.

It appears to me that the alignment studies indicate a possibility of bypassing the Tarleton Farm by incorporating part of Alternate "D" in Alternate "E".

Therefore, I respectfully request that a great deal of thought and effort be given to designing Alternate "E" in such a way that the Tarleton Farm would be bypassed or skirted along the northern edge.

Thank you for your cooperation, consideration, and courtesy in this regard.

Sincerely,

James C. Simpson
State Senator

sjm
cc: St. Mary's County Commissioners
Mr. David Salsberg
Mr. Joseph R. Tarleton

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SENATE OF MARYLAND

ANNAPOLIS, MARYLAND 21401

JAMES C. SIMPSON
STATE SENATOR
[illegible] LEGISLATIVE DISTRICT
[illegible] ST. MARY'S COUNTIES
ANNAPOLIS:
269-2780

DISTRICT OFFICE
[illegible]

January 18, 1977

Mr. Robert J. Hajzyk, Director
Office of Planning and Preliminary
  Engineering
State Highway Administration
300 W. Preston Street
Baltimore, Maryland, 21201

Dear Mr. Hajzyk:

This letter is with respect to St. Mary's Contract No. SM 581-3-570 (Patuxent River Bridge Approaches).

As you will recall, I wrote to you on December 20, 1976, expressing my interest in bypassing the Tarleton farm when the decision on which Alternate would be used is made.

I am again writing concerning this matter and this time it is with respect to safety factors involved in the approach road. I would hope that the views and concerns of all of the citizens in that area are taken into careful consideration by the Department of Transporation prior to the opening of the bridge.

Thank you for your cooperation and courtesy in this regard.

Sincerely,

James C. Simpson
State Senator

sjm

ACTION | INFO | FILE
CAMPONESCHI | [illegible] | [illegible] | JANATA
SCHNEIDER | [illegible] | [illegible] | KELLER
HOUST | [illegible] | HONEYWELL | WILLIAMS
[illegible] | [illegible] | [illegible]

COMMENTATOR: James C. Simpson, Senate of Maryland.

RESPONSE: Alternate E Modified was developed to skirt along the north edge of the farm. Regarding the safety of the approach road (Patuxent Beach Road) the State Highway Administration is of the opinion that extensive improvements should not be undertaken. A smoother riding surface tends to give the motorists a false sense of security and an increase in driving speed. When motorists are aware of the substandard character of a road they will drive slower. If Patuxent Beach Road is used as an interim access road to the bridge then the State Highway Administration favors utilizing extensive signing to warn the motorists of existing conditions.

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JOHN HANSON BRISCOE
SPEAKER

HOUSE OF DELEGATES

STATE HOUSE
ANNAPOLIS, MARYLAND 21401
267-5374
267-5595

December 23, 1976

Mr. Robert J. Hajzyk, Director
Office of Planning and Preliminary Engineering
State Highway Administration
300 W. Preston Street
Baltimore, Maryland 21201

Re: St. Mary's County Contract No. SM 581-3-570
Patuxent River Bridge Approaches

Dear Sir:

Recently a majority of the St. Mary's County Commissioners recommended Alternate "E" for the Patuxent River Bridge approach road. I have no objection to this route only if the Tarleton Farm is left intact.

It seems to me, in looking at the various alignment studies, that it is possible to bypass the Tarleton Farm by incorporating part of Alternate "D" in Alternate "E". Of course, as a layman, I am not in a position to assess the engineering feasibility of by-passing the Tarleton Farm. However, I strongly and sincerely request that some thought be given to designing Alternate "E" in such a way that it either by-passes the farm or skirts it along the north edge.

As always, the work your office has done and the care in which you have presented this program is appreciated.

Sincerely,

John Hanson Briscoe

JHB/sjm

cc: County Commissioners
David Salsberg
Joseph R. Tarleton

✓ CAMPONESCHI	CATHERMAN	HOPKINS
HOUST	DORSEY	HUTZLER
KROLAK	GRANDY	JANATA
✓ SCHNEIDER	HELWIG	KOLLER
UHL	HOFFMAN	WILLIAMSON

ACTION ✓ INFO FILE

COMMENTATOR: John Hansen Briscoe, Maryland House of Delegates.

RESPONSE: Alternate E Modified was developed to skirt along the north edge of the affected farm.

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HOUSE OF DELEGATES
ANNAPOLIS, MARYLAND 21404

ROYDEN P. (ROY) DYSON
CHARLES, ST. MARY'S COUNTIES
ENVIRONMENTAL MATTERS

HOME ADDRESS:
POST OFFICE BOX FIVE
GREAT MILLS, MARYLAND 20634

December 3, 1976

Mr. Robert J. Hajzyk, Director
Office of Planning and
Preliminary Engineering
State Highway Administration
300 West Preston Street
Baltimore, Maryland 21201

Dear Mr. Hajzyk:

I am writing on behalf of the Joseph R. Tarleton Family of Route 2, Patuxent Beach Road, California, Maryland, 20619. The Tarleton's live in the vicinity of the proposed access roads to the new lower Patuxent River Bridge currently under consideration by your Department. As an aid in further clarification, I am referring to State Project No. SM 581-003-570.

Should the State decide to construct either alternate "E" or "F" it would mean the Tarleton's farm would be divided by a state highway. Recently I had the opportunity to visit that portion of the Tarleton farm where the surveyor's stakes were in place. It was obvious to me that a road (alternate "E" or "F") through the farm would effectively curtail farming as an occupation for the Tarleton Family.

During the 1975 and 1976 sessions of the Maryland General Assembly, one of the prime concerns of the Environmental Matters and Ways and Means Committees was legislation aimed at preserving agricultural land. I have become alarmed over the amount of farm land which is taken out of production each year in our State. It appears that both alternate "E" and "F" will consume more farm acreage than any other proposed route.

It is my sincere hope that the State Highway Administration will provide in its final access decision a careful consideration of the preservation of our valuable farmlands. The Tarleton's farm is important to them as well as to Saint Mary's County as a whole. I am confident that you will give their situation careful consideration.

Sincerely,

Roy Dyson
House of Delegates

cc. Mr. Walter L. Hanrahan
Project Manager
Mr. Arnold Gardner
District Engineer
Mr. Joseph R. Tarleton

COMMENTATOR: Royden P. Dyson, Maryland House of Delegates.

RESPONSE: The State Highway Administration agrees with Mr. Dyson's comments regarding saving farmland. Due to the comments received, Alternate E was modified to avoid dividing the farm. However, it was impossible to develop an alternate that would completely avoid the farm without adversely affecting several residences.

APPENDICES

APPENDIX A

LIST OF REFERENCES

APPENDIX A

LIST OF REFERENCES

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APPENDIX B

ASSESSMENT OF SIGNIFICANT ENVIRONMENTAL EFFECTS

ASSESSMENT OF SIGNIFICANT ENVIRONMENTAL EFFECTS

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The following questions should be answered by placing a check in the appropriate column(s). If desirable, the "comments attached" column can be checked by itself or in combination with an answer of "yes" or "no" to provide additional information or to overcome an affirmative presumption.

In answering the questions, the significant beneficial and adverse, short and long term effects of the proposed action, on-site and off-site during construction and operation should be considered.

All questions should be answered as if the agency is subject to the same requirements as a private person requesting a license or permit from the State or Federal Government.

	Yes	No	Comments Attached
A. Land Use Considerations			
1. Will the action be within the 100 year flood plain?	X		
2. Will the action require a permit for construction or alteration within the 50 year flood plain?	X		
3. Will the action require a permit for dredging, filling, draining or alteration of a wetland?	X		
4. Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?	X		
5. Will the action occur on slopes exceeding 15%?	X		
6. Will the action require a grading plan or a sediment control permit?	X		
7. Will the action require a mining permit for deep or surface mining?		X	
8. Will the action require a permit for drilling a gas or oil well?		X	
9. Will the action require a permit for airport construction?		X	
10. Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?		X	

	Yes	No	Comments Attached
11. Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river or wildland?	___	X	___
12. Will the action affect the use of any natural or man-made features that are unique to the county, state or nation?	___	X	___
13. Will the action affect the use of an archaeological or historical site or structure?	___	X	___
B. Water Use Considerations			
14. Will the action require a permit for the change of the course, current, or cross-section of a stream or other body of water?	X	___	___
15. Will the action require the construction, alteration or removal of a dam, reservoir or waterway obstruction?	___	X	___
16. Will the action change the over-land flow of storm water or reduce the absorption capacity of the ground?	X	___	___
17. Will the action require a permit for the drilling of a water well?	___	X	___
18. Will the action require a permit for water appropriation?	___	X	___
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	___	X	___
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	___	X	___
21. Will the action result in any discharge into surface or sub-surface water?	X	___	___

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	Yes	No	Comments Attached
22. If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	___	X	231
C. Air Use Considerations			
23. Will the action result in any discharge into the air?	___	X	___
24. If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	___	X	___
25. Will the action generate additional noise which differs in character or level from present conditions?	X	___	___
26. Will the action preclude future use of related air space?	___	X	___
27. Will the action generate any radiological, electrical, magnetic, or light influences?	___	X	___
D. Plants and Animals			
28. Will the action cause the disturbance, reduction or loss of any rare, unique or valuable plant or animal?	___	X	___
29. Will the action result in the significant reduction or loss of any fish or wildlife habitats?	X	___	___
30. Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?	___	X	___
E. Socio-Economic			
31. Will the action result in a preemption or division of properties or impair their economic use?	X	___	___

	Yes	No	Comments Attached
32. Will the action cause relocation of activities, structures or result in a change in the population density or distribution?	X		232
33. Will the action alter land values?	X		
34. Will the action affect traffic flow and volume?	X		
35. Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?		X	
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?		X	
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans--including zoning?	X		
38. Will the action affect the employment opportunities for persons in the area?	X		
39. Will the action affect the ability of the area to attract new sources of tax revenue?	X		
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	X		
41. Will the action affect the ability of the area to attract tourism?	X		
F. Other Considerations			
42. Could the action endanger the public health, safety or welfare?		X	
43. Could the action be eliminated without deleterious effects to the public health, safety, welfare or the natural environment?		X	

		Yes	No	Comments Attached
44.	Will the action be of statewide significance?	___	X	___
45.	Are there any other plans or actions (federal, state, county or private) that, in conjunction with the subject action could result in a cumulative or synergistic impact on the public health, safety, welfare or environment?	X	___	___
46.	Will the action require additional power generation or transmission capacity?	___	X	___

G. Conclusion

47.	This agency will develop a complete environmental effects report on the proposed action.	X	___	___

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APPENDIX C

COMPARISON OF PREDICTED NOISE LEVELS

ALTERNATE C

A COMPARISON OF PREDICTED NOISE LEVELS WITH AMBIENT AND DESIGN GOALS

NOISE SENS. AREA	ACTIVITY CATEGORY	AMBIENT L_{10}	DESIGN YR. L_{10} (2000)	CHANGE IN L_{10}	RELATION TO DESIGN GOAL	ASSESSMENT
1	B	63dBA	66dBA	+3	-4	Negligible increase in ambient level
2	B	55dBA	66dBA	+11	-4	Significant increase in ambient level
3	B	63dBA	71dBA	+8	+1	Minor increase in ambient level; design noise level exceeded
4	B	46dBA	62dBA	+16	-8	Severe increase in ambient level
5	B	63dBA	61dBA	-2	-9	No increase in ambient level
6	B	48dBA	58dBA	+10	-12	Minor increase in ambient level
7	B	46dBA	54dBA	+8	-16	Minor increase in ambient level
8	B	46dBA	54dBA	+8	-16	Minor increase in ambient level
9	B	51dBA	68dBA	+17	-2	Severe increase in ambient level
10	B	55dBA	58dBA	+3	-12	Negligible increase in ambient level
11	B	48dBA	55dBA	+7	-15	Minor increase in ambient level
12	B	51dBA	63dBA	+12	-7	Significant increase in ambient level
13	B	58dBA	62dBA	+4	-8	Negligible increase in ambient level
14	B	58dBA	63dBA	+5	-7	Negligible increase in ambient level

ALTERNATE F

A COMPARISON OF PREDICTED NOISE LEVELS WITH AMBIENT AND DESIGN GOALS

NOISE SENS. AREA	ACTIVITY CATEGORY	AMBIENT L_{10}	DESIGN YR. L_{10} (2000)	CHANGE IN L_{10}	RELATION TO DESIGN GOAL	ASSESSMENT
9	B	41dBA	68dBA	+17	-2	Severe increase in ambient levels
10	B	55dBA	58dBA	+3	-12	Negligible increase in ambient levels
11	B	48dBA	55dBA	+7	-15	Minor increase in ambient levels
12	B	51dBA	63dBA	+12	-7	Significant increase in ambient levels
13	B	58dBA	62dBA	+4	-8	Negligible increase in ambient levels
14	B	58dBA	63dBA	+5	-7	Negligible increase in ambient levels
16	B	66dBA	56dBA	-10	-14	No increase in ambient levels
17	B	51dBA	53dBA	+5	-14	Negligible increase in ambient levels
18	B	56dBA	60dBA	+5	-9	Negligible increase in ambient levels
19	B	54dBA	63dBA	+10	-6	Minor increase in ambient levels
20	B	53dBA	55dBA	+2	-15	Negligible increase in ambient levels
21	B	71dBA	75dBA	+4	+5	Negligible increase in ambient levels; federal design noise level exceeded

SHA 61[redacted]34
4-3-75

NO-BUILD ALTERNATE

COMPARISON OF PREDICTED NOISE LEVELS WITH AMBIENT AND DESIGN GOALS

NOISE ENS. AREA	ACTIVITY CATEGORY	AMBIENT L_{10}	DESIGN YR. L_{10} (2000)	CHANGE IN L_{10}	RELATION TO DESIGN GOAL	ASSESSMENT
22	B	63dBA	63dBA	0	-7	No increase in ambient.
23	B	65dBA	66dBA	+1	-4	Negligible increase in amb
24	B	55dBA	55dBA	0	-15	No increase in ambient.
25	B	55dBA	66dBA	+11	-4	Significant increase in ambient.
26	B	63dBA	66dBA	+3	-4	Negligible increase in ambi
27	B	63dBA	70dBA	+7	equals	Minor increase in ambient.
28	B	46dBA	61dBA	+15	-9	Significant increase in ambient.
29	B	46dBA	61dBA	+15	-9	Significant increase in ambient.
30	B	41dBA	58dBA	+17	-12	Severe increase in ambient.
31	B	55dBA	62dBA	+7	-8	Minor increase in ambient.
32	B	46dBA	58dBA	+12	-12	Significant increase in ambient.
33	B	41dBA	54dBA	+13	-16	Significant increase in ambient.
34	B	55dBA	68dBA	+13	-2	Significant increase in ambient.

SHA 61.5-34
4-3-75

NO-BUILD ALTERNATE

COMPARISON OF PREDICTED NOISE LEVELS WITH AMBIENT AND DESIGN GOALS

NOISE ENS. AREA	ACTIVITY CATEGORY	AMBIENT L_{10}	DESIGN YR. L_{10} (2000)	CHANGE IN L_{10}	RELATION TO DESIGN GOAL	ASSESSMENT
36	B	55dBA	62dBA	+7	-8	Minor increase in ambient.
37	B	51dBA	62dBA	+11	-8	Significant increase in ambient.
38	B	46 dBA	58 dBA	+12	-12	Significant increase in ambient.
39	B	55dBA	58dBA	+3	-12	Negligible increase in ambient.
40	B	48dBA	55dBA	+7	-15	Minor increase in ambient.
41	B	51dBA	55dBA	+4	-15	Negligible increase in ambient.
42	B	51dBA	63dBA	+12	-7	Significant increase in ambient.
43	B	55dBA	63dBA	+8	-7	Minor increase in ambient.

APPENDIX D

SUMMARY OF RELOCATION EFFECTS FOR ALTERNATE E MODIFIED

Rec. Feb. 23, 1977

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Mr. A. M. Schmlier, Chief, Bureau
of Relocation Assistance
Attention: Mr. George Hester
Robert L. Gordon
District 5 Relocation Officer

February 15, 1977

SM 581-11-571
Md. Rte. 2 & 4 from Lower Patuxent River
Bridge to Md. Rte. 235
Environmental Input Statement

As per your request by letter dated February 7, 1977, a review of the selected alternate has been made. The information for the final Environmental Impact Statement follows.

The community affected by the modified alternate could best be classified as rural residential, however, there are two businesses and one farm that will be impacted. The income levels will vary considerably but an average would be about middle class. The laternate will have an impact on the remaining homes along Maryland Route 235, with several homes in Woodland Acres having to relocate their driveways to the rear of the property. The remainder of the road being on relocation will not divide or disrupt any other communities, however it will be in close proximity to the Kingston Manor subdivision. There are two businesses that will be affected; one a well and plumbing business which should be able to relocate in the general area, the other a grocery store which may find it difficult to relocate into a new building and remain in business. There will be no adverse impact on particular groups such as the elderly and handicapped, and there will be no impact on community facilities. There should be no significant change in the character or zoning make up of the affected community, however an exception may be at the intersection that will be created with Md. Rte. 235 where commercial development may come. The property values along the alternate will remain the same except for the aforementioned intersection, which may increase with the zoning change.

The modified alternate will necessitate the displacement of four families which consist of approximately ~~eight~~ 11 persons. Of these two are owner occupied and two are tenant occupied. There are two business operations affected, a grocery store and a plumbing and well company. There is a possibility that the grocery store will discontinue business due to the non-availability of replacement sites. The alternate will affect one farm operation where two large barns and some of the tillable land are affected. There are no non-profit organizations affected.

There are no minority families, groups or communities either affected or by-passed by this alternate.

Relocation Plan

At the time of this report there were at least 25 houses for sale

in the project area. Broken down into categories: eleven between 20 and 40 thousand, and fourteen between 40 and 60 thousand. Since this is a growing community the number of houses available at this time would be considered normal. There is not expected to be any adverse impact to existing communities by those being displaced. The information for available homes was obtained largely from the classified section of the newspaper Enterprise 2-10-77, contacts with local realtors, and field surveillance at the time of study.

Depending on the timing of the project, there are two road projects (Md. 235 from Hollywood to St. Andrews Church Road and Md. Rte. 5 in the Ridge area) and new flights coming into the Naval Station that could affect the supply of homes.

The lead time for the alternate is expected to be approximately one year, since there are no foreseeable problems.

The relocation of the families displaced by the modified alternate should be able to be satisfactorily resolved in a normal amount of time, with the relocation being accomplished in accordance with the requirements of the Uniform Relocation Assistance and Land Acquisition Policies Act of 1970.

RLG:hp:ndb
cc: Mr. David Heinmuller

Bureau of Relocation Assistance
Office of Real Estate
300 West Preston Street - Room 403
Baltimore, Maryland 21201

STATE HIGHWAY ADMINISTRATION
OF THE
DEPARTMENT OF TRANSPORTATION
OF MARYLAND

S.H.A. 63.0 RP-1 (10-25-74) Page 1 Preliminary Relocation Studies
Maryland Project: SM 581-11-571 Federal Aid Project: ______
Termini: Md. Rte. 2 & 4 from Lower Patuxent River Bridge to Md. Rte. 235 Alternate Number: Mineral File No.

Indicate which of the following applies to the information below: Draft Environmental Impact Statement ______ Conceptual Stage Study ______ Final Environmental Impact Statement X Acquisition Stage Study ______

RESIDENTIAL OCCUPANTS AND IMPROVEMENTS AFFECTED

Occupancy Status	Dwlgs.	Dwlg. Units	Fam.	Ind.	Type of Construction: Brick	Frame	Comb.	Det.	Sem. Det.	Row	Multi Fam.	Age: 0-10 Yrs.	11-30 Yrs.	31 Yrs. Up	Rooms: 3	4	5	6	7	8 up	Bedrooms: 1	2	3	4 up	Estimated Values (000's) or Rent: $0-$30	$30-$40	$40-?
Owner Occupied	2	2				1	1	2					2			1		1				1	1		1	1	
Tenant Occupied	2	2					2	2					2					2					2			2	
Totals	4	4				1	3	4					4			1		3				1	3		1	3	

RESIDENTIAL IMPROVEMENTS AVAILABLE

FOR SALE

Asking Price Range (000's)	Dwlgs.	Type of Construction: Brick	Frame	Comb.	Det.	Sem. Det.	Row	Age: 0-10 Yrs.	11-30 Yrs.	31 Yrs. Up	Rooms: 3	4	5	6	7	8 up	Bedrooms: 1	2	3	4 up
$0-20	0																			
$20-40	11	2	5	4	11			2	6	3				2	8	1		2	6	3
$40-60	14	3	6	5	14			6	8					1	10	3		1	11	2
Totals	25	5	11	9	25			8	14	3				3	18	4		3	17	5

Sources: ______

FOR RENT

Bedrooms No.	Monthly Rent: 0 to $100	$100 to $150	$150 to $200	$200 to $250	$250 to $300	$300 & up	Apt.	Homes	Totals
1		1						1	1
2			1		1	1		3	3
3			1		1	1		3	3
4 up		1	2		2	2		7	7

Sources: The Enterprise(2-10-77), field observ.

BUSINESSES, FARMS, AND NON-PROFIT ORGANIZATIONS AFFECTED

Occupancy Status	Businesses: Retail	Comm.	Mfgr.	Chain	Emp.	Farms: Dairy	Cattle	Truck	Emp.	Non-Profit Organizations: Rel.	Soc.	Inst.	Emp.
Owner	1	1											
Tenant													
Totals	1	1											

AVAILABLE REPLACEMENT SITES

Type of Site	Business	Non-Profit	Farms
Sale			
Lease			
Totals			

Sources: The Enterprise (2-10-77), field observ.

Remarks: There are 2 additional homes that could be taken due to location of septic systems, one in Kingston Manor and one on Woodland acres Road.

Estimated average family size 4
Estimated total number persons affected 16.
Estimated total number of minority group members affected 0, number of owner occupant families 8, number of tenant occupant families 0, and number of individuals 0.

Estimated number of minority owned or operated businesses 0.
Estimated number of minority employees 0.
Estimated number of minority owned or operated farms 0.
Estimated number of minority employees 0.
Estimated number of minority non-profit organizations 0.
Estimated number of minority employees 0.

Signature: [illegible] (RELOCATION OFFICER) 2 15 77 (DATE)