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**FINAL SUPPLEMENT 1
FINAL ENVIRONMENTAL IMPACT STATEMENT**

**METRO A ROUTE
SHADY GROVE TO ROCKVILLE
MONTGOMERY COUNTY, MARYLAND**

IT-23-9003

**U. S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION**

APRIL 1977

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FINAL
SUPPLEMENT #1
TO
FINAL ENVIRONMENTAL IMPACT STATEMENT

METROPOLITAN WASHINGTON RAPID TRANSIT SYSTEM
PROJECT IT-23-9003

EXTENSION OF METRO "A" ROUTE FROM ROCKVILLE TO SHADY GROVE,
RELOCATION OF SERVICE AND INSPECTION YARD FROM ROCKVILLE
TO SHADY GROVE

This transportation improvement is being funded
under Title 49, U.S.C. 1601 ET. SEQ. and Title 23,
U.S.C.

This statement is submitted pursuant to Section 102(2)c
of NEPA of 1969 (PL 91-190); Section 14 of the UMTA Act
of 1964 as amended; and Section 4(f) of the DOT Act of
1966.

U.S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration

April, 1977

April 7, 1977
Date

BY: Jerome C. Premo
Jerome C. Premo
Associate Administrator for
Transit Assistance

FOREWORD

This Final Supplement to the Washington Metropolitan Area Transit Authority Regional Transit System Final Environmental Impact Statement (August, 1975) was prepared by the Urban Mass Transportation Administration in cooperation with the Washington Metropolitan Area Transit Authority (WMATA) to meet the requirements of the National Environmental Policy Act of 1969 (NEPA). This final supplemental statement documents the environmental impacts of the proposed Rockville-Shady Grove Extension to the 1968 Adopted Transit System in the Washington, D. C. metropolitan area.

The WMATA Regional Transit System Final Environmental Impact Statement, which considered the environmental impacts of the entire regional metro system was circulated in August 1975 and is on file for reference at the Washington Metropolitan Area Transit Authority, 600 Fifth Street, N. W., Room 2F, Washington, D. C. 20001 and the Urban Mass Transportation Administration, Office of Transit Assistance, 400 Seventh Street, S. W., Room 9306, Washington, D. C. 20590.

This statement is the result of an impact assessment conducted by the Washington Metropolitan Area Transit Authority and its consultant. Public hearings were held on December 9-10, 1974 on the Environmental Impact Assessment.

The Draft Supplemental Environmental Impact Statement for this extension was circulated in November, 1976 to appropriate agencies and to the public for review in accordance with the Council on Environmental Quality's guidelines and UMTA procedures. The questions and comments received during the review are answered in this Final Supplement. Certain sections have been rewritten and expanded to include additional data and information, and portions were revised or added as appropriate to respond to the comments received. The appendix of the Draft Supplemental Impact Statement has not been changed. Therefore, the appendix is not being circulated with the main text of this Final Supplement statement.

SUMMARY SHEET

SUPPLEMENT #1 TO FINAL ENVIRONMENTAL STATEMENT

WASHINGTON METRO SYSTEM

U. S. Department of Transportation, Urban Mass Transportation Administration

1. Name of Action: Administrative Action

2. Description of Proposed Action:

a. This supplemental statement discusses the following changes to the Metro Route A:

- elimination of the terminal station and service and inspection facility at Rockville, Maryland.

- extension of Route A to Shady Grove, Maryland (2.66 miles of at-grade track)

- addition of terminal station and service and inspection yard at Shady Grove, Maryland.

b. This total additional cost for these modifications is estimated at:

	<u>Cost in Millions of Dollars</u>
Running Track including Shady Grove Sta.	50.5
Shady Grove S&I Yard and Shop	39.7
Bridges (highway access)	<u>3.6</u>
	93.8

c. The affected area would be Shady Grove. These charges will have some impact on the entire system, as they are expected to increase transit ridership by making transit more readily accessible to a greater number of communities.

d. UMTA Project Number: IT-23-9003

3. Summary of environmental impact and adverse effects:

a. Possible long-term adverse effects:

(1) The permanent adverse environmental impact will be the transformation from a rural to an industrial landscape which will involve clearing, regrading, building and paving on a 70-acre tract in the headwaters of Crabbs Branch. The Metro

facility will require some 28 acres of parking and access roads, a 36-acre rail yard and several acres for drainage detention. The headwaters basin is zoned industrial and may be expected to receive impacts from private development. This transformation will destroy the existing landscape of old fields, pastures, hedgerows and meadows.

- (2) Storm runoff will be alleviated by detention ponds with culverts and channels designed to release excess runoff from parking lots and rail yards at a rate which Crabbs Branch can accommodate. Two considerations must be noted. Development in this area will increase downstream flooding and the effects of severe rainstorms would be only partially ameliorated by the detention basins. Finally, it must be noted that detention basins cannot eliminate dissolved salts, dissolved solids, suspended solids and dissolved chemicals, all of which may potentially effect the stream's health. Water quality will be reduced in Crabbs Branch but the effects of Metro will be assimilable. However, with the cumulative effects of Metro, the County Service Park, a County Processing Facility and planned industrial development, the health of Crabbs Branch will invariably suffer. No flood plain problems are associated with this project.
- (3) Local traffic congestion in the area of the Shady Grove extension will probably increase. However, substantial road improvements are planned by Montgomery County in the near future which will hopefully alleviate this impact. Other negative impacts are the closing of Frederick Avenue, Westmore Road and Redland Road, thus eliminating at-grade crossings of the B&O Railroad, and the reconstruction of the Gude Drive bridge and the Derwood Road bridge over the railroad and Metro alignments. The traffic impacts created closing Frederick Avenue and Westmore Road can be partially mitigated for the local area by improving access via the Park Street Underpass. The closing of Redland Road is proposed to be mitigated by connecting it to Field Road on the northeast. At present the local jurisdictions have under study the cost/benefit of additional connections across the project.
- (4) No long-term adverse impacts on air quality are expected from the Metro facilities at Shady Grove.
- (5) As much of this segment of the route is open space, noise from trains will have no adverse effect. However, where the train passes residences, sound barriers will be used to mitigate noise impacts. Wherever the train passes an industrial section, sound barriers will be necessary only for commercial office or commercial retail buildings.

- (6) A minor long-term impact due to construction-related traffic and Metro-induced traffic will be experienced by area school children.
- (7) A majority of the right-of-way will be in the existing railroad right-of-way, therefore, the impact on land take will be minimal. Relocation will be minimal as well.
- (8) No 4(f) lands, no historic or archaeological sites are affected by this project.

b. Short-term adverse environmental impacts:

- (1) Distributing the ground for grading during construction will constitute short-term impact. Construction of the site will also have an impact on air quality, noise, traffic as well as erosion and sedimentation.
- (2) School children may experience minor to moderate short-term impacts during construction. The Derwood Bible Church will experience minor negative impacts due to traffic disruption during construction of the Shady Grove site.

c. Long-term beneficial effects:

- (1). There will be beneficial impact on regional air quality in that a Shady Grove station will reduce vehicle miles traveled to downtown and the accompanying emission of pollutants.
- (2) Population and employment growth is expected due to the Shady Grove extension. The extension will increase Metro's accessibility to a greater area north of Rockville.

4. Alternatives considered for A017 and A016¹:

- a. No Build - This alternative would require a terminal station at Rockville and an S&I yard in downtown Rockville.
- b. Two alternative terminal and service yard locations and four alternative alignments with aerial and tunneling options were studied.

5. This Supplemental Environmental Statement is being circulated to the following Federal, State and local agencies:

¹A016 is the S&I Yard.

Assistant Secretary for Environment, Safety and Consumer
Affairs, U.S. Department of Transportation

Honorable Walter E. Washington, Mayor - Commissioner
District of Columbia

Honorable Marvin Mandel - Governor of the State of Maryland

Honorable Linwood Holton - Governor of the Commonwealth of
Virginia

The Council on Environmental Quality

Environmental Protection Agency

Department of Agriculture

Department of Commerce

Department of Defense

Department of Health, Education and Welfare

Department of Housing and Urban Development

Department of the Interior

Army Corps of Engineers

Federal Highway Administration

Federal Railroad Administration

Advisory Council on Historic Preservation

Department of State Planning Baltimore, Maryland (State Clearinghouse)

Metropolitan Washington Council of Governments (Regional Clearinghouse)

National Capital Planning Commission

Maryland Department of Transportation

Virginia Department of Transportation

D.C. Department of Highways

D.C. City Council

Montgomery County Council

Prince George's County Board of County Commissions

Maryland - National Capital Park and Planning Commission

Washington Metropolitan Area Transit Commission

D.C. Redevelopment Land Agency

6. Dates of availability of statement for public review:

The Final Environmental Statement for the Washington Metropolitan Area Regional System was made available to CEQ and for public review in August, 1975. The Final Supplement Environmental Statement is being made available for public review in April 1977, at the Urban Mass Transportation Administration, Office of Transit Assistance, 400 Seventh Street, S.W., Room 9306, Washington, D.C. 20590 and the Washington Metropolitan Area Transit Authority, 600 Fifth Street, N.W., Room 2F Washington, D.C. 20001.

REVIEW AND FINDINGS

Based on information included in this Environmental Impact Statement (EIS) and comments received, the Administrator of UMTA, before formally approving any project, must make the following review and findings required by the respective sections of the Urban Mass Transportation Act of 1964 as amended.

Section 3(d) revised that the applicant

- (1) has afforded an adequate opportunity for public hearings pursuant to adequate prior notice, and has held such hearings unless no one with a significant economic, social or environmental interest in the matter requests a hearing:
- (2) has considered the economic and social effects of the project and its impact on the environment; and
- (3) has found that the project is consistent with official plans for the comprehensive development of the urban area.

Section 14 (b) ... the project application includes a detailed statement on

- (1) the environmental impact of the proposed project,
- (2) any adverse environmental effects which cannot be avoided should the proposal be implemented;
- (3) alternatives to the proposed project; and
- (4) any irreversible and irretrievable impact on the environment which may be involved in the proposed project should it be implemented

Section 14(c) ... that

- (1) adequate opportunity was afforded for the presentation of views by all parties with a significant economic, social or environmental interest, and fair consideration has been given to the preservation and enhancement of the environment and to the interest of the community in which the project is located; and
- (2) either no adverse environmental effect is likely to result from such project, or there exists no feasible and prudent alternative to such effect and all reasonable steps have been taken to minimize such effect.

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PREFACE

PREFACE

In February 1972 Washington Metropolitan Area Transit Authority (WMATA) retained the firm of Wallace, McHarg, Roberts and Todd (WMRT) to prepare an assessment of the environmental impact of the 1968 Approved Regional Metro System. The WMATA staff subsequently requested the preparation of an Environmental Impact Statement (EIS) based on the appraisal. This statement was intended to serve as the system-wide EIS. It is intended that, where more site-specific information on a route or segment of the Metro System is required for local impact estimates, detailed studies and statements will be prepared.

To this date, WMRT has prepared environmental impact studies for the C, D, and L Routes, the L'Enfant Route, and Segments A-9a and A013 of the Rockville Route.

On May 9, 1974 the WMATA Board amended the current Environmental Impact Study contract with WMRT to include the preparation of an environmental study on the extension of the Rockville Metro Route from Grosvenor Station to the terminal station. The Study is concerned with A Route Segments A014, A015, A016 and A017 (possible Rockville Route extension to Shady Grove). Although the performance of the Study for all segments was done simultaneously, two separate Environmental Impact Statements have been prepared. This Report covers the extension of the ARS-68 1968 Approved Regional Metro System beyond Rockville or Segment A017. This Report deals with the possible relocation of the terminal station and Service and Inspection Yard at Gude Drive or Shady Grove. This extension was not part of the Approved 1968 System and therefore must follow a different review process.

Information for this Study was provided by the WMATA staff, their consultants, and County and Municipal planning agencies. The Study involved interviews and information meetings with the WMATA Board, the WMATA staff, their consultants, and with planning bodies having jurisdiction in the Study Area. The Study included field reconnaissance, and a detailed reviewing of reports and engineering data as available and relevant.

The estimated environmental impacts identified in this Report are based upon analysis provided by the WMATA staff and consultants unless otherwise indicated.

INTRODUCTION

a. Background

Planning for Washington's regional rapid rail system began nearly a quarter of a century ago when the National Capital Planning Act charged the National Capital Planning Commission (NCPC) with the responsibility of developing plans aimed at improving the movement of people and goods. In 1955, Congress authorized the NCPC and the National Capital Regional Planning Council (NCRPC) to conduct a four-year Mass Transportation Survey. The results of the Survey, presented in 1959, recommended rail rapid transit as part of a balanced system of highways and transit. In response to public hearings on the 1959 Survey Plan, Congress created a temporary Federal agency, the National Capital Transportation Agency (NCTA) to begin planning the rapid rail system. In 1962, NCTA proposed an 83-mile rail transit system composed of six trunk lines radiating from downtown Washington.

Underlying this system was the wedges and corridors concept of the Year 2000 Policies Plan, published in 1961 by the National Capital Regional Planning Commission. This Plan proposed a series of corridors of urban development radiating away from Washington with wedges of open space between the corridors. A high speed transit and freeway system was proposed to run along the center of urban corridors, connecting all parts of the region with a circumferential freeway system. Centers of intensive commercial, industrial and residential development were proposed every few miles along the corridors to be served by rapid transit stops and freeway interchanges.

The extensive 83-mile regional system encountered difficulties in Congress and NCTA was requested to redesign it into a 25-mile system serving the District. In 1965, a 25-mile Modified Rapid Transit System largely within the District was re-submitted to Congress and approved as the nucleus of a regional system.

On February 20, 1967, the Washington Metropolitan Area Transit Authority (WMATA) came into existence after the execution of an interstate compact by Maryland, Virginia, and the District of Columbia, which had been authorized

by Congress.

This agency, WMATA, for which this Study is prepared, replaced the National Capital Transportation Agency, October 1, 1967, and is uniquely responsible and responsive to the jurisdictions of the District of Columbia and the Maryland and Virginia suburbs although the funding for the System comes from Congressional appropriations and revenue bonds as well as from these jurisdictions. Any costs over the ARS-68 System for Segment A017, however, involves UMTA (Urban Mass Transportation Administration) and the transfer of Interstate Highway Funds.

The legislation creating WMATA calls for it to plan, develop, finance, and provide for the operation of the regional transit facilities, and coordinate the operation of all public and privately owned transit facilities to arrive at a truly regional system and to "expand the basic system authorized by the National Capital Transportation Act of 1965 into a regional system." Thus, WMATA was instructed to base the larger regional system upon the previously approved 25-mile system.

On March 1, 1968, after a series of conferences of local, State and Federal officials and staff, and after extensive public hearings in each of the jurisdictions on the alternatives discussed at those conferences, WMATA adopted the 97.7 mile Regional Metro System. The construction of this system officially started December 9, 1969, the same day the President signed legislation authorizing Federal participation in the system's construction.

Modifications to this Adopted Regional System have been necessary since 1968 to respond to constraints of engineering, the environment, and the concern of citizens and government agencies.

Purpose of the Study

The 1968 Adopted Regional Metro System (ARS) included the Rockville or A Route. The Rockville Route serves the northwestern portion of the District and the western half of Montgomery County. It begins in subway at Metro Center Station and follows G Street to 15th Street and then through Lafayette Square where it follows Connecticut Avenue north in tunnel to a point beyond Van Ness Center. There it turns to the Tenley Circle area and continues northwest in tunnel along Wisconsin Avenue to the Capital Beltway where it proceeds north to Rockville by means of surface aerial and subway construction. In the Approved Regional Metro System Plan of 1968, the A Route includes 15.5 miles of service and 13 stations: 7 in the District and 6 in Montgomery County. The Rockville Route

is presently under construction and is scheduled to begin service in October of 1980 to Van Ness-WTI Station, and in September of 1981 to Shady Grove.

This Study is concerned with Segment A017 or the possible extension of 'A' Route beyond Rockville. The following table presents a chronology of events affecting the extension of the 'A' Route. The table only includes those events related to Rockville and the 'A' Route extension.

<u>Date</u>	<u>Event</u>
Feb., 1968	Montgomery County Council adopts Regional Rapid Rail Transit Plan
Mar.1,1968	WMATA defines Adopted Regional System
Mar.28,1968	Meeting between WMATA and City of Rockville re Rockville Station
Feb.26,1969	Meeting between WMATA and City of Rockville re transit right-of-way and possible relocation of S&I facility
Sept.8,1969	WSTC Board Meeting: TOP Committee discussion regarding engineering and design status of Rockville Route
Nov.10,1971	Letter from Montgomery County Executive to WMATA requesting staff review regarding possibility of utilizing property north of Rockville for S&I facility
Nov.15,1971	WMATA staff memo re alternative location for Rockville S&I
Nov.16,1971	Letter from WMATA to Montgomery County Executive re study of alternative site for Rockville Route S&I facility and responsibility for increased costs which would be incurred by such relocation
Dec.29,1971	Letter from City of Rockville to WMATA re planning for Rockville Route, including Twinbrook Station
Jan. 4,1972	Meeting re time schedule for three stations on Rockville Route
Jan. 4,1972	Meeting with WSTC staff and commissioners re schedule of Rockville Route
Jan.18,1972	Letter from WSTC to City of Rockville in response to Dec.29,1971 letter to WMATA re coordinated planning for Rockville Route
Feb. 1,1972	Letter from City of Rockville to WSTC setting down points of concern re planning of Rockville Route in preparation of staff meeting with WSTC and WMATA
Feb. 8,1972	Staff meeting between WSTC and WMATA and Rockville City Manager re coordinated planning for Rockville Route, including Twinbrook and Rockville Stations, S&I Yard

<u>Date</u>	<u>Event</u>
Feb.10,1972	TOP worksession with Rockville City Manager and staff to promote coordinated planning process for Rockville Stations, lineage and terminal facilities
Mar.29,1972	TOP worksession to initiate formal planning coordination for the Rockville Stations (Twinbrook and CBD)
Aug.17,1972	City of Rockville requests WSTC to initiate studies on feasibility and impact of combining Twinbrook and Nicholson Lane Metro Stations into one station at Nicholson Lane.
Aug.28,1972	WSTC Board meeting - WSTC adopts resolution requesting WMATA to undertake study of Rockville Route, station locations and S&I location from Nicholson Lane to Shady Grove Road
Sept.13,1972	WSTC Board meeting - Discussion of letter received from WMATA noting initiation of feasibility study as noted above had been undertaken
Sept.22,1972	TOP worksession re Rockville Route including Rockville Station and S&I Yard
Sept.29,1972	WMATA OPERA Committee meeting re Rockville Route feasibility study
Oct.25,1972	Letter from Roy Dodge of WMATA to General Architectural and Engineering Consultants requesting general plan development in the area of Nicholson Lane, Twinbrook and Rockville Stations be deferred until further notice. This action taken as a result of WSTC action requesting feasibility study on Rockville line from Nicholson Lane through Rockville
Nov.13,1972	WSTC Board meeting - Discussion of previous Board action re initiation of feasibility study
Nov.14,1972	Letter from WSTC to WMATA requesting clear statement setting forth actual time delays envisioned in conducting the requested feasibility study on the Rockville line

<u>Date</u>	<u>Event</u>
Nov.29,1972	Letter from WMATA to WSTC responding to Nov.14 WSTC request for statement re time delays on Rockville line
Dec.11,1972	WSTC Board meeting - Decision to forward copy of WMATA letter re delays on Rockville Route to County Executive and Council requesting their reaction to delays on Rockville Route as noted in WMATA letter of 11/29/72
Dec.27,1972	WMATA staff memorandum re cost estimate on alternate S&I Yard location of Rockville line and future station
Mar.15,1973	WMATA OPERA Committee meeting re Twinbrook Station. Three schemes presented in addition to modified scheme
Mar.23,1973	TOP worksession re Rockville Stations, S&I Yard, and possible extension to Shady Grove Road
Apr.1,1973	Report to WSTC Board re staff meeting with City of Rockville and Gaithersburg re feasibility study
Apr.23,1973	WSTC Board meeting and discussion of feasibility study
May 16,1973	Letter from County Council and Executive to SHA requesting plans for Md. 355 be revised to accommodate possible extension of Metro to Shady Grove Road
May 16,1973	Memorandum from Montgomery County Executive to County Council re Md. Route 355 widening-- Metro Extension to Shady Grove Road
May 22,1973	Letter from Montgomery County DOT to WMATA requesting timetable of actions for Rockville Route, including Twinbrook Station, Nicholson Lane Station and Rockville Station, and extension of line
June 4,1973	Letter from City of Rockville to WMATA requesting schedule for staff recommendations and public hearings for Rockville Route

<u>Date</u>	<u>Event</u>
June 15,1973	WMATA response to City of Rockville letter of June 4,1973, re schedule of actions on Rockville Route
June 27,1973	Letter from WMATA to Montgomery County DOT summarizing events regarding plans for Rockville Route Stations and providing scheduling sequence for future actions
July 11,1973	Letter from WMATA to SHA re Metro extension and right-of-way
Aug. 3,1973	OPERA meeting re Rockville Route
Aug.29,1973	TOP worksession - Rockville Route
Sept.4,1973	TOP worksession - Rockville Route
Sept.11,1973	TOP worksession - Rockville Route
Sept.19,1973	TOP worksession - Rockville Route
Sept.20,1973	Letter from WMATA to SHA stating agreement to pay just compensation to SHA for costs resulting from SHA realignment of Md. 355 subject to receipt of authorization from WMATA Board of Directors to extend Metro north of Rockville
Sept.29,1973	WMATA OPERA Committee meeting - feasibility study
Oct.26,1973	TOP worksession - Rockville Route
Oct.31, 1973	TOP worksession - Rockville Route
Nov. 6,1973	TOP worksession - Rockville Route
Nov.14,1973	Rockville City Council adopts Position Paper re Terminal Station and Location of S&I Yard
June 20,1974	Preliminary Evaluation Report - Segments A014 to A017 presented to WMATA Board

<u>Date</u>	<u>Event</u>
Feb. 25, 1975	Montgomery County Council passes EIS Resolution for segments A014 to A017 of the A Route. The EIS Resolution incorporates alternative system Rockville D for the end of A Route. Rockville D refers to the System with Nicholson Lane, Twinbrook and Rockville Stations and the extension beyond Rockville to Shady Grove.
March 6, 1975	WMATA Board passes EIS Resolution referring to the action of the Montgomery County Council. Rockville System D is approved segments A014-A017.
June 24, 1975	Montgomery County Council passes General Plans Resolution on segments A014-A015.
July 8, 1975	Montgomery County Council passes General Plans Resolution on segment A017.
July 17, 1975	WMATA Board approves General Plans Resolution on A014 and A015 as well as on A017 and A016. Same day for action but separate resolutions.

SHADY GROVE EXTENSION
Rockville Route

Coordination following WMATA Board approval of EIS in preparation for General Plans Development:

This coordination evolved through the following avenues:

- 1) WMATA staff coordination with staff from local jurisdictions - State, Montgomery County, City of Rockville, City of Gaithersburg and Town of Washington's Grove. Referred to as the Shady Grove Coordinating Committee.
- 2) Maryland National Capital Park and Planning Commission (MNCPPC) through its staff and their Shady Grove Citizens Advisory Committee - with assistance of the WMATA staff. (See attached sheets from MNCPPC Preliminary Sector Plan for list of representaives and comments on role they played).
- 3) Formal presentations to the various Planning Boards, City and County Councils, Historic District Commissions, etc. by the WMATA staff.

March 17, 1975 WMATA staff presentation of Rockville Station and Shady Grove extension to City of Rockville Mayor and Council.

March 19, 1975 WMATA staff met with the Shady Grove Coordinating Committee.

March 26, 1975 WMATA staff met with the City of Rockville's Transit Impact consultant.

April 2, 1975 Met with Shady Grove Coordinating Committee regarding storm sewer alternative plans in conjunction with County's Service Park and proposed Central Processing Facility.

April 7, 1975 WMATA staff attended all day seminar of MNCPPC regarding coordination of all visual aspects of development of private and public facilities in the Shady Grove Sector Plan area.

April 8, 1975 Shady Grove CAC meeting primarily on access roads.

April 16, 1975 Met with Shady Grove Coordinating Committee.

April 22, 1975 WMATA staff met with property owner in Shady Grove Station area regarding status of plans and impact on resident land access.

April 23, 1975 Met with Shady Grove Coordinating Committee.

April 28, 1975 Montgomery County Planning Board reviewed General Plans

April 29, 1975 General Plans Public Hearing - Rockville Station and Extension

May 23, 1975 WMATA staff met with City of Rockville staff.

June 3, 1975 WMATA staff briefing to the Montgomery County Council concerning public hearing testimony and staff recommendations.

June 11, 1975 Shady Grove Coordinating Committee

June 18, and
June 30, 1975 Montgomery County Council work sessions on the Rockville Station, Shady Grove Station and Storage and Inspection Yard.

July 8, 1975 Montgomery County adopts Resolution 80323 on Rockville Station and extension.

July 9, 1975 Discussions with Montgomery County Council members regarding County vs WMATA participation in storm sewer plans.

July 17, 1975 WMATA Board adopts Resolution on Rockville Station and extension

August 6, 1975 Shady Grove Coordinating Committee

Sept. 5, 1975 WMATA staff meeting with B&O (Chessie System) staff regarding extension.

Oct. 22, 1975 Shady Grove Coordinating Committee

Oct. 23, 1975 Montgomery County Planning Board reviewed General Plans revisions

Nov. 4, 1975 Shady Grove CAC meeting at MNCPPC

Nov. 5, 1975 Shady Grove Traffic Sub-committee of Coordinating Commission

Nov. 11, 1975 Shady Grove Sector Plan public hearing by MNCPPC including Metro Station and S&I Yard

Dec. 11, 1975 Montgomery County Planning Board work sessions on Sector Plans public hearing, including Metro and timing

Dec. 16, 1975 WMATA staff met with Rockville Planning Commission and Historic District Commission.

Feb. 12, 1976 Participated in discussions with Montgomery County Planning Board on design modifications to General Plans

Feb. 24, 1976 Participated in panel discussion to the Rockville Chamber of Commerce regarding plans for Rockville Station and extension to Shady Grove.

May 6, 1976 WMATA staff met with City of Rockville staff.

b. Glossary of Terms

Stations

Nicholson Lane Station refers to the ARS platform location alternative approximately 425 feet north of Nicholson Lane, parallel to Rockville Pike.

A Combined Station refers to a station platform location which serves the projected ridership from two previous ARS stations.

Nicholson Lane Combined Station refers to the station design proposed to service the Nicholson Lane area and the Twinbrook area, located at Nicholson Lane.

Twinbrook B Combined Station refers to a combined station located on Rockville Pike in the parking area of the Dart Drug Shopping Center. This station is part of the B-C alignment.

Twinbrook ARS Station refers to the ARS platform location alternative located on the B&O corridor north of Halpine Road.

Twinbrook ARS-M Station is the modified design of the ARS alternative located on the B&O corridor south of Halpine Road.

Rockville Station signifies the ARS station platform alternative located on Hungerford Drive and the B&O corridor in Rockville.

Rockville WMRT represents a station at the alternative location of the S&I Yard in Rockville if an extension of the Route is built.

Rockville S&I Yard refers to the service and inspection yard at Rockville (S.P.810+00 to 845+00).

Gude Drive Station is the terminal station alternative located at Gude Drive as part of the extension beyond Rockville.

Gude Drive S&I Yard refers to the service and inspection yard alternative at Gude Drive as part of the extension beyond Rockville.

Shady Grove Station is the terminal station alternative located at S.P. 941+80 on the B&O corridor, north of Fields Road.

Shady Grove S&I Yard refers to the service and inspection yard at Shady Grove, on the west side of the B&O tracks, north of Shady Grove Station (S.P. 950).

Grosvenor Station is the station located on Rockville Pike at Grosvenor (part of A013 segment) north of Rock Creek Park.

Platform refers to the station platform used for embarking and disembarking from trains.

Kiss-and-ride refers to the parking spaces used by short-term users who stop to pick up or drop off passengers.

Scheme signifies the alternative station site designs (B-1, B-2, etc.).

S.P. refers to "station point" or the 500 foot reference points on the alignment.

East and West when applied to alignment refer to the sides of the B&O corridor.

Deferred station platform refers to a station postponed at present, but to be possibly built in the future.

Alignments

A014 refers to the segment of the A Route from just north of Grosvenor Station (S.P.580+00) to just south of Twinbrook Parkway (S.P.679+50).

A015 is the segment from 160 feet south of Twinbrook Parkway (S.P.679+50) to Park Road (S.P.870+00) in Rockville.

A016 is the segment from Park Road (S.P.870+00) to Frederick Drive in Rockville. This segment number only applies to the S&I Yard at Rockville.

A017 refers to a terminal and S&I Yard north of Rockville. For the purposes of this report, "A017" includes a S&I Yard north of Rockville and eliminates the yard in Rockville (A016).

Cut and cover refers to the tunneling method where a tunnel is dug by cutting away the surface and then covering the shaft after completion.

Surface signifies the alignment at-grade.

Tunnel refers to the sub-surface shaft(s) for the track.

Single or double box refers to the number of shafts in a tunnel.

Alignment pertains to the design of the railroad track route.

Systems

Rockville A pertains to the system which has a Nicholson Lane/ Twinbrook Combined Station, Twinbrook deleted and Rockville Station and S&I Yard.

Rockville B refers to the system with Nicholson Lane, Twinbrook, and Rockville Station and S&I Yard.

Rockville C signifies the System with Nicholson Lane/Twinbrook Combined Station, Rockville Station and extension beyond Rockville (Gude Drive or Shady Grove with S&I Yard).

Rockville D refers to the System with Nicholson Lane, Twinbrook and Rockville Stations and extension beyond Rockville (Gude Drive or Shady Grove with S&I Yard).

ARS-68 refers to the Adopted Regional System with Nicholson Lane ARS, Twinbrook ARS-M and Rockville ARS Station and S&I Yard.

A Route refers to the Metro route from downtown Washington to a terminal and yard at Rockville, Maryland.

Extension refers to the addition to "A" Route beyond Rockville to a terminal and yard between Rockville and Gaithersburg.

Impact Matrix Terms

Positive pertains to impacts beneficial to the community or the environment.

Negative refers to impacts detrimental to the community or the environment.

Short-term signifies the impacts of short duration usually due to the construction process.

Long-term refers to the impacts which have a lasting effect.

Evaluation Matrix Terms, "Impact Factors"

Patronage refers to the potential ridership available for a system.

Displacement/Relocation refers to the businesses and/or homes displaced by Metro construction.

Employment refers to the number of employees displaced.

Access refers to the availability of access to the stations.

Traffic refers to the potential traffic generation projected for each station and its impact, as well as existing conditions.

Safety pertains to the safety related problems (with the B&O, and/or the community).

Operation pertains to operational efficiency of the Metro System itself.

Convenience refers to the ease of reaching or leaving station facilities.

Construction costs refers to the costs associated with construction of the Metro System.

Land Use/Value Intensity pertains to the present land use and its compatibility with Metro.

Conformance with General Plans refers to how well the Metro station location conforms with the Master Plans of the community involved.

Community Involvement refers to the position of local community groups on the construction of Metro.

Community Structure refers to the impact of Metro on the inherent character of the neighborhood.

Retail/Commercial signifies the impact of Metro on local retail and commercial establishments.

Government Agencies refers to whether the local and regional government agencies favor or disapprove of the Metro construction.

Historical/Archaeological signifies the impact that Metro construction will have on important historical and/or archaeological resources.

Parkland/Recreational refers to land designated as public parks or for recreation, that will be affected by Metro construction.

Schools/Institutions pertains to the impact of Metro on these community facilities.

Soils/Geology refers to the impact of Metro on surface and subterranean formations.

Water/Hydrology signifies the impact of Metro on surface and sub-surface water.

Vegetation/Wildlife refers to the impact of Metro on existing plant species and wildlife habitats.

Physiography refers to Metro's impact on existing land contours.

Air Quality refers to the existing air quality and the potential change in quality due to Metro.

Noise and Vibration refers to the potential noise and vibration disturbance resulting from Metro trains.

Parking pertains to the efficiency of parking facilities.

Site development refers to how construction of a Metro station will encourage or discourage outside development of the area.

Scenic resources pertains to the impact of Metro on the scenic qualities of the imposed corridor (visually and physically).

Agency Abbreviations

HEW - Department of Health, Education and Welfare

DOT - Department of Transportation

UMTA - Urban Mass Transportation Administration

EPA - Environmental Protection Agency

CEQ - Council on Environmental Quality

SCS - Soil Conservation Service

M-NCPPC - Maryland National Capital Park and Planning Commission

WASH COG - Metropolitan Washington Council of Governments

NCPC - National Capital Planning Commission

CBD - Central Business District

TOP - Technical Operations Panel

OPERA - Operations, Planning, Engineering, Real Estate, Accounting

SHA - State Highway Administration (Maryland)

WMATA - Washington Metropolitan Area Transit Authority

WSTC - Washington Suburban Transit Commission

MCPB - Montgomery County Planning Board

Md.DOT - Maryland Department of Transportation

METRO - The rail transit system to be built and operated by WMATA

NCTA - National Capital Transportation Agency (absorbed by WMATA in 1967)

NCRPC - National Capital Regional Planning Council

MCPB - Montgomery County Planning Board

c. Method and Work Process

This document covers the segments A016 and A017. Initially the A016 segment was the Service and Inspection Yard located in Rockville. Segment A017 refers to the proposed extension of the Rockville "A" Route from Rockville to Shady Grove. Due to the relocation of the terminus of the Segment A016, the "A" Route, Service and Inspection Yard, has been relocated to Shady Grove.

The method developed in this Study seeks to identify and assess the degree of impact of each system and alignment alternative, and to discern the alternative of maximum positive impact and least negative impact to the existing natural and man-made environment.

In order to accomplish this, the existing environment was described in terms of certain value categories which were defined as 21 "impact factors" (see Glossary of Terms for definitions of "Impact Factors"). These were evaluated in terms of their magnitude and "area of influence", in which the environment is susceptible to impact. Through a comprehensive analysis of these impact factors, a matrix showing potential environmental problem and opportunity areas is established.

The design characteristics of the proposed system, alignment, station platform location and site design alternatives are then described with maps and supporting data, and compared with the design characteristics of all other alternatives considered and with the existing environment as described in the Impact Summary Matrix. The values and objectives of various interest groups concerned are reviewed through examination of public hearing records, written plans and publications, or personal contact.

A framework is required to relate all of the foregoing ingredients of the Study to each other, so that the impact of the design characteristics of each alternative alignment can be perceived by value (positive or negative), and magnitude (minor, moderate, or major), in relation to the many impact factors and interest groups identified. This framework is provided by the Environmental Impact Matrix.

Once the Matrix graphically identifies these inter-relationships and the critical characteristics that

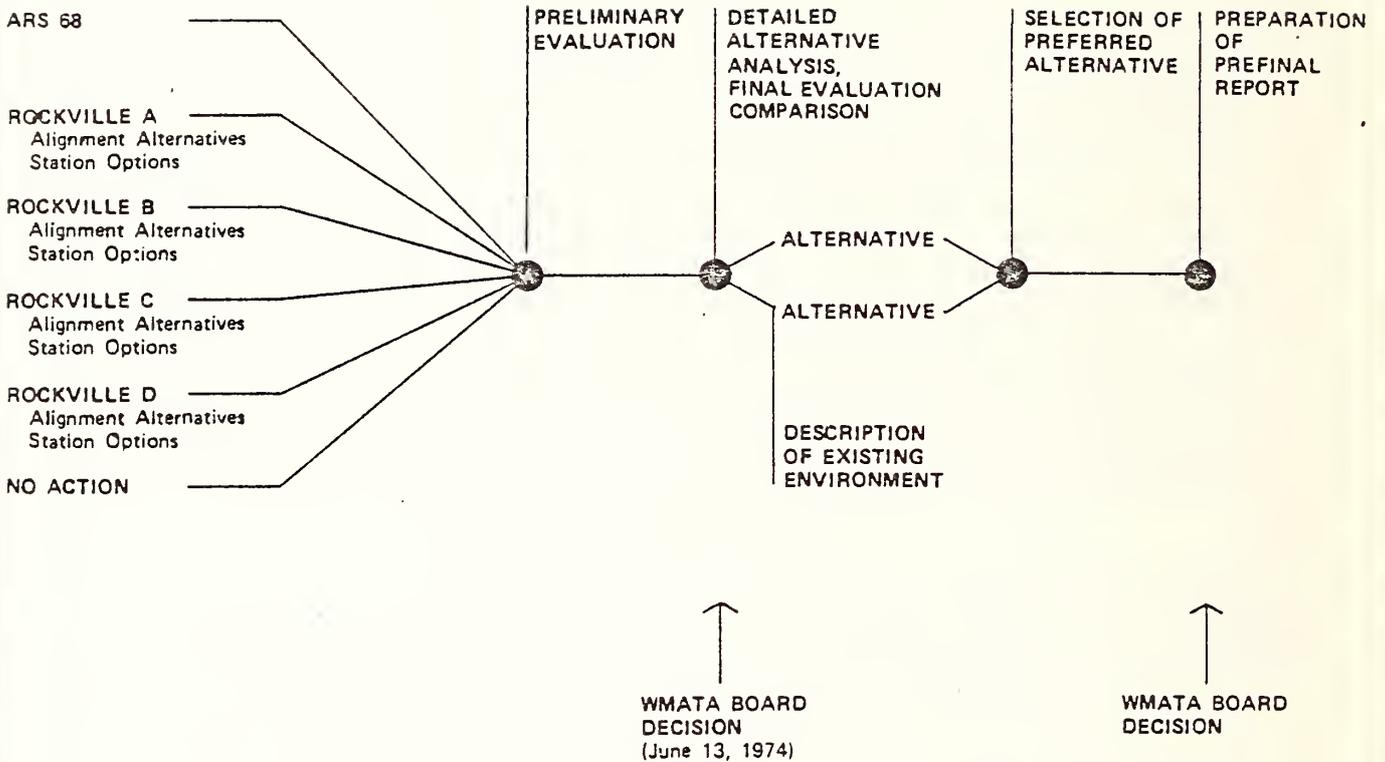
distinguish alternatives, the alignment alternative of the least negative impact and highest positive impact becomes evident and facilitates a more rational decision-making process for alignment selection.

By comparing the verbal statements of the Impact Summary Matrix with the Environmental Impact Evaluation Matrix the consultant's value judgments are identified, as in the assignment of relative magnitudes (minor, moderate or major) to the impacts identified in the Matrix. Value judgements are supported wherever possible by technical data. Initially no quantitative values are assigned to each cell of the Matrix; however, after the criteria and categories are established, a numerical rank helps to communicate relative magnitude. However, totalling these numerical values for each alternative particularly in the Preliminary Evaluation has proved to be of less value than the conclusions that can be drawn from the weighting process itself. Obviously some "impact factors" are much more easily quantified than others. Where a more subjective judgement is required the method of evaluation should not suggest a precision of data that is not present. This is particularly true when the relative weights vary with each scale of concern. On a regional level, the taking of five houses by a station alternative might be considered a minor long-term impact; however, on the scale of a station site design evaluation, the removal of five houses might rank as a major or moderate long-term impact depending on the relative displacement characteristics of the other design alternatives under consideration.

The Decision Tree

The evaluation/comparison of the "A" Route alternatives has been organized as a simple decision tree which initially incorporates all alternatives, related to the six alternative systems, and proceeds through a qualitative and quantitative evaluation and comparison of each with the objective of narrowing the field to those alternative systems that exhibit the least negative and most positive impacts on a regional basis. These remaining systems are then qualitatively and quantitatively re-evaluated in more detail in terms of their local impacts with respect to alignment alternatives and station platform location options. From this analysis that system which represents the least negative and most positive impacts in terms of overall regional and local performance with respect to alignments, station platform locations and station design is then recommended as the preferred alternative after a Preliminary and Final Evaluation of those alternatives recommended for further study.

SECTION A017
 DECISION TREE



As the diagram of the decision tree indicates, all systems with alignment alternatives and station options are to be considered in the Preliminary Evaluation after 30 days of analysis. Those alternatives selected for Final Evaluation will go through a more detailed analysis which will include an assessment of air quality, and noise and vibration impacts. From this Final Evaluation, a preferred system alternative is selected along with a preferred alignment, station platform locations and site designs.

As mentioned earlier in order to measure the relative environmental impact of each alternative against a data base of socio-economic, cultural, ecological and visual/physical factors, an Environmental Impact Evaluation Matrix was established.

The methods used for the Preliminary Evaluation and Final Evaluation were designed to provide estimates of the potential impact of the Rockville alternatives on the natural and man-made environment. The estimates were arrived at through a five-step process which included:

- (1) Selection and review of engineering base maps which show the existing physical environment in outline form, and the preliminary plan and profile characteristics of Metro in each mapped segment;
- (2) A review of public hearing records, staff correspondence, and data on the physical and operational characteristics of the Metro system;
- (3) A discussion of Metro characteristics, impacts, issues and alternatives with WMATA staff and consultants;
- (4) A field reconnaissance along the segments under consideration recording information on maps and with slides regarding the existing natural and socio-economic environment with a preliminary evaluation of the impact of Metro construction and operation. This step is represented by the Environmental Impact Summary Matrix which records verbally all impacts related to the impact categories:

Socio-Economic

Displacement/Relocation
Community Structure
Land Use/Value/Intensity

Retail/Commercial
Schools/Institutions
Convenience
Traffic/Safety
Construction Costs
Community Involvement
Parking

Cultural

Historical/Archaeological
Park/Recreation

Ecological

Soils/Geology
Surface Hydrology
Physiography
Vegetation/Wildlife
Air Quality
Noise and Vibration

Visual/Physical

Site Design/Development
Scenic Resources

The definitions of these 20 impact factors is included in the Glossary of Terms in the Introduction of this Report. Wherever possible, the impacts are quantified such as number of square feet of building taken, or number of dollars in construction costs, or number of employees displaced. It is from the statements in the Environmental Impact Summary Matrix that the Environmental Impact Evaluation Matrix is drawn.

- (5) Evaluation of environmental impacts of the alternatives and an assignment of value (positive or negative), magnitude (major, moderate or minor) and duration (long-term, or short-term) to each impact estimate and cross referencing them with the 21 impact factors and interest groups identified.

This ranking is done graphically in the Environmental Impact Evaluation Matrix with the following symbols:

<u>Major</u>	<u>Moderate</u>	<u>Minor</u>	
⊖	⊖	⊖	negative long-term
⊖	⊖	⊖	negative short-term
⊕	⊕	⊕	positive long-term
⊕	⊕	⊕	positive short-term

In order to more easily assess the environmental impact of each alternative over all factors identified in the Matrix to make comparison between them, it is necessary to assign numerical values to the rankings. The numerical values quicken recognition of critical impact factors which distinguishes alternatives. In the Preliminary Evaluation, the following values were assigned:

<u>Major</u>	<u>Moderate</u>	<u>Minor</u>	
-4	-2	-1	negative long-term
-2	-1	-1/2	negative short-term
+4	+2	+1	positive long-term
+2	+1	+1/2	positive short-term

Once the matrix graphically and numerically identifies the interrelationship of factors, the alternatives possessing the most favorable impact characteristics can be selected for further study in the Final Evaluation.

Impact Mapping

The impact symbols used in the maps of alignment and station impacts record spatially each impact in terms of its magnitude and duration. The number and letter designation assigned to each symbol serves to cross-reference the symbols to their more detailed description on the Segment Impact pages of this Report. The same symbol and letter-number designation may appear more than once on each map segment if the description of the impact applies to more than one location along the alignment.

The difference from the Evaluation Matrices is that the map symbols each represent an impact group (i.e., Ecological, Socio-Economic, etc.), and relate to a verbal description on an accompanying Segment Impact sheet. The symbols used in mapping:

- ① Socio-Economic
- ② Ecological
- ③ Visual-Physical
- ④ Cultural

The symbol indicates the impact group affected while the reference number is indexed to the Segment Impact sheets.

Many impacts of Metro construction and operation cannot be adequately described at the scale of the map segment. These regional or system-wide impacts of Metro are discussed in the Draft Environmental Statement.¹ The overall impact at the route level or system-wide level should, therefore, not be based only upon the illustration of positive and negative impacts in the Impact Trade-off Matrices of the Draft Environmental Statement. This Report is intended to provide the background descriptions and estimates at the site specific and route level to support the statements made in the Draft Environmental Statement.

Limits of the Method

Even at the segment and route level, WMRT recognizes limits to its method of assigning values to each impact symbol. These steps in the process are included only to give a graphic illustration to the relationship between impacts. The method does not imply that impacts with the same symbol are necessarily the same. The method does, however, portray all of the estimates of potential impacts such that decisions can be made by WMATA working with public agencies and communities involved.

¹"Draft Environmental Statement", WMATA and U.S.DOT, WMRT Consultants, February 1973.

The remaining steps in the work process follow those required to answer the specific concerns of the National Environmental Policy Act and include: (1) the identification of the probable adverse impacts which cannot be avoided; (2) evaluation of the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; (3) a description of any irreversible and irretrievable commitments of resources which would be involved in the proposed action, should it be implemented; and (4) the statement of measures taken and proposed to minimize harm to the existing environment.

d. Scope of Study

This Environmental Study covers the extension of the 'A' Route beyond Rockville, Md. The Study was performed in compliance with Article VI, Section 14c, of WMATA's Interstate Compact, and CEQ Guidelines for the preparation of Environmental Impact Statements under the National Environmental Policy Act of 1969.

This Report does not analyze in detail the Pre-ARS alternatives or those studied between 1968 and February 1969 when the system was revised to its present form. These region-wide or route alternatives are discussed in the Summary Report on the system-wide Draft Environmental Impact Statement (summarized in Appendix B of this Report).

This Report focuses upon the more detailed alternatives for terminal location, service and inspection yard location and route alignment. All alternative alignments for the extension were considered in the Preliminary Evaluation. These included historic and current alternatives as proposed by the WMATA staff, their consultants, local planning agencies, and citizens in the local community.

"Environmental Impact" in this Study, as in the guidelines for the implementation of the National Environmental Protection Act of 1969, is broadly defined. It encompasses the ecology of both the natural and man-made environment, and its relationships to the visual, physical, cultural, and socio-economic aspects of the human existence. Factors used to categorize impacts so that relationships can be established and trade-offs can be clearly articulated are divided into four groups. Positive as well as negative impacts are considered. The impact factors listed and defined below are used throughout this Report.

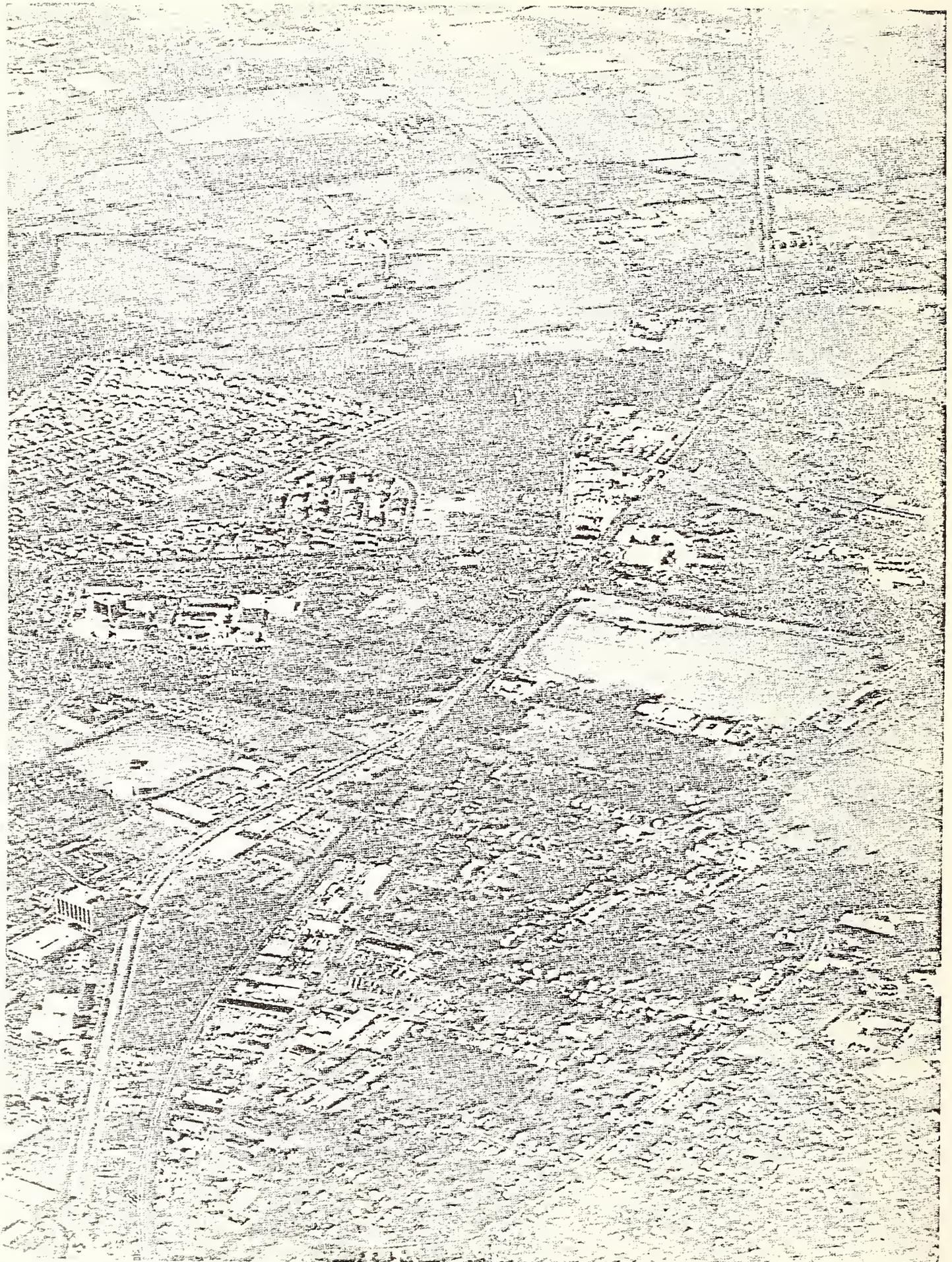
Ecological Factors: Those factors dealing with the climate, soils, geology, water quality and hydrology (floodplains, surface and subsurface water), wildlife, vegetation, noise and other physiographic features (land forms, topography, slopes). They include the regional impact of the disposal of spoil from cuts; the effect on water quality due to increased sedimentation or ground water due to runoff from parking lots or Service and Inspection Yard facilities; change in stream flow regimen, where applicable, due to runoff and/or increased sedimentation; changes in stream biology; changes in vegetation; implications of an increase in noise level; changes in air pollution levels or concentrations; and the importance of good management and construction procedures.

Cultural Factors: Those factors that denote a particular stage of advancement in a civilization, such as historical or archaeological sites and objects, parks and recreational facilities, and certain institutions such as museums, libraries and schools. They include the location and potential disturbance of historic sites or recreational activities; and the location and potential disturbance of institutional activities.

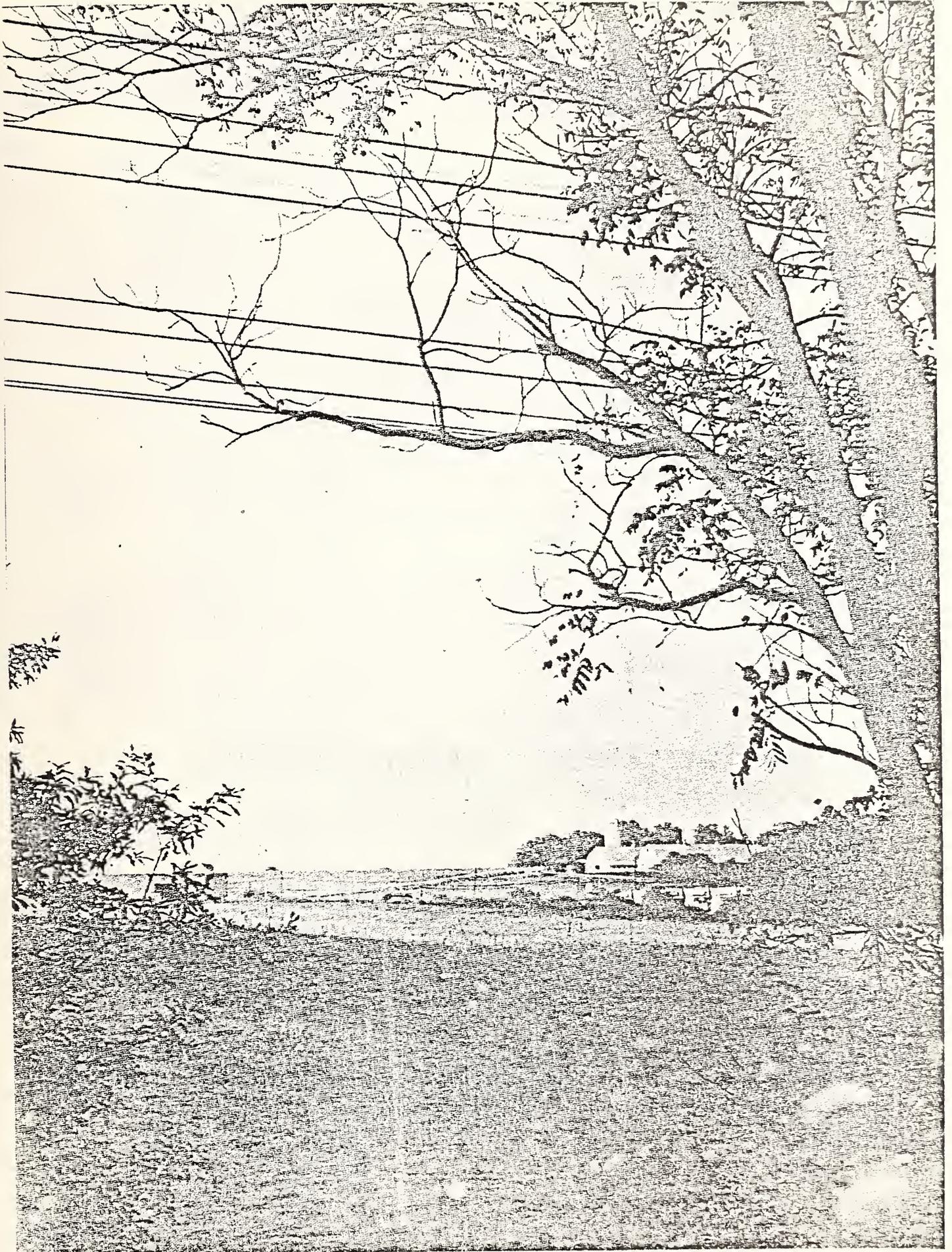
Visual, Physical Factors: Those elements of line, slope, space and form that constitute a visual experience, including scenic resources and the design of structures. They include the location and evaluation of scenic resources in the area; existing and proposed parking facilities and variations likely to occur due to transit accessibility and operation; and design and spatial considerations of importance in evaluating station location.

Socio-Economic Factors: Those factors which influence man's life style and subsistence, and his interaction with other men such as population distribution, community structure and cohesiveness, employment, the use of land including shopping, retail and commercial activity and industrial production. They include socio-economic and housing characteristics for the existing and projected population in the area of the stations, probable relocation of families and businesses resulting from transit land needs; expected change to and provisions for public schools, and other public facilities; citizen participation through neighborhood or civic associations; and effects of mass rapid transit station locations and transit operations on land use and land values.

Construction factors such as traffic disruption, construction noise or erosion of excavated material, will fit within the above impact factors and are treated in a time dimension. For example, the noise from construction of the system is treated as a short-term impact, whereas the noise from the operation of the Metro cars is treated as a long-term impact, or one of continuing duration.



AERIAL VIEW NORTH FROM ROCKVILLE TO SHADY GROVE (A017 and A016)



SHADY GROVE AREA LOOKING WEST

SUMMARY OF FINDINGS & CONCLUSIONS

1. GENERAL FINDINGS AND SPECIFIC CONCLUSIONS

This Environmental Impact Study has led to certain findings and conclusions which have been reached on the basis of the data, analysis and evaluation techniques documented in the body of this Report. Perhaps the most important finding in the Study of Rockville Segments A016 and A017 (extension of A Route beyond Rockville) supports the re-evaluation of the ARS-68 alignment terminating at Rockville and favors the extension of the Route to a terminal station and S&I Yard at Shady Grove. The Segment involved in this extension (A017) was investigated as part of this Environmental Impact Study. Although the research and evaluation for these Segments were done simultaneously, the completed studies for the A014-A015 Segments and A017 and A016 Extension have separate reports. Each report will be subject to a different review process. This Report deals with A017 and A016.

Despite the necessity to separate the findings with respect to the review process, for the purpose of this Environmental Impact Report, all sections of the Rockville line from A014 to the terminal station and S&I Yard were looked at together in order to assess the performance of the system as a whole. It is impossible to examine the service area implications and regional impacts of adding, deleting or moving a station within these segments of the Rockville Route without looking at the entire A Route System from Grosvenor (Parkside) to the terminus.

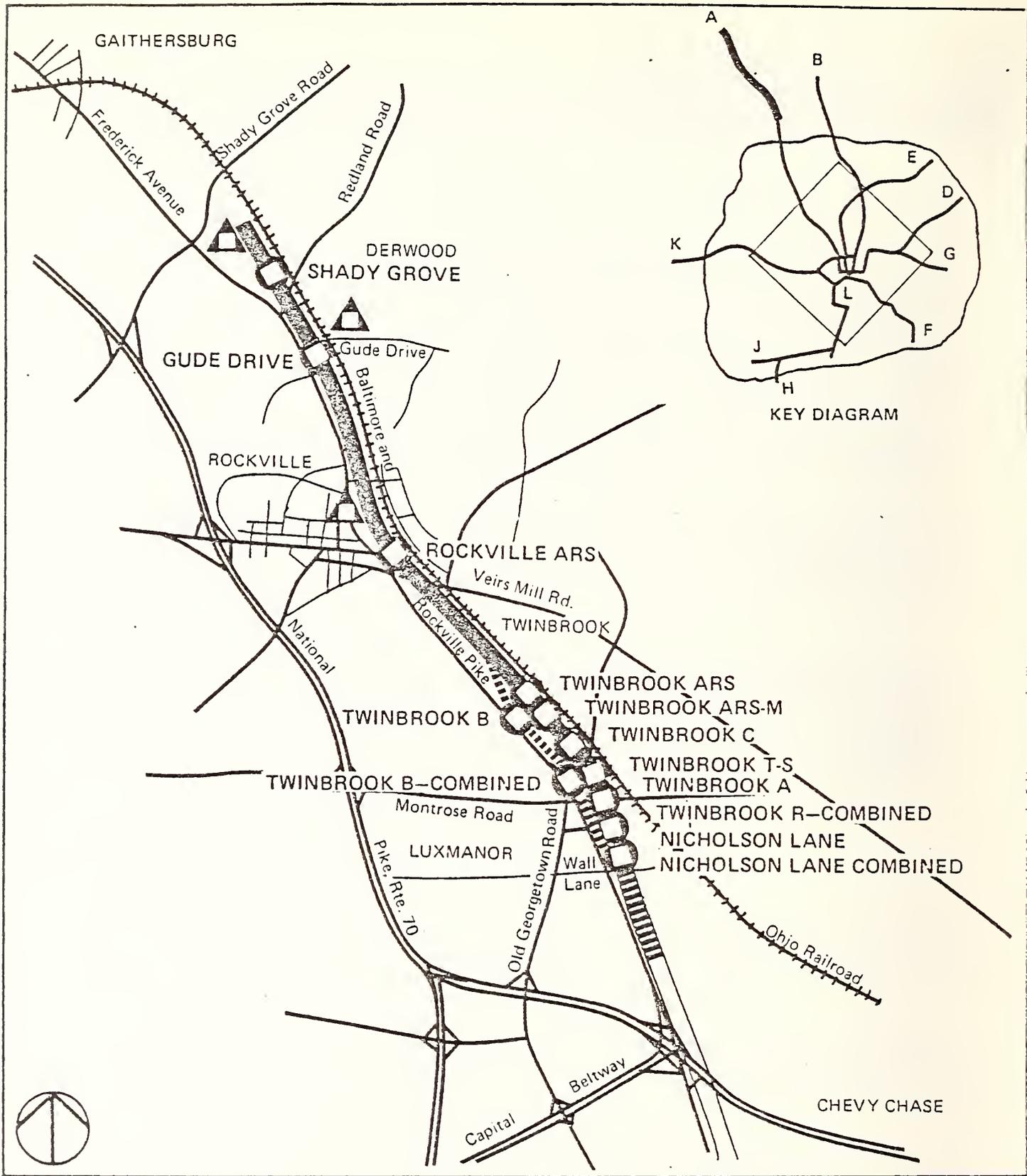
General Findings

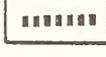
1. WMATA, as well as other County and municipal planning agencies, has investigated a wide range of alternatives to the proposed action for Rockville Route Segment A017 as well as for Segments A014-A016.
2. The proposed change from the original design of these segments of the Approved Regional System of the 1968 (ARS-68) to the preferred alignment is based primarily on the desire to minimize negative environmental impacts documented by this Report.
3. The preferred system alternative for the end of the Route, Rockville System D, which recommends the extension of the terminal station and S&I Yard beyond Rockville to Shady Grove, would provide for the maximum positive impact on the corridor area.

This system was approved in 1975 by Montgomery County Council and WMATA Board with EIS and General Plan Resolutions. The S&I Yard is referred to as segment A016. ---

Specific Conclusions

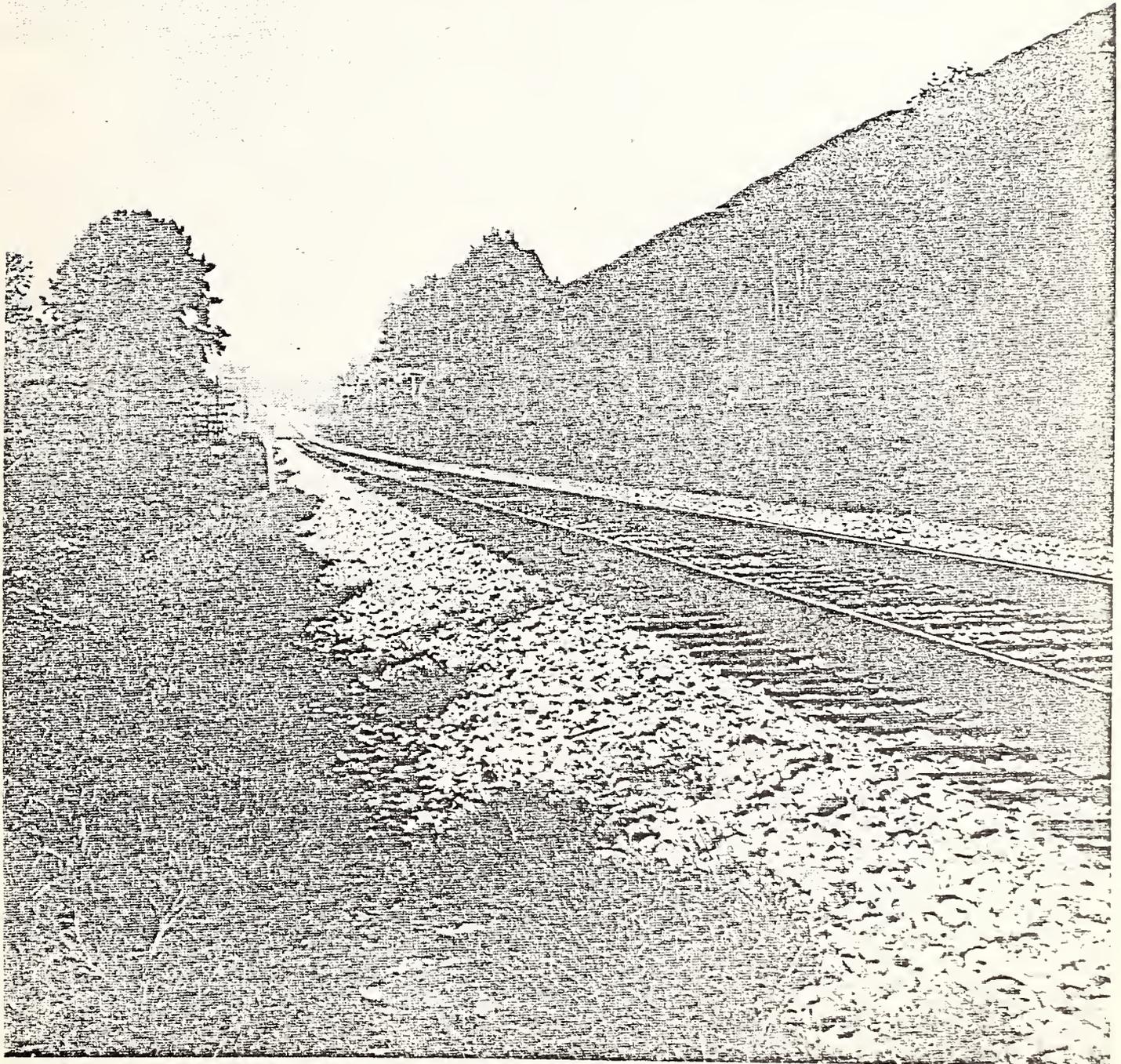
1. Major changes are expected to take place in the vicinity of Shady Grove terminal station and S&I Yard and to a lesser extent at Rockville Station with respect to increased density, visual character, movement and traffic, and the character of the natural environment. These changes will be due, in part, to the introduction of Metro at Shady Grove Station and S&I Yard to the area. The changes are also anticipated by the local government, regional and local planning agencies, and policies to effect these changes have been approved and adopted by them. In fact, a County Service Park is being planned at Shady Grove in the site adjacent to Metro on the east side of the B&O Railroad tracks.
2. Although there may be a general improvement in regional traffic congestion and access due to Metro, the area in the vicinity of the Rockville Station can expect an increase in congestion due to over-capacity traffic volumes created by station parking and surrounding development.
3. All feasible alternatives to the alignment and station location for Metro will result in some measure of negative impact to the rural environment around Shady Grove. These negative impacts are kept to a minimum by the preferred alternative, and should be balanced with the positive impacts and long-term benefits of Metro relative to other forms of transportation.



-  Cut and Cover Alignment
-  Surface Alignment
-  Alternative Alignments
-  Platform Location
-  Service, Storage and Inspection Yard (S&I)

'A' ROUTE SEGMENTS A014, A015, A016 AND A017





B&O TRACKS IN A017 SEGMENT OF A ROUTE

2. SUMMARY OF THE ENVIRONMENTAL EVALUATION

2.1 Proposed Action

The extension of Metro Route A beyond Rockville to the vicinity of Shady Grove Road is intended to improve the operational efficiency of the transit line, to improve access to the terminal station, and to relieve Rockville of both the traffic generated by a terminal station and the presence of a rail yard near the heart of the City. A location for the terminal, parking areas, and Service and Inspection Yard was found near the Baltimore and Ohio Railroad, on industrially zoned land, some 2.7 miles north of the proposed Rockville Metro Station (Rockville ARS Station).

2.2 Description of the Proposed Action

Route A extension follows an alignment on the west side of the Baltimore and Ohio Railroad tracks between Rockville and Gaithersburg. This alignment is referred to as SG-W or Shady Grove-West in the Evaluation of the Proposed Action and Its Alternatives. The alignment is parallel to the B&O tracks for a distance of about 2.66 miles from the start of the extension, at the north end of the Rockville ARS Station to the entrance to the proposed S&I Yard near Shady Grove Road. The extension will be built at-grade, typically at a grade and elevation close to that of the existing B&O tracks. In its route from Rockville Station to the Shady Grove Station just north of Fields Road, the alignment intercepts six roads which presently cross the railroad tracks, either at-grade or on structures.

Park Road is carried under the B&O tracks to join Middle Lane at Hungerford Drive (Md. 355). Construction of the Rockville Station parking and access roads will require a widening and an improvement of this presently narrow underpass.

Frederick Avenue, which presently crosses the B&O tracks at-grade, would be closed by the Metro line, which does not tolerate grade-level crossings. Westmore Road crosses the B&O some 1800 feet north of Frederick Avenue; an at-grade crossing, it too would be closed.

Gude Drive is carried over the B&O tracks on a bridge that would require reconstruction to accommodate the Metro alignment. Derwood Road bridge would also require reconstruction.

A new bridge connecting Fields Road with Redland Road would eliminate the need for a grade crossing at Redland Road and would improve access to the Metro Station north of Fields Road.

The terminal station will be about 2.66 miles from Rockville Station, 400 feet north of Fields Road. The station will be a center-platform surface structure with pedestrian underpasses to connect the station to parking lots and access roads on the east and west sides of the rail alignment.

Parking will be provided at the Shady Grove Station for 3000 cars. Spaces for 57 cars and 6 buses will accommodate standing vehicles while passengers arrive or depart.

Access to the station and parking will be from Sommerville Drive on the west. On the east side of the alignment, parking access will be from Shady Grove Road or the Outer Beltway link over a limited access road built to serve only the station. Buses will enter the east side from either Shady Grove Road or the Outer Beltway link on the same limited access road or from Fields/Redland Road.

The Service and Inspection Yard at Shady Grove will provide storage for Metro cars, inspection and service shops, car cleaning facilities and turn-around loops.

The Service and Inspection Yard will occupy about 36 acres of land; the parking and station area west of the B&O will occupy about 11 acres, and the parking lots and station area to the east will occupy twenty acres or more, depending on the requirements for water management ponds. The access road from Shady Grove Road extended or the Outer Beltway link to the parking area on the west will occupy some 3 or 4 acres, depending on right-of-way dimensions.

Changes in the ridership projections and service areas of Metro, as well as community opposition about certain features of the ARS System, particularly the terminal station and yard at Rockville, led to the proposal of numerous alternatives for the design of the end of the Rockville Route. These alternatives were generated by citizen groups, County and municipal planning agencies, the WMATA staff and their consultants.

2.3 Alternatives to the Proposed Action

The alternatives proposed in the Rockville segment under study can best be understood in terms of different levels of decision-making as well as planning and design concern. First, there is the system level which deals with all the components of the end of the Rockville Route (alignment, station and yard location). Secondly, there is the alignment level which deals with the precise routing of the tracks themselves and whether they are below grade, at grade, or above grade. The third level deals with station platform and S&I Yard location or where the platform and yard is incorporated into the alignment.

And finally, the station and yard design level which deals with the proposed access and parking configuration of the site design. Alternatives are found at all of these levels along Segment A017 of the A Route. They will be discussed in the order presented. The system alternatives deal with all the segments at the end of the Rockville Route--A014, A015, A016, as well as A017--in order to evaluate the necessity and performance of the proposed extension beyond Rockville.

a. System Alternatives

Within the corridor under study, there are five system alternatives to the ARS-68 System. The ARS-68 System (the presently¹ funded system) includes alignments A014, A015 and A016. The stations are Nicholson Lane ARS, Twinbrook ARS-M (south of Halpine Road) and Rockville ARS. The S&I Yard is in Rockville. The five system alternatives to ARS-68 are defined as follows:

1. Rockville A

Rockville A System alternative includes alignments A014 and A015 along with A016. The stations are Nicholson Lane and Twinbrook Combined (with three station location alternatives) and a terminal station and S&I Yard at Rockville.

2. Rockville B

Rockville B System alternative includes Alignments A014 and A015 along with A016. The stations are Nicholson Lane and Twinbrook (six platform location alternatives) and a terminal station and S&I Yard at Rockville.

3. Rockville C

Rockville C System alternative includes Alignments A014, A015, A017 and A016. The Stations are Nicholson Lane Combined (three platform location alternatives), Rockville (two platform location alternatives) and extension of terminal station and S&I Yard beyond Rockville (two station platform alternatives).

4. Rockville D

The Rockville D System alternative includes Alignments A014, A015, A017 and A016. The stations are Nicholson Lane and Twinbrook (six platform location alternatives), Rockville (two platform location alternatives) and final extension of terminal station and yard beyond Rockville (two platform location alternatives).

¹A016 is included here because it represents S&I Yard in Rockville

5. No Action

The No Action project alternative for A017 and A016 considers terminating the Rockville Route of the Metro at Rockville. The Systemwide EIS, completed in 1975, covered the ARS-68 System to the City of Rockville. This study of A017 and A016 was initially carried out in 1974 before the Systemwide EIS was circulated or approved. This project report was structured to address the issue of the need for the extension beyond Rockville. The No Action alternative for A017 and A016 should be viewed, however, in the context of the five system alternatives plus the ARS-68 for end of A Route, illustrated diagrammatically on the map entitled "System Alternatives for the End Segments of The Rockville Route." (See page 42)

b. Alignment and Terminal Station and Yard Location Alternatives

Only system alternatives C and D include the extension of the A Route beyond Rockville. Systems ARS-68, A and B would be the equivalent of the No Action alternative for Segment A017 and A016, or terminating the Metro Route in Rockville. Within the A017 and A016 Segment of Systems C and D, six alternative alignments were studied with two alternative terminal station and service yard locations. These eight alternatives, with the addition of the No Action alternative, are described below:

SG-Wa:* Identical in alignment, terminus, and location of service yard to SG-W (proposed action); SG-Wa spans Frederick Avenue and Westmore Road on an aerial structure.

SG-Ea: An aerial structure carries Metro tracks over the B&O from the west to the east side of the B&O tracks; proceeding northward, the aerial structure spans Frederick Avenue and Westmore Road before the alignment returns to an at-grade position. North of Fields/Redland Road, the Shady Grove Station occupies a site east of the location proposed for SG-W and about 2000 feet further north. The Service and Inspection Yard is east of the station.

SG-WEa: This extension to Shady Grove follows the west side of the B&O Railroad to a point south of Derwood Road where an aerial structure carries the Metro tracks from the west to the east side of the B&O. Station and yard locations are identical to SG-Wa.

*Two station platform locations are possible for SG-W and SG-Wa; the one described in 2.2 supercedes an earlier location 1000 feet further north of Fields Road. SG=Shady Grove, W=west, E=east, a=aerial, t=tunnel, GD=Gude Drive.

- SG-WEt: A tunnel under the B&O tracks near Derwood Road carries Metro from west to east, the alignment is identical to SG-WEa.
- GD-W: The Gude Drive alternative places the terminal station north of Gude Drive, about one mile short of the Shady Grove terminal. GD-W follows the west side of the B&O tracks (identical to SG-W); north of Gude Drive, a station is provided. Yard tracks north of the station go through a tunnel under the B&O tracks to a Service and Inspection Yard on the east side of the railroad, north of Gude Drive.
- GD-Wa: This alternative is identical to GD-W, except that an aerial structure on the west side of the B&O spans Frederick Avenue and Westmore Road.
- GD-Ea: This alternative crosses from the west to the east side of the B&O Railroad on an alignment identical to SG-Ea. Frederick Avenue and Westmore Road are spanned as in SG-Ea. The terminal station is north of Gude Drive on the east side of the B&O, with the S&I Yard immediately north of the station.
- SG-Wt: Following the same alignment as SG-W, but it would be an underground alignment to a surface station and service yard at Shady Grove. Construction would be accomplished by excavating a trench, building a double-box tube, and refilling the excavation.
- No Action (RK-W): Adoption of this alternative would require a terminal station at Rockville and a Service and Inspection Yard in downtown Rockville, between Hungerford Drive and the B&O tracks, north of Park Road as planned in the Adopted Regional System (ARS-1968).

These nine alignment, station and yard location alternatives for A017 are illustrated diagrammatically on the map entitled "Alignment and Terminal Alternatives for A017."

2.4 The Preliminary Evaluation

The purpose of the Preliminary Evaluation is to make a first cut analysis of all feasible and proposed alternatives. As stated in Task III of the Scope of Service, "those alternative alignments that prove to be unacceptable shall not be studied beyond this point."

Of the six systems, Alternatives ARS-68, Rockville A, Rockville B, Rockville C, Rockville D and No Action, only ARS-68 (the funded system), Rockville C System and Rockville D System were recommended for more detailed consideration in the Final Evaluation.

For the proposed Metro extension beyond Rockville which is incorporated within Systems C and D, the Preliminary Evaluation indicated that only alignment Shady Grove-West (SG-W) should receive more detailed consideration in the Final Evaluation. (This evaluation was carried out against 20 impact factors by the means of a matrix included in Chapter 5 of this Report.) This alignment (SG-W) would be assessed and compared to a No Action alternative for the proposed extension, as incorporated in the ARS-68 System which places the terminal station and S&I Yard in Rockville.

As explained in the Preface, separate Environmental Impact Statements have been prepared for the A014-A016 Segments and the proposed A017 extension of the Rockville Route. Of necessity, the Preliminary Evaluation for both Reports had to examine and assess all sections of the Rockville line from A014 to the terminal station and S&I Yard. After the Preliminary Evaluation, the two Reports became quite distinct from one another. The A014-A016 Report proceeded to analyze in greater depth and detail Systems ARS-68, C and D and their components so as to establish a preferred and recommended system for the portion of the Rockville Route beyond Grosvenor.¹ The A017 Report proceeded to analyze in greater depth and detail the impacts of the SG-W alignment with a station and S&I Yard at Shady Grove and to evaluate the No Action alternative.

2.5 The Final Evaluation

Since the No Action alternative was determined to have severe long-term negative impacts on the City of Rockville (Chapter 6 of this Report), the Final Evaluation examined in detail the potential impacts of the proposed SG-W alignment with a terminal station and S&I Yard at Shady Grove. The evaluation included detailed studies of the air quality and noise and vibration impacts of the alignment, station and S&I Yard under consideration. A more detailed evaluation was done with respect to alignment impacts, visual/physical impacts, cultural impacts, traffic impacts, and socio-economic impacts.

¹System D was passed in 1975 as the proposed action by the Montgomery County Council and₃₉the WMATA Board.

2.6 The Preferred Alternative Is Also The Proposed Action

Based on the comprehensive evaluation described above, the Shady Grove-West alignment and its components is recommended as the preferred alternative and the proposed action for the Rockville extension, or the A017 Segment.

The advantages of the Shady Grove-West alignment are numerous. Not only does it relieve the City of Rockville of the long-term irreversible impacts which a terminal station and an S&I Yard would have on the City, but it provides a terminal station at a location which can better serve up-County residents and anticipated development in the Gaithersburg-Germantown area, and provides a site for the station and service yards with ample room for the most efficient layout in an area whose future industrial uses will be compatible.

The Shady Grove site permits a flexibility of design and access that would be impossible in downtown Rockville. As the site is presently in pasture, herbaceous oldfield (perennial grasses and weeds) or hedgerows, and occupies the headwaters of Crabb's Branch, the impact of rail yard and parking lot on natural systems is considerable. Construction will require careful management to prevent or mitigate harmful effects on land, soil, air, plants, and especially water quality. A detailed discussion of environmental considerations relative to the proposal and its alternatives are discussed in Chapters 6 and 7 of this Report.

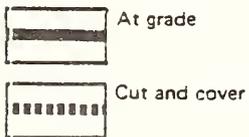
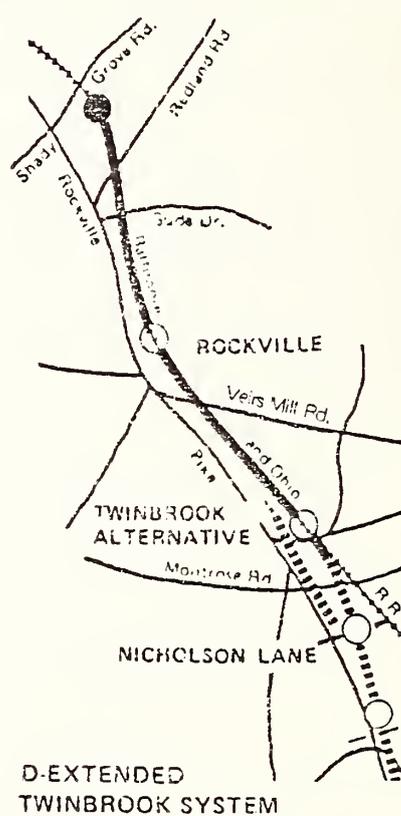
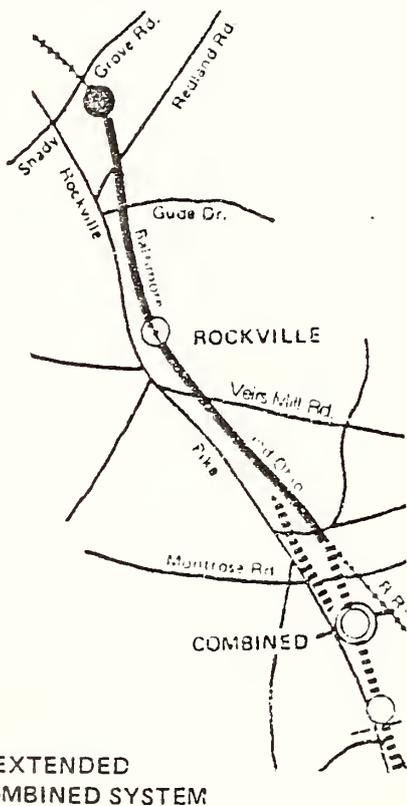
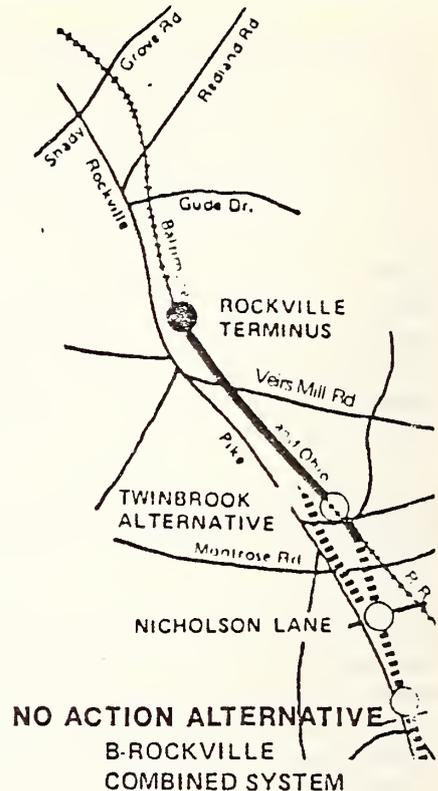
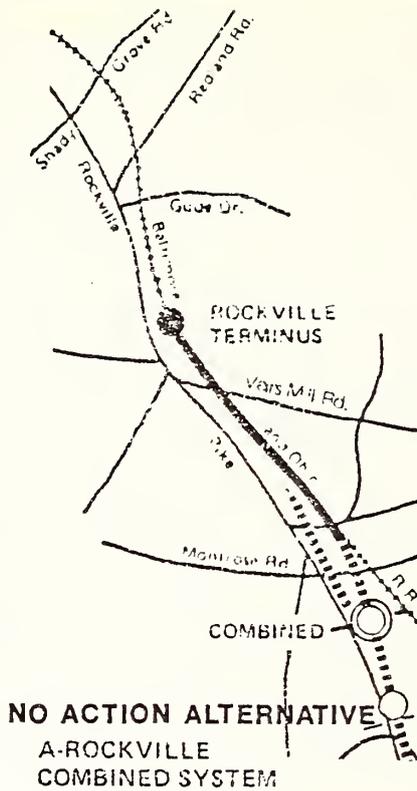
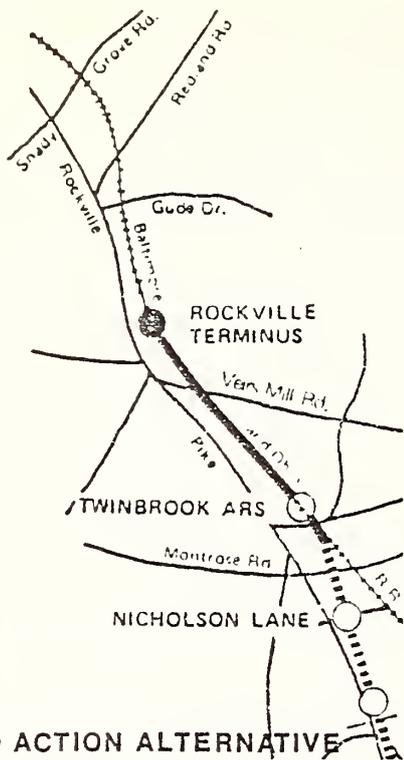
There is space for ponds to detain and settle runoff from paved areas and there is room for trees and plantings to soften the effects of the station. Because of their location at the upper end of the Crabb's Branch drainage basin, the yard and parking lots will occupy level to gently sloping land rather than the steeper, more dissected terrain typical of the middle and lower parts of drainage basins in the Piedmont. Therefore, surface runoff from these areas will be easier to control with the appropriate location of detention basins. Besides runoff detention, other techniques will be used to deal with water treatment and consumption. The S&I Yard contains an automated car-washing operation. Of the water used for this washing process, a high percentage will be reclaimed and the rest will be treated. A design for such an operation at the New Carrollton Yard reclaims 70% of the waste water. A description of the New Carrollton system is in the Appendix of this Report.

Because the terminal area lies in a natural bowl, its visual impacts will be limited to the area immediately surrounding the site. As for cultural impacts, these will be negligible as no archaeological, historic, park or recreational sites are affected by the preferred alignment.

From a traffic perspective, if the proposed and projected roadway improvements discussed in Section 3.5 are effectuated in the Shady Grove area, Metro-related traffic impacts will be positive and long-term at the regional level in that south-bound auto traffic from the Shady Grove area north to beyond Montgomery County is expected to be diverted to rapid rail transit at the Shady Grove Station. By thus reducing vehicle miles traveled by automobiles, the preferred alternative for the A017 Segment of the Rockville Route will have a beneficial long-term impact on regional air quality since accompanying the reduction of vehicle miles traveled are lower emissions of carbon monoxide, hydrocarbons, oxides of nitrogen, oxidants and particulates.

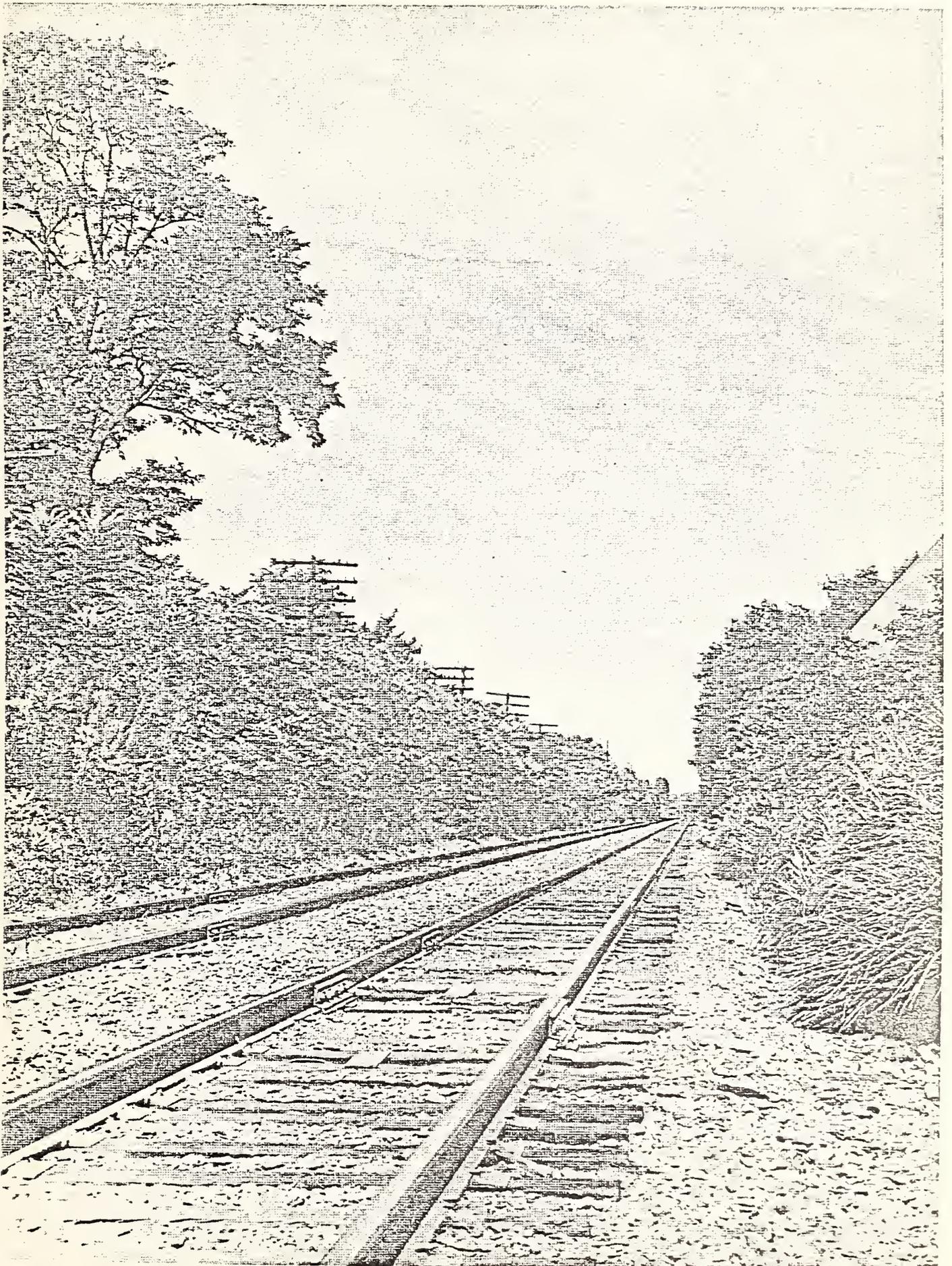
As for noise and vibration, ground-borne vibration from the transit trains, and from any other activities associated with operations of the transit system will not be noticeable or perceptible as a mechanical motion at any point along the preferred and proposed alignment for the A017 Segment. The air-borne noise from transit trains operating at-grade and on aerial structure will be noticeable but at an acceptable level with the use of sound barrier walls as proposed by noise and vibration consultants (see Appendix E) at specific locations and will produce noise which will be consistent with the existing noise environment.

Finally, the preferred and proposed SG-W alternative is expected to accelerate population and employment growth in the area surrounding the Shady Grove Station and in the areas to the north and northwest of the station in accord with local and regional plans for the area. The preferred alternative will provide increased accessibility to the new employment centers in these areas, and increased accessibility for the growing population of the northern portion of the 70-S corridor to employment opportunities located to the south and southeast.



SYSTEM ALTERNATIVES FOR END SEGMENTS
OF THE ROCKVILLE ROUTE





B&O TRACKS NORTH OF ROCKVILLE APPROACHING SHADY GROVE

3. DESCRIPTION OF EXISTING AND PROJECTED ENVIRONMENTAL CONDITIONS

3.1 Introduction

Before an in-depth evaluation of environmental impacts can be made for each alignment and station alternative, at the end of the A Route, it is necessary to understand the existing environmental conditions. These conditions include Ecological (geology, soils, hydrology, and vegetation/wild-life), Visual/Physical (texture and grain of development), Cultural (historical/archaeological, schools/institutions and parkland/recreational), Air Quality, Noise and Vibration, and Socio-Economic (population, employment, traffic characteristics). The following sections describe the aspects of these conditions relevant to the impact evaluation and selection of a preferred Metro alignment for Segment A017 of the Rockville Route. The Preliminary Evaluation (Section 5) and the Final Evaluation (Section 7) assess the impacts of the proposed actions and its alternatives, in the context established by the inventory and interpretation of these existing environmental conditions. These conditions supply the common reference base for measuring the alignment and station alternatives with the least negative and positive impacts.

3.2 Ecological Conditions

Geology

A017 Segment lies entirely within an area of the Piedmont physiographic province that is underlain by the upper pelitic schist of the western Wissahickon Formation of late Precambrian Age. The rocks are medium grained, banded or laminated, quartz-rich phyllite and schists with magnetite, quartz veins, sandstones and conglomerate beds composed of muscovite, chlorite, albite and quartz. The western sequence forms a broad northeast trending belt of metasedimentary rocks that extend from Fairfax County, Virginia through Maryland and southeast Pennsylvania. The formation coarsens from west to east.

Poor exposure and structural complications make approximation of stratigraphic thickness difficult. The width of the belt (5-9 miles in Montgomery County) and prevalence of steeply dipping beds suggest that even with structural repetition, the sequence is thousands of feet thick.

"The top of the formation is not exposed, therefore, total thickness is unknown. But at least 14,000 feet of rocks belonging to the western Wissahickon Formation are now exposed along the Potomac, and the original thickness may have been much greater."¹

The bedrock in the area surrounding A017 is overlain by a layer of saprolite (bedrock weathered or decomposed in situ) of variable thickness. From an engineering point of view, the decomposed rock is expected to act as a stiff or compact soil of moderately good quality.

The fresh unweathered Wissahickon schist is generally gray or dark-bluish to greenish gray, fine to medium grained. No fresh unweathered crystalline rocks are found at or even very near the ground surface within the study area. This is because these dense, hard crystalline rocks weather or decompose readily to form a deep mantle over the relatively fresh bedrock of compact residual soil and rotted rock that becomes gradually and progressively denser and more rock-like with increasing depth.

The Wissahickon schist, upon decomposition, produces a reddish, yellow or tan, clayey, silty soil. These soils, because of their high clay content, tend to be relatively heavy and impermeable.

The major structural features of the crystalline rocks in the area is their schistosity or foliation, which is the lamination that results from the parallel arrangement of platy or elongated mineral grains, e.g. abundant mica, characteristic of Wissahickon schist.

Foliation in the area strikes north, or a few degrees east or west of north, and dips steeply to vertically. Lineation plunges southward at about 10° to 30°.

Another important structural feature is the joint system in the crystalline bedrock of the area. Joints, which are fractures in the bedrock along which there has been no appreciable movement of the jointed blocks of rock parallel to the fracture planes, are commonly present in the area.²

¹G.W. Fisher, The Petrology and Structure of the Crystalline Rocks Along the Potomac River, Johns Hopkins University, PhD Dissertation.

²Minor Piedmont streams are controlled by joints in rock. On the proposed Shady Grove site, the two branches of Crabb's Creek are controlled by a major joint set north-west, south-east trending.

Geo-Hydrology

Crystalline rocks underlying the area are covered by a mantle of weathered, decomposed rock of varying thickness, formed in place. The thickness, porosity and permeability of this "saprolite" helps to govern the occurrence of ground water beneath the area, because the saprolite contains most of the ground water stored in crystalline rocks. Saprolite is a stage in the breakdown of crystalline rocks by the process of chemical weathering. This process is promoted by the percolation through the rock of ground water containing dissolved carbonic acid and humic acids.

Crystalline rocks of the types present in the study area have a compact fabric, with little or no appreciable porosity or permeability in the fresh unbroken rock. Therefore, ground water is contained and moved almost entirely within the fracture (joints, faults, cleavage planes). Weathering proceeds most rapidly along the avenues of ground water movement. Weathering enlarges the fractures, and further facilitates the movement of water through otherwise relatively impermeable rocks; on the other hand, ground water within saprolite or decomposed rock zone is stored in the interstitial voids between the residual grains and the movement of water is more like that in hard, compact soils, or unconsolidated sediments. It should be emphasized that in this area, ground water moves only through small cracks and fissures generally only fractions of an inch wide in the relatively sound rock and through the tiny pore spaces in the soils and decomposed rock.

There are no large cavities that can accommodate underground streams, such as can occur in limestone terrain under certain conditions. Movement of ground water in the fractures and pore spaces of the materials underlying the study area are generally quite slow, on the order of fractions of an inch to a few inches a day.

Soils

The A Route extension to Shady Grove transects an area of upland silt loams in the Chester-Glenelg-Manor Association. The soils vary from well-drained to poorly-drained, depending upon their topographic position. Because they are erodible and occupy slopes of 0 to 15%, measures to control erosion and sedimentation will be required both during and after construction.

Chester (Ch) soils are fertile, deep, and well-drained with a high moisture-supplying capacity. They are easy to work

and are good to excellent agricultural soils. These soils developed from mica schist or granitized schist.

Chester silt loam, 0 to 3% slopes (ChA) occurs in a small area to the north of the Crabbs Branch, in an area proposed for the alternate service and inspections yard at Shady Grove east of the existing B&O Railroad tracks.

Chester silt loam, 3 to 8% slopes, moderately eroded (ChB2) surrounds the above mentioned Chester soil (ChA) to the west of the B&O tracks and north of the Crabbs Branch and occurs in a narrow band west of the B&O Railroad tracks. This soil appears again further south and to the west of the B&O tracks, in the vicinity of Westmore Road and Hungerford-Frederick Drive (State Route 355). A small area of this soil straddles the B&O tracks just to the south of Derwood Road.

Elioak (Ee, Ek) soils are deep, well drained, very red soils that developed from materials weathered in place from mica schist containing large quantities of mica and many veins of white quartzite. These soils are mature and have strong horizons and structural development, particularly in subsoil. They occur mostly on ridge tops.

Elioak silt loam, 3 to 8% slopes, moderately eroded (EeB2) is a deep, well-drained, nearly level to gently sloping, acid soil. This soil area in the vicinity of the B&O Railroad tracks and Redland Road. The soil requires relatively simple management and erosion control practices when under cultivation.

Elioak (EkB3) silty clay loam, 3 to 8% slopes, severely eroded has lost original silt loam topsoil through erosion. The present surface layer is mostly subsoil. Special attention should be paid to erosion control. This soil occurs in a thin band crossing the B&O Railroad tracks, north of, and immediately adjacent to the above mentioned Elioak soil, EeB2.

Elioak silty clay loam, 8 to 15% slopes, severely eroded (EkC3) requires careful management in order to prevent severe erosion problems. This soil occurs in a small area to the east of the B&O Railroad and north of Redland Road, and immediately south of the above mentioned soil.

The Glenelg (Gh) soils are moderately deep, well-drained soils, developed from weathered mica schist, granitized schist or gneiss. The subsoil is texturally finer than surface soil.

Glenelg (GhB2) silt loam, 3 to 8% slopes, moderately eroded occupies gently sloping uplands. Simple practices are needed to control erosion. This is an important agricultural soil.

This soil is well to excessively drained, acid, easily eroded, and should be kept in vegetative cover to control erosion. This soil is the most prevalent along the A017 section.

The soil occurs in two major areas; one from Westmore Road south straddling the B&O Railroad tracks into Rockville, another between Derwood and Redland Roads, spreads south almost to Westmore Road. Another area of this soil appears in the proposed Shady Grove service and inspections yard, west of the B&O Railroad tracks, and south of the Sears Warehouse.

Glenelg (GhB3) silt loam, 3 to 8% slopes, severely eroded, occurs on gentle slopes, but erosion has removed most of the surface and in places part of the subsoil. This soil is well drained but special care is needed to dispose of excess water because the soil is so easily eroded. This soil is used primarily as pasture. The soil occurs in an area that will be partially occupied by Shady Grove Station and parking lots. There is another small area of this soil in the proposed alternate service and inspections yard to the west of the B&O tracks.

Glenelg silt loam, 8 to 15% slopes, severely eroded (GhC3) is well-drained. The soil erodes readily and must be managed intensively to control erosion. This soil occurs in the vicinity of the proposed parking lots of the Shady Grove Station.

Glenville (Gm) soils are moderately well-drained and have distinct fragipans, or silt pans, in the subsoil. These soils developed primarily from materials weathered from mica schist, phyllite, and gneiss. Glenville soils are on upland flats and in somewhat depressed areas throughout the Piedmont plateau, generally around the heads and upper courses of intermittent drainage ways. These soils are slowly permeable because of the fragipan in the subsoil. At times, the surface soil is wet, and other times, very dry because moisture cannot rise easily from the lower level. Some depressed spots are temporarily ponded after heavy rains or quick thaws.

The A017 Segment of the Rockville Route crosses many small areas of Glenville soils. One area occurs in the vicinity of the proposed alternate station at Gude Drive west of the B&O tracks. Another area occurs just south of Gude Drive to the west of the B&O tracks. Three small areas of this soil also occur to the north of Westmore Road. A small area of this soil also falls within the proposed alternate Shady Grove service and inspections yard west of the B&O Railroad tracks.

Worsham soils (Wo) are poorly drained, with a moderately fine textured, slowly permeable subsoil. These soils developed mainly from mica schist and gneiss. The surface soil consists

mostly of silty material washed from adjacent, higher areas. These soils are found in depressions, at the heads of drains and along small drainage ways, and are very poorly drained. They are not in floodplains, but occupy upland flats, depressions and sloping areas around and above the heads of small streams. Since these soils are poorly drained, runoff from higher areas will accumulate in Worsham area and will pond.

A substantial portion of the proposed alternate Shady Grove service and inspections yard west of the B&O Railroad tracks occupies an area of Worsham soil. Both proposed alternate stations at Shady Grove (east and west of the B&O tracks) fall partially on this soil as do their parking lots. The proposed alternative station at Gude Drive east of the railroad tracks also partially falls on this soil.

There is a small area of Made land (Ma) within the proposed alternate Shady Grove service and inspection yard west of the B&O tracks. Made land consists of areas that have been so altered by industrial and building activities that they cannot be classified as soils. In this case, the Made land is dumped material brought in from outside the area. It consists of a mixture of fill soils, building rubble, and trash and garbage.

The dumping is still going on and the area of Made land is consequently increasing in size. The dumping activity has serious consequences for building because of the lack of uniformity and the unpredictability of the materials involved.

The tables which follow list those soils relevant to the alternative proposals for the A017 section by soil type and map symbol.

The different soils that occur within the A017 section are shown on the composite maps of environmental impacts. The soils are abbreviated in a three-letter one-number code. The first two letters are initials for the soils series name; the third capital letter refers to the slope of the ground; and the number refers to the degree of erosion.

ESTIMATED PHYSICAL PROPERTIES OF SOILS, A017 SEGMENT.
 (From U.S.D.A. Soil Conservation Service, Soil Survey, Montgomery County, Maryland)

Soil Type & Map Symbol	Depth to Surface High Water Table (ft.)	Depth to Surface Bedrock (ft.)	Erosion Characteristics	Drainage	Engineering Classification Unified ¹	AASHTO ²	Range in Permeability (In./Hr.)	Structure	Reaction ³	Shrink/Swell
Clayton										
Silt Loam			Erodible	Well-drained	ML	A-4	63.2.0	Granular to subang-ular blocky	4.5.5.5	Low
ChA	4.10	8.40			CL	A-6	20.0.6.3	Subangular blocky	4.5.5.5	Moderate
ChOZ	4.10	40.48+			SC	A-2 or A-4	5.1.2.0	None	4.5.5.5	Low
Elioak										
Silt Loam			Highly erodible	Well-drained	ML	A-4	53.2.0	Subangular blocky	5.1.6.0	Low
EsB2	6.10	8.44			CL or MC	A-6 or A-4	20.0.6.3	Blocky & subang-ular blocky	5.1.6.0	Moderate
Elioak										
Silty loam			Highly erodible	Well-drained	ML	A-6	20.0.6.3	Blocky & platy	5.1.6.0	Low
EkBJ	3.8	44.95+								
EkCJ	3.8									
Glennville										
Silt Loam			Highly erodible	Well-drained	ML	A-4	53.2.0	Granular to subang-ular blocky	4.5.5.5	Low
Ghd2	5.10+	0.12			CL or ML	A-6	20.2.0	Subangular blocky	4.5.5.0	Low
Ghd3	3.10+	12.24			MH	A-5	5.1.2.0	Massive	6.1.5.6	Low
GhCJ	3.10+	24.48+								
Greenville										
Silt Loam			Highly erodible	Moderately well-drained	ML or CL	A-4	53.2.0	Granular to subang-ular blocky	4.5.5.5	Low
GmA	1-3(b)	4+			MH	A-5	66.2.0	Platy & subangular blocky	4.5.5.0	Low
20.42+										
Worsham										
Silt Loam			Highly erodible	Poorly drained	ML or CL	A-4	20.0.6.3	Crumb	5.1.5.5	Low
WbA	0.1	5.8			ML or CL	A-5 or A-4	20.0.2.0	Platy & blocky	4.5.5.5	Moderate
					ML	A-4 or A-6	20.0.6.3	None	4.5.6.0	Low

1. See attached table "Unified Soil Classification".
 2. See attached table "Revised Bureau of Public Roads or AASHTO Classification".
 3. (a) Slightly erodible
 5.1.5.5 - Strongly acid
 5.6.0.0 - Medium acid
 0.1.6.5 - Slightly acid
 (a) In most residual soils, depth to water table cannot be estimated but normally the water table is within the bedrock.
 (b) These soils have a slowly permeable fragment in the subsoil. At times a perched water table is directly above the fragment and is separated from a lower, more permanent water table by a layer of dry soil.



SOIL CHARACTERISTICS THAT AFFECT ENGINEERING, A017 SEGMENT
 (From U.S.D.A. Soil Conservation Service, Soil Survey, Montgomery County, Maryland, 1961.)

Soil Type (Map Symbol)	Suitability for Winter Grading	Susceptibility to Frost Action	Suitability as Material for:		Suitability as Source of:	
			Road Subgrade	Road Fill	Topsoil	Sand & Gravel
Chester Silt Loam (ChA, ChB2)	Not Suitable	Slight to Moderate	Fair to Good	Fair to Good	Good	Not Suitable
Elioak Silt Loam (EeB2)	Not Suitable	Slight to Moderate	Fair to Good	Fair to Good	Fair to Good	Not Suitable
Elioak Silty Clay Loam (EkB3, EkC3)	Not Suitable	Slight to Moderate	Fair to Good	Fair to Good	Fair to Good	Not Suitable
Glenelg Silt Loam (GhB2, GhB3, GhC3)	Not Suitable	Slight to Moderate	Fair to Good	Fair to Good	Fair to Good	Not Suitable
Glenville Silt Loam (GmA)	Not Suitable	Strong	Poor	Poor	Fair	Not Suitable
Worsham Silt Loam (WoA)	Not Suitable	Very Strong	Poor	Poor	Poor	Not Suitable

Slope Key

Degree of Erosion Key

A ¹ = 0- 3%	No Number = Little Erosion
B = 3- 8%	2 = Moderately Eroded
C = 8-15%	3 = Severely Eroded
D = 15-25%	4 = Very Severely Eroded
E = 25-45%	Ex.: ChB2 - Ch = Chester silt loam; B = 3%-8%; 2 = Moderately eroded
F = 45-65%	

¹For Worsham Soils A=0-8%

REVISED BUREAU OF PUBLIC ROADS OR AASHO CLASSIFICATION

Group	Sub-group	Per Cent Passing U.S. Sieve No.			Character of Fraction Passing No. 40 Sieve		Group Index No.	Soil Description	Subgrade Rating
		10	40	200	Liquid Limit	Plasticity Index			
A-1			50 max	25 max		6 max	0	Well-graded gravel or sand; may include fines Largely gravel but can include sand and fines Gravelly sand or graded sand; may include fines	
	A-1-a	50 max	30 max	15 max		6 max	0		
	A-1-b		50 max	25 max		6 max	0		
A-2*				35 max			0 to 4	Sands and gravels with excessive fines Sands, gravels with low-plasticity silt fines Sands, gravels with elastic silt fines Sands, gravels with clay fines Sands, gravels with highly plastic clay fines	Excellent to Good
	A-2-4			35 max	40 max	10 max	0		
	A-2-5			35 max	41 min	10 max	0		
	A-2-6 A-2-7			35 max 35 max	40 max 41 min	11 min 11 min	4 max 4 max		
A-3			51 min	10 max		Nonplastic	0	Fine sands	
A-4				36 min	40 max	10 max	8 max	Low-compressibility silts	
A-5				36 min	41 min	10 max	12 max	High-compressibility silts, micaceous silts	
A-6				36 min	40 max	11 min	16 max	Low-to-medium-compressibility clays	Fair to Poor
A-7				36 min	41 min	11 min	20 max	High-compressibility clays	
	A-7-5 A-7-6			36 min 36 min	41 min 41 min	11 min† 11 min†	20 max 20 max	High-compressibility silty clays High-compressibility, high-volume-change clays	
A-8								Peat, highly organic soils	Unsatisfactory

* Group A-2 includes all soils having 35 per cent or less passing a No. 200 sieve that cannot be classed as A-1 or A-3.
† Plasticity index of A-7-5 subgroup is equal to or less than LL-30. Plasticity index of A-7-6 subgroup is greater than LL-30

UNIFIED SOIL CLASSIFICATION (After U.S. Waterway Experiment Station & ASTM D 2487-66T)

Major Division	Group Symbol	Laboratory Classification Criteria		Soil Description	
		Finer than 200 Sieve %	Supplementary Requirements		
Coarse-grained (over 50% by weight coarser than No. 200 sieve)	Gravelly soils (over half of coarse fraction larger than No. 4)	GW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}^2/(D_{60} \cdot D_{10})$ between 1 & 3 Not meeting above gradation for GW	Well-graded gravels, sandy gravels
		GP	0-5*		Gap-graded or uniform gravels, sandy gravels
		GM	12 or more*	PI less than 4 or below A-line	Silty gravels, silty sandy gravels
		GC	12 or more*	PI over 7 and above A-line	Clayey gravels, clayey sandy gravels
	Sandy soils (over half of coarse fraction finer than No. 4)	SW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}^2/(D_{60} \cdot D_{10})$ between 1 & 3 Not meeting above gradation requirements	Well-graded sands, gravelly sands
		SP SM SC	0-5* 12 or more* 12 or more*	PI less than 4 or below A-line PI over 7 and above A-line	Gap-graded or uniform sands, gravelly sands Silty sands, silty gravelly sands Clayey sands, clayey gravelly sands
Fine-grained (over 50% by weight finer than No. 200 sieve)	Low compressibility (liquid limit less than 50)	ML	Plasticity chart	Silts, very fine sands, silty or clayey fine sands, micaceous silts	
		CL	Plasticity chart	Low plasticity clays, sandy or silty clays	
		OL	Plasticity chart, organic odor or color	Organic silts and clays of low plasticity	
	High compressibility (liquid limit more than 50)	MH	Plasticity chart	Micaceous silts, diatomaceous silts, volcanic ash	
		CH	Plasticity chart	Highly plastic clays and sandy clays	
		OH	Plasticity chart, organic odor or color	Organic silts and clays of high plasticity	
Soils with fibrous organic matter	Pt	Fibrous organic matter; will char, burn, or glow	Peat, sandy peats, and clayey peat		

* For soils having 5 to 12 per cent passing the No. 200 sieve, use a dual symbol such as GW-GC.

Hydrology

Crabbs Branch lies in the northwest part of the Rock Creek basin, which comprises a total area of 77.37 square miles. Precipitation within the Rock Creek basin averages 43.5 inches per year. Runoff and base flow total an average of 12.6 inches per year (29% of precipitation); evapotranspiration accounts for the remaining 30.9 inches or 71% of precipitation. Ground water movement (base-flow) is 8.5 inches or 67% of the total flow in streams; the remaining 4.1 inches (33%) is direct surface runoff. Loss by evapotranspiration is greatest in summer and early fall, with a maximum of 86% of precipitation in September, and a minimum of 45% in February. Analysis of the hydrologic cycle in Rock Creek watershed indicates that effective ground water recharge (base-flow) is approximately 0.42 million gallons per day per square mile (mgd/sq.mi.). The area of Crabbs Branch basin is 1513 acres. Total effective recharge within the basin is .99 mgd. The mean yield from wells drilled in the upper pelitic schist of the Wissahickon Formation that underlies A017 is 11 gallons per minute (gpm)¹.

Crabbs Branch is approximately 1.9 miles long. The average gradient of Crabbs Branch is 2%. All of the stream lies on the western Wissahickon Formation and joins Rock Creek in the area referred to as Middle Rock Creek.

At the point of confluence, the width is 25 feet, depth is 3 feet, with clear water, good quality, normal odor and fast flow. The headwaters consist of two streams which come together in a "V" on the site. The "V" is on Worsham silt loam (see soils section). The streams at the headwaters are supposedly ephemeral, though an August 3rd reconnaissance found them to be more than the ephemeral trickle expected, especially at a time of year when evapotranspiration rates are so high; base flow would probably be at its lowest: width ±3 feet, depth ±7 inches.

Turbidity (35.1 mg/l) is high at the confluence with Rock Creek; this point is downstream of Lake Needwood which is believed to be the source of high turbidity, as colloidal clay and silt particles remain suspended during the detention period, and never settle out. Fecal coliform count is high, as the headwaters are in pasture. The ph reaction is circumneutral (7.3±); this is well within the optimum range.

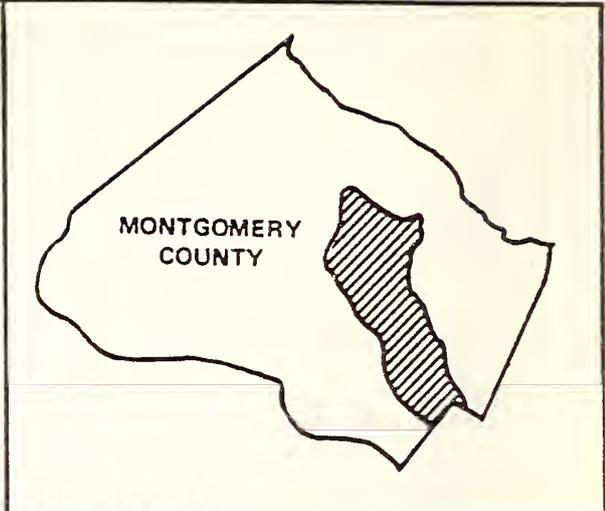
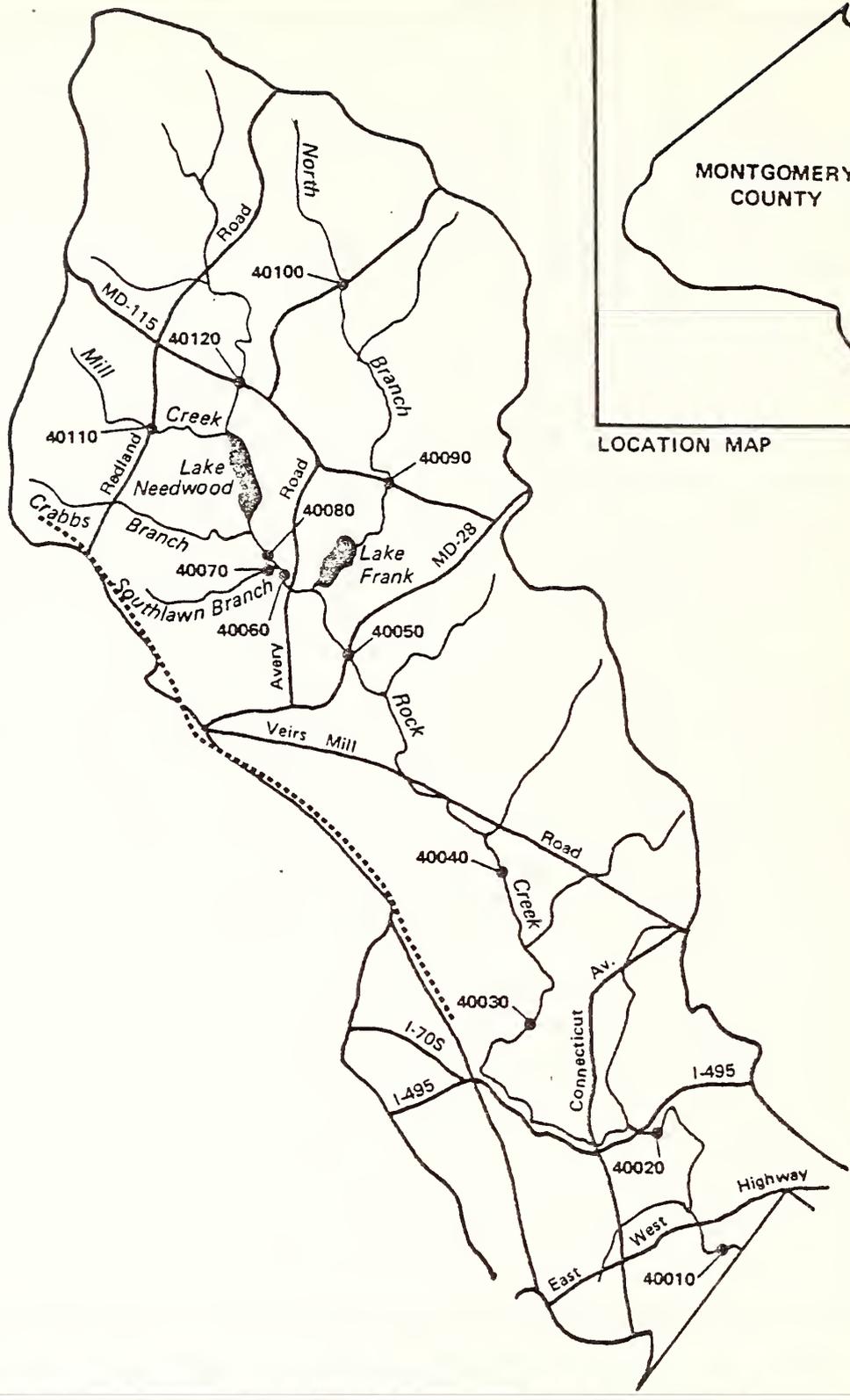
¹Based on wells drilled in the western series of the Wissahickon Formation throughout Montgomery County, Dingman and Meyer (1954) "The Water Resources of Howard and Montgomery Counties", Bull.#14 Md. Department of Geology, Mines and Water Resources.

Water Quality of Rock Creek
Water Temperature, Dissolved Oxygen, pH, BOD-5, Nitrate-Nitrite, Phosphate, Turbidity, Total Coliform
Count and Fecal Coliform Count in Lower Rock Creek, Middle Rock Creek and Southlawn Branch

Date From To		WATER TEMP CENT	DO MG/L	LAB PH SU	BOD 5 DAY MG/L	NO2&NO3 N-TOTAL MG/L	T PO4 PO4 MG/L	TURB HLGE PPM SI02	TOT COLI MPN CONF TUBECODE	FEC COLI MPN TUBECODE
Station 40010, 40020, 40030, and 40030 – Lower Rock Creek										
72/01/01	Number	82.0000	94.0000	92.0000	92.0000	92.0000	92.0000	92.0000	92.0000	92.0000
Year	Maximum	24.0000	16.2000	7.70000	6.90000	3.18000	3.95000	145.000	240000	93000.0
	Minimum	.0000000	6.90000	6.70000	.0000000	.980000	.0400000	.500000	93.0000	43.0000
	Mean	11.4634	9.95689	7.28259	2.21739	1.83858	.288151	26.4196	7913.46	1281.26
	Stand Dev	7.05743	2.18165	.208631	1.37588	.427955	.438426	25.0139	4.26989	4.82333
73/01/00										
00/00/00										
Station	Number	223.000	232.000	92.0000	92.0000	92.0000	92.0000	92.0000	92.0000	92.0000
	Maximum	24.0000	16.2000	7.70000	6.90000	3.18000	3.95000	145.000	240000	93000.0
	Minimum	.0000000	6.70000	6.70000	.0000000	.980000	.0400000	.500000	93.0000	43.0000
	Mean	13.4419	9.75235	7.28259	2.21739	1.83858	.288151	26.4196	7913.46	1281.26
	Stand Dev	6.86729	1.83266	.208631	1.37588	.427955	.438426	25.0139	4.26989	4.88333
99/99/99										
Station 40050, 40060, 40070 and 40080 – Middle Rock Creek and Southlawn Branch										
72/01/01										
Year	Number	94.0000	96.0000	95.0000	95.0000	95.0000	95.0000	94.0000	95.0000	95.0000
	Maximum	23.0000	14.1000	84.0000	58.0000	5.25000	4.36000	189.000	.2400E+07	.2400E+07
	Minimum	.0000000	6.60000	6.40000	.100000	1.16000	.0500000	1.00000	23.0000	3.60000
	Mean	11.9468	9.96249	7.34735	3.36841	2.07726	.322315	34.9362	4799.76	1087.24
	Stand Dev	6.82873	2.18697	.289801	6.22031	.735598	.450589	34.7612	11.9699	13.6485
73/01/00										
00/00/00										
Station	Number	256.000	304.000	217.000	216.000	113.000	217.000	107.000	206.000	206.000
	Maximum	25.0000	14.1000	8.90000	58.0000	5.25000	4.36000	189.000	.2400E+07	.2400E+07
	Minimum	.0000000	4.40000	6.40000	.0000000	.500000	.0300000	.0000000	23.0000	3.60000
	Mean	13.5664	9.87663	7.40413	4.69883	2.09327	.280967	35.1075	5767.16	858.107
	Stand Dev	6.83499	1.94643	.358909	6.07265	.754640	.356171	34.6499	9.64572	10.6945
99/99/99										

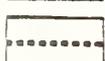
NOTE: Figures represent the mean of the combined total for each set of four stations. Station locations can be found on the Map of Rock Creek Watershed.

Source: Water Quality of Montgomery County Streams and Sewage Treatment Plant Effluents, Wm. J. McCaw, III, 1973, page F-7.



LOCATION MAP

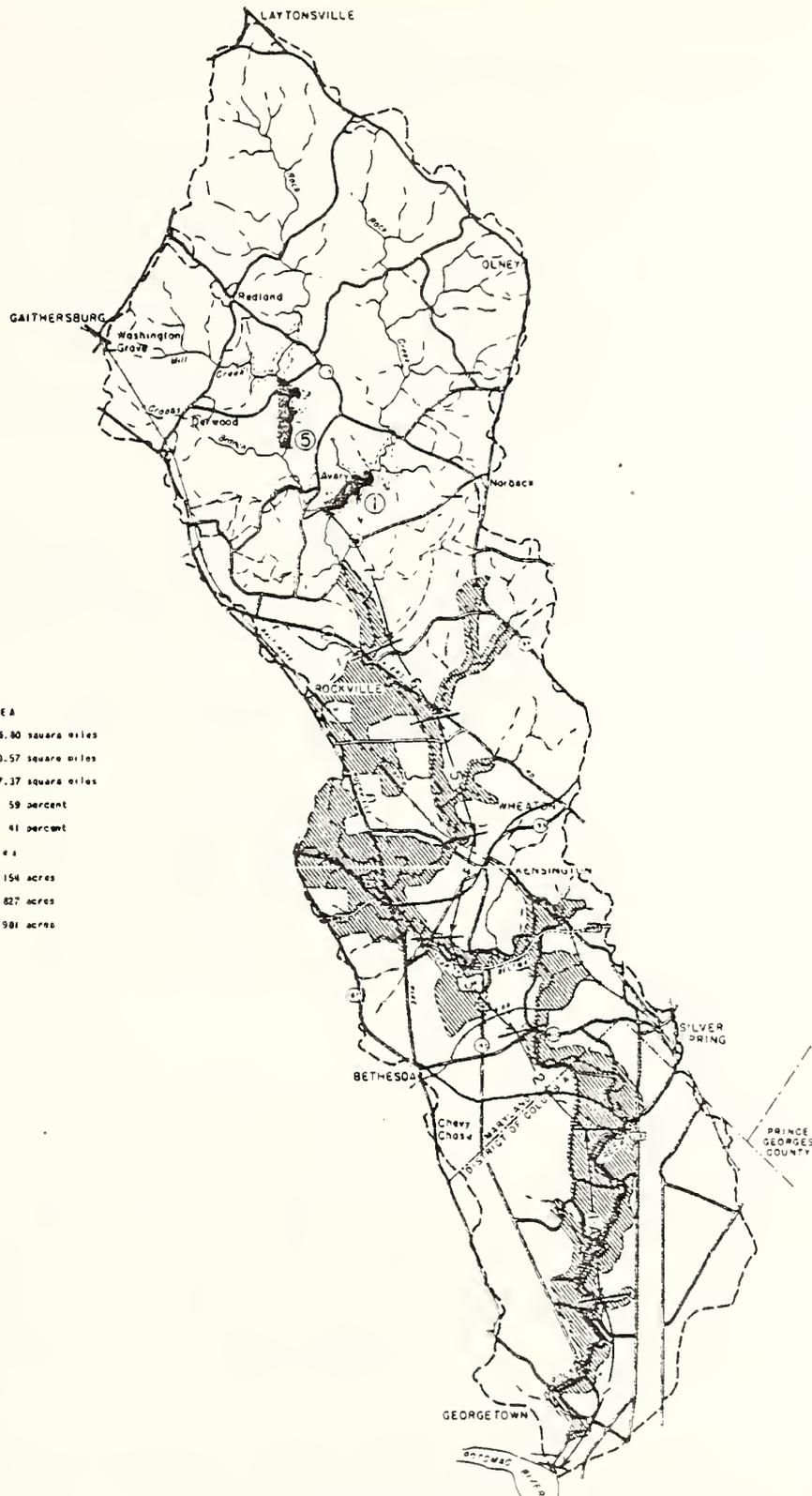


-  Monitoring station
-  Alignment

LOCATION OF STREAM MONITORING STATIONS IN REGION

Source: McCaw, W.J., Water Quality of Montgomery County Streams and Sewage Plant Effluents, Montgomery Co. Md., Dept. of Environmental Protection, January 1973.





WATERSHED AREA

In District of Columbia	16.80 square miles
In Maryland	60.57 square miles
Total Watershed Area	77.37 square miles
In Urban Use	59 percent
In Agricultural Use	41 percent
FLOODPLAIN AREA	
In District of Columbia	154 acres
In Maryland	827 acres
Total Floodplain Area	981 acres



- Open Space (park-cam-golf course-etc)
- Residential area
- Agricultural land
- Multiple purpose structure
- Damage reach

- Four or more lanes
- Other first class roads

ROCK CREEK WATERSHED



Description of Sampling Sites Along Crabbs Branch

On the northwest side of the B&O tracks at Shady Grove, behind Sears Warehouse towards the B&O tracks, spoil from construction in the area is being dumped. Most of the spoil is soil, but some of it is gravelly fill. The southern tip of the soil is covered by a large trash heap; mattresses and a discarded sofa sit on a pile of trash bags, which are spilling down the slope. The area that is covered by spoil is the proposed site of the Shady Grove S&I Yard. The spoil will have to be removed by WMATA. In the meantime, the Montgomery County Environmental Protection office reports a sizeable increase in stream sediment for Crabbs Branch probably caused by this dumping. This area is in the headwaters of the stream.

The headwaters of Crabbs Branch (sampling site designated on the map as CC13) are on the site of the proposed Shady Grove terminus. The water in the stream directly north of the site may come from a spring; it runs parallel to the B&O tracks for several hundred feet, then turns southeast into a grass-lined detention basin, then through a culvert under the B&O Railroad tracks. Field samples taken on August 28, 1974 revealed that the northernmost stream was clear, and fast running.

The stream, which had been disturbed by the movement of a large tractor, could be seen easily only in cleared areas. The bottom of the stream was covered with a yellowish scum. The depth ranged from 6-8 inches and width was 2.5 feet. The stream at this point has an immature drainage pattern, and is on clayey and relatively impermeable soil. The moisture retention capacity, hence bank storage capacity, is very low.

The other branch of Crabbs Creek (designated sampling site CC10 on map) flows south, then turns about 100° to the east, passes through a culvert, and joins the northernmost branch on the eastern side of the B&O Railroad tracks. Samples were taken 10 feet above the point where runoff enters the stream from a shopping center parking lot. Rocks in the stream were slimy. The stream is 1½ feet wide, and 6-10 inches deep at this point. Small frogs, gnats, dragonflies and yellow jackets were abundant in the area around the stream, which is fast moving and clear. Vegetation grows undisturbed up to the banks, which are 2-2½ feet high.

The two streams converge about 350 feet east of the B&O tracks. About 1500 feet downstream, where the creek passes under Redland Road, sample CC11 was taken. At this point the stream is fairly clear and moves slowly due to extensive aquatic vegetation along the banks. This vegetation covers approximately 1.5 feet on each side of the stream. The banks are about 5-7 feet high here, and the water is 1.5 feet deep, and full of minnows. This particular area under the bridge is a haven for large black and yellow spiders.

CRABB'S BRANCH WATER QUALITY, AUGUST 1974

(Based on samples from four stations taken August 28 and 29, 1974; analysis by Montgomery County Department of Environmental Protection)

Sampling Station Code	pH Reaction	Dissolved Oxygen (ppm)	Chloride (mg/l)	Nitrogen as NO ₂ , NO ₃ (mg/l)	Phosphate (mg/l)	Turbidity as SiO ₂ (ppm)	Iron (Fe) (mg/l)	Celsius Temperature (°C)	Alkalinity as CaCO ₃ (mg/l)	Fecal Coliform Count per 100 ml of Sample
CC10	7.5	9.4	37.0	9.16	0.13	5.0	0.38	26.3 ^o	40	3900
CC11	6.7	6.2	16.0	3.32	0.23	1.0	3.04	20.9 ^o	44	200
CC12	7.0	6.4	13.0	2.67	0.22	19.0	1.39	31.0 ^o	40	4300
CC13	7.2	1.6	15.0	1.02	0.27	49.0	5.54	23.0 ^o	196	1500

NOTES:

1. BOD (BIOLOGICAL OXYGEN DEMAND) samples were not analyzed.
2. Turbidity: 0-10 low, 10-30 moderate; 30+ extreme.
3. CC14 Analysis: See Table, "Analysis of Crabb's Branch Water Quality Near Its Confluence with Rock Creek".
4. ppm = parts per million; mg/l = milligrams per litre; ppm=mg/l.

CRABB'S BRANCH WATER QUALITY, QUARTERLY MEANS

(Based on samples monitored each quarter during 1973, 1974 at station CC14 by Montgomery County Department of Environmental Protection)

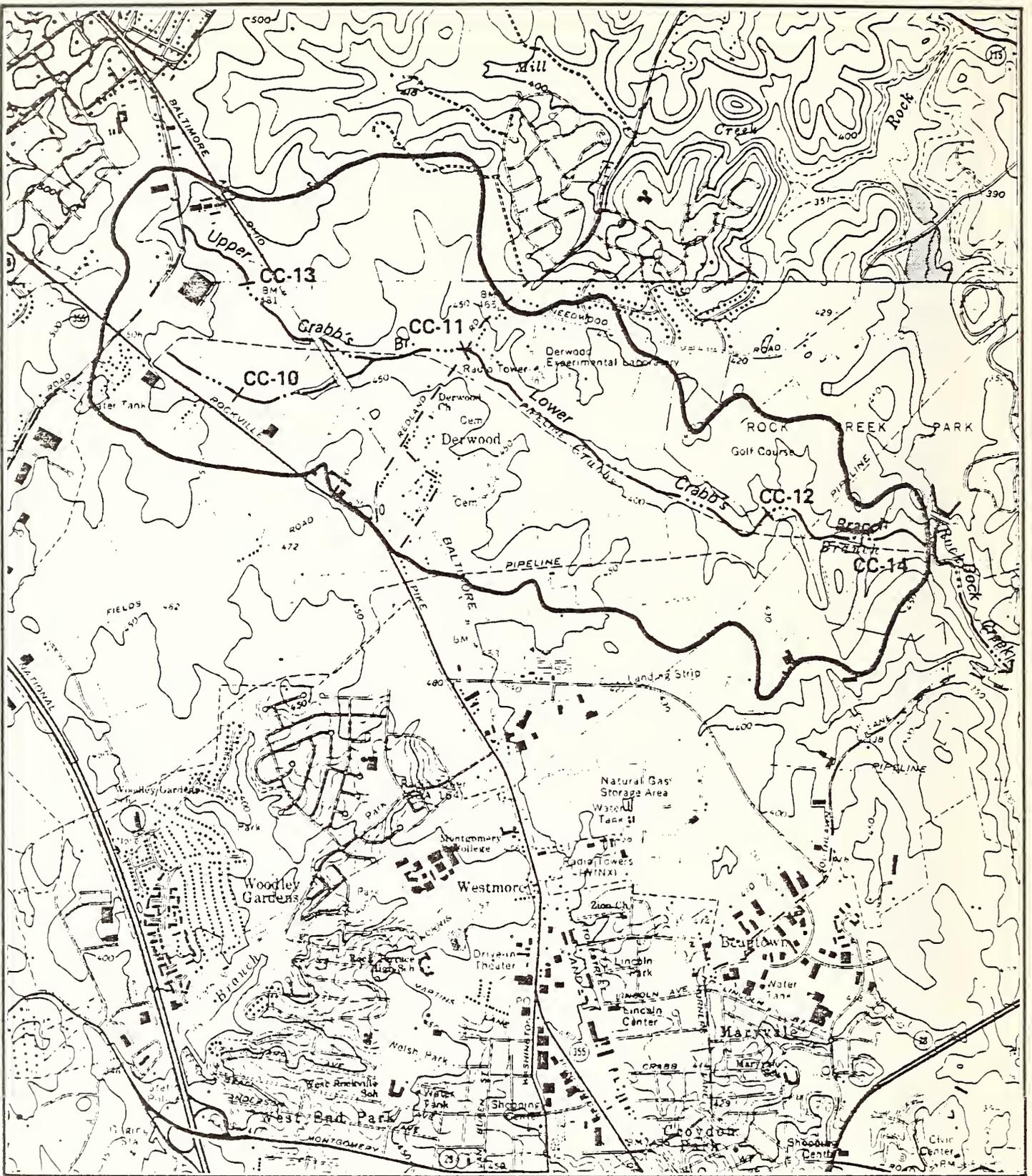
Date	Turbidity ¹	Stream Flow Severity ²	Fecal Coliform MPN Tube Code Log	Iron mg/l	Water Temperature (C ^o)	Air Temp. (C ^o)	D.O. mg/l	B.O.D. 5-Day mg/l	pH
Mar. 73	1.4	4.2	900.8	8.5	9 ^o	11.4 ^o	10.8	2.4	7.31
June 73	1.0	3.4	1111.6	.510	19 ^o	24 ^o	8.54	1.6	7.5
Sept. 73	1.0	3.0	411.9	.508	13.4 ^o	14.2 ^o	9.8	1.06	8.6
Dec. 73	2.0	3.0	2300.0	2.78	5.0 ^o	7.0 ^o	11.8	1.1	7.8
Apr. 74	-	4.0	36.0	.43					
June 74	-	4.0	2300.0	1.04					

1. Explanation of Turbid Severity:

1. Clear
2. Moderately turbid
3. Very Turbid

2. Streamflow Severity:

1. Dry
2. Puddled
3. Low Flow
4. Normal Flow
5. Above Normal Flow
6. Flood



-  Water shed
-  CC-10 Stream sampling station

SAMPLING STATION



The next sample, CC12, was taken about 2000 feet downstream, in the Needwood Golf Course, which is a part of Rock Creek Park. The creek at this point is quite beautiful and easily accessible as it is at the westernmost part of the golf course, marking the edge of a densely wooded area. The vegetation grows to the edge of the bank; the stream banks are 3 feet deep; water is roughly 1 foot deep, and the bottom is fairly rocky. There are groundhogs, rabbits, mice and a variety of birds, as well as watersnakes. The water contained minnows, and the area around the stream was gnat-infested. This area is well vegetated. The photosynthetic zone extends across the stream. The stream meanders through Rock Creek Park to join Rock Creek 800 feet south of Lake Needwood. Samples (CC14) were taken 500 feet above the point of convergence with Rock Creek. Crabbs Branch at this point has a fairly rocky stream bed, is about 6 feet wide, 10-12 inches deep and is very clear, with minnows, and small silverfish. The vegetation grows out to the bank which is about 3 feet high on the north side, and 2 feet high on the south side. The land slopes about 45° to the south. This area is also very well shaded.

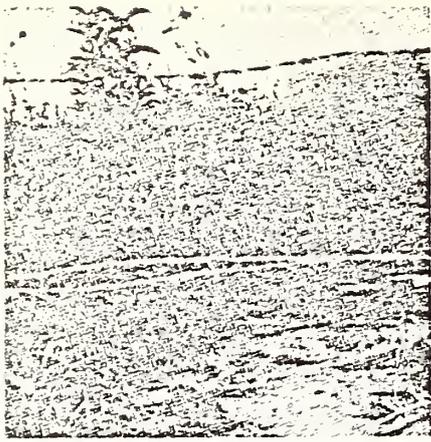
Analysis of Field Samples

At sampling point CC10, nitrogen and chloride are excessively high. The headwaters of the southwestern branch of Crabbs Creek is located in pasture land; animal waste is the factor that determines these high levels. Fecal coliform count is high, also because the animal waste goes into the stream. Nitrogen enrichment is quite high, especially considering that analysis of samples did not include ammonia and organic nitrogen. What has been measured here, then, is the minimal amount of nitrogen in the stream, and this single source contributes 9.16 mg/l.

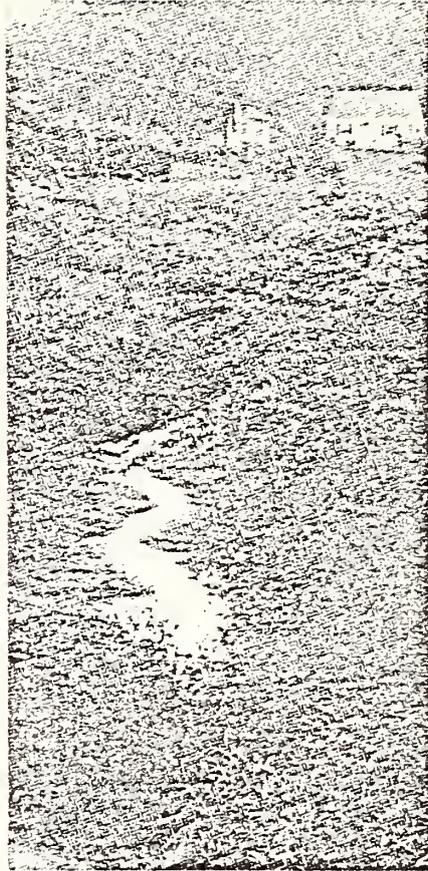
Turbidity is low. There is very little suspended sediment in the stream. The alkalinity is within an acceptable range, given a pH of 7.5. Phosphate is well within an acceptable range. This sampling point is extremely well oxygenated. The iron (Fe) level is within an acceptable range.

At sampling point CC11, both chloride and nitrogen levels have dropped but are still very high, again because the stream runs through pasture land. Phosphate level is high, due probably to the use of fertilizers. The turbidity is low, and there is an iron increase, the source of which is probably the dump near the Sears Warehouse. Oxygen is unsaturated, but still well above the danger point for fish (5.0).

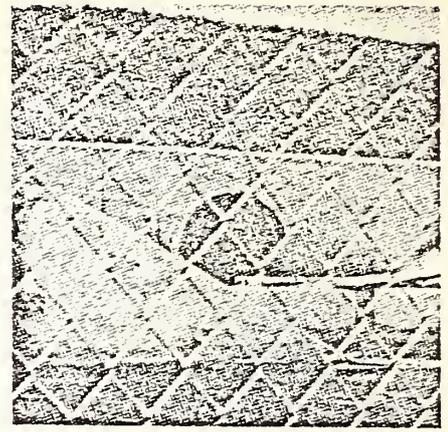
At point CC12, chloride and nitrogen are reaching acceptable levels. The nitrogen level is down, but the stream is slightly enriched, enough to stimulate the growth of aquatic



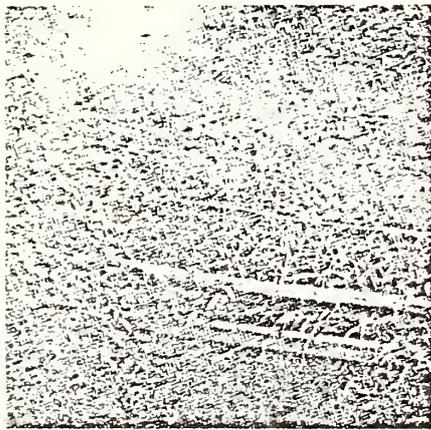
Headwaters of Crabb's Branch



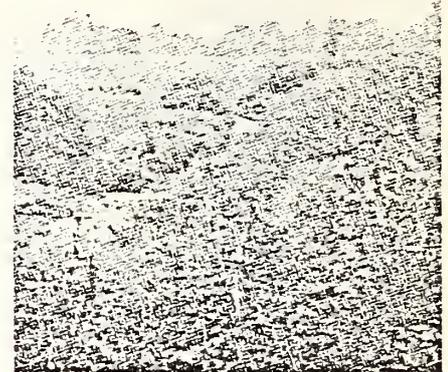
Headwaters of Crabb's Branch



Industrial detention basin on Shady Grove site



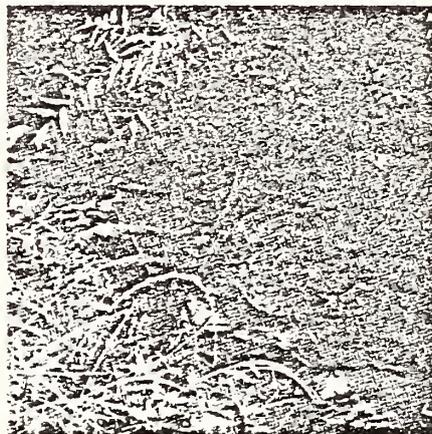
Headwaters of Crabb's Branch



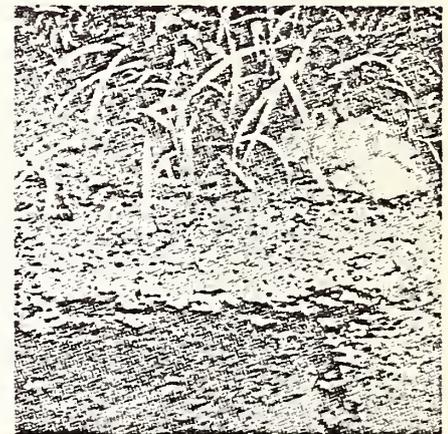
Stream on east side of B&O tracks



Headwaters of Crabb's Branch



Headwaters of Crabb's Branch



Headwaters of Crabb's Branch

vegetation along the sides of the stream. Alkalinity is normal considering ph and the physiographic region.

Point CC13 is the northern headwaters of Crabbs Creek. The dissolved oxygen level is extremely low. The spoil/trash dump accounts for this, as it also accounts for the high level of turbidity (49). Iron could be from the dump; this seems extremely likely, as the Fe levels drop according to distance downstream from CC13. Fe level at CC13 is highest at 5.54 mg/l, 3.04 mg/l at CC11 which is 3000 feet downstream and 1.39 mg/l at CC12, which is about 2000 feet below CC11.

All information on point CC14 has been taken from the Storet computer. The relevant data from those printouts are on the charts following this page.

Water Supply for Shady Grove Terminal and Service Buildings

There are two water mains which cut through the site. The larger pipe (48") has its origin on the Potomac River, across from Watkins' Island. The other (36") pipe is supplied with water from the Patuxent water facility. The bulk of the water used in the area of the site is from the Potomac. These two pipes deliver an average of 25 mgd; approximately 85% comes from the Potomac facility.

Sewage Disposal

There is a sewer at Fields Road and 355 (Rockville Pike), but it is a very small pipe (8") and the flow through this pipe and its connection, the Watts interceptor, never exceeds 0.2 mgd. Sewage flows to secondary treatment facilities, about 28 miles away at the Blue Plains Dulles interceptor. The velocity of the Potomac here, 96.1 river miles from the river's mouth, ranges from 1700 cfs to 43,120 cfs.

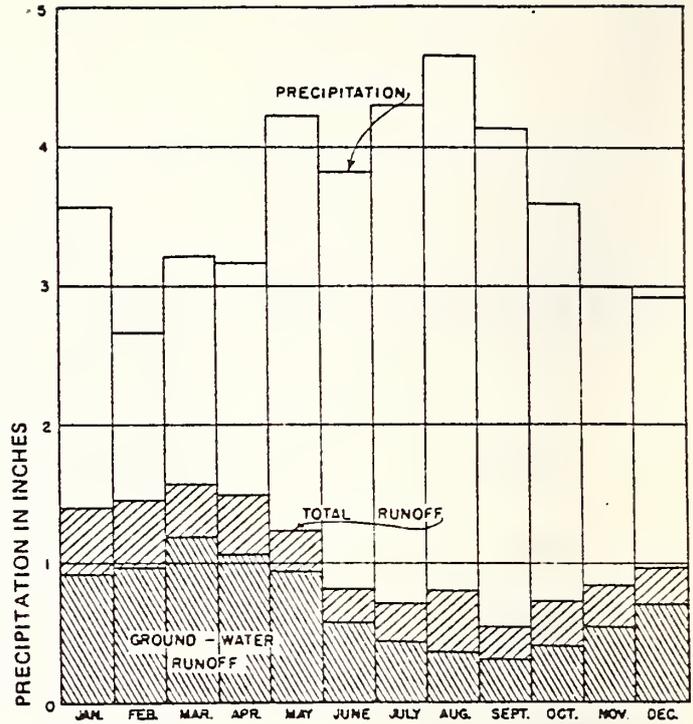
GROUND WATER RESOURCES

Mean Monthly Precipitation and Total Runoff, and Estimated Ground-Water Runoff and Loss by Evaporation and Transpiration in Rock Creek Basin, Montgomery County, for the period 1933-1949

Month	Mean monthly precipitation (inches)	Evaporation and transpiration ^a		Total runoff		Ground-water runoff		
		Inches	Percent of precipitation	Inches	Percent of precipitation	Inches	Percent of total runoff	
January	3.57	2.16	61	1.41	39	0.93	26	66
February	2.67	1.21	45	1.46	55	.97	36	66
March	3.22	1.65	51	1.57	49	1.20	37	76
April	3.18	1.68	53	1.50	47	1.07	34	71
May	4.24	3.00	71	1.24	29	.93	22	75
June	3.83	3.02	79	0.81	21	.59	15	73
July	4.42	3.68	83	.74	17	.46	10	62
August	4.66	3.86	83	.80	17	.37	8	46
September	4.14	3.58	86	.56	14	.34	8	61
October	3.60	2.90	81	.70	19	.43	12	61
November	3.01	2.17	72	.84	28	.54	18	64
December	2.93	1.95	67	.98	33	.69	24	70
Annual average of 17 - yr. period 1933-49	43.5	30.9	71	12.6	29	8.5	20	67

^aPrecipitation minus total runoff; figures include one percent or less of discharge by pumping.

WATER RESOURCES OF HOWARD & MONTGOMERY COUNTIES



Graph showing the Mean Monthly Precipitation, Total Runoff, and Estimated Ground-Water Runoff in the Rock Creek Basin, Montgomery County

Source: Water Resources of Howard & Montgomery Counties, State of Maryland, Dept. of Geology, Mines & Water Resources

Vegetation

The appearance of the undeveloped land on A017 Route (north of Rockville to Shady Grove) is quite different from the vacant land along the sections from Nicholson Lane Station to Rockville. Cropped fields, thin hedgerows, expanses of pasture, files of trees and shrubs along streams, occasional successional woods and an assortment of long-established ornamental shrubs and trees are the dominant vegetation experiences here. It is difficult to find even the smallest remnant or regrowth of the original forest types. It is hard to imagine that these fields were once covered by the deciduous forest characteristic of this region. Clearing, farming and other uses have modified the land's appearance to such an extent that any resemblance to the original has been lost.

However, it is neither an ugly landscape nor necessarily inferior vegetation, simply different. The landscape was molded by efforts to get the highest return in productivity; it has been cleared, right to the streams and only the narrowest of hedgerows have been retained. This has had a powerful and sometimes negative effect on soils and water quality and has changed the very nature of the vegetation itself.

Despite these modifications, the evaluation of vegetation is based on its importance for erosion control, for wildlife, and its aesthetic value. Vegetation quality is ranked in four categories: (1) good-natural; (2) good-managed; (3) disturbed but healthy (managed or natural), (4) poor-very disturbed.

The crescent-shaped area between the B&O tracks and Hungerford Drive (Middle Lane to Frederick Avenue) has a large area of woods. However, they are full of weeds, the result of severe, probably chronic disturbance. The trees which border the yard are typical disturbance species but even they give no hint of how severely disturbed are portions of the interior. More than half of the vegetation is early successional, consisting primarily of introduced grasses, forbs and trees, mostly tree of heaven, mulberry, cherry and sassafras. Vines are an important component of this area with grape and poison ivy giving the area the appearance of a dishevelled jungle. Much of this is poor and highly disturbed with few, if any trees or associations worth saving. The best looking plants on the site are the escaped ornamental grasses which are surprisingly common and help to stabilize the soil (Category 4).

The area north and south of Gude Drive is typical of highly managed vegetation. Except for one sizable woods of about 30 acres and small scattered patches of less than 5 acres each, it is land entirely devoted to pasture or nursery. Streambanks have been almost uniformly denuded and there are

visible signs of erosion on overgrazed fields. The extent of modification has been so pervasive that well-planned development might be less ecologically damaging. Such positive measures as encouraging streamside vegetation should be immediately taken, regardless of future land use. The successional woods on the opposite side from the nursery are a mixture of highly disturbed successional trees rarely over 30 feet tall. Half of the area is in low shrubs and grasses while the other half supports sassafras, cherry, tree of heaven and occasional maples and tulip poplars, grape cat brier and poison ivy have been very successful here (category 4).

The Gude Nursery contains a valuable collection of ornamental and specimen shrubs and trees of prodigious size. Although there are many conifers here which can be transplanted, some are too big and too old. The most important stock consists of unusual hardwood trees and very large boxwoods. The condition of the plant material is excellent; almost every specimen is of remarkable value. Though some plants are too big to move, all those which may be displaced should be relocated to serve as visual barriers. This is a marvelous resource which can and should be used; it is classified as Category 2.

Between Fields Road and Shady Grove Road is an area of heavily modified vegetation consisting of oldfields, pasture and wood lots. Occasional large trees border the streams, but most woody vegetation has been removed. On either side of the tracks, a very diverse, low vegetation is evident. These include escaped clumps of ornamental grasses, many colorful fall-blooming forbs such as thistles, sneezeweed, sunflower, aster, goldenrod and thoroughwort. A thick, hedge-like assortment of sassafras and cherry occurs intermittently along the track. The condition of this successional vegetation is good although it is far from being irreplaceable. For this reason it is classified as (2). However, management of all the agricultural land is poor and falls so short of its potential that it should be classified as managed-fair (3).

The vegetation shows the effects of changes in response to market conditions; abandoned and mis-managed fields deteriorate while they are being held for sale to industrial developers.

Wildlife

Along the B&O Railroad tracks, development directly north of the proposed Rockville S&I Yard limits habitats for small mammals; even so, it is possible to find mice, grey squirrels, and rabbits. Further north, above Westmore Road, vegetation

coverage is extensive; larger mammals, such as raccoon and possum can be found there.

Past Redland Road on the proposed location of the terminal station and S&I Yard at Shady Grove, open fields, hedgerows and dense vegetation along the streams provide habitats for different species. Field reconnaissance found several species of frogs, box turtles and evidence of deer. The abundant pole weed provides a good source of food for both birds and mammals. Both quail and pheasant nest in the open field.

Many birds are found in the area:

<u>Year 'round</u>	<u>Summer</u>	<u>Winter</u>
Cardinal	Robin	Yellow-
Carolina wren	Yellow throat	bellied
Bob white	Kingbird	sap sucker
Redwing blackbird	Indigo bunting	
Grackle	Catbird	
Goldfinch	Bluejay	
Wood thrush		
Carolina chickadee		
Starling		
Crows		
Morning dove		
Woodpecker		
Brown creeper		

Fishery Resources for Crabb's Creek

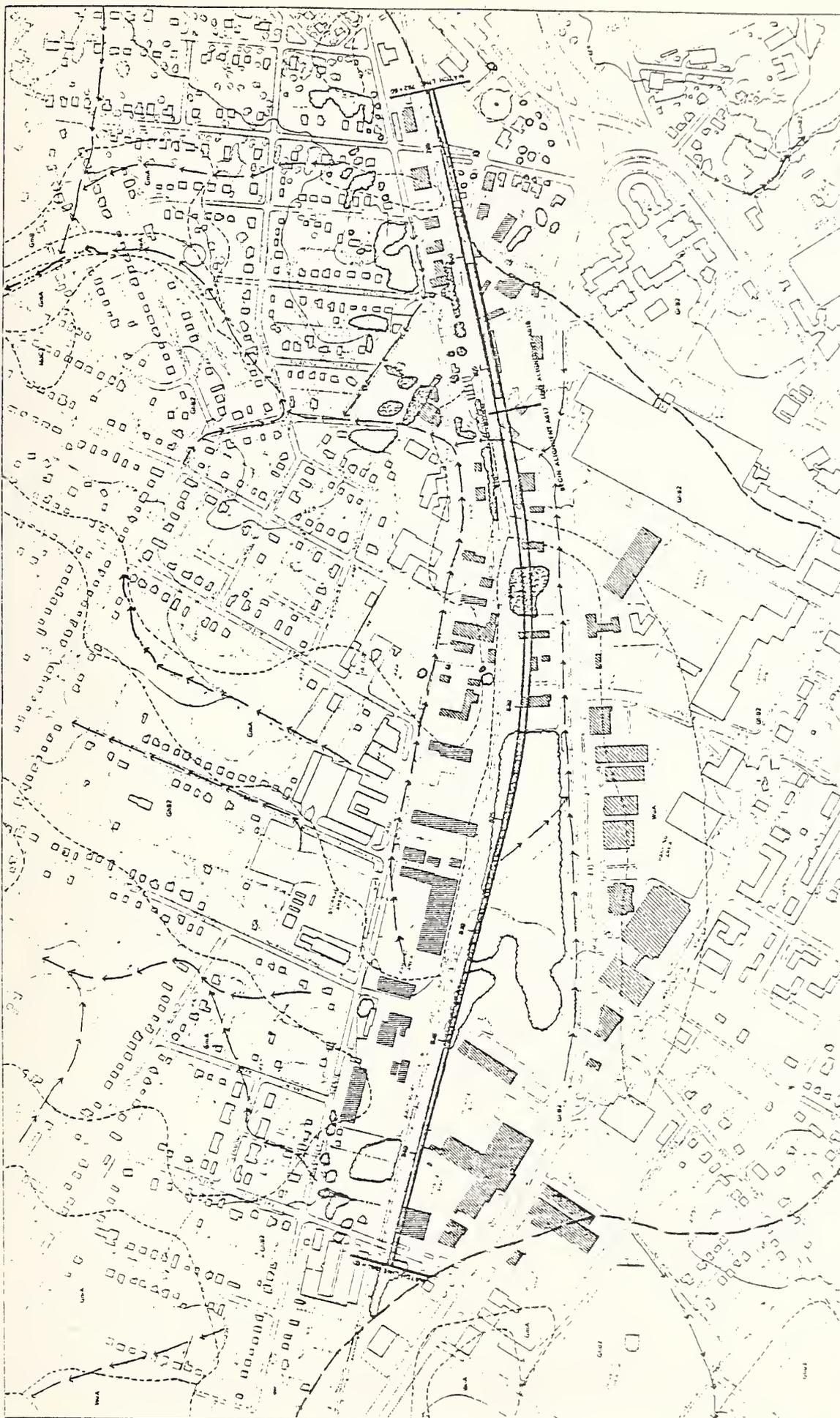
Data on fishery resources of Rock Creek is taken from the 1975 Maryland National Capital Park and Planning Commission report A Provisional Inventory of the Fishes of Rock Creek, Little Falls Branch, Cabin John Creek, and Rock Run, Montgomery County, Maryland. This includes a description of species collected at 27 sampling stations in the Rock Creek watershed. One station is located on the Upper Crabb's Creek immediately downstream of Redland Road in the vicinity of the Shady Grove terminal.

The following list indicates the species collected at the station in 1950 and 1974:

Species	1950	1970
Cyprinidae		
Blacknose Dace <u>Rhinichthys atratulus</u>	88	17
Rosyside Dace <u>Clinostomus funduloides</u>	14	1
Creek Chub <u>Semotilus atromaculatus</u>	14	1
Common Shiner <u>Notropis Cornutus</u>	1	-

Catostomidae		
White Sucker <u>Catostomus commersoni</u>	16	33
Centrarchidae		
Bluegill Sunfish <u>Lepomis macrochirus</u>	--	1
Green Sunfish <u>Lepomis cyanellus</u>	--	1
Percidae		
Tessellated Darter <u>Etheostoma olmstedii</u>	98	36
TOTAL SPECIES	6	7

Sampling indicates a total of 6 and 7 species present in Crabb's Creek in 1950 and 1974 respectively. One species disappeared and two were added during this time period. All with the exception of the white sucker decreased in abundance. The exact cause of the drop in abundance in Rock Creek has not been conclusively determined. It has been suggested however that impoundments on the Creek have been partly responsible for the decline in distribution since 1950. The maintenance of species diversity over the 24 year period suggests that pollution loading in the stream from urban and agricultural land uses has been limited.

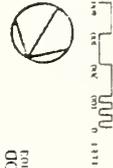


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- SOCIO-ECONOMIC
- ENVIRONMENTAL
- ECOLOGICAL
- HISTORICALLY SIGNIFICANT
- NATURAL RESOURCE/SCIENTIFIC
- VISUAL
- STREETS
- FLOODS
- WATERBODIES/WETLANDS

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
WASHINGTON, D.C. 20003

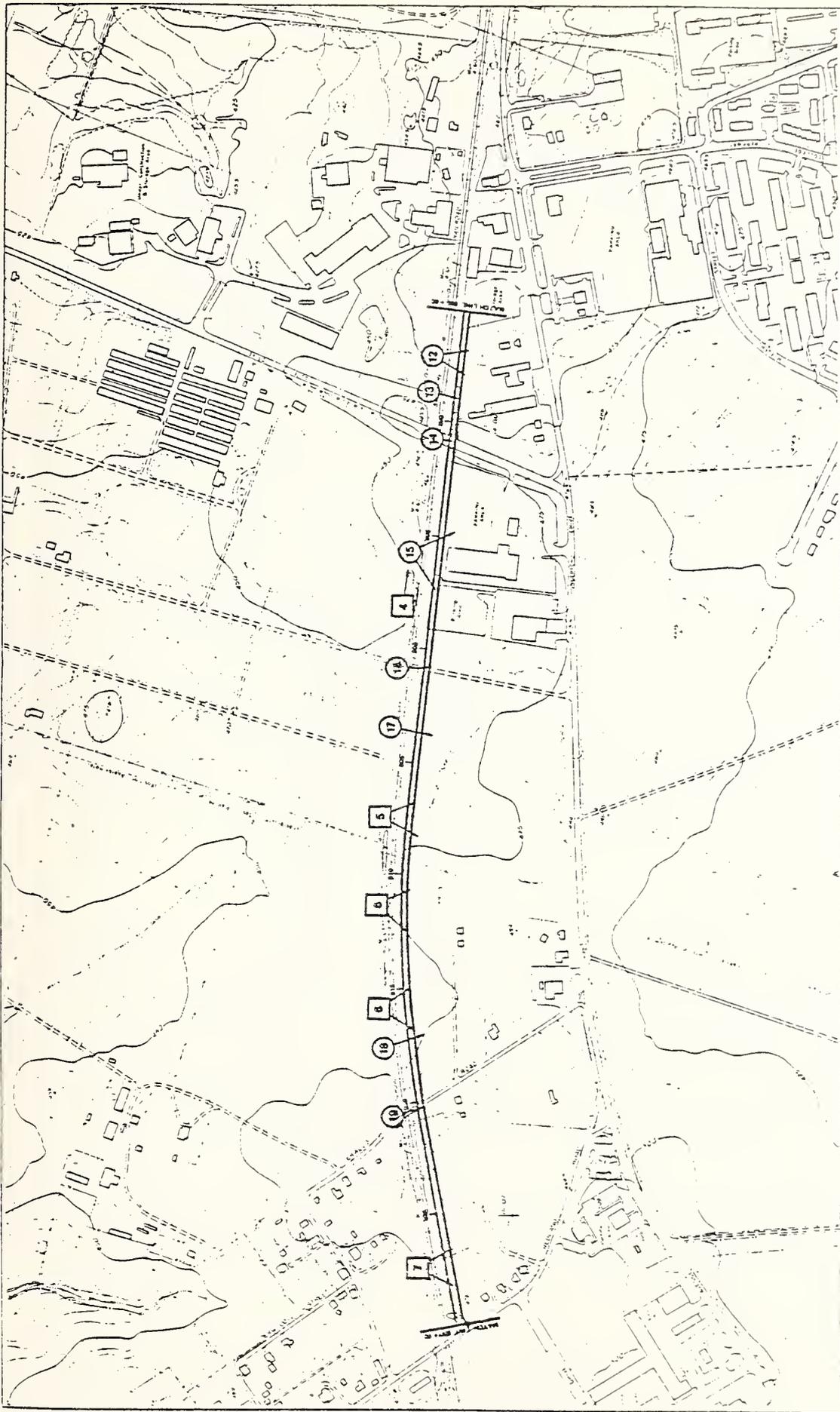
WALLACE MCHARG ROBERTS AND TODD
1237 CHESTNUT STREET
PHILADELPHIA, PA 19103



EXISTING CONDITIONS

ROCKVILLE ROUTE A
STATION POINTS 792 E 50
TO 845 E 00



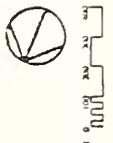


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- SOCIO-ECONOMIC
- ECOLOGICAL
- △ URBAN - PHYSICAL
- ◇ CULTURAL

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 400 PENTAGON AVENUE, N.W.
 WASHINGTON, D.C. 20009

WALLACE McHARG ROBERTS AND TODD
 737 CHESTNUT STREET
 PHILADELPHIA, PA 19103



ALIGNMENT IMPACTS

ROCKVILLE ROUTE A
 STATION POINTS 885 + 00
 TO 930 + 00



3.3 Visual and Physical Conditions

The northern extension beyond Rockville of the Adopted Regional System 'A' Route, will follow the Baltimore and Ohio tracks from Rockville to Shady Grove Road, a distance of 2.7 miles.

The extension will be built at-grade; its relationship to the landscape will be nearly identical to that of the existing railroad, requiring cuts where the railroad enters cuts and requiring embankments of fill where the railroad crosses low areas. The alignment will vary according to local conditions, but it will be from 50 to 80 feet wide and parallel to the Baltimore and Ohio right-of-way.

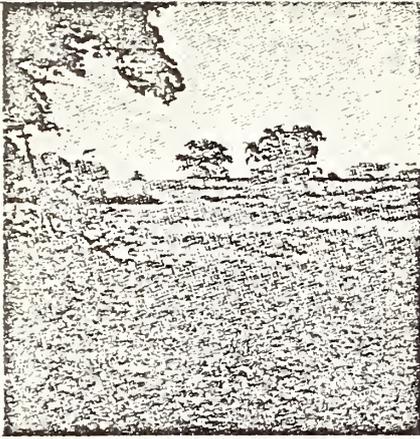
The adjacent lands on both the east and the west sides of the tracks are devoted mostly to industrial or commercial uses where they are developed. The east side of the alignment from Lincoln Avenue to Ashley Avenue is bordered by a residential area of single-family houses. On the west, from Middle Lane to 500 feet north of Frederick Avenue, are small industries and commercial establishments in a strip along Hungerford Drive. One woodland of several acres interrupts the regularity of this commercial strip.

Beyond Frederick Avenue, Hungerford Drive (Md.355) is adjacent to the railroad right-of-way for a distance of 3000 feet to Campus Parkway. Montgomery County Community College is opposite the railroad, on a hill. The Campus is about 1000 feet from Hungerford Drive. Commercial and industrial buildings with their related parking and storage areas stretch at irregular intervals along the west side of the alignment from Campus Parkway to Shady Grove Road.

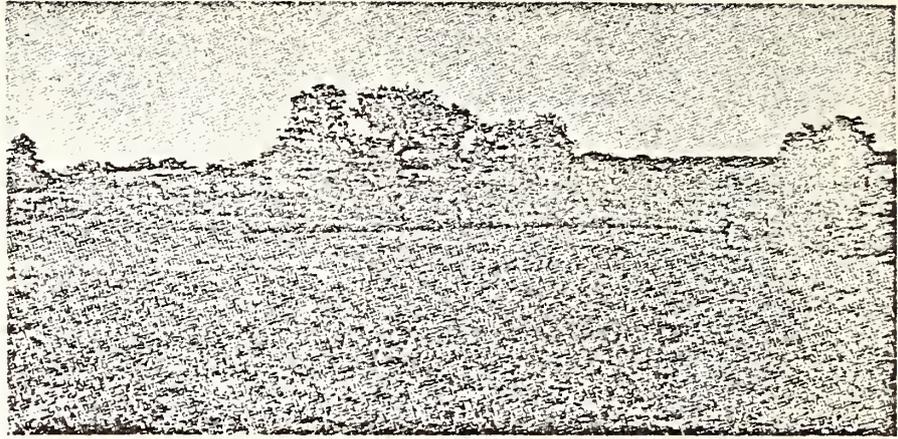
On the east side of the tracks, though the land is zoned for industry, the aspect is more rural and forested. An underground tank farm for the Washington Gas and Light Company is north of Westmore Road. Between the utility and Gude Drive is a collection of buildings and storage areas. North of Gude Drive are the nurseries of A. Gude and Sons. The view from the alignment is of a dense woods filled with small to semi-mature trees. Beyond the woods, the land rises in a gentle slope covered by large, fully grown specimen trees and shrubs. The greenhouses are further up the hill, about 800 feet from the railroad.

From Derwood Road to Redland Road, the small residential community of Derwood borders the east side of the alignment. Opposite Derwood, on the west side, is an industrial and commercial area on Fields Road and Sommerville Drive.

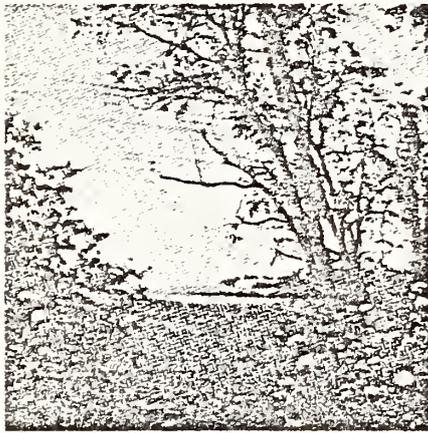
Between Fields Road and Shady Grove Road are large tracts on the east and west sides of the alignment. The farmland on the east side has been acquired by the County for a Service Park, a warehousing, service, and storage facility. It is



Looking north on the Shady Grove site



Looking north on the Shady Grove site



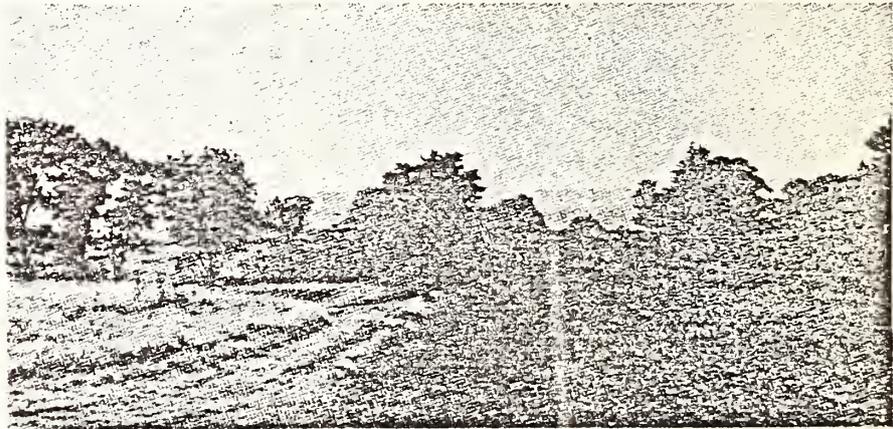
Looking west on the Shady Grove site



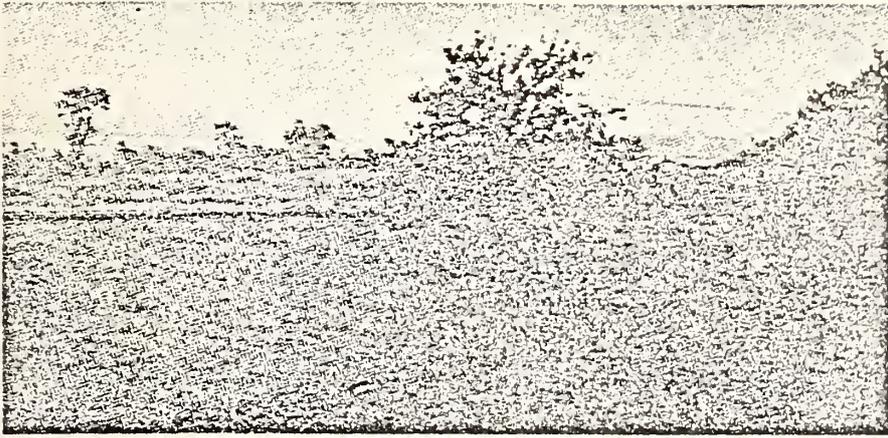
Disturbed terrain on the Shady Grove site



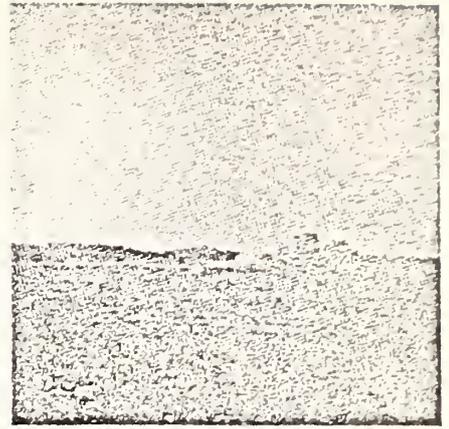
Looking north on the Shady Grove site



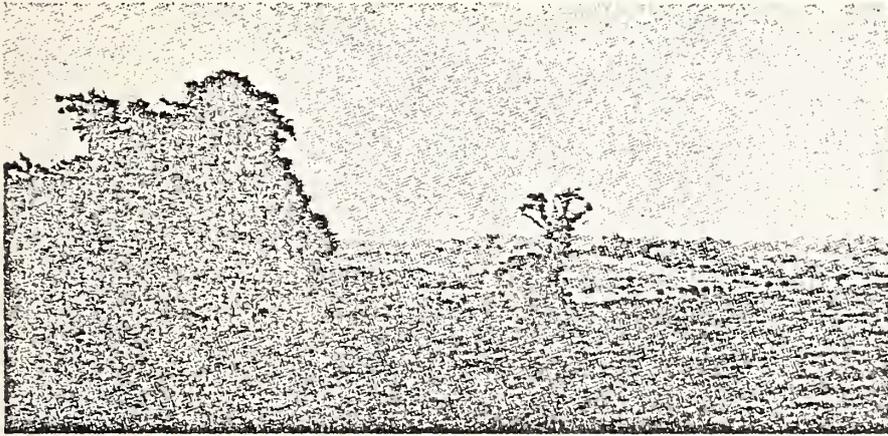
Looking north from Fields Rd. & B&O tracks



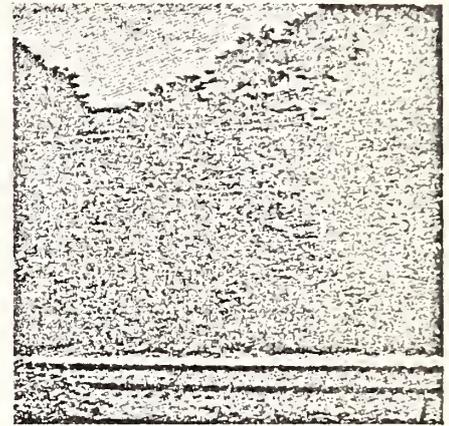
Looking east, from B&O tracks at Shady Grove site



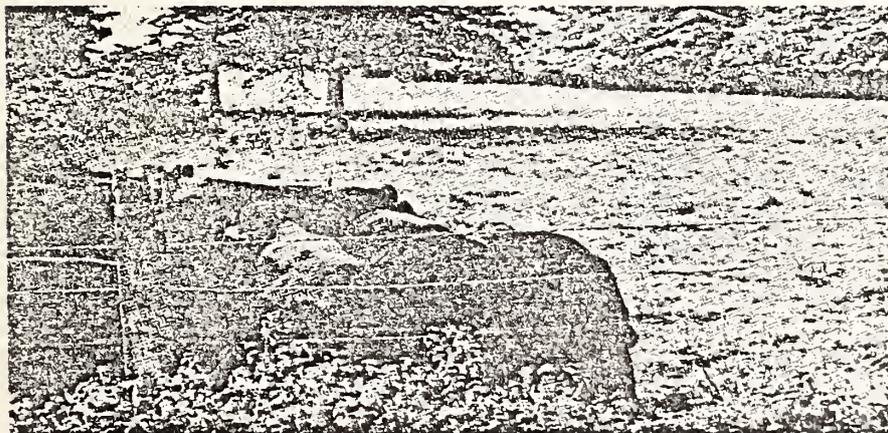
Looking northeast, from B&O tracks at Shady Grove site



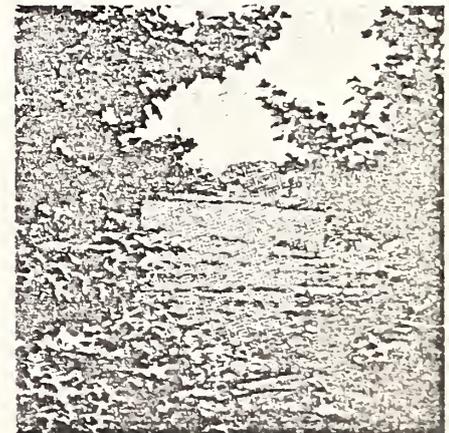
Pasture east of B&O tracks at Shady Grove site



Typical right-of-way vegetation at Shady Grove site



Pasture east of B&O tracks at Shady Grove site



Looking east, from B&O tracks

presently in pasture with a large woodland along one border of the track. On the west side of the alignment are the pastures and old fields of a rural property in the process of being transformed into industrial land. A large Sears Warehouse dominates the view of the farm and of the meadows at the headwaters of Crabbs Branch. Most of the land bounded by the tracks, Shady Grove Road, Frederick Road (Md. 355) and Fields Road, lies in a wide, shallow basin broken by the low hill. The eastern side of the basin is dominated by the railroad embankment that cuts across it.

The landscape where the alignment is proposed is characterized by the gently rolling terrain and broad shallow basins typical of drainage divides and headwaters in the Maryland Piedmont. Historically, Indian trails followed the broad ridge that separates Rock Creek drainage from the Cabin John and Watts Branch drainage basins. Rockville Pike and Old Georgetown Road followed the same ridgeline, where grades were gentle and stream crossings unnecessary. From Twinbrook to Gaithersburg, the B&O Railroad follows an alignment that is close to Rockville Pike and requires few stream crossings, none of them over large streams. As a consequence, cuts and fills along the railroad are, with a few exceptions, slight; grading for the Metro extension will be similar.

3.4 Cultural Conditions

Historic Buildings and Sites

The A017 alternatives do not affect any know historic sites or structures or archaeological sites, either on property required for the right-of-way or in the adjoining properties which will be influenced by the introduction of the rapid transit line. The National Register of Historic Places does not include any structures located in the area, nor are there any structures considered potentially eligible for inclusion on the Register. Documentation of this is included in the Addendum to this Report.

The Peters House, an historical structure located on Oakmont Avenue between Route 355 and the B&O alignment, will not be affected by Metro. There is an historical marker on Route 355 near Redland Road noting the grave of Brigadier General Jeremiah Crabbe, officer during the Revolutionary War. However, the exact location of the grave is uncertain. Should it be affected by Metro, the grave will be moved. Since local tradition places the grave in the Derwood Cemetery, it is unlikely to be disturbed by Metro construction near the railroad.

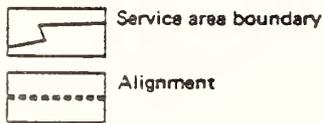
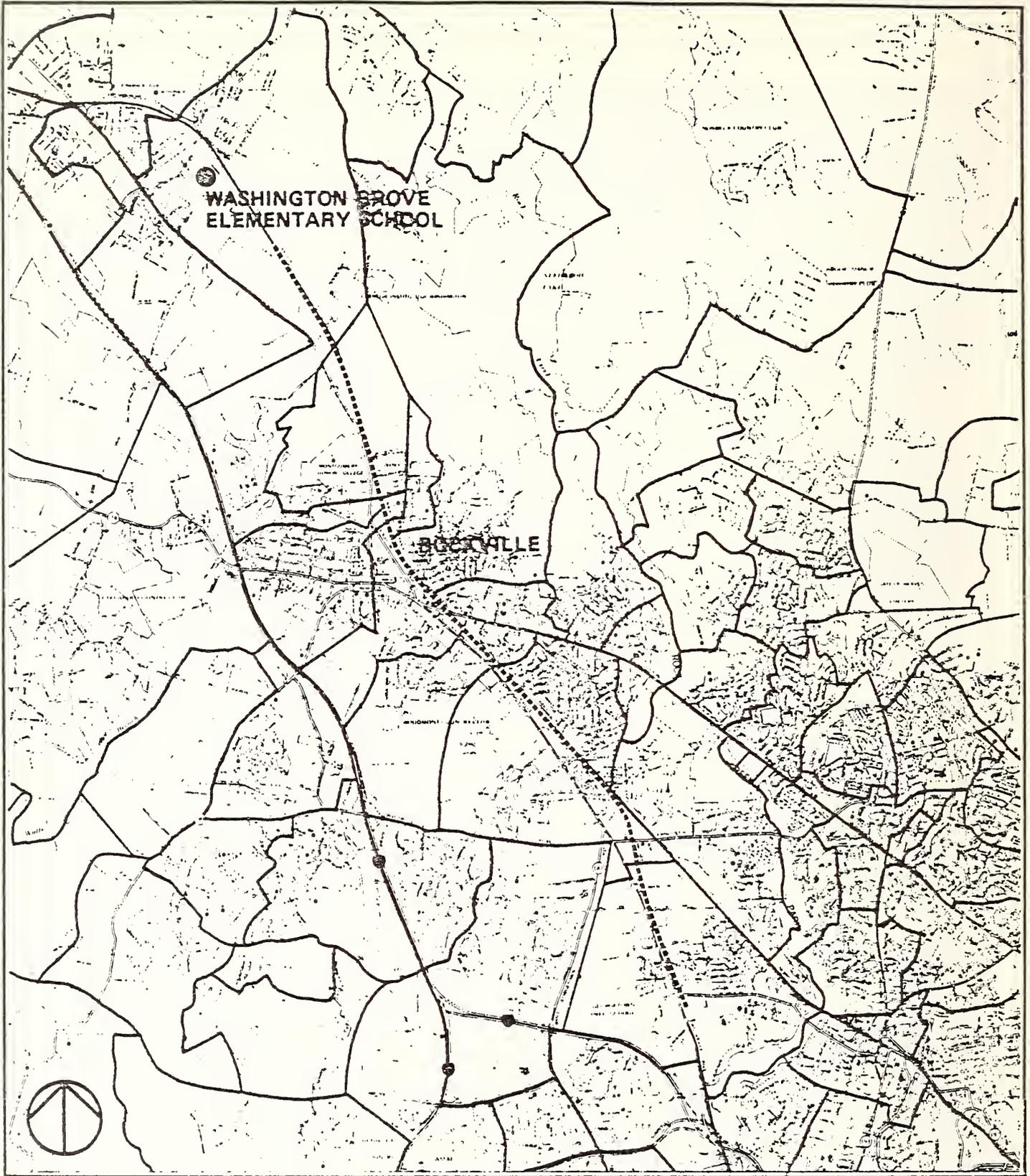
Parks and Recreational Areas

The A017 alternatives do not affect any public park or recreational facilities as none are nearby.

Schools

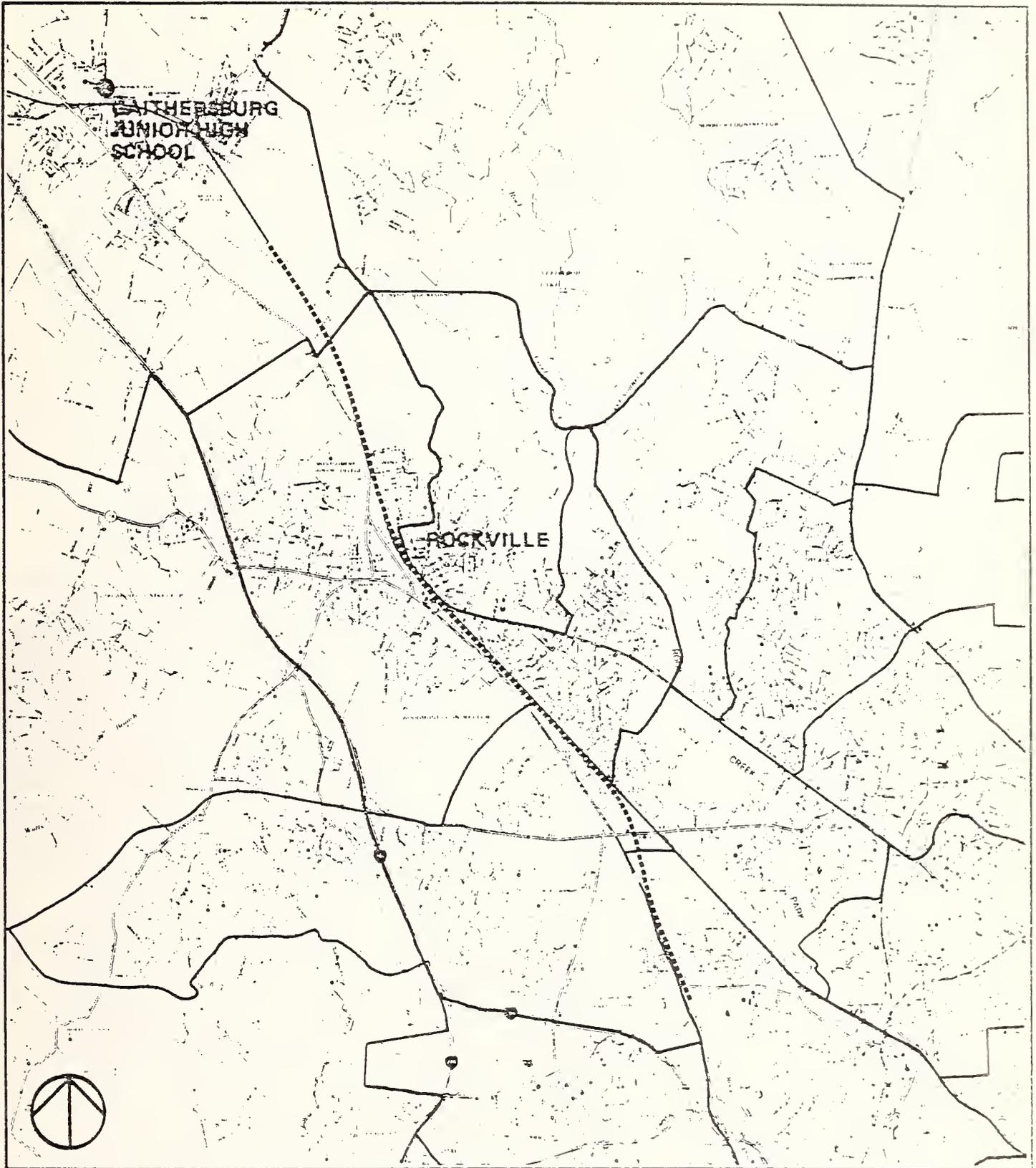
Public schools in the A017 corridor are located such that no structures or facilities will be affected. However, school children will be affected by Metro both during and

(Continued on page 73)

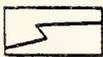
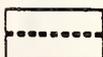


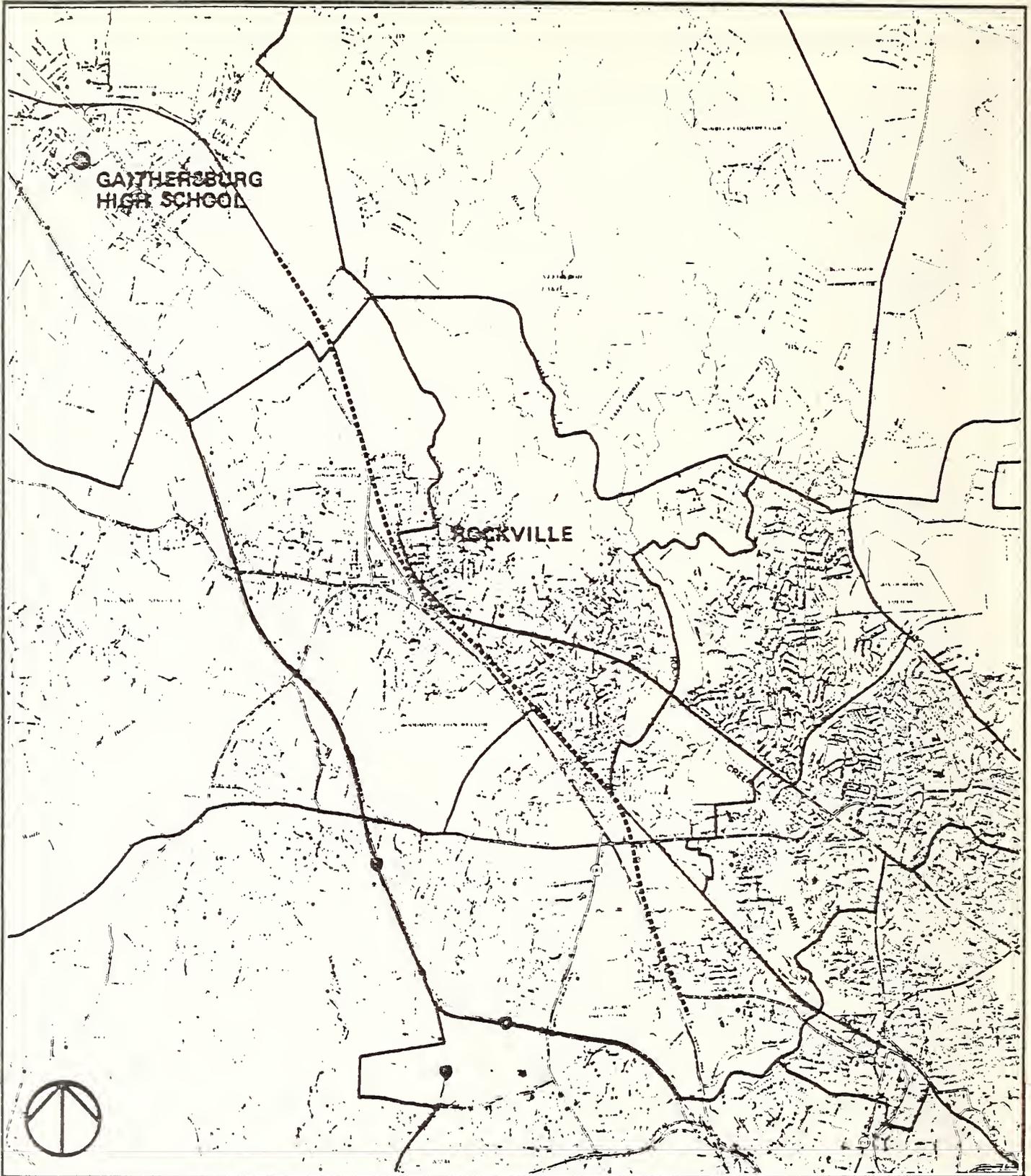
ELEMENTARY SCHOOL SERVICE AREAS





JUNIOR HIGH SCHOOL SERVICE AREAS

-  Service area boundary
-  Alignment



GAITHERSBURG
HIGH SCHOOL

ROCKVILLE



-  Service area boundary
-  Alignment

SENIOR HIGH SCHOOL SERVICE AREAS



after construction. College Gardens Elementary School, West Rockville Elementary School, Merryvale Elementary School, Washington Grove Elementary School, Gaithersburg Junior High School, Julius West Junior High School, Gaithersburg High School, Rock Terrace High School, and Richard Montgomery High School have service areas which encompass the proposed Metro alignment (see school service area maps included in this Section). Students attending these schools who live in the vicinity of the Metro alignment will be affected during Metro construction as they walk or are driven to school. The short-term negative impact involves safety concerns which include hazards from temporary disruption of traffic, from construction equipment and from the site itself during construction. Each of these areas of concern is dealt with by WMATA through the safety provisions included in all their construction contracts. Examples of these contract provisions dealing specifically with safety during construction are included in Chapter 13 of this Report entitled "Measures Taken to Minimize Harm to the Environment".

Upon completion of Metro construction, the only safety concern affecting school children will be due to increased traffic resulting from Metro stations.¹ This is a long-term negative impact that can be substantially reduced with additional and improved signal systems at appropriate intersections and with the assistance of school crossing guards at particularly congested intersections.

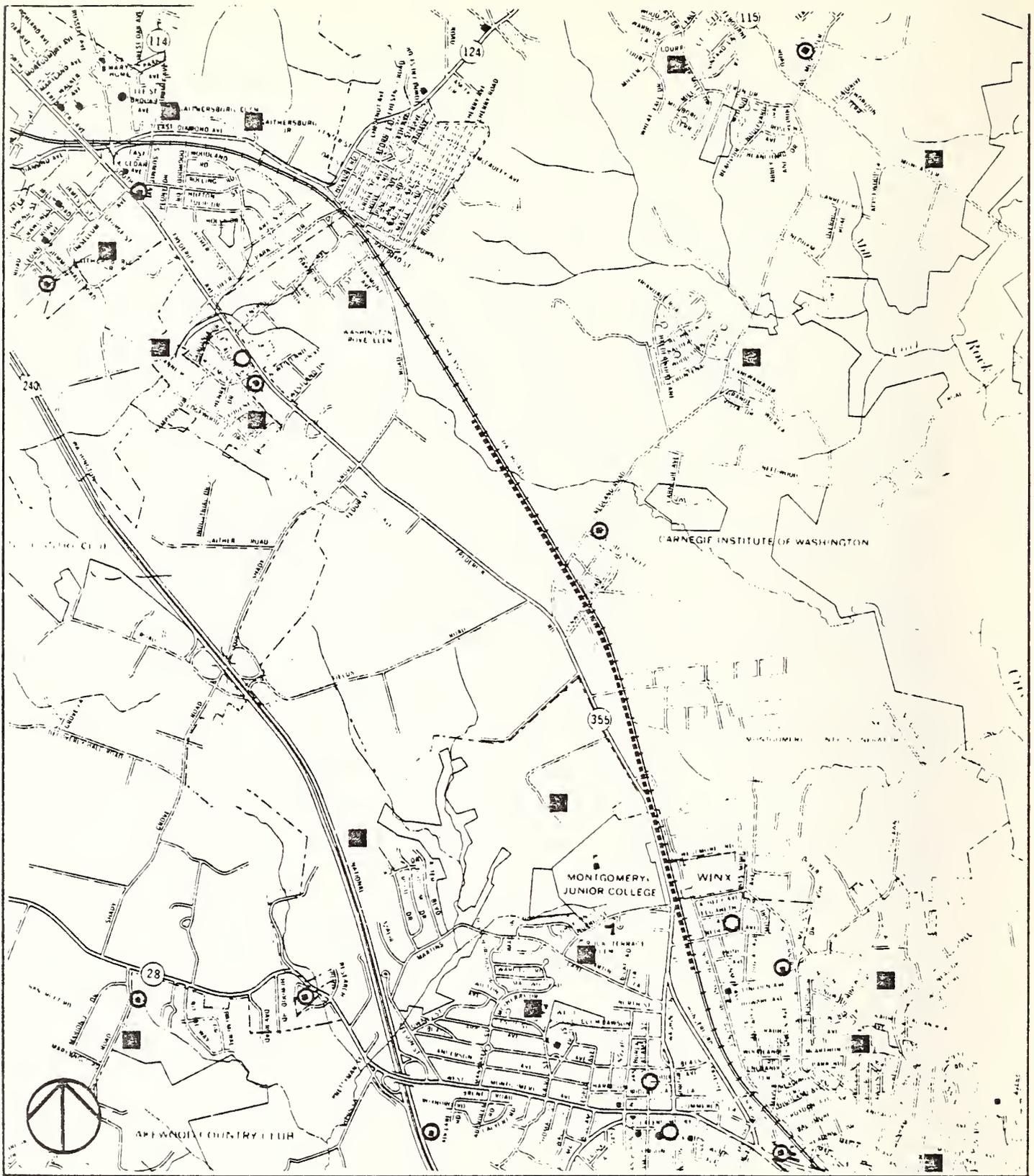
Institutional Uses

Institutional uses along the A017 corridor are limited to Montgomery Junior College and Derwood Bible Church.

Montgomery Junior College is located in northern Rockville, west of Route 355 and directly south of College Parkway. The College is expected to benefit from Metro as a result of the increased accessibility that will result from rail rapid transit and feeder bus service.

Derwood Bible Church is located on the corner of Derwood and Redland Roads, two blocks from the B&O alignment and within walking distance to the proposed County Service Park, described in Chapter 6 of this Report, and the proposed Shady Grove Station. Those driving to church may experience heavier traffic than is presently the case. This is a minor impact which would, at most, minimally affect the church.

¹Overall traffic volume will be reduced as a result of Metro. On a county-wide basis, Metro will have a positive impact on school children's safety.



-  Public school
-  Church
-  Alignment

EXISTING & PROPOSED INSTITUTIONAL USE



3.5 Traffic and Highway Characteristics

This Section describes existing traffic and highway characteristics and how they affect access to the Metro Station proposed at either Gude Drive or Shady Grove. This Section also includes a list and brief description of proposed roadway improvements affecting the A017 Segment of the Rockville Route as well as the A014 and A015 Segments. (If an A017 is built, there is no A016, since this Segment identified solely the S&I Yard in Rockville and its location, which would be superseded by the extension.)

The Metro alignment for Segment A017, the proposed extension of the Rockville Route, is to follow the Baltimore and Ohio Railroad alignment to an area just north of Gude Drive or to an area between Fields Road and Shady Grove Road where a station and Storage, Service and Inspection (S&I) Yard would be located. Approximately a mile south of the proposed Gude Drive Station and S&I Yard, and west of Route 355 there is a major institutional complex consisting of Montgomery College, the County School Board Headquarters, Rock Terrace High School and the Rockville Municipal Swim Center. A neighborhood convenience shopping center fronts on Route 355 just south of the Gude Drive intersection. North of Gude Drive, between Route 355 and the railroad, there are scattered highway-oriented uses such as automobile sales, a fresh produce business, fast foods, a credit union, and a small shopping center. East of the B&O Railroad is the Gude Drive Nursery consisting of 150 acres on which the greatest portion of Metro facilities at the proposed Gude site would be located, in particular, the S&I Yard.

New development in the area is proposed for the areas north of Gude Drive. For example, a recreational area is planned by Montgomery County at the Southlawn Lane and Gude Drive land-fill sites. The Potomac Electric Power Company recently submitted a proposal to the City of Rockville to consolidate their administrative office and operational functions in one complex to be located on 70 acres of the 104-acre Seldeen property, just east of I-270 and north of Gude Drive extended. Two major areas open to private development are the industrial land west of Route 355 and land zoned for residential use east of the B&O Railroad on the Mobley tract. Both areas are presently in agricultural use. Large scale development of these areas does not seem imminent.

The major access roads to the proposed Gude Drive Station will be Route 355, presently under widening and roadway improvements to a six-lane divided arterial, and Gude Drive, a two-lane collector street.

Shady Grove Road and Oakmont Avenue are presently congested at peak hours. The Shady Grove Route 355 leg of the intersection experiences substantial travel time delays and traffic back-ups under peak hour traffic conditions. Traffic volumes on Shady Grove Road at Route 355 currently exceeds 20,000 vehicles per day. Volumes have grown at an annual rate of approximately 2,000 vehicles per day and are currently in excess of acceptable levels.¹ The Oakmont Avenue-Route 355 leg of the intersection has less extensive traffic and travel delays at peak hours than the Shady Grove-Route 355 leg, but these are nonetheless significant. The intersection of Redland Road and Route 355 (Frederick Avenue) also presently experiences travel time delays and traffic back-ups under peak hour traffic conditions.

Traffic counts available for the Shady Grove area are Average Weekday Traffic Counts and A.M. Peak - P.M. Peak Hour Counts made available by Montgomery County DOT as shown on the maps at the end of this section.

Several of the access roadways mentioned above are slated for improvements to reflect the needs of the area during the next ten to twenty years.

Fields Road will be extended from the B&O Railroad tracks to meet with Redland Road near Needword Road with a bridge to be built over the Metro and B&O tracks. Fields Road from Route 355 to Redland Road is proposed as a four-lane roadway. The Fields Road extension will provide direct access to the proposed Metro Station; it should relieve traffic congestion in the Route 355-(Frederick Avenue) Redland Road area, and increase traffic safety by providing grade separation over the B&O and Metro tracks.² This facility is in conceptual stage only (see end of this Section).

The Gaithersburg Vicinity Master Plan which considers the provision of rail rapid transit "the key to the planning and development of the Gaithersburg corridor city", and would like to see the transit system extended as far as the German-town corridor city, proposed to relocate and upgrade Shady Grove Road. This project includes the construction of a 100-foot wide, divided, four-lane highway with a 24-foot median in a 120-foot right-of-way, from Route 355 to Route 115 (Muncaster Mill Road), a distance of 13,500 feet.³ This project is referred to as the Shady Grove Road extension (see end of this Section). Status of facility, detailed design, complete construction plans, complete right-of-way acquired, and the proposed contract award date was November 15, 1974⁴.

¹Shady Grove Sector Plan Newslater, Page 7, Maryland-National Capital Park and Planning Commission, July 1974.

²Montgomery County Capital Improvement Program, 1974.

³Ibid.

⁴Correspondence with Edward A. Daniel, Montgomery County DOT, August 30, 1974.

Route 355 is substantially traveled at peak hours and the intersection of Gude Drive and Route 355 experiences travel time delays and back-ups under peak hour traffic conditions. The available traffic counts for the Gude Drive area are included at the end of this Section.

The extension of Metro to either Gude Drive or to the Shady Grove alternative sites will require the closing of Frederick Avenue and Westmore Road to the east of the B&O Railroad tracks, as at-grade crossing cannot be retained, and an alternative to closing these two roadways has not been resolved. The Gude Road bridge will require reconstruction to accommodate either Metro Station alternative for the A017 Segment.

There are several transportation system changes called for by Master Plans for the Gude Drive area (see the list at the end of this Section). The widening of Route 355 to a six-lane urban divided highway will improve access to a Metro Station at Gude Drive as will the Gude Drive extension to the west of Route 355 and the proposed reconstruction of Gude Drive into a four-lane divided highway from Route 355 to Route 28, though the latter improvement is only programmed at present beginning south of Southlawn Lane.¹ Improvements notwithstanding, access to a station at Gude Drive would be difficult since all Metro auto induced traffic would converge at Route 355 and Gude Drive.

The site of the proposed station, accompanying parking facilities and S&I Yard is adjacent to an already approved county-wide facility called the Montgomery County Service Park which will include maintenance and storage operations for various County agencies and departments. Other County facilities are also planned in or near the Shady Grove area, and commercial and industrial land uses are anticipated to the west and northwest of the proposed Shady Grove Metro Station. Presently, however, there are no major traffic generators in the vicinity of the proposed Shady Grove Station.

The major access roads to the proposed station and S&I Yard will be: Route 355 (Frederick Road), presently a two-lane undivided arterial; Shady Grove Road, a multi-lane divided arterial; the proposed Shady Grove Road extension (from Route 355 to Muncaster Mill Road); Oakmont Avenue, a two-lane collector street; Fields Road, presently a two-lane collector street; and Redland Road, presently a two-lane undivided collector street with at-grade crossing of the B&O Railroad tracks.

Shady Grove Road is substantially traveled at peak hours. Oakmont Avenue experiences slight to moderate traffic. However, the intersection of Route 355 (Frederick Road), Shady

¹Preliminary Rockville Capital Improvement Program, 1975.

Route 355 (Frederick Road) will be upgraded to a six-lane divided highway with improvements at the intersection with Shady Grove Road.¹ The two segments from Rockville to Montgomery Village Avenue are fully funded.²

Project planning for the Intercounty Connector (Outer Beltway) from the Western Arterial to the Baltimore-Washington Parking has changed from the concept originally indicated in the 1975-1979 Primary State Highway Improvement Program. The low priority now given this facility is due to extreme difficulty in funding and political infeasibility of implementing a complete outer circumferential highway in the Washington Region in the foreseeable future. For the present plan period the proposed limits (for planning purposes) of the Intercounty Connector are the Western Arterial in Montgomery County and I-295 in Prince George's County. The project can be described as a four-lane divided access controlled highway beginning at an interchange with I-270 approximately midway between Muddy Branch Road and Shady Grove Road. The alignment proceeds in an easterly direction generally along the southern boundary of the City of Gaithersburg. It crosses over Maryland 355 and the B&O Railroad and terminates at the interchange with the access road to the Shady Grove Metro Station. The segment of the Outer Beltway from I-270 to the direct access road serving the station is proposed to be funded as an interstate highway substitution under the State's proposal.³

A north-south limited access road between the Metro parking lot on the east side of the railroad to the proposed segment of the Outer Beltway, with an interchange at Shady Grove Road is also planned. The direct access road from the Outer Beltway segment to the station is included in the State's request for State Highway Fund transfer and is proposed to be funded as part of the Metrorail extension⁴. WMATA has further proposed an additional limited access road to Metro parking facilities on the west side of the B&O Railroad. This access road would be from Sommerville Drive and Fields Road.

Facilities which will serve as major access roads to a Metro Station at Shady Grove must be improved and new ones constructed if the Shady Grove Station is to be attractive enough to divert auto patrons from highways to mass transit. As an

¹Maryland Highway Improvement Program, 1975.

²Correspondence with Edward A. Daniel, Montgomery County DOT, August 30, 1974.

³Maryland DOT Interstate Highway Substitution Program (Preliminary Draft), 1974.

⁴Ibid.

example, the proposed County Medical Center to the southeast of the proposed Shady Grove Station is expected to generate 80,000 daily trips¹. In addition, many thousand trips will be generated by the proposed commercial office district recommended to be located adjacent to the Medical Center². These trips cannot be handled by the existing and proposed highway system³. The Gaithersburg Vicinity Master Plan indicates that the Shady Grove Metro extension will divert a substantial number of these automobile patrons from highways to rail transit.

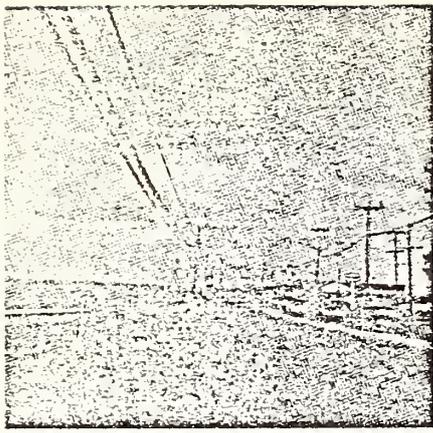
The following list and the accompanying map included in this Section indicates future highway improvements, and their respective locations, which will affect access to a Metro Station at Gude Drive or Shady Grove as well as to the proposed transit stations on Segments A014 and A015 of the Rockville Route⁴.

¹Gaithersburg Vicinity Master Plan, January 1971, Page 307

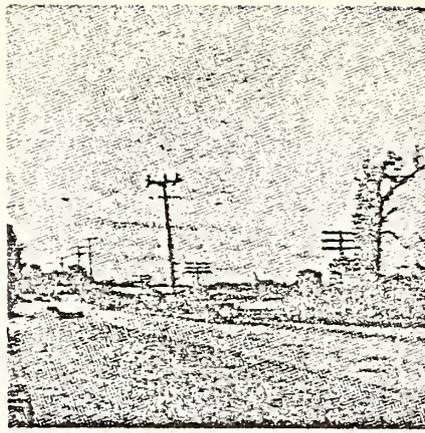
²Ibid.

³Ibid.

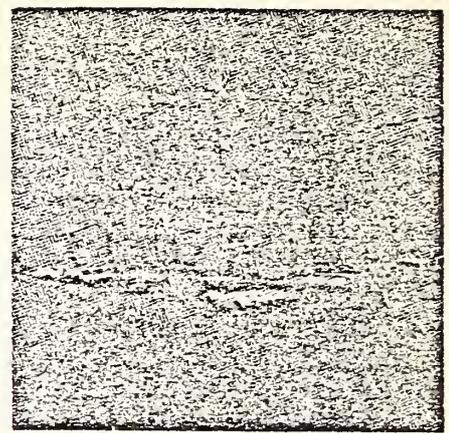
⁴Capital Improvement Programs of the State of Maryland, Montgomery County and the City of Rockville; Gaithersburg Vicinity Master Plan, January 1971; Rockville Master Plan, July 1970; North Bethesda-Garrett Park Master Plan, December 1970; Wallace, McHarg, Roberts & Todd Investigation.



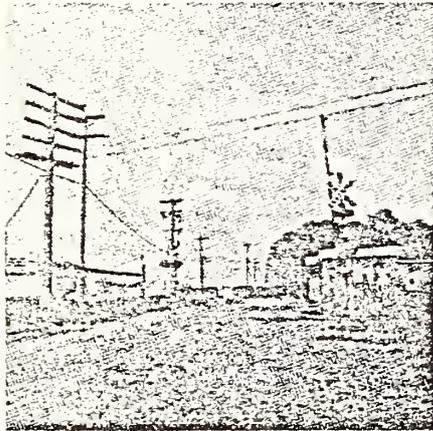
Frederick Ave. south of Shady Grove site



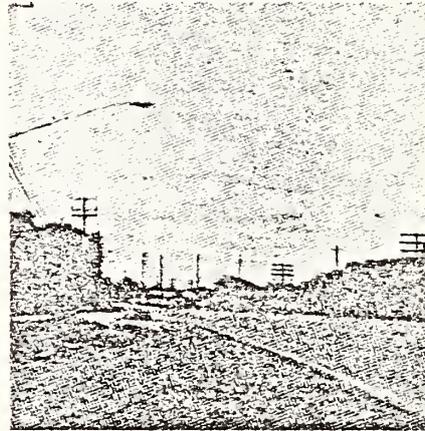
Frederick Ave. southwest of Gude Dr.



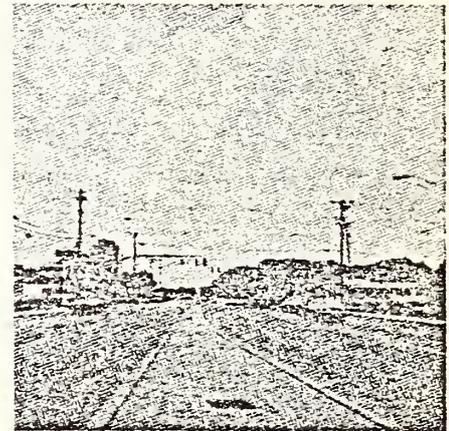
Frederick Ave. south of Shady Grove site



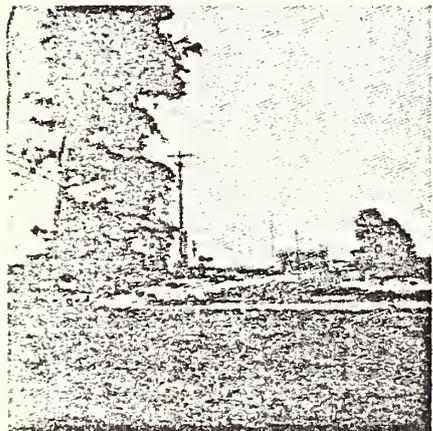
Redland Road and B&O tracks



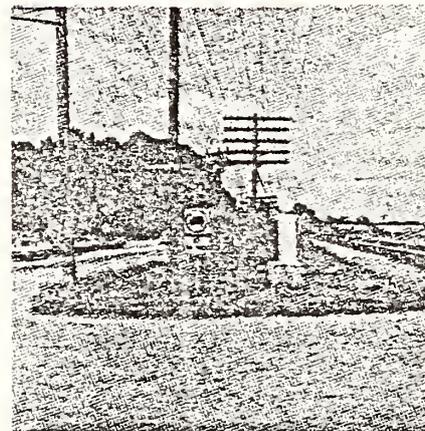
Frederick Ave. south of Gude Dr.



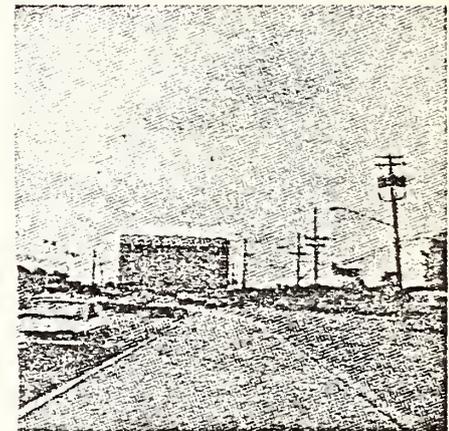
Rt. 355 in Rockville



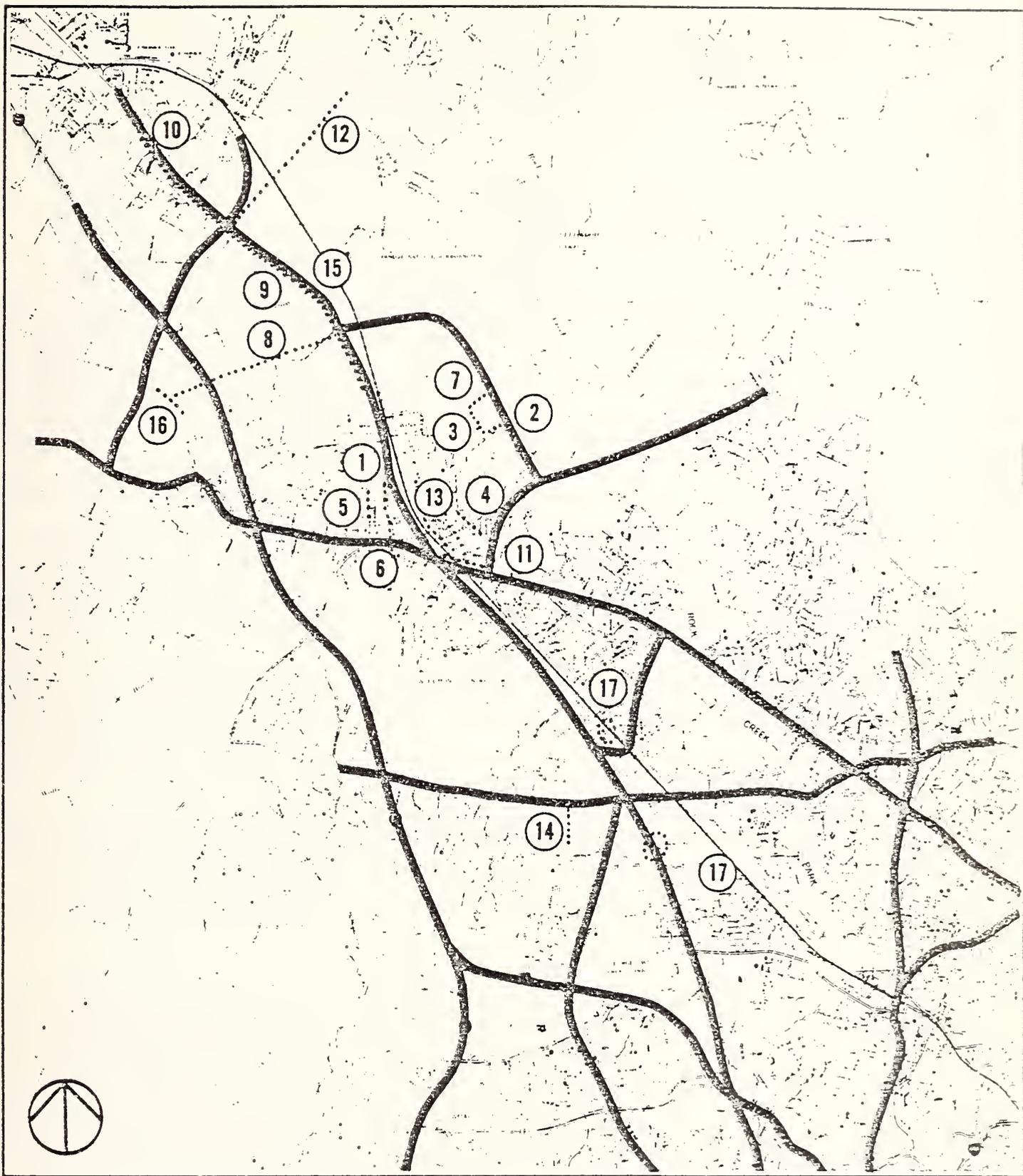
New St. and Hungerford Drive in Rockville

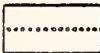


Westmore Rd. and Frederick Ave. Rt. 355 in Rockville



Hungerford Drive looking south




 Road improvement and/or extension

PROGRAMMED HIGHWAY IMPROVEMENTS



PROGRAMMED HIGHWAY IMPROVEMENTS THAT DIRECTLY AFFECT
SEGMENT A017 AS WELL AS SEGMENTS A014 AND A015
OF THE ROCKVILLE ROUTE

<u>Improvement Location</u>	<u>Fiscal Year of Planned Completion</u>	<u>Roadway and Route Number</u>	<u>Project Description</u>
1	Completed 1975	North Washington Street Sidewalk	Design, right-of-way and construction of a sidewalk on the east side of North Washington Street between Frederick Avenue and the North Washington-Hungerford intersection, to serve this fully developed commercial area
2	F.Y. 80	Southlawn Lane	Construction of street widening to improve access from Gude Drive to Southlawn Industrial Area from Lofstrand to Gude
3	F.Y. 80	Lofstrand Lane	Construction of primary industrial road and utilities to improve access to Southlawn Industrial Area from Southlawn to Dover
4	F.Y. 79	Croydon Avenue-Highland Avenue	Construction of secondary residential street connecting Croydon and Highland Avenues, to accomplish separation of industrial and residential area traffic
5	F.Y. 79	North Street and North Adams	Construction of secondary residential streets and utilities to provide access and allow single family residential development of the interior area west of North Washington Street and south of Martins Lane from east of North Van Buren to the end of existing North Adams

MAP NO	ROUTE NUMBER ROUTE NAME AND FEDERAL AID TYPE	DESCRIPTION OF LIMITS, TYPE OF IMPROVEMENT AND LENGTH.	TOTAL ESTIMATED COST (\$ 000)	EXPENDED THRU JUNE 30th 1976	CURRENT YEAR 1977	BUDGET YEAR 1978	FISCAL YEAR PROJECTED CASH REQUIREMENTS FOR PLANNING PURPOSES ONLY				FIVE YEAR TOTAL	BALANCE TO COMPLETE
							1979	1980	1981	1982		
							1977	1978	1980	1981		
1	U.S. 50 John Hanson Highway Prince George's Urban	Ardwick-Ardmore Road at Rd. 410 extended reconstruct interchange	PLANNING 120 ENGINEERING 160 RIGHTS OF WAY 2650 CONSTRUCTION 17600 TOTAL 20530	70	30	20	-	-	-	20	-	
2	U.S. 50 John Hanson Highway Prince George's Primary	New Carrollton Metro Access construct access ramps <i>ROW problem</i>	PLANNING - ENGINEERING 60 RIGHTS OF WAY 860 CONSTRUCTION 1200 TOTAL 2120	-	-	-	-	-	-	-	-	
3	Rd. 198 Spencerville Rd. Prince George's Montgomery Primary	U.S. 29 to begin divided hwy. W. of I-95 4 lane divided reconstruct 2.03 mi.	PLANNING - ENGINEERING 170 RIGHTS OF WAY 2860 CONSTRUCTION 3300 TOTAL 6330	-	40	280	-	-	-	2550	-	
4	Intercounty Connector* Prince George's Montgomery Primary	Western Arterial to I-95 6 lane freeway construct 18.00 mi.	PLANNING 790 ENGINEERING 3400 RIGHTS OF WAY 27500 CONSTRUCTION 146300 TOTAL 177990	90	70	350	280	0	0	630	-	
5	Rockville Facility Montgomery Primary	Md. 189 to Intercounty Connector est. scheduled imp. subject to determination of Rockville Corridor Trans. Improvement Alt. Feasibility Study 10.20 mi.	PLANNING 1020 ENGINEERING 690 RIGHTS OF WAY 12700 CONSTRUCTION 79200 TOTAL 93610	620	40	200	160	0	0	360	-	
	TOTALS (current dollars)		PLANNING 1930 ENGINEERING 4480 RIGHTS OF WAY 46570 CONSTRUCTION 247600 TOTAL 300580	780	140	570	440	-	-	1010	-	
	COST OF INFLATION ESTIMATED INFLATED COST				3160	90	1000	20	230	120	4320	

SECONDARY HIGHWAY PROGRAM 1978 - 1982

MAP NO	ROUTE NUMBER ROUTE NAME AND FEDERAL AID TYPE	DESCRIPTION OF LIMITS, TYPE OF IMPROVEMENT AND LENGTH	TOTAL ESTIMATED COST (\$ 000)	EXPENDED THRU JUNE 30th 1976	CURRENT YEAR 1977	BUDGET YEAR 1978	FISCAL YEAR PROJECTED CASH REQUIREMENTS FOR PLANNING PURPOSES ONLY				FIVE YEAR TOTAL	BALANCE TO COMPLETE		
							1979	1980	1981	1982				
1	Md. 28 Norbeck Road Urban	Bauer Drive to Md. 609 4 lane urban divided reconstruct construct service roads with striped bikeways and sidewalks both sides 2.30 mi.	PLANNING	100	30	20	-	-	-	-	20	-		
			ENGINEERING	200	0	60	140	-	-	-	200	-		
			RIGHTS OF WAY	3900	50	0	0	0	0	0	0	0	3850	
			CONSTRUCTION	6380	0	0	0	0	0	0	0	0	6380	
			TOTAL	10630	30	80	140	0	0	220	0	10230		
2	Md. 97 Georgia Avenue *Primary	0.2 mile north of Bel Pre Road to Md. 28 (Norbeck Road) 6 lane divided reconstruct ped/bikeway striped on service rd. 0.99 mi.	PLANNING	-	-	-	-	-	-	-	-	-	-	
			ENGINEERING	230	80	30	0	0	0	0	0	30	10	
			RIGHTS OF WAY	-	-	-	-	-	-	-	-	-	-	-
			CONSTRUCTION	2300	0	0	0	0	0	0	0	0	2300	
			TOTAL	2530	80	30	0	0	0	30	0	2310		
3	Md. 97 Georgia Avenue	Md. 97 at Md. 108 (Olney) reconstruct intersection	PLANNING	-	-	-	-	-	-	-	-	-	-	
			ENGINEERING	70	70	-	-	-	-	-	-	-	-	
			RIGHTS OF WAY	2300	1000	1300	-	-	-	-	-	-	-	
			CONSTRUCTION	2000	0	400	1200	400	-	-	1600	-	-	
			TOTAL	4370	1070	1700	400	400	-	1600	-	-		
4	Md. 115 reloc. Urban	Montgomery Village Avenue to Md. 28 (final improvement type subject to study, cost based on 6 lane divided construct) 7.60 mi.	PLANNING	300	100	60	10	-	-	-	70	-		
			ENGINEERING	560	0	0	0	0	0	0	0	0	560	
			RIGHTS OF WAY	8130	0	0	0	0	0	0	0	0	8130	
			CONSTRUCTION	17810	0	0	0	0	0	0	0	0	17810	
			TOTAL	26800	130	60	10	0	0	70	0	26500		
5	Md. 118 reloc. Urban	Riffle Ford Road to Md. 355 (final improvement type subject to study, cost based on 6 lane divided construct) 4.36 mi.	PLANNING	150	80	30	10	-	-	-	40	-		
			ENGINEERING	180	0	0	0	0	0	0	0	0	180	
			RIGHTS OF WAY	3050	0	0	0	0	0	0	0	0	3050	
			CONSTRUCTION	7730	0	0	0	0	0	0	0	0	7730	
			TOTAL	11110	80	30	10	0	0	40	0	10960		
6	Md. 182 Layhill Road Urban	Md. 97 to Argyle Club Road 4 lane urban divided reconstruct construct service road on E. side and ped/bikeways on both sides 2.57 mi.	PLANNING	-	-	-	-	-	-	-	-	-	-	
			ENGINEERING	370	70	200	20	-	-	-	220	-		
			RIGHTS OF WAY	2320	30	0	0	0	0	0	0	0	2290	
			CONSTRUCTION	4920	0	0	0	0	0	0	0	0	4920	
			TOTAL	7610	100	200	20	0	0	220	0	7210		
7	Md. 183 Randolph Road Urban	Md. 97 (Georgia Avenue) to Md. 650 (New Hampshire Avenue) 6 lane divided reconstruct ped/bikeways on both sides 3.06 mi.	PLANNING	-	-	-	-	-	-	-	-	-	-	
			ENGINEERING	240	240	-	-	-	-	-	-	-	-	
			RIGHTS OF WAY	1300	1300	-	-	-	-	-	-	-	-	
			CONSTRUCTION	4800	600	400	-	-	-	-	400	-	-	
			TOTAL	6340	2140	3900	400	-	-	400	-	-		
8	Md. 185 Connecticut Ave. -	Bradley Lane to Underwood Street drainage improvement 0.43 mi.	PLANNING	-	-	-	-	-	-	-	-	-	-	
			ENGINEERING	70	20	0	50	-	-	-	50	-		
			RIGHTS OF WAY	-	-	-	-	-	-	-	-	-	-	
			CONSTRUCTION	240	0	0	0	0	0	0	0	0	240	
			TOTAL	310	20	0	50	0	0	50	0	240		

A. IDENTIFICATION AND CODING INFORMATION

1. Project Number: 763795 Agency No.: 00000000 Update Code: _____ DO NOT USE

2. Date: Feb. 20, 1976

3. Project Name: EASTERN ARTERIAL-HO 115 EXT 5. Agency: TRANSPORTATION

4. Program: TRANSPORTATION 6. Planning Area: GAITHERSBURG VICINITY

B. EXPENDITURE SCHEDULE (000'S)

	(8) Total	(9) Thru FY 75	(10) Estimate FY 76	(11) Total 6 Years	(12) Year 1 FY 77	(13) Year 2 FY 78	(14) Year 3 FY 79	(15) Year 4 FY 80	(16) Year 5 FY 81	(17) Year 6 FY 82	(18) Beyond 6 Years
Capital Expenditures	460			310							450
Land	2,500		169								2,131
Site Improvements and Utilities	5,000										5,000
Construction	7,960		179	310							7,731
Total	15,960		169	310							12,861

C. FUNDING SCHEDULE (000'S)

CO FUNDING	2,730	179	310	2,551
FED AID	5,230			5,230
Total	7,960	179	310	7,781

D. DESCRIPTION & JUSTIFICATION

PROJECT NO. 763795 PROJECT NAME Maryland Route 115 Extended

1. DESCRIPTION. This project includes the design and construction of a four-lane divided highway, providing for ultimate widening to six lanes, in a 150 foot right-of-way including bikeway, from an at-grade intersection at the location of a future interchange at Montgomery Village Avenue to Shady Grove Road extended. Service Area: Gaithersburg Vicinity.

2. JUSTIFICATION. This project is included in the Gaithersburg Vicinity Master Plan and will provide for traffic circulation in the developed and developing areas east of the D&O Railroad. Construction of the project will provide relief to congestion in the I-270 corridor and improve mobility in the more rapidly developing areas north of I-270 in the Gaithersburg Vicinity. This project is included in the State 5 Year Program. Site surveys indicate traffic volumes of 22,000 trips per day.

3. STATUS. Conceptual stage only. 114 option secured with ALARP.

4. FINANCING. Reimbursement for a major portion of the cost for this project will be sought from the SHIA on a dollar-for-dollar basis. In addition, a portion of this facility will be located within the City of Gaithersburg's expansion limits. The City of Gaithersburg will benefit substantially from this facility and registration will proceed in an effort to determine an equitable contribution. Project contingent upon federal funds.

E. ANNUAL OPERATING BUDGET IMPACT (000'S)

Program Costs	Staff	0
Facility Costs	Other	0
	Maintenance	0
	Debt Service	273
Total Costs		273
Offsetting Revenue or Cost Savings		(0)

F. APPROPRIATION AND EXPENDITURE DATA (000'S)

Date First in Capital Program	FY 76
Date First Appropriation	FY 76
Initial Cost Estimate	11,268
Present Cost Estimate	7,560
Cumulative Appropriation	179
Expenditures and Encumbrances	0
Unencumbered Balance	179
Appropriation Request, Budget Year	FY 77
Supplemental Appropriation Request	FY 76
Current Year	

G. RELOCATION INFORMATION

Families: 0 Individuals: 0 Estimated: 0

H. MAP Reference Code: NONE

See Page 1093 for Map

I. COORDINATION INFORMATION

The design of this project will be in accordance with SHIA criteria, with review and approval requested of that agency relative to possible future reimbursement for part of the costs.

Master Plan for Bike Trails Coord. with SHIA alignment and needs study to include possible alternative

A. IDENTIFICATION AND CODING INFORMATION

1. Project Number 663907 Agency No. Update Code

2. Date Feb. 20, 1976

DO NOT USE

3. Project Name FIELDS RD-MUDDY BRANCH/SHADY GRVE

5. Agency TRANSPORTATION

4. Program TRANSPORTATION

6. Planning Area GAITHERSBURG VICINITY

E. ANNUAL OPERATING BUDGET IMPACT (000's)

Program Costs:	Staff	0
	Other	0
Facility Costs:	Maintenance	12
	Debt Service	273
Total Costs		285
Offsetting Revenue or Cost Savings		(275)

B. EXPENDITURE SCHEDULE (000'S)

Cost Elements	(8) Total	(9) Thru FY 75	(10) Estimate FY 76	(11) Total 6 Years	(12) Year 1 FY 77	(13) Year 2 FY 78	(14) Year 3 FY 79	(15) Year 4 FY 80	(16) Year 5 FY 81	(17) Year 6 FY 82	(18) Beyond 6 Years
1. Planning, Design and Supervision	277	24	93	120	20	20	20	30	30		
2. Land Site Improvements and Utilities	282			282				125	157		
3. Construction Furniture and Equipment	2,212			10	10						2,202
4. Total	2,731	24	93	412	30	20	20	155	187		2,202

C. FUNDING SCHEDULE (000'S)

CO. FUND SOURCE	(19) Total 6 Years	(20) Year 1 FY 77	(21) Year 2 FY 78	(22) Year 3 FY 79	(23) Year 4 FY 80	(24) Year 5 FY 81	(25) Year 6 FY 82	(26) Beyond 6 Years
CO. FUND SOURCE	407	25	20	20	155	167		2,202
Other:	5	5						

D. DESCRIPTION & JUSTIFICATION

PROJECT NO. 663907 PROJECT NAME Fields Road

1. DESCRIPTION. This project includes the design and construction of (1) an arterial street 50 feet wide with curb, gutter, and sidewalk on both sides within an 80-foot right-of-way from Muddy Branch Road to a point 7,000 feet east, and (2) a business district street 50 feet wide with curb, gutter, and sidewalk on both sides within an 80-foot right-of-way from Shady Grove Road westerly 1,500 feet. The total length of this project is approximately 8,500 feet, extending from Muddy Branch Road to Shady Grove Road. Funding for construction of the ultimate facility has been moved beyond the six year program in order to reallocate current program spending to areas east of I-270 where existing and potential development are more critical. It is the opinion of DOT that surface maintenance will permit use of the existing facility during the interim. City of Gaithersburg has requested resurfacing of presently unpaved portion of Fields Road. It is estimated that the cost of resurfacing will be \$10,000 and will be shared 50-50 with the City. Improvement of this type will require amendment to Road Code. A similar request was received for Muddy Branch Road Project No. 663899. Service Area: This project serves local businesses and residents.

2. JUSTIFICATION. Plans and Studies: This project is included in the Gaithersburg Vicinity Master Plan. Specific Data: The project will improve mobility and support planned growth by providing access to proposed commercial and residential development. This construction will improve access to the proposed Commuter Rail Facility in the County Service Park.

3. STATUS. Detailed Design Stage.

4. OTHER. Reimbursement of part of the costs of this project are anticipated from front foot benefit assessments in the amount of \$275,000.

F. APPROPRIATION AND EXPENDITURE DATA (000's)

Date First In Capital Program	FY 66
Date First Appropriation	FY 75
Initial Cost Estimate	1,650
Present Cost Estimate	2,731
Cumulative Expenditures and Encumbrances	74
Appropriation Balance	335

Appropriation Request, Budget Year, FY 77

Appropriation Reduction (317)

Supplemental Appropriation Request FY 76

G. RELOCATION INFORMATION

Families 0 Individuals 0 Businesses 0

H. MAP Reference Code: D11L

See Page 1093 For Map

I. COORDINATION INFORMATION

E. ANNUAL OPERATING BUDGET IMPACT (000's)

Program Costs	Staff	0
Facility Costs	Other	0
	Maintenance	0
	Debt Service	312
Total Costs		312
Offsetting Revenue or Cost Savings		(815)

F. APPROPRIATION AND EXPENDITURE DATA (000's)

Date first in Capital Program	FY 69
Date first Appropriation	FY 69
Initial Cost Estimate	2,000
Present Cost Estimate	2,215
Cumulative	Unencumbered
Appropriation	Expenditures and Encumbrances
	4,300
	Balance 1,016
Appropriation Request, Budget Year, FY 77	
Appropriation Reduction(200)	
Supplemental Appropriation Request FY 76	
Current Year	

G. RELOCATION INFORMATION
 Families: 0 Individuals 0 Businesses 0

H. MAP Map Reference Code: B10H

See Page 1093 for Map

I. COORDINATION INFORMATION
 Design must be coordinated with Ritchie Parkway and Rockville Facility Study. Funding must be coordinated with the City of Rockville.
 Coordination with Shady Grove Rail Station (Project No. 743154).

A. IDENTIFICATION AND CODING INFORMATION

1. Project Number: 69301B
 Agency No.: _____
 Update Code: _____

2. Date: March 4, 1976

3. Agency: TRANSPORTATION

4. Program: TRANSPORTATION

5. Planning Area: GAITHERSBURG VICINITY

6. Project Name: SHADY GROVE ROAD

EXPENDITURE SCHEDULE (000'S)

	(8) Total	(9) Thru FY 75	(10) Estimate FY 76	(11) Total 6 Years	(12) Year 1 FY 77	(13) Year 2 FY 78	(14) Year 3 FY 79	(15) Year 4 FY 80	(16) Year 5 FY 81	(17) Year 6 FY 82	(18) Beyond 6 Years
1. Planning Design and Supervision	381	153	107	120	50	50	20				
2. Land Site Improvements and Utilities	1,120	961	177								
3. Construction	5,721	133	1,500	2,095	1,020	835	240				
4. Equipment											
5. Total	5,211	1,247	1,784	2,215	1,070	885	260				

FUNDING SCHEDULE (000'S)

	(19) Total	(20) State Aid
CO. BONDS	1,233	370
STATE AID	982	700
	2,215	202

D. DESCRIPTION & JUSTIFICATION PROJECT NO. 69301B PROJECT NAME: Shady Grove Road

1. **DESCRIPTION:** This project includes the design and construction of a 100 foot wide, divided, four lane highway with a 120 foot median in a 120 foot right-of-way, from Ml. Rt. 355 (Frederick Road) to Ml. Rt. 115 (Master Plan Road), a distance of 13,500 feet. Service Area: The project serves the Upper Rock Creek watershed by providing a safer travel way between Ml. Rt. 355 to Ml. Rt. 115.

2. **JUSTIFICATION:** Plans and Studies. This project is included in the Gaithersburg Vicinity Master Plan. The project is currently programmed for State funding in the amount of \$2,122,000. Traffic data indicates that volumes are currently in excess of acceptable levels and the proposed improvements will improve vehicular mobility and safety and provide for planned growth. The construction schedule has been revised to show construction over a 3-year period.

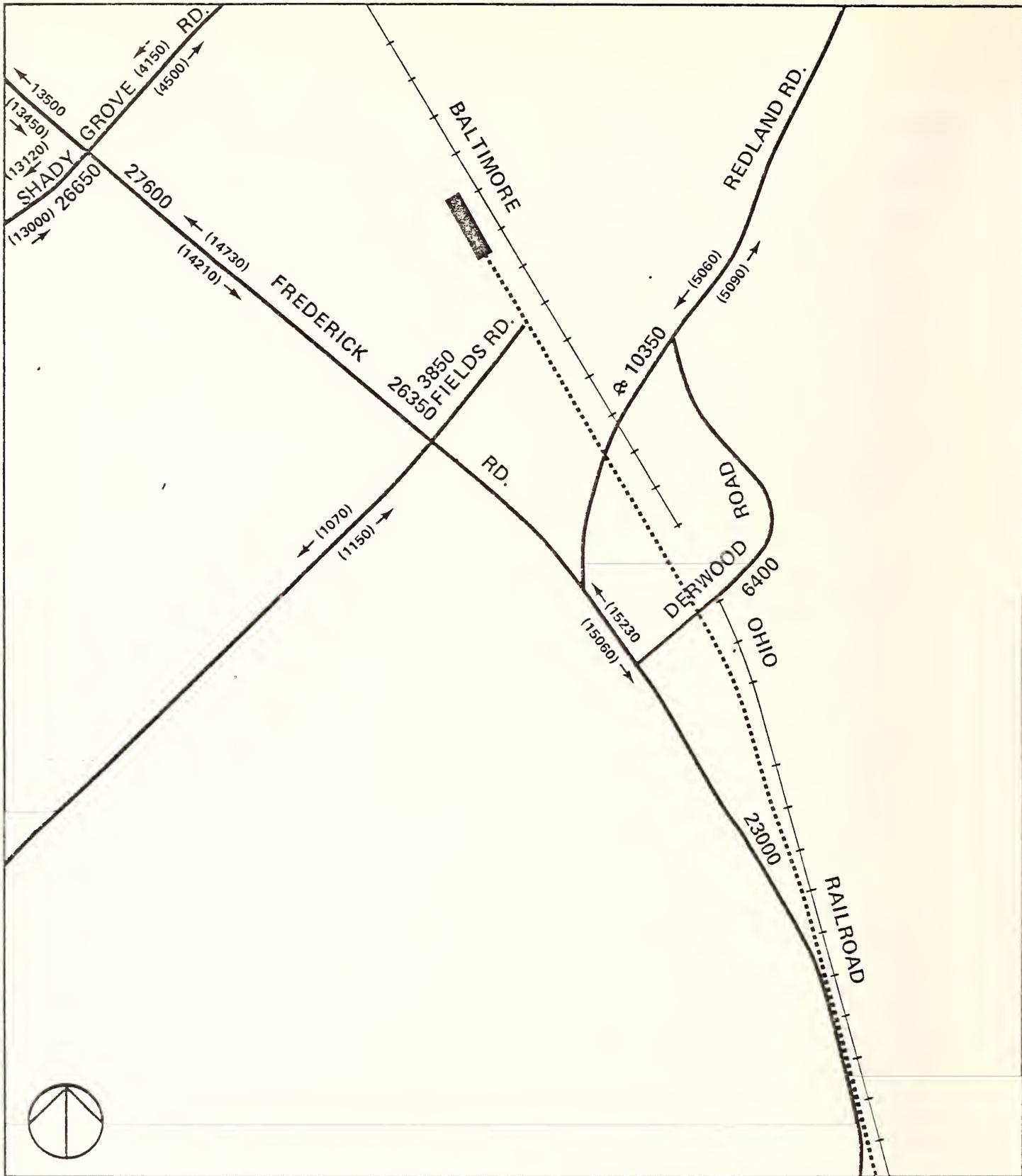
3. **STATUS:** Under construction.

4. **OTHER:** Reimbursement of part of the cost of this project is anticipated from front foot benefit assessments in the amount of \$125,000. This project has been programmed for State funding in the amount of \$2,122,000. Street lighting, landscaping, and intersection signalization are also to be funded out of this project:
 Sidewalk-Bike Trail - \$110,000 - 1979
 Landscape - \$260,000 (\$10,000 design, \$250,000 coordination) - 1978/79
 Lighting - \$320,000 - 1978
 F/F crossing maintenance - \$40,000 1978/79

<u>Improve- ment Lo- cation</u>	<u>Fiscal Year of Planned Comple- tion</u>	<u>Roadway and Route Number</u>	<u>Project Description</u>
6	F.Y. 79	North & South Washington St., West Middle Lane	Reconstruction to 49' width; needed for improvement of traffic flow operations in downtown area; includes 36' width in Middle Lane approach to N. Washington Street westerly to serve adjacent shopping center
7	After F.Y. 83	Mason Drive	Construction of secondary industrial street, to pro- vide access to properties in area, remove industrial traffic from North Horners Lane from Lofstrand Lane to Lofstrand Lane extended
8	F.Y. 80	Gude Drive (West) Rt. 355 to Research Boulevard - Phase I	Partial construction of major cross-county highway, bypassing the City of Rock- ville north of Woodley Gardens. Connecting the Southlawn Industrial Area to 70-S, relieving Mont- gomery Avenue of automo- bile and heavy truck traf- fic from Md. 355 to Research Boulevard
9	F.Y. 79	Rockville Pike (Rt. 355)	Reconstruct a six-lane di- vided highway including sidewalks on both sides from Westmore Road to Shady Grove Road
10	F.Y. 79	Frederick Road	Reconstruct a six-lane di- vided highway for 1.10 miles and 62' wide straight for 1.80 miles including side- walks on both sides and an interchange at Diamond Avenue from Montgomery Village to Shady Grove Road

<u>Improve- ment Lo- cation</u>	<u>Fiscal Year of Planned Comple- tion</u>	<u>Roadway and Route Number</u>	<u>Project Description</u>
11	F.Y. 79	Veirs Mill Road	Reconstruction of six-lane divided highway for 0.41 miles and a four-lane urban divided highway for 0.17 miles from Md. 355 to E. Md. 28 (including sidewalks)
12	Completed 1976	Shady Grove Road	Construct four-lane divided major highway from Md. 355 (Frederick Road) to Md. 115 (Muncaster Mill Road) along planned location (13,500 feet), including bridge over B&O Railroad and pedestrian underpass at Mill Run Drive
13	F.Y. 80	Park Road Under- pass	Construction of additional two-lane railroad underpass. Construction programmed to coincide with underpass widening scheduled by Metro System
14	F.Y. 77- 78	East Jefferson Street	Construct arterial roadway paved 50 feet wide, with curbs, gutters, and sidewalks, on East Jefferson Street from Montrose Road to Executive Boulevard (1500 feet)
15	F.Y. 80	Redland-Fields Road	This project includes the design and construction of an industrial street 50 feet wide with curb, gutter, and sidewalk or bikeway on both sides within an 80 foot right-of-way from the B&O Railroad to proposed road I-6, and a primary street 36 feet wide with curb, gutter, and sidewalk on both sides from proposed road I-6 to Redland Road

<u>Improvement Location</u>	<u>Fiscal Year of Planned Completion</u>	<u>Roadway and Route Number</u>	<u>Project Description</u>
16	F.Y. 80	Research Boulevard	Construction of the remaining portion of primary industrial street between Route 28 and Shady Grove Road to provide access to industrial area west of Interstate 70-S north and south from existing terminal
17	F.Y. 79	Twinbrook/ Nicholson Lane Station Access	This project provides funds for design, right-of-way and construction of access roads to the proposed Twinbrook and Nicholson Lane Transit Stations. Although the Adopted Regional System proposes stations at each of these locations, studies are currently being conducted by WMATA, at the request of the County Council, to determine the feasibility and desirability of modified locations. Therefore, specific recommendations for access improvements cannot be made at this time; however, it is evident that the expenditure of funds to improve access to the ARS or modified station locations will be necessary



26350 - AADT

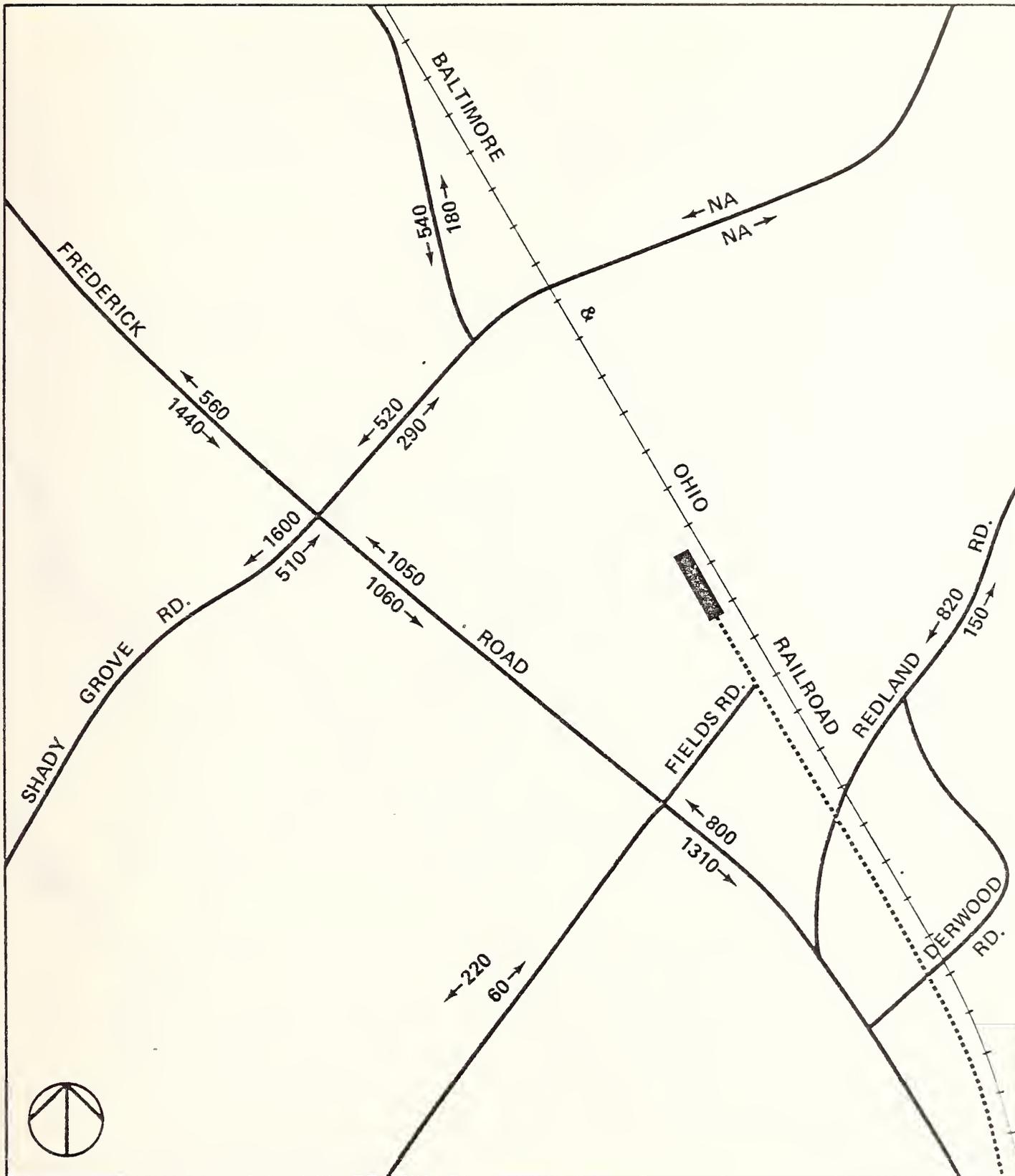
(14210) - Average Daily Traffic Volume (directional)

 STATION PLATFORM

SHADY GROVE ANNUAL
AVERAGE DAILY TRAFFIC

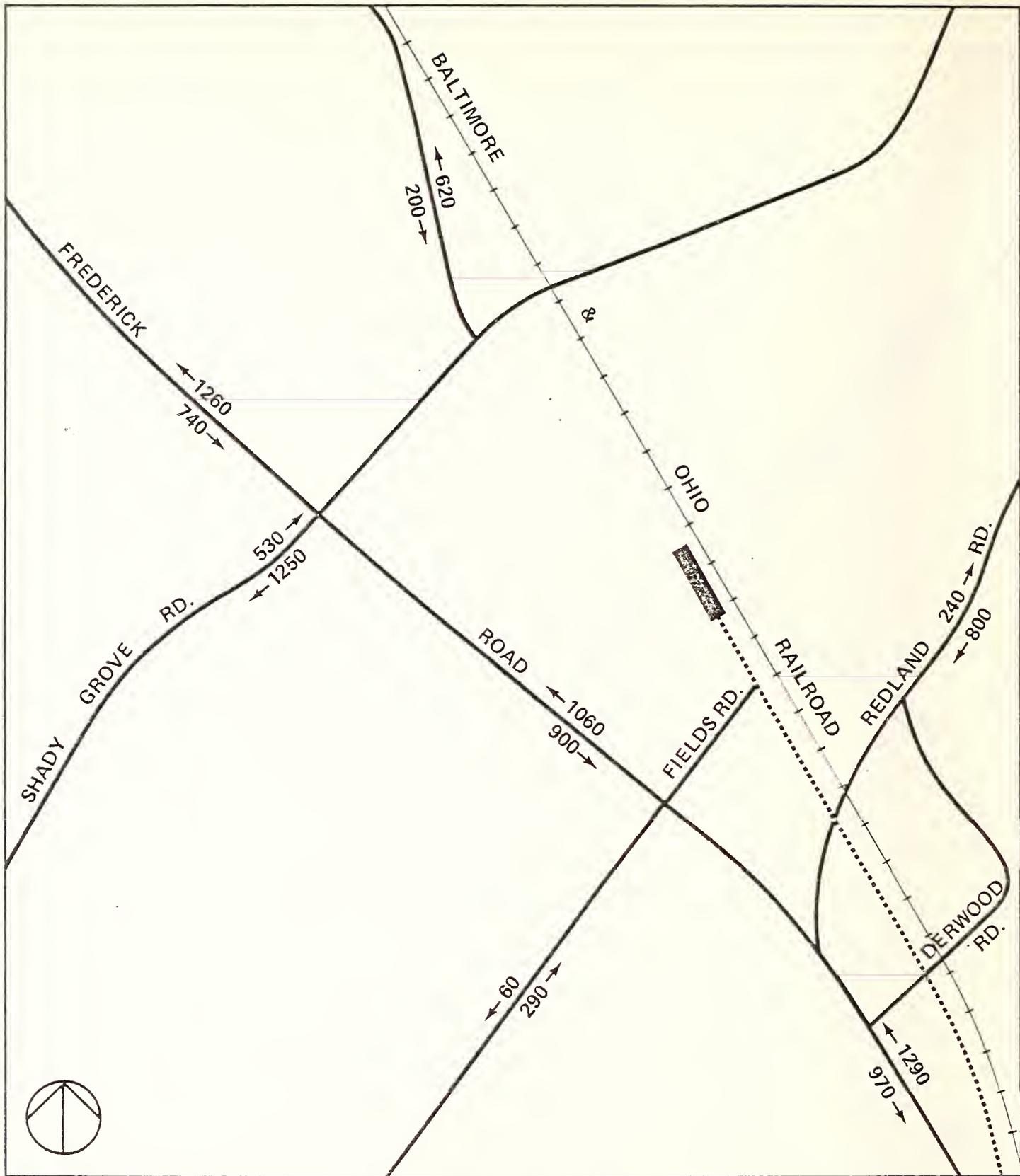
Source:
1. Dept of Transportation Div of Traffic
of Engineering Montgomery County
2. Montgomery County Planning Board





-  STATION PLATFORM
-  ALIGNMENT
-  THRU TRAFFIC

1974 TOTAL PEAK HOUR TRAFFIC VOLUMES (7-8 a.m.)



-  STATION PLATFORM
-  ALIGNMENT
-  THRU TRAFFIC

1974 SHADY GROVE TOTAL PEAK-HOUR TRAFFIC VOLUME (5-6 p.m.)

3.6 Air Quality

An air quality impact analysis was done by Environmental Research & Technology, Inc. The results of this analysis, together with an updated addendum (September 1976) is included in Appendix D of this report.

3.7 Noise and Vibration

The following summary is taken from the full Noise and Vibration Study done by Wilson, Ihrig & Associates, Inc., acoustical consultants to WMATA. The entire Noise and Vibration Study is included in Appendix E of this Report.

Procedures for Evaluating Community Noise Levels

Establishing the existing noise level or noise environment in a community requires measuring the noise at a large number of locations at several different times of day and preferably on several different days and at different times of the year. Community noise is a continually fluctuating entity dependent on many factors. Because the noise level does fluctuate over a relatively wide range, it is necessary to make measurements which are statistically significant and which can be analyzed on a statistical basis.

The community ambient or background noise level is generally the lowest during the evening and nighttime hours and the possibility of intrusion from transit train operations is greatest during this time period. Therefore, design criteria and standards must be based on nighttime operations and noise levels. Any noise and vibration reduction features provided in the transit system facilities are functional at all times but must be designed for the most critical time period in order to accomplish the desired purpose.

Noise measurements made in the past along sections of the Metro system which were under design were made for the purpose of assessing the typical background noise or noise climate of the transit system corridor area to provide a basis for determining the criteria which should be applied in the design of the Metro system structures in order to minimize or avoid intrusion from the system operations. Thus the observations of the ambient community noise level were made primarily during the evening and nighttime hours.

While community noise level data for the evening and nighttime hours are sufficient to establish the design criteria and evaluate the potential impact of the transit system, such measurements are not sufficient for a complete assessment of the community area. In evaluating the community noise levels along the WMATA Metro system alternative routes, a consistent set of procedures and criteria for the evaluation have been requested. Therefore, in each environmental assessment study area along the Metro system alternative routes, noise measurements are being accomplished to give data for all times of day rather than just evening and nighttime hours.

For some types of studies complete 24-hour surveys of the noise level are performed in order to obtain a complete statistical representation of the daily noise exposure in a community area. It has been found, however, that the noise in communities can be characterized adequately by making spot check surveys using at least four characteristic times of day. Because of time limitations and because of the purpose of the noise measurements, the spot check type of survey is being used as the measurement procedure for the Metro system environmental studies.

For the assessments, sound level data are taken at representative selected locations along each of the routes and alternatives. A sufficient number of locations for measurements are selected to be representative of each of the characteristic types of communities adjacent to the proposed transit system routes to provide information on the typical noise environment for each of the community sections along the routes. For the purposes of the assessment studies the characteristic times of day are:

Daytime:	10:00 a.m. to 2:00 p.m.
Rush Hour:	4:00 p.m. to 6:00 p.m.
Evening:	7:00 p.m. to 10:00 p.m.
Nighttime:	11:00 p.m. to 2:00 a.m.

Complete measurement samples are taken at each site for each of the four characteristic times of day. For residential areas the measurements are repeated at least once to demonstrate the consistency and repeatability of the noise data and to assure that the observed noise environment is representative for each site. Most measurements show little variation from day to day, however, this should be checked in each community area. The morning rush hour is not measured because the noise level results would be essentially the same as for the evening rush hour.

Each measurement consists of a 10-minute long continuous sample of noise at the site recorded by means of a calibrated precision magnetic tape recorder and sound level meter. The recordings obtained are later analyzed to obtain the statistical distribution of noise level and other details of the analysis. The tape recordings can be used to obtain spectral analyses of the noise at the sites, such as octave band analyses, and represent a permanent record or documentation of the noise environment at the time of the measurements.

The most frequently used and readily understandable method of describing the noise climate prevailing at a location in a community is derived from statistical analysis of the noise levels in decibels. The factors derived from the analysis are the levels exceeded 90% of the time, 50% of the time, 10% of the time, and 1% of the time, designated L_{90} , L_{50} , L_{10} and L_1 , respectively.

L_{90} is a description of the typical minimum of "residual" background noise level observed during a monitoring period and is normally made up of a summation of a large number of sound sources distant from the measurement position and not recognizable as individual sound sources. Occasional local motor vehicle passbys do not strongly influence L_{90} and it is not intended to describe local traffic or ambient noise. The most prevalent source of this residual background noise is the street and highway traffic but it can also be influenced by stationary sources such as air conditioning equipment.

L_{50} represents the long-term statistical average sound level over the monitoring period and does reveal the long-term influence of local traffic. If many samples of the instantaneous sound level are taken over the monitoring period, 50% of the samples will lie above L_{50} and 50% of the samples will lie below L_{50} .

L_{10} describes the average peak or maximum sound levels occurring, for example, during nearby passbys of trucks, buses, automobiles, or airplanes. Thus, while L_{10} does not describe the long-term noise levels prevailing it does describe the typical maximum noise levels observed at a point and is strongly influenced by the momentary maximum sound level occurring during vehicle passbys.

L_1 is representative of the occasional maximum or peak sound level which occurs in an area.

Because of some inherent deficiencies of the statistical measure in evaluating the noise exposure effects of short duration, high level sounds (such as train, truck or bus passbys), the Energy Equivalent Level has been developed as a convenient and valid single-number descriptor of community noise. Because it is an energy integral over time, L_{EQ} represents the constant or steady sound level which would give the same noise energy level as the fluctuating value integrated over the total time period. Some consider L_{EQ} noise exposure in an area and most new evaluation systems such as the community noise equivalent level, CNEL, or the "Day-Night" average level, L_{DN} , use the energy equivalent concept.

All of the noise levels determined in the community noise measurements and the noise levels projected for the transit system operations are presented in terms of A-weighted sound level in decibels, abbreviated dBA. This measurement scale is used because it has become accepted as the best compromise scale, using frequency weighting which approximates the hearing characteristics of the human ear. The A-weighted sound level shows good correlation of subjective response of people and communities with the measured noise levels. Also, most noise ordinances, standards and specifications are now being written in terms of A-weighted sound level. In some cases the projections have been prepared or calculated in terms of Noise Criterion Level, NC level, because it is necessary to include information on the frequency characteristics of the noise for projection purposes. However, these can be converted to and correlate well with A-weighted sound levels in dBA.

Existing Noise Levels

Prior to the adoption of the Montgomery County Noise Control Ordinance, the sound level data for the community assessment were taken at representative selected locations between July 15, and July 31, 1974 to determine an ambient noise level for the area. WMATA's 1976 review of those levels indicates that the noise level data for the community assessment remains essentially the same.

The location of measurement sites in the assessment are included on Figures 1, 2, and 3 in Appendix E maps of the area showing the proposed Rockville Route. Table I in Appendix E gives a general description of each measurement location. Measurements were made at 36 individual sites along the A Route.

Because most of the proposed alignment parallels either the Rockville Pike or the B&O Railroad tracks, the observed noise levels at many of the measurement locations have been influenced by railroad train passbys and/or heavy vehicular traffic. Review of the data for locations along Segment A017 shows that

the railroad train passbys do not have a significant effect on L_{10} , L_1 and L_{EQ} , but affect L_{50} and L_{90} to a lesser degree. It should be noted that the length and the speed of the railroad train strongly affect the statistical analysis at a measurement position. Thus, L_{10} , L_1 and L_{EQ} can be markedly different even when only a single train passby occurs during the sample period at a position, when compared with the analysis of a sample with no trains.

At points in residential areas away from main thoroughfares, and in the absence of any railroad train passbys, the typical nighttime L_{50} range is 45 to 50 dBA. The quietest areas were found to be at locations 1 and 2 near the proposed Shady Grove Station and in the residential areas near locations 21 and 26 where the mean sound level was 44 dBA.¹

Table III in Appendix E presents the total Energy Equivalent Noise Level, L_{EQ} , in dBA, for the entire data, calculated in the basis of equal contribution for each of the four times of day. For each measurement location, the noises generated by railroad train passbys, if any, were included in the total L_{EQ} calculations. Thus, at the measurement locations near the B&O Railroad, the occurrence of a railroad train passby was random, depending on the exact time a particular sample was made and the time of the passbys. However, neglecting the railroad train passbys from the total L_{EQ} calculation would completely ignore the effect of the railroad trains and give an incorrect impression of the noise environment. Since the surveys were not complete 24-hour surveys, the total L_{EQ} for the day may not be precise due to inappropriate time allotment for the time periods measured, compared to the time period between trains. A complete 24-hour survey would accurately account for the influence of the railroad train passbys throughout the entire day, rather than just during the period sampled. However, the data given is representative for each of the areas at the time of observation and shows the comparison of the total environment at the various locations along the route.

Table III also shows the measured noise levels summarized for the evening and nighttime measurement periods. Since the evening and nighttime are the periods with lower ambient noise and are the periods used for establishing the noise environment appropriate to the criteria for a transit system facility design, the data given provide a basis for categorizing the communities through which the transit system route passes and thereby provide a basis for selecting the appropriate maximum acceptable noise level from train operations and ancillary facilities. This then establishes what noise and vibration reduction features should be included in the transit system facilities.

¹For location of the measurement sites, see Appendix E.

From the noise level data obtained in the course of the survey it is possible to draw approximate contours indicating community noise level ranges for the study area. Figure 5 in Appendix E presents such noise level contour charts for the A017 study area indicating the approximate noise level contours or noise range contours for the community area as determined by the average of the evening and nighttime data, as on Table III.

Figure 11 is statistical distribution plots along the A017 study area showing the detailed statistical distribution in terms of noise level exceedance in percentage of time for the noise levels along different sections of the A017 Segment for the nighttime and evening measurements. The data is shown on a chart indicating the proposed criteria for non-aircraft noise in residential areas as presented by T. J. Schultz in the HUD "Noise Assessment Guidelines, Technical Background", Report TE/NA-172. These charts provide a means of graphically comparing the evening and nighttime ambient noise distributions along different sections of the route. A review of the charts shows that most of the areas are in the normally acceptable range for residential areas. However, some areas near the B&O Railroad tracks are in the normally unacceptable range due to a railroad train passby during the sample period. In the areas where a railroad train passby has influenced the distribution, the noise environment is essentially identical to other areas except for the high sound level portion of the statistical distribution (the upper few percent vs sound level on the percent exceedance charts).

Noise and Vibration Criteria

The appropriate audible noise criteria for the noise created by transit system facilities and operations depend on the activities of the occupants and on the ambient noise level in an area. In general, it is found that persons occupied with various tasks or recreational activities are not aware of an intruding transient or short duration noise until its level is about 10 decibels, dB, greater than the typical background noise. Conversely, it is possible for persons who are quietly sitting and listening to detect an intruding transient sound when it is about 5 dB less level than the background noise. For steady noises, such as ventilation fan noise, intrusion or annoyance occurs when the noise adds significantly to the pre-existing background noise or when the fan noise results in a background noise level which is excessive for the type of area or type of building occupancy.

It is, therefore, necessary to compromise on the maximum noise level criteria for most areas and types of occupancy since there are usually several varieties of activities or occupancy. Also, it is unreasonable in all cases to design for a noise level that is not noticeable or is undetectable. It is more appropriate to design for a level that is acceptable or non-intrusive but which may be audible at some times.

The general purpose of the criteria determined for use in the design of the WMATA Metro facilities is to determine the maximum acceptable noise level from trains on surface or aerial structures, from fan and vent shaft openings or for ground-borne vibration from trains for different types of areas and nearby buildings.

There are five general categories of areas or types of communities where the noise from transit train operations or ancillary facilities could create audible intrusion or impact. Therefore, these areas, indicated in the following Table, are the areas which are considered and categorized in determining or defining the maximum permissible noise levels for Metro system operations.

COMMUNITY CATEGORY AREAS USED IN
ESTABLISHING METRO SYSTEM NOISE
LEVEL CRITERIA (See Pages 20 and
21 in Appendix E)

<u>Area Category</u>	<u>Description</u>	<u>Typical Ambient Noise Levels at Night</u>
I	<u>Quiet</u> urban residential, and suburban residential areas.	35-40 dBA
II	<u>Average</u> urban residential areas, apartments and hotels in quiet areas, open space recreational areas.	40-45 dBA
III	<u>Noisy</u> urban residential or average semi-residential-commercial areas.	45-55 dBA
IV	<u>Commercial</u> areas with office buildings, retail stores, etc., with primarily daytime occupancy. Open space parks and suburban areas near highways or high speed boulevards with distant residential buildings.	Over 55 dBA
V	<u>Industrial</u> or <u>Freeway and Highway Corridors</u> with either residential or commercial areas adjacent.	Over 60 dBA

3.8 Socio-Economic Conditions

General Characteristics

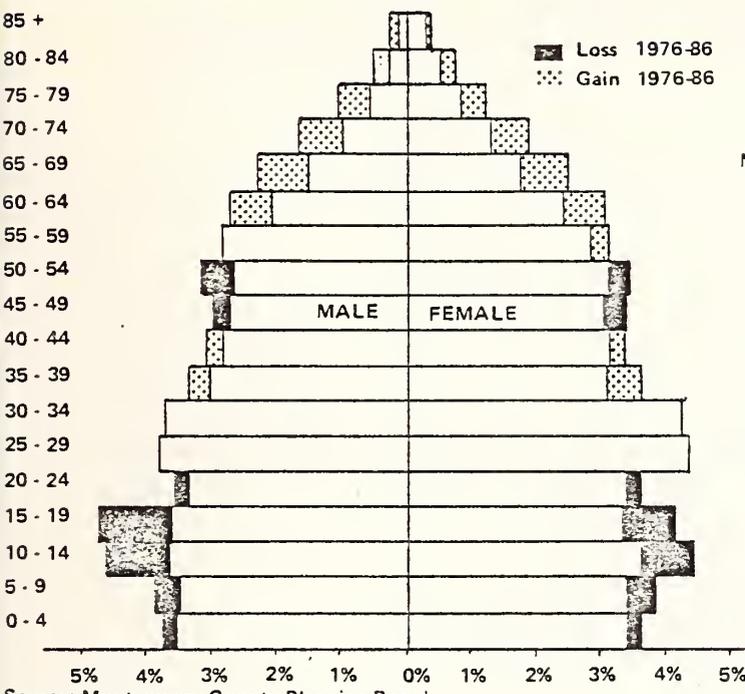
Socio-economic data drawn from the U.S. Bureau of the Census for 1970, the 1976 Growth Policy Report of the Montgomery County Planning Board, and Projections of the Metropolitan Washington Council of Governments indicate that for Montgomery County the rate of growth has been slower in the '70s than in the '60s or '50s. However, the number of households is growing faster than the population as the number of people per household decreases. Furthermore, the relative number of young children is declining and the median age of the County's population is increasing. This trend is predicted to continue. Between 1976 and 1986 Montgomery County should experience a decline in the number of children 5-9 years old and a small increase in the number under 5 years old through 1981, and a subsequent increase by 1986. Between 1976 and 1986 Montgomery County can expect the number of people over 65 to increase 75%. In general the entire population of the County is increasing in age. In 1970, the median age of the County's residents was 27.9; by 1986 it will advance to 33.4. (See "Changes in Population Age Profile 1960-1970" and "Comparison of Population Structure 1970-1986".)

Since the middle '60s the black population of the County has been increasing. This is due largely to the fact that fair housing legislation has made it possible for many black families to exercise the same kinds of housing choices as white families.

Montgomery County has enjoyed high average family incomes for several decades. In 1970 the County's median family income was the highest in both the region and the nation. Since 1969 the number of families earning more than \$25,000 has more than doubled. At the same time the number earning less than \$12,000 was almost halved. (See "Montgomery County: Estimated Family Income 1969-77".) As a result of this shift, median family income in 1972 was \$22,000, in contrast with \$16,700 in 1969, a rate of change more than double the rate of inflation. This relative affluence is largely due to the significant proportion of the labor force working in professional and managerial occupations and to the very large number of families with more than one income producer.

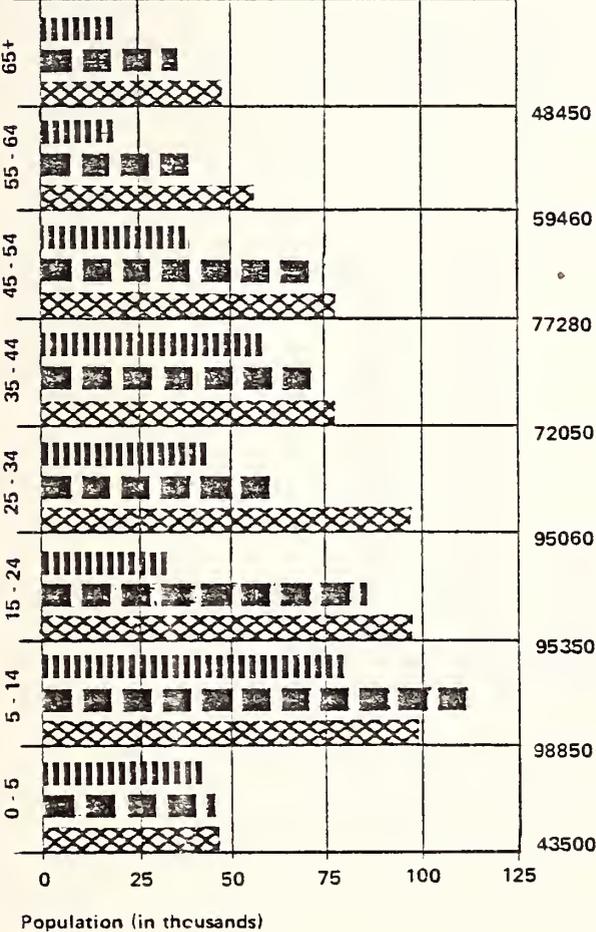
As disposable income rises the County's housing goes up in price. In Montgomery County, housing does not filter down from the more affluent to the less affluent. Instead, used housing trends to be upgrade, especially as the population becomes more affluent. Consequently, there is a serious and growing deficit in low and moderate income housing. It is therefore imperative that Metro construction not disrupt the existing low and moderate income communities adjacent to the

**COMPARISON OF POPULATION STRUCTURE
MONTGOMERY COUNTY, 1976-1986**



Source: Montgomery County Planning Board

**CHANGES IN POPULATION AGE
PROFILE, MONTGOMERY COUNTY,
1960-1976**



Source: Montgomery County Planning Board

**DISTRIBUTION OF COUNTY FORECAST
AREA POPULATION BY AGE: 1970**

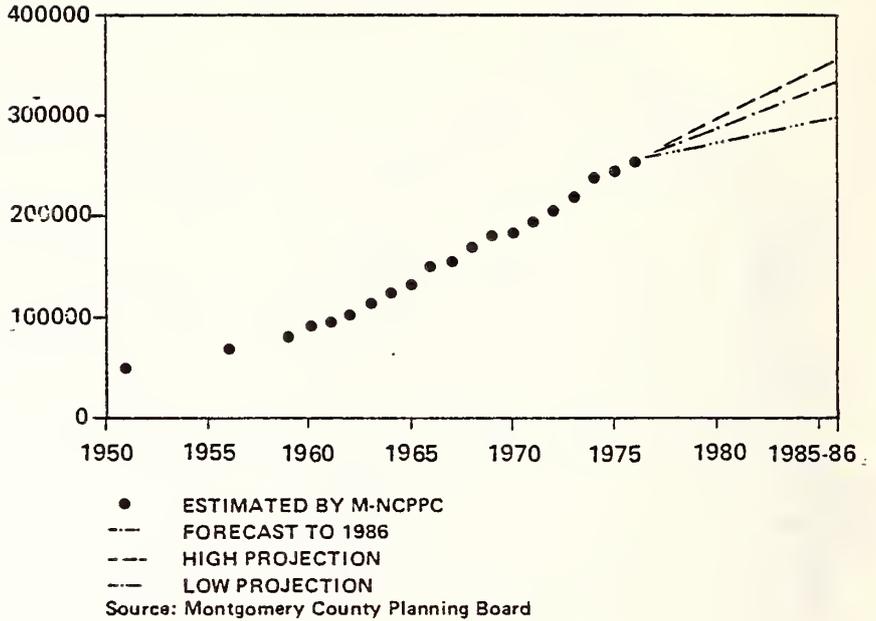
(Figures are in Percent)

	UNDER 5 YRS	5 - 14 YRS	15 - 24 YRS	25 - 44 YRS	45 - 54 YRS	55 - 64 YRS	65+ YRS
MONTGOMERY COUNTY	8.2	21.6	16.1	26.7	13.3	7.8	6.3
COLESVILLE	7.8	23.5	15.9	27.2	14.0	6.9	4.7
URBAN RING	8.0	20.5	16.4	26.2	13.6	8.5	6.8
POOLESVILLE	8.0	24.4	16.8	23.6	11.4	8.2	7.6
POTOMAC	8.5	28.9	13.1	28.1	13.9	4.7	2.8
DAMASCUS	9.0	25.4	14.5	27.0	10.5	7.3	6.3
OLNEY	9.6	26.0	13.2	27.8	11.4	6.8	6.2
I-270 CORRIDOR	11.9	21.7	16.7	31.5	9.2	4.6	4.4

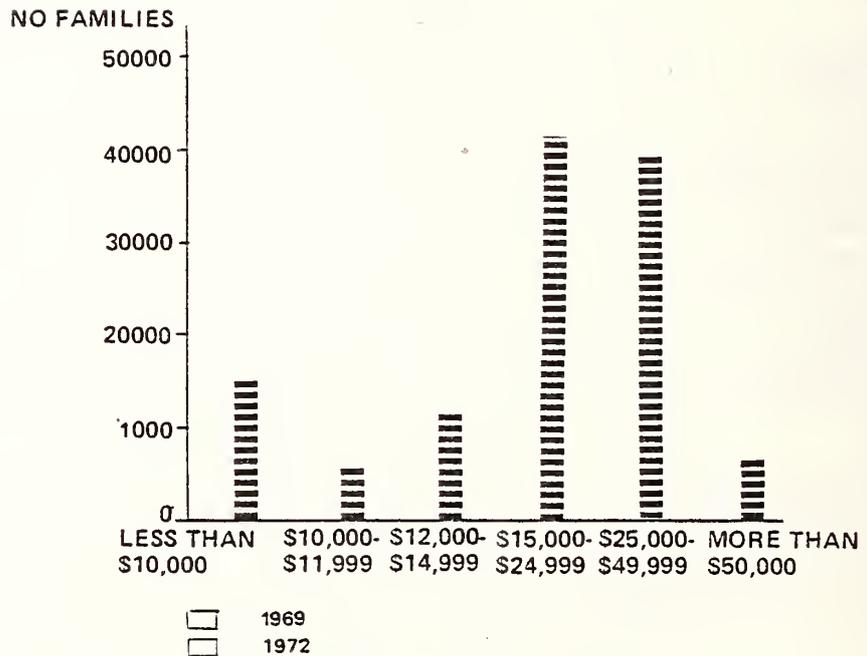
CUMULATIVE PERCENT (X-axis): 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source: U.S. Census, MCPB

AT-PLACE EMPLOYMENT MONTGOMERY COUNTY 1951 - 1986



MONTGOMERY COUNTY ESTIMATED FAMILY INCOME



Growth of Non-Agricultural At-Place Employment , Washington SMSA and Montgomery County, 1950, 1960, 1970, 1974 (in thousands)

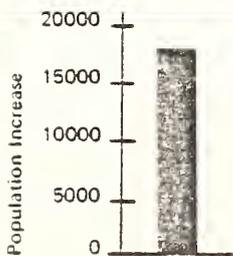
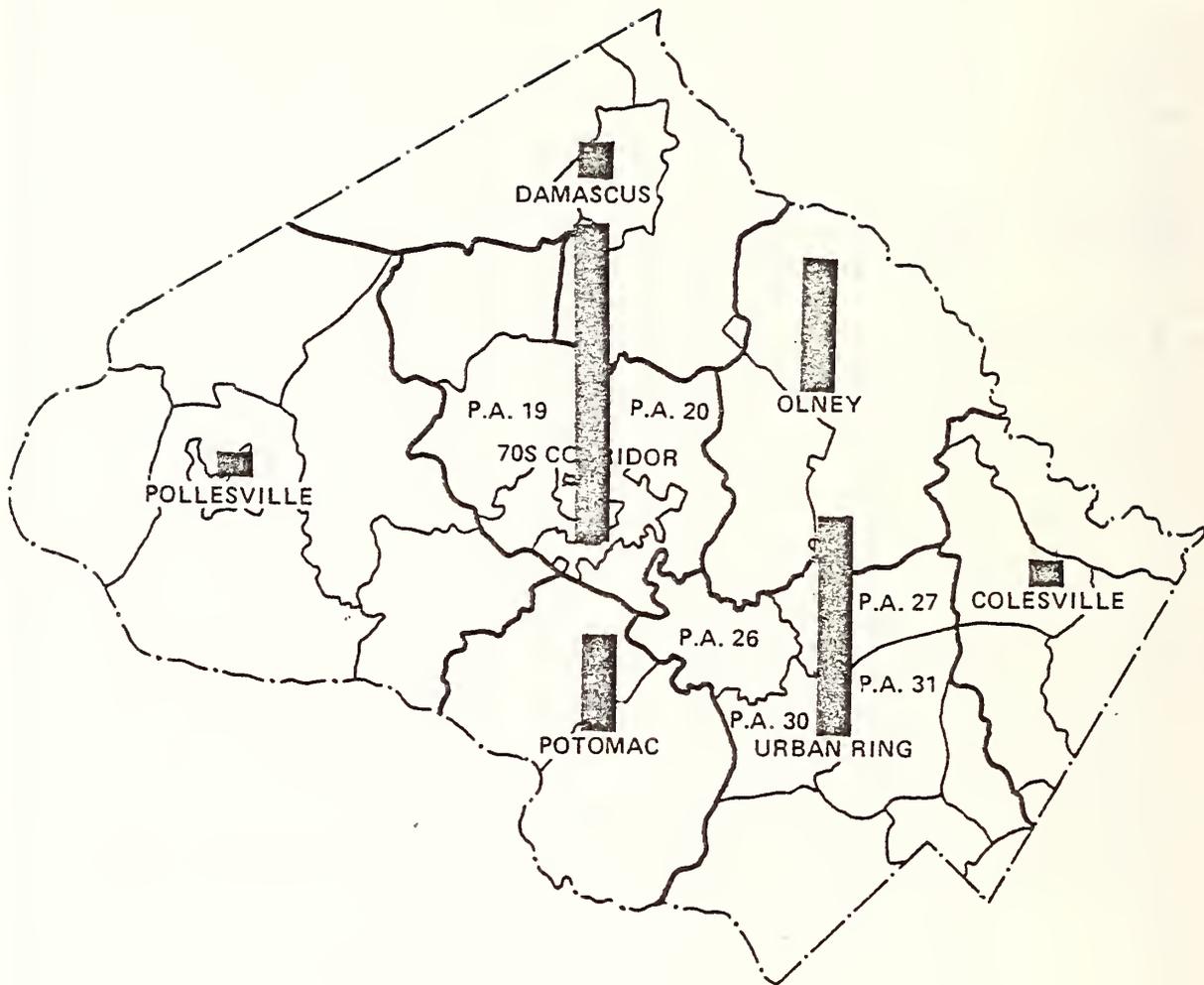
Industry	Washington SMSA					Montgomery County				
	1950	1960	1970	1974	% Increase 1950-74	1950	1960	1970	1976	% Increase 1950-76
Construction	39.6	50.0	68.7	88.7	224.0	3.7	8.2	14.3	16.7	386.5
Manufacturing	25.4	34.8	43.6	48.6	191.3	1.8	4.9	9.5	9.4	527.8
Transportation, Communication & Public Utilities	40.0	44.4	60.3	66.5	166.3	0.7	1.4	4.1	6.5	585.7
Wholesale Trade	20.3	26.7	39.2	42.4	208.9	0.2	1.5	4.2	6.5	210.0
Retail Trade	94.6	29.5	187.9	205.2	216.9	5.6	14.5	36.3	42.7	648.2
Finance, Insur- ance & Real Estate	30.1	40.7	68.4	79.2	263.1	1.0	3.9	13.0	16.6	130.0
Services	81.3	36.5	252.2	300.5	369.6	8.1*	23.3*	53.4	64.9	659.3
Federal Gov't	227.4	236.2	316.2	337.3	148.3	9.9	19.1	36.6	52.7	369.7
State and Local Gov't	32.8	54.5	119.7	155.8	475.0	3.7	9.3	18.0	21.4	486.5
TOTAL	591.5	744.3	1156.5	1324.2	223.9	34.7	86.2	191.8	237.4	552.7

*Includes services, self-employed and private household workers.

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings, States and Areas, 1939-1970. Bulletin 1370-8.* 1971.

The Maryland-National Capital Park and Planning Commission, *Factors Influencing Development, Montgomery County*, December 1969.

The 1970 data for Montgomery County were compiled from various sources including the Employment Security Administration, Department of Employment and Social Services, State of Maryland, December 1971.



POPULATION INCREASE BY GROWTH FORECAST AREAS
MONTGOMERY COUNTY 1970-1976

Source: Montgomery County Planning Board Staff



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the corridor as these cannot be replaced through the normal operations of the private housing market or via presently inadequate public subsidy or construction programs.

Over 50% of County residents work in the County, and there are almost as many job opportunities in the County as there are residents in the labor force. (See "Employment and Commuting in Montgomery County 1960-1970".) It is expected that the County labor force will grow much faster than the population over the next ten years. From 1970-1976, an average of 12,000 additional jobs per year located in the County, representing a growth rate of 5.7% per year. If present trends continue, the average annual number of at-place jobs will increase by 8,300 between 1976 and 1981, and by 7,700 between 1981 and 1986. In this period the County will capture approximately 19% of the employment growth in the SMSA.

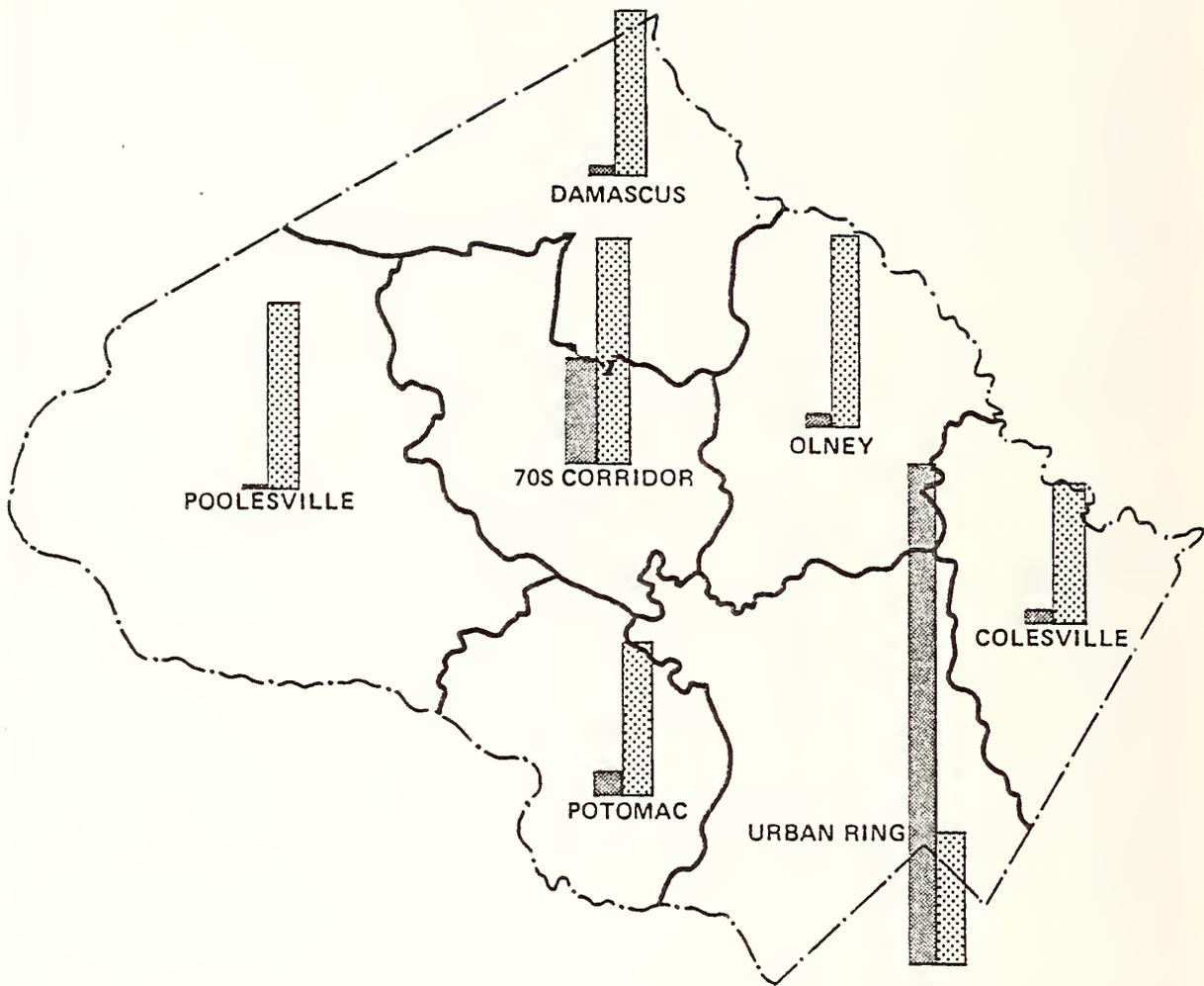
The 70-S Corridor, which encompasses the area surrounding the A017 Segment, accounted for 53% of the County's increase in population during the 1970-1976 period.

Forecast ¹ Area	Population 1970	Estimated Population 1976	Change 1970- 76 Number/ Percent	Percent Share of County Growth
70-S Corridor	26,936	62,300	35,364/231%	53%
Total County	552,809	590,000	67,191/113%	

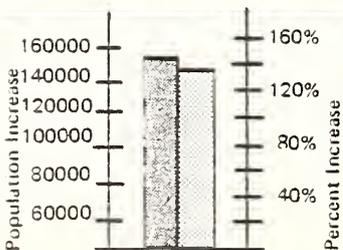
The 70-S Corridor's age distribution is younger, with more pre-school children than the population in the County at large. (See "Distribution of County Forecast Area Population by Age".)

It is anticipated that the 70-S Corridor will experience more growth during 1976-1986 than any other forecast area within Montgomery County. (See "Population Increase, Montgomery County 1976-1986 by Forecast Area".) The 70-S Corridor will account for 47% of the County's population growth during this period.

¹Source: Population estimated by staff of Montgomery County Planning Board; except 1970 which is U.S. Census figure.



POPULATION INCREASE BY FORECAST AREAS & AS A PERCENT OF EXISTING POPULATION MONTGOMERY COUNTY 1976-1986



Source: Montgomery County Planning Board Staff



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Forecast ¹ Area	Estimated Population 1986	Estimated Change Number	1976-86 Percent	Percent Share County Growth	
				1960-70	1976-85
70-S Corridor	108,300	46,000	174%	8.3	47%
Total County	687,000	97,000	116%	100%	100%

Date for 1970-1976 shows that 34,656 dwelling units were built in the County. The 70-S Corridor accounted for 35.0 percent of the activity.

The 70-S Corridor is projected to have most of the sewerred and vacant land available for development in Montgomery County during the 1970's. This is expected to encourage a rapid growth rate and accompanying building activity. Another attractive characteristic of this area which will probably be an inducement for development is that the area contains ample multi-family zoning.

Community Characteristics

The foregoing discussion of the socio-economic context of the proposed end of the "A" Route must now be narrowed so as to focus more specifically on the areas adjacent to the proposed A017 Segment alternatives. Socio-economic data from the U.S. Bureau of the Census for 1970 has been utilized to evaluate existing population and housing characteristics for the corridor under study.

This is the most current information available for the alignment corridor; while 1970 Census figures have been updated to 1974 for political jurisdictions in the Washington Metropolitan Area. They have not been revised for tracts within jurisdictions. Data for socio-economic projections have been taken from the forecasts made to 1995 by the Metropolitan Council of Governments for Transportation Zones along the Corridor.

The study area which includes five census tracts is shown on the Census Tract map included in this Section. Summary data describing existing income characteristics, housing types, rental and ownership distribution, age groups and racial composition is found on tables included in this Section.

Census data indicates that the study area has a higher proportion of children (under 18 years) and a lower proportion of elderly than either the region or the District. Data further indicates

¹Source: Population estimated by staff of Montgomery County Planning Board; except 1970 is U.S. Census figure.

Income Characteristics for Census Tracts Adjoining the A017 Segment

	No. Families	No. Families Earning Less than \$12,000	No. Families Earning More than \$25,000	Median Family Income
7010.04 *	261	99	—	\$14,423
7012.08	310	80	42	\$14,557
7007.05	728	430	69	\$11,108
7007.04	791	217	48	\$15,374
7007.03	1,165	174	135	\$17,492
Total Montgomery County				\$16,710
Washington, D.C.				\$ 9,583
Washington SMSA				\$12,933

*Census tract 7010.04 is included in both the A014-A016 Environmental Impact Report and the A017 Environmental Impact Report because the A016 and A017 Segments of the "A" Route overlap.

Source: U.S. Census.

Comparison of Population and Housing Characteristics for Census Tracts Adjoining the A017 Segment and Washington, D.C., and Washington SMSA for 1970

Race and Age	Total Population	Percent of Total Population			
		Negro	In Group Quarters	Under 18	62 Years and Over
Washington, D.C.	756,510	71	5	30	12
Washington SMSA	2,861,123	26	3	35	8
7010.04 *	6,556	1	—	46	2
7012.08	1,349	4	—	44	5
7007.05	2,719	—	—	36	5
7007.04	2,881	1	—	37	4
7007.03	4,785	1	—	47	3

*Census tract 7010.04 is included in both the A014-A016 Environmental Impact Report and the A017 Environmental Impact Report because the A016 and A017 Segments of the "A" Route overlap.

Source: U.S. Census.

Housing Characteristics in Vicinity of A017 Segment by Census Tracts

Census Tract	Total Year Round Housing Units	Average Value Owner Occupied Unit (\$)	Average Contract Rent, Renter Oc- cupied Unit (\$)	Lacking Some or All Plumbing Facilities	1.01 if More Persons/Room Total
7010.04 *	1,739	40,400	233	2	17
7012.08	342	38,300	101	30	19
7007.05	918	32,300	118	6	52
7007.04	886	31,200	157	3	46
7007.03	1,211	36,900	203	6	15

*Census tract 7010.04 is included in both the A014-A016 Environmental Impact Report and the A017 Environmental Impact Report because the A016 and A017 Segments of the "A" Route overlap.

Source: U.S. Census, 1970.

Comparison of Population and Housing Characteristics for Census Tracts Adjoining the A017 Segment and Washington, D.C., and Washington SMSA for 1970

Housing Units

	Total Year Round Housing Units	No. One Unit Structures	No. Structures of Ten or More Units	No. One Person Households
Washington, D.C.	278,374	102,110	104,042	84,239
Washington SMSA	937,518	376,882	NA	NA
7010.04*	1,739	1,384	112	70
7012.08	342	329	-	16
7007.05	918	356	462	118
7007.04	886	565	127	98
7007.03	1,211	1,018	128	47

*Census tract 7010.04 is included in both the A014-A016 Environmental Impact Report and the A017 Environmental Impact Report because the A016 and A017 Segments of the "A" Route overlap.

Source: U.S. Census 1970.

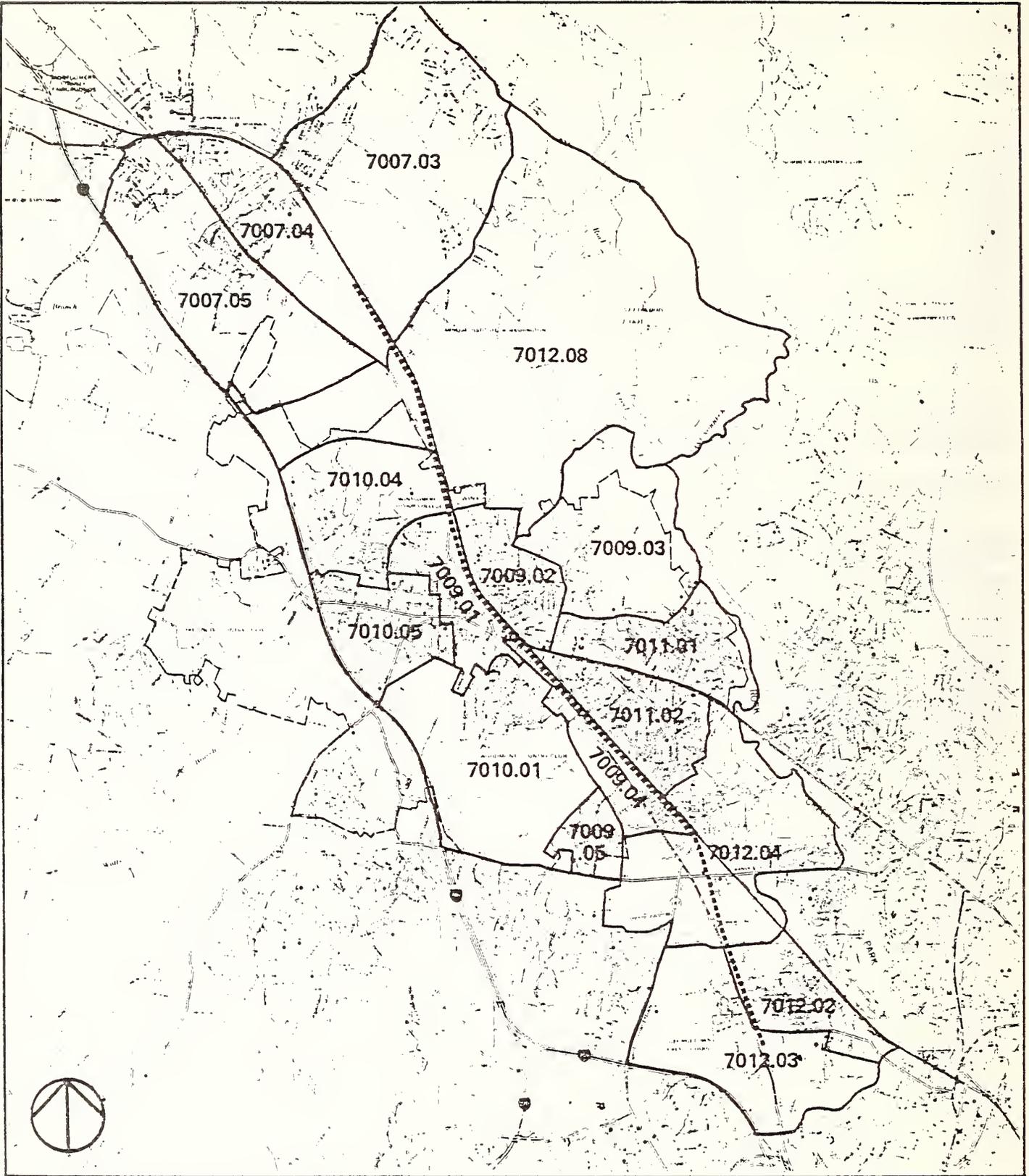
Comparison of Population and Housing Characteristics for Census Tracts Adjoining the A017 Segment and Washington, D.C., and Washington SMSA for 1970

Owner and Renter Occupied Units

Census Tract	OWNER OCCUPIED			RENTER OCCUPIED		
	Total	Average Value (\$)	% Negro	Total	Average Cont. Rent (\$)	% Negro
Washington, D.C.	73,980	26,500	61	188,558	123	63
Washington SMSA	413,262	NA	15	484,870	142	34
7010.04*	906	40,400	1	773	233	2
7012.08	263	38,300	5	72	101	4
7007.05	285	32,300	-	609	118	-
7007.04	509	31,200	-	367	157	1
7007.03	898	36,900	1	273	203	3

*Census tract 7010.04 is included in both the A014-A016 Environmental Impact Report and the A017 Environmental Impact Report because the A016 and A017 Segments of the "A" Route overlap.

Source: U.S. Census 1970.



-  Census tract boundary
-  Rockville corporate boundary
-  Alignment

CENSUS TRACTS

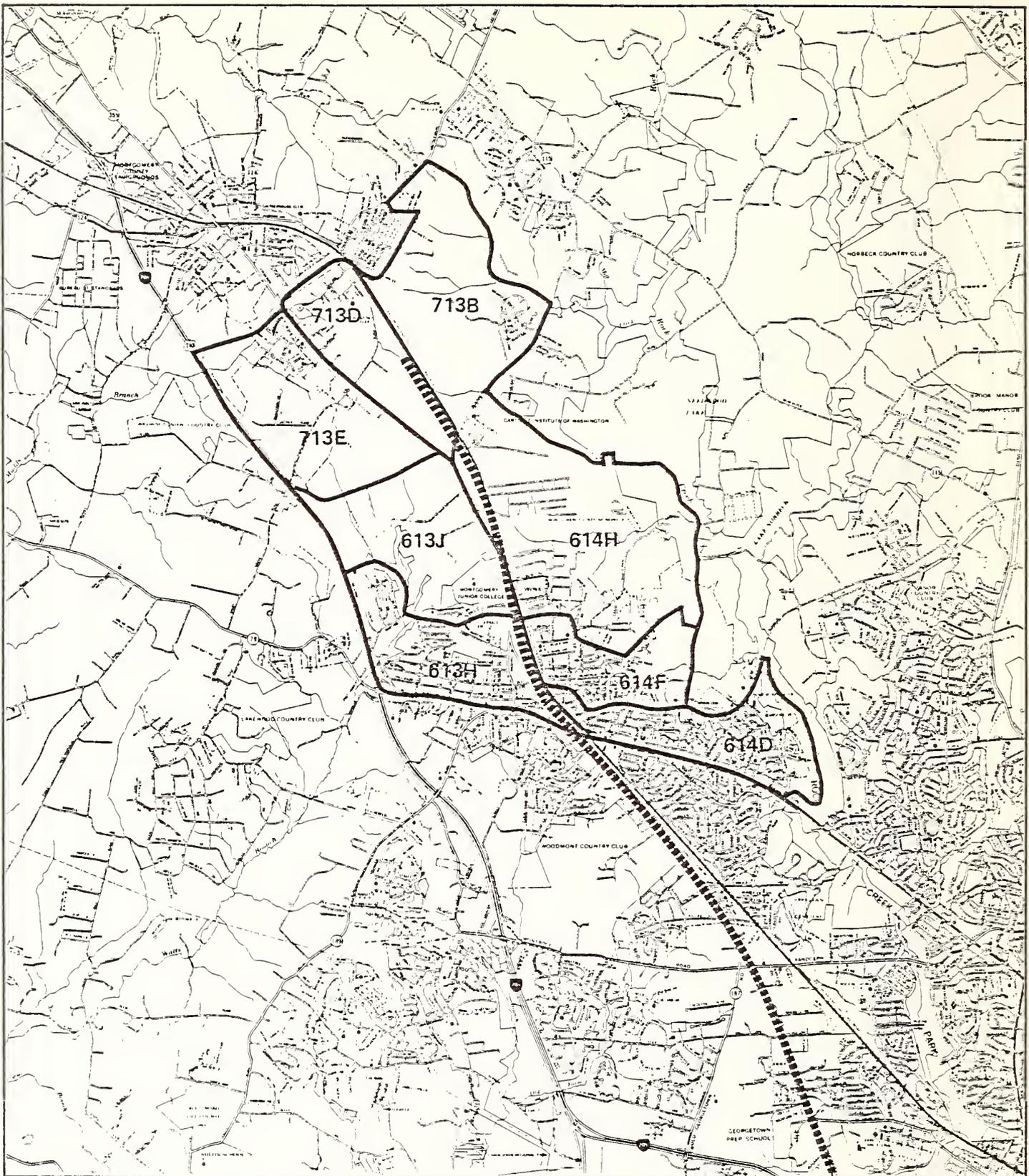


Forecasts for 1980, 1985, 1990 and 1995 for Transportation Zones in Vicinity of A017 Segment

Zone	Population				Employment*				Households						
	1980	1985	1990	1995	% Increase 1980-1995	1980	1985	1990	1995	% Increase 1980-1995	1980	1985	1990	1995	% Increase 1980-1995
613H	7100	7100	6900	6800	96	4700	5600	6400	7400	157	2500	2500	2500	2500	100
613J	1600	2200	2100	2100	131	1000	1300	1500	1700	170	600	800	800	800	133
614D	5200	5000	5000	4900	94	1000	1000	1100	1100	110	1500	1500	1600	1600	107
614F	1700	1600	1800	1700	100	200	200	200	200	100	500	500	500	600	120
614H	1400	2500	3000	3200	229	4000	4100	4300	4600	115	400	800	900	1100	275
713B	2700	3000	3800	4300	159	300	300	300	400	133	900	1100	1400	1600	178
713D	1600	1600	1900	2000	125	1200	1300	1400	1500	125	500	600	700	800	160
713E	2600	2900	3200	3500	135	3500	3800	4100	4500	129	500	500	600	600	120
TOTAL	23,900	25,900	27,700	28,500	119	15,100	17,800	19,300	21,400	142	7600	8300	9000	9600	126

* Total Non-Agricultural At-Place Employment

Source: Washington Metropolitan Council of Governments, November 18, 1976.



 Traffic analysis zone boundary

 Alignment

TRAFFIC ANALYSIS ZONES

Source: 1. Metropolitan Washington Council of Governments - 1977



that the area has a very small black population, a condition that will most likely change as job and housing opportunities in the area increase over the next ten years. The median income of the study area is lower than the median for the County, as a whole, but by comparison with the region and the District, the study area enjoys a relatively high median income.

Housing in the study area consists of 71.7% one-unit structures as compared to 40.2% regionally and 36.7% one-unit structures in the District. The number of one-person households is significantly lower than in the District - 6.8% as opposed to 30.3%. Owner-occupied housing units average \$35,820. In general, contract rents are higher than those in either the region or the District, with tract 7012.08 and 7007.05 as exceptions. As for substandard or overcrowded units, proportionately few units in the study area are either substandard or overcrowded by Census definition.

Socio-economic projections for the Study area were provided by the Washington Council of Governments for Transportation Zones as shown.

The forecast indicates that in the Rockville area population is expected to increase by 120% by 1995. The areas showing the most significantly projected growth is located east of the alignment between Rockville and Shady Grove. Two zones in Rockville are forecasted to lose population by 1995.

Increases in the number of households in the corridor area suggest a change in population age structure. In the Rockville area, the number of households is expected to increase or remain the same in all zones, while population is expected to decline in all but one. Shady Grove is expected to experience a 158% increase in the number of households, and the area west of the corridor between Rockville and Shady Grove a 275% increase. These projections are consistently higher than those forecasted for population growth, suggesting the immigration of childless couples and establishment of single member households.

Employment forecasts show the greatest increases in at-place employment in the Rockville portion of the corridor area. Some growth is expected in the Shady Grove area as well. The rate of at-place employment growth, however, only exceeds population growth rate in two zones in Rockville, indicating that most of the new population will be working outside the corridor area.

Civic Associations and Citizen Interest as Reflected by Mayor and Council of Rockville

In the corridor under study, civic associations are usually organized by residential area development, as indicated by the Civic Associations map. For example, three civic associations close to the proposed Shady Grove alternative are the Rosemont Citizen's Association, the Parkside Estates Civic Association, and the Washington Grove Citizen's Action Committee.

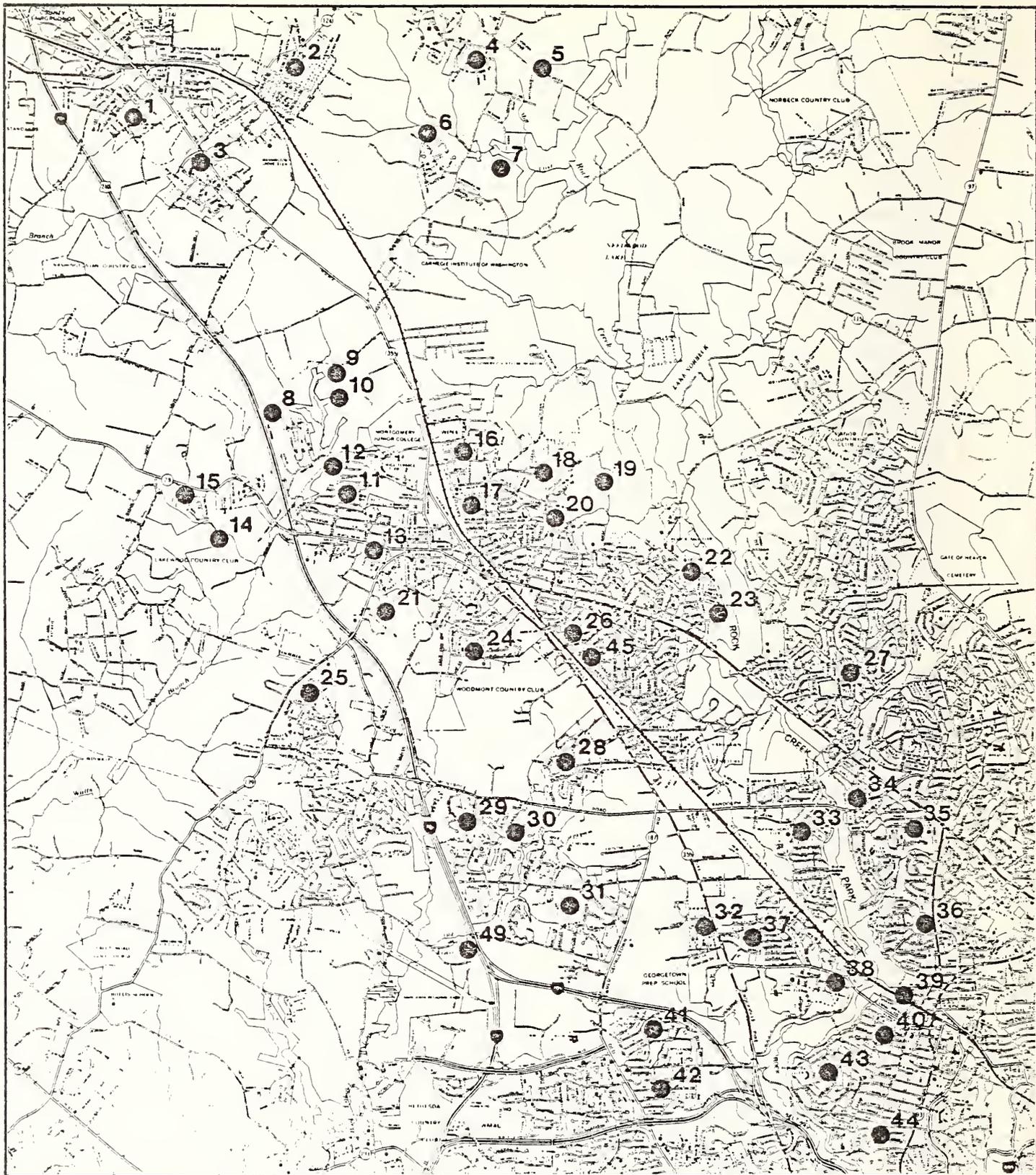
The Progressive Citizen's Association, in the City of Rockville on the east side of the B&O tracks and the proposed Metro alignment, is particularly concerned with the impact the Shady Grove extension will have on the community of Lincoln Park, which it represents. Lincoln Park is primarily a lower-middle income black community whose access to the Rockville CBD is by way of Park Road, Frederick Avenue, Westmore Road and Gude Drive. The Progressive Citizen's Association is concerned that, should Frederick Avenue and Westmore Road be closed by the Metro extension, Lincoln Park would be isolated from the rest of Rockville, especially from the Rockville business district.

Despite the reservations of the Progressive Community Association, the majority of Rockville residents, as represented by the Mayor and Council of Rockville, favor the Rockville Route extension, specifically favoring an extension to Shady Grove. The Mayor and Council of the City of Rockville issued a position paper in November of 1973 which voiced concern over the location of an S&I Yard and a terminal station in Rockville. The City of Rockville insists that locating an S&I Yard in downtown Rockville would be contrary to the City's efforts to upgrade the downtown; would create excessive noise and air pollution; and would deny the City prime taxable land. As to the location of a terminal in Rockville, the City's position is that it would create intolerable congestion in the downtown area as well as excessive parking demands. Consequently, the City favors moving the terminal station to a site north of Rockville to relieve the traffic and parking problems that would otherwise be caused by channeling up-County demand for Metro into a cramped downtown site. The City also favors moving the S&I Yard to a site north of Rockville to avoid a land use conflict in the downtown, to remove the adverse environmental and aesthetic impact on the downtown; and to retain 27 acres of prime taxable land. The City of Rockville further recommends that the S&I Yard and terminal station be located at Shady Grove as this location is compatible with surrounding land use proposals; land is available in sufficient quantity for Metro facilities; and there will be good access to the site.

Citizen interest is also reflected via the Citizen's Advisory Committee for the Shady Grove Sector Plan which was established to assist the Montgomery County Planning Board and staff in the preparation of the Shady Grove Sector Plan. The Maryland Department of Transportation, which is making an access study of the Shady Grove site as part of its general access study of other station sites in the County, will use the same Citizen's Advisory Committee to satisfy Federal requirements for citizen participation. The access study is coordinated with the Montgomery County Planning Board's Impact and Sector Plan studies which are presently under way for the Shady Grove area.

CIVIC ASSOCIATIONS

1. Summit Hall Committee Association
2. Washington Grove Citizens Action Committee
3. Rosemont Citizens Association
4. Horizon's Condominium Homeowners Association
5. Winter's Run Civic Association
6. Parkside Estates Civic Association
7. Needwood Civic Association
8. Woodley Gardens Civic Association
9. College Gardens Civic Association
10. Federation of Civic Associations
11. Regents Square Homeowners Association
12. Woodley Gardens E.W. Homeowners Association
13. West End Citizens Association
14. Rockshire Civic Association
15. Glenora Hills Citizens Association
16. Progressive Citizens Association
17. East Rockville Civic Association
18. David Scull Court Citizens Association
19. Rock Creek Manor Citizens Association
20. Burgundy Estates Civic Association
21. New Mark Commons Homeowners Association
22. Twinbrook Citizens Association
23. Twinbrook Forest Condominium Association
24. Hungerford-Stoneridge Civic Association
25. Potomac Woods Civic Association
26. Rock Creek Citizens Association
27. Wheaton Woods Citizens Association
28. Montrose Civic Association
29. Walnut Woods Citizens Association
30. Tilden Woods Citizens Association
31. Luxmanor Citizens Association
32. Wickford Citizens Association
33. Randolph Citizens Association
34. Viers Mill Village Citizens Association
35. Holiday Park Citizens Association
36. Rock Creek Palisades Citizens Association
37. Garrett Park Estates Citizens Association
38. Garrett Park Citizens Association
39. Ken Gar Civic Association
40. West Kensington Civic Association
41. Wildwood Manor Citizens Association
42. South Grosvenor Citizens Association
43. Parkwood Citizens Association
44. Byeford Civic Association—Rock Creek Highland
45. Rock Creek Coalition
46. Mid-County Civic Alliance
47. North Bethesda Congress of Civic Associations
48. Montgomery County Civic Federation
49. Grosvenor Park Condominium Association



● Approximate location

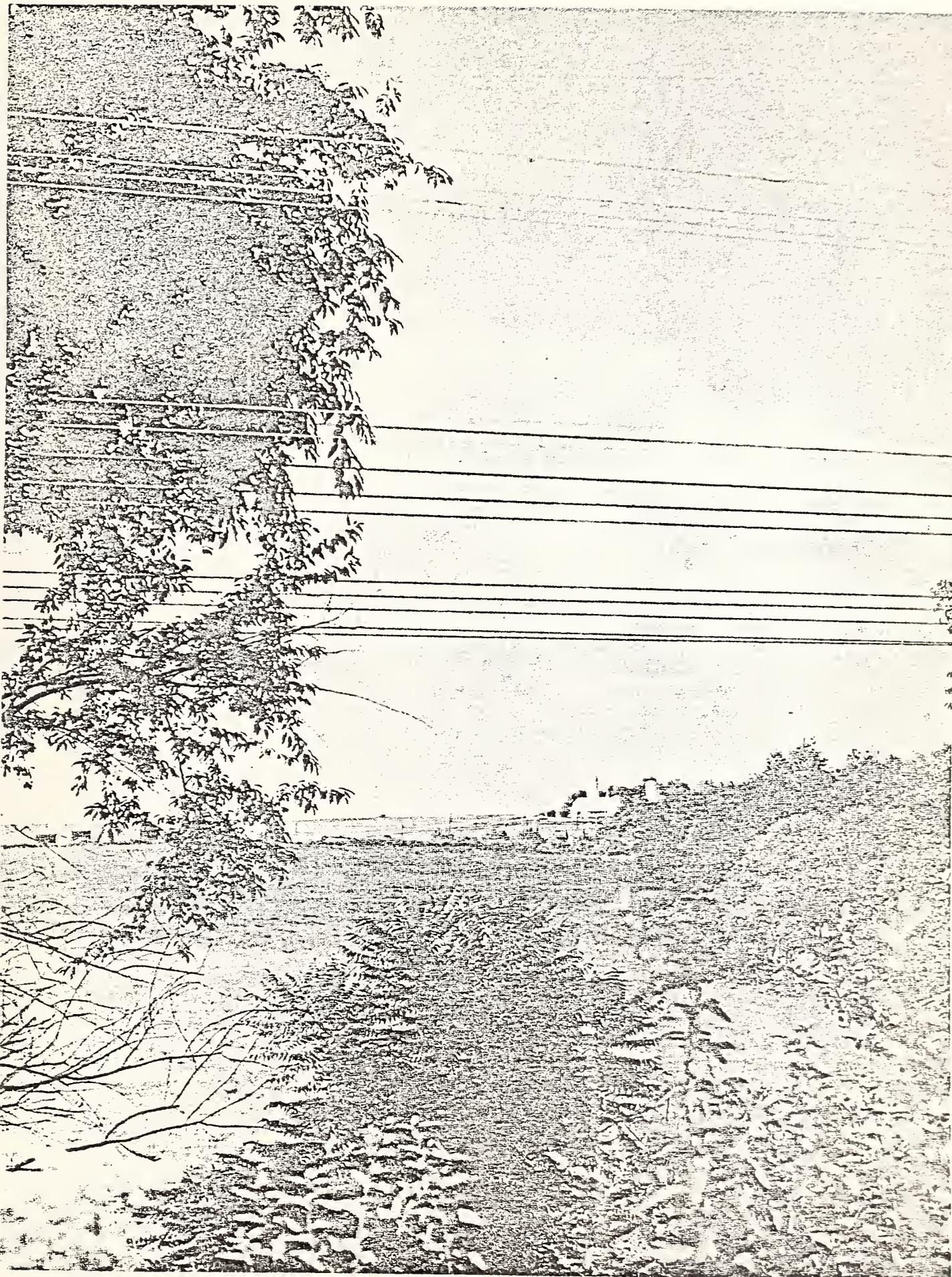
CIVIC ASSOCIATIONS

Source: 1. Maryland-Nat'l Capital Park & Planning Comm. 1977
 2. City of Rockville



metro

REVISED



SHADY GROVE SITE
115

4. DESCRIPTION OF THE PROPOSED ACTION AND ITS ALTERNATIVES

A terminus for the 'A' Route requires sufficient vacant or easily cleared land for parking lots and a Service and Inspection Yard with its associated sidings, turning loops and other facilities. Access to the station from outlying areas should be good and space for parking should be ample.

Over the years since the Adopted Regional System (ARS-68) set Rockville as the terminus of Route A, development in, planning, and terminal design improvements made the inadequacy of Rockville as an end-point for the Metro Route evident. The City of Rockville and the County were especially concerned about the effects on the town center of thousands of daily commuter trips to the terminal. The proposed location of the S&I Yard was being occupied by development, and the city government objected to the presence of a rail yard in the downtown area.

It was resolved that, if suitable land could be found along the B&O tracks north of Rockville and south of Washington Grove, a proposal to extend the 'A' Route to a more northerly terminus would be examined and proposed.

Potential sites for the facility exist north of Gude Drive, where it crosses the railroad, and north of Fields Road, where it crosses the railroad. At Gude Drive, there is room for parking lots and S&I Yard on the east side of the B&O, on lands of the A. Gude Nursery. At Shady Grove, north of Fields Road and south of Shady Grove Road, there is ample space on either the east or west sides of the B&O.

Because of disruption to the nursery and inferior access at Gude Drive and because of a firm decision by Montgomery County to develop the east-of-the-tracks side at Shady Grove as a Service Park, attention was concentrated on the west side location for the S&I Yard at Shady Grove (proposed action) after the Preliminary Evaluation described in Chapter 5 of this Report recommended that Gude Drive be dropped from consideration.

The extension of Metro Route A beyond Rockville to the vicinity of Shady Grove Road is intended to improve the operational efficiency of the transit line, to improve access to the terminal station, and to relieve Rockville of both the traffic generated by a terminal station and the presence of a rail yard near the heart of the City. A location for the terminal, parking areas, and Service and Inspection Yard was found near the Baltimore and Ohio Railroad, on industrially zoned land, some 2.7 miles north of the proposed Rockville Metro Station (Rockville ARS Station).

The site permits a flexibility of design and access that would be impossible in downtown Rockville. As the site is presently in pasture, herbaceous oldfield (perennial grasses and weeds) or hedgerows, and occupies the headwaters of Crabb's Branch, the impact of rail yard and parking lot on natural systems is considerable. Construction will require careful management to prevent or mitigate harmful effects on land, soil, air, plants, and especially water.

On the other hand, there is space for ponds to detain and settle runoff from paved areas and there is room for trees and plantings to soften the effects of the station. Because of their location at the upper end of the Crabb's Branch drainage basin, the yard and parking lots will occupy level to gently sloping land rather than the steeper, more dissected terrain typical of the middle and lower parts of drainage basins in the Piedmont.

A detailed discussion of environmental considerations relative to the proposal and its alternatives follows their descriptions.

4.1 Description of the Proposed Action

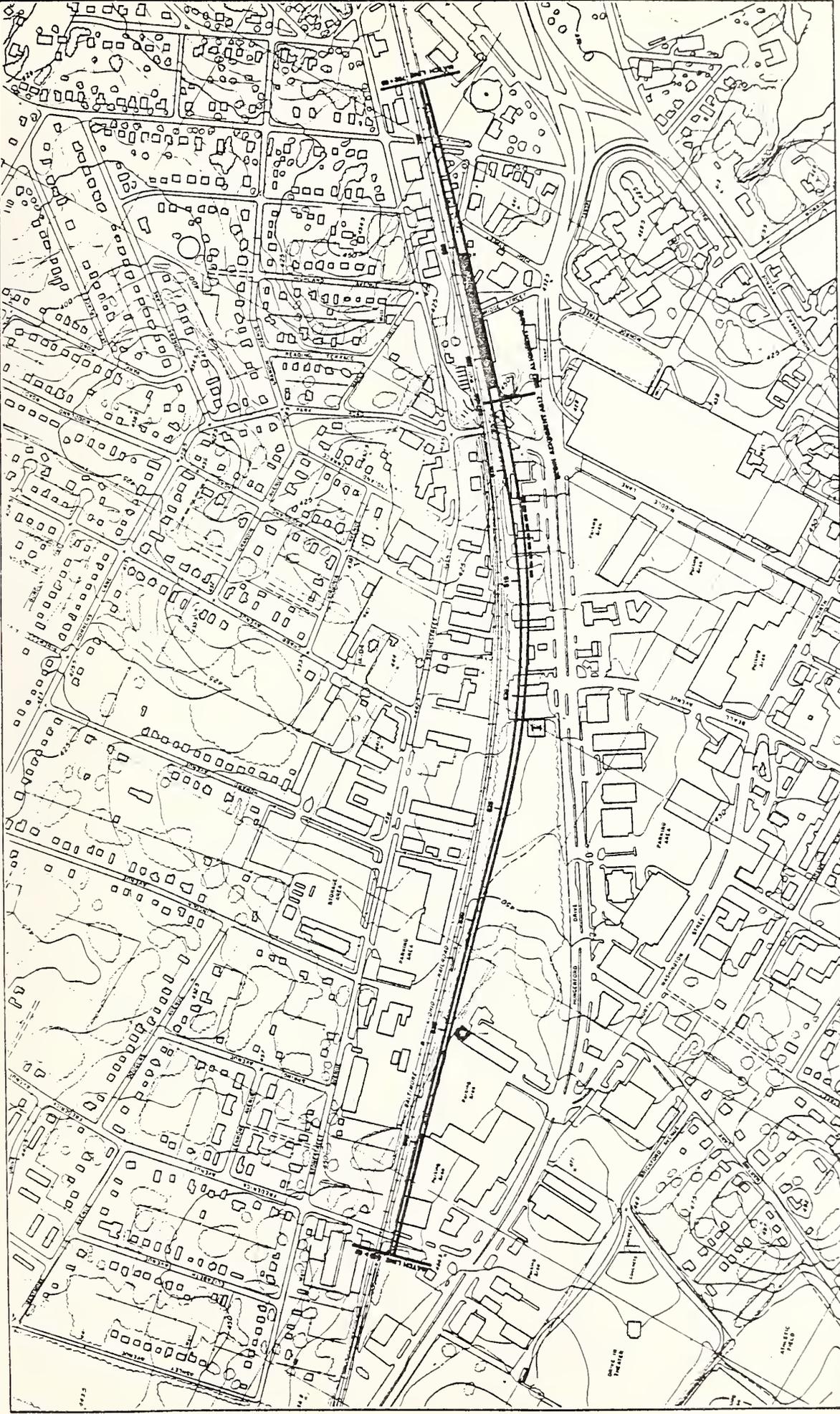
Route A extension follows an alignment on the west side of the Baltimore and Ohio Railroad tracks between Rockville and Gaithersburg. The alignment is parallel to the B&O tracks for a distance of about 2.66 miles from the start of the extension, at the north end of the Rockville ARS Station to the entrance to the proposed S&I Yard near Shady Grove Road. The extension will be built at grade, typically at a grade and elevation close to that of the existing B&O tracks. In its route from Rockville Station to the Shady Grove Station, just north of Fields Road, the alignment intercepts six roads which presently cross the railroad tracks, either at grade or on structures.

Park Road is carried under the B&O tracks to join Middle Lane at Hungerford Drive (Md. 355). Construction of the Rockville Station parking and access roads will require a widening and an improvement of this presently narrow underpass.

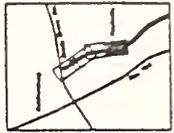
Frederick Avenue, which presently crosses the B&O tracks at grade, would be closed by the Metro line, which does not tolerate grade-level crossings. Westmore Road crosses the B&O some 1800 feet north of Frederick Avenue; on at-grade crossing, it too would be closed.

Gude Drive is carried over the B&O tracks on a bridge that would require reconstruction to accommodate the Metro alignment. Derwood Road bridge would also require reconstruction.

A new bridge connecting Fields Road with Redland Road would eliminate the need for a grade crossing at Redland Road and would improve access to the Metro Station north of Fields Road.

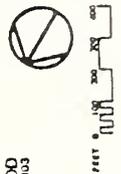


ALIGNMENT DESCRIPTION
ROCKVILLE ROUTE A
 STATION POINTS 783 + 50
 TO 845 + 00



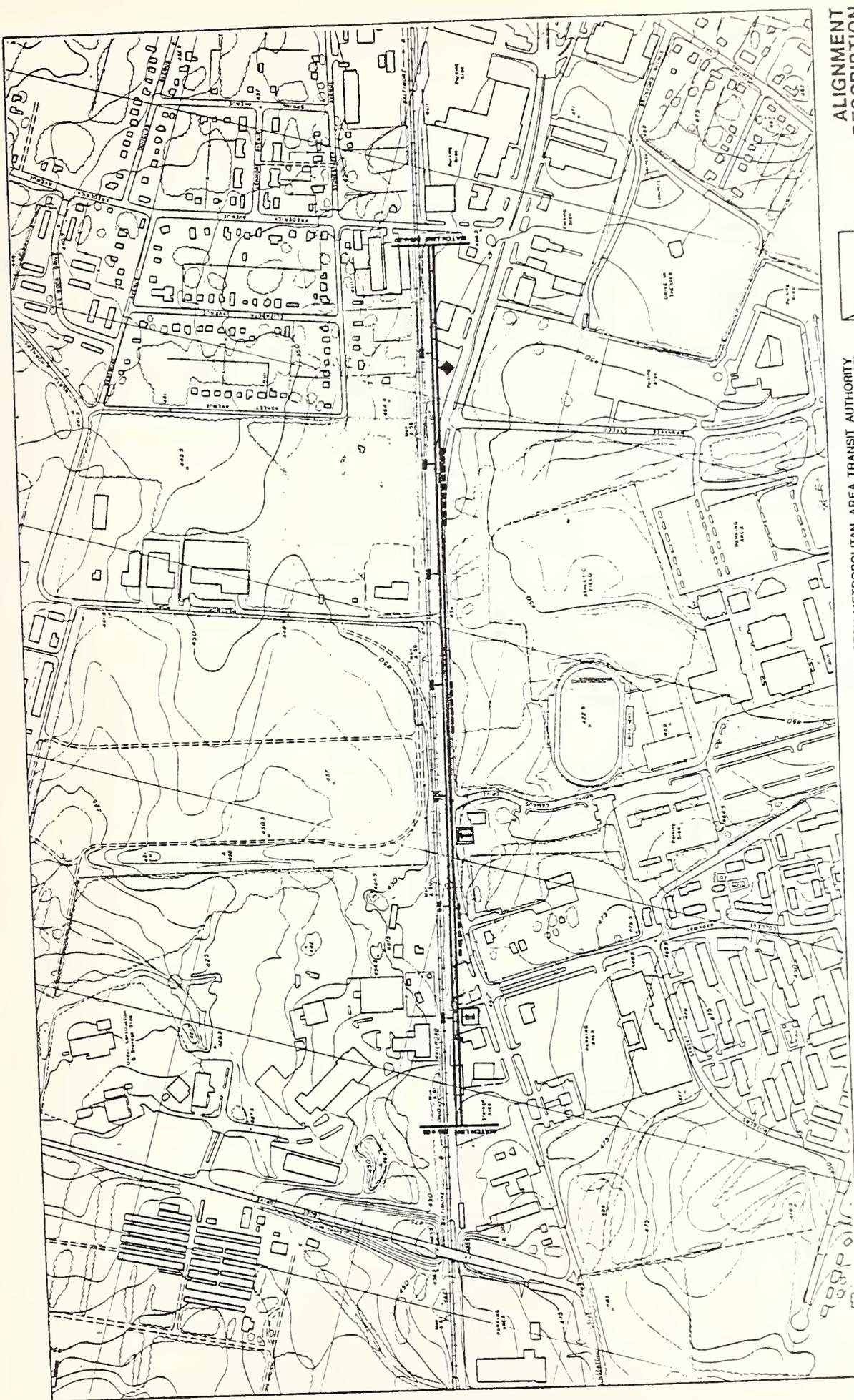
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 800 FIFTH STREET, N.W.
 WASHINGTON, D.C. 20001

WALLACE MCHARG ROBERTS AND TODD
 1517 CHESTNUT STREET
 PHILADELPHIA, PA 19103

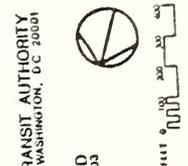


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- BREAKER WALL
- BREAKER STATION
- PLATFORM
- ELECTRICAL SUBSTATION
- ELECTRICAL SUBSTATION (LOCATION IF A THIRD-PARTY STATION IS DELETED)
- BREAKER STATION (LOCATION IF A THIRD-PARTY STATION IS DELETED)
- PLATFORM (LOCATION IF A THIRD-PARTY STATION IS DELETED)
- ELECTRICAL SUBSTATION (LOCATION IF A THIRD-PARTY STATION IS DELETED)
- BREAKER STATION (LOCATION IF A THIRD-PARTY STATION IS DELETED)



ALIGNMENT DESCRIPTION
 ROCKVILLE ROUTE A
 STATION POINTS 848+00 TO 888+00

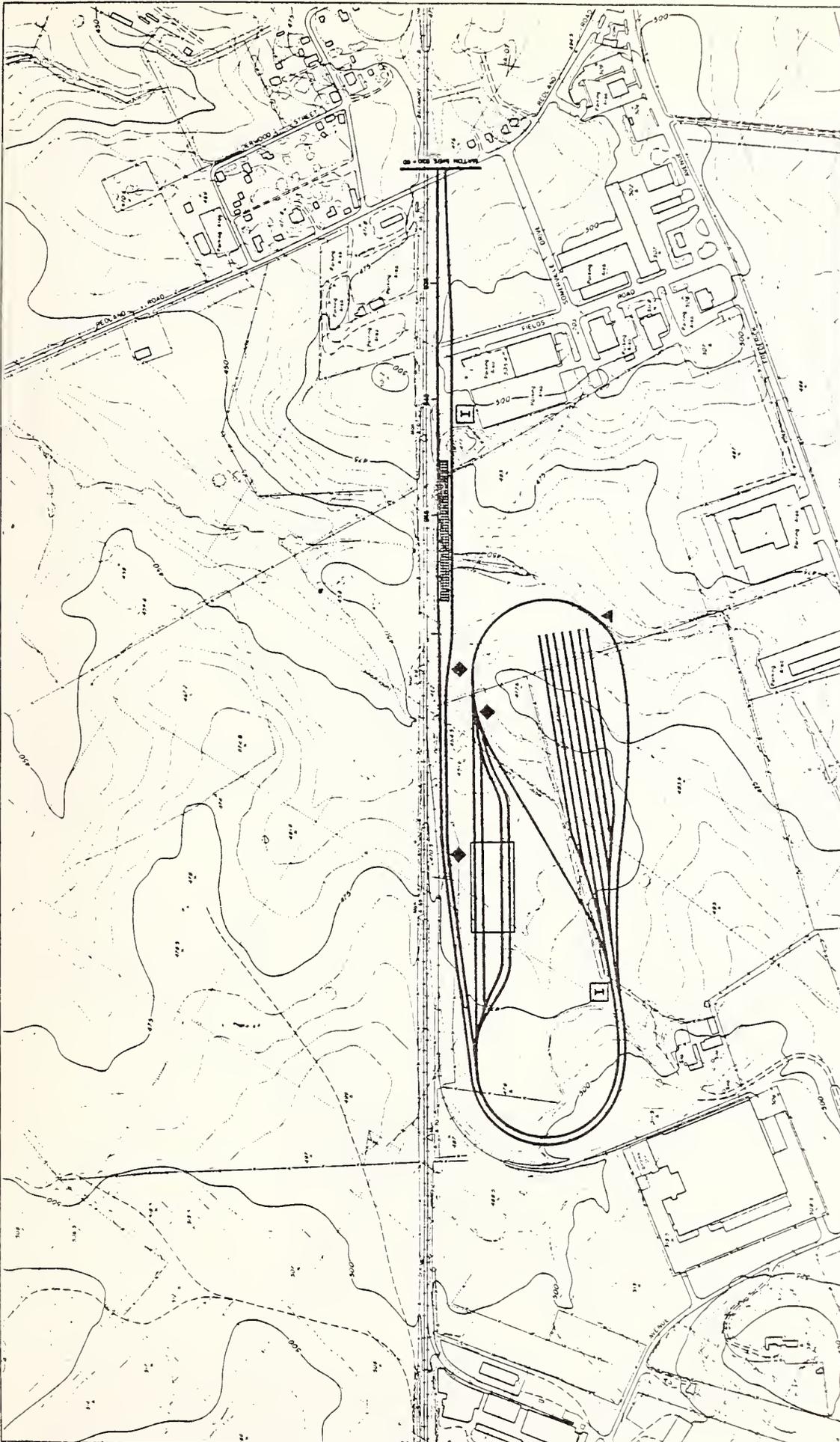


WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 800 FIFTH STREET, N.W.
 WASHINGTON, DC 20001

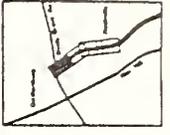
WALLACE MCHARG ROBERTS AND TODD
 PHILADELPHIA, PA 19103
 1737 CHESTNUT STREET

ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- THE BREAKER STATION
- THE BREAKER STATION (ELEVATION IF A TRANSITION STATION IS DELIVERED)
- DAMAGED PUMPING STATION
- FENCING WALL
- PLATFORM
- ELECTRICAL SUBSTATION
- ELECTRICAL SUBSTATION (ELEVATION IF A TRANSITION STATION IS DELIVERED)



ALIGNMENT DESCRIPTION
 ROCKVILLE ROUTE A
 STATION POINTS 830 + 00
 TO 841 YARD



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 WASHINGTON, DC 20001

WALLACE MCHARG ROBERTS AND TODD
 PHILADELPHIA, PA 19103

ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- THE BREAKER WALL
- PLATFORM
- ELECTRICAL SUBSTATION
- THE BREAKER STATION (LOCATION IF A THIRDFLOOR STATION IS SELECTED)
- DRAINAGE PUMPING STATION
- ELECTRICAL SUBSTATION (LOCATION IF A THIRDFLOOR STATION IS SELECTED)

The terminal station will be about 2.66 miles from Rockville Station, 400 feet north of Fields Road. The station will be a center-platform surface structure with pedestrian underpasses to connect the station to parking lots and access roads on the east and west sides of the rail alignment.

Parking will be provided at the Shady Grove Station for 3000 cars. Spaces for 57 cars and 6 buses will accommodate standing vehicles while passengers arrive or depart. Approximately 5% of the parking lot area will be landscaped.

Access to the station and parking will be from Sommerville Drive on the west. On the east side of the alignment, parking access will be from Shady Grove over a line built to serve only the station. Buses will enter the east side from either Shady Grove Road on the same exclusive drive or from Fields/Redland Road.

The Service and Inspection Yard and Shady Grove facility will provide storage for Metro cars, inspection and service shops, car cleaning facilities and turn-around loops.

The Service and Inspection Yard will occupy 48 acres of land; the parking and station area west of the B&O will occupy about 36 acres, and the parking lots and station area to the east will occupy about 30 acres or more, depending on the requirements for water management ponds. The access drive from Shady Grove Road extended to the parking area on the west occupies some 3 or 4 acres, depending on right-of-way dimensions.

4.2 Description of the Alternatives

Two alternative terminal and service yard locations and four alternative alignments were studied. The alternatives are described below:

- SG-W:* The Proposed Action, described in 4.1 above.

- SG-Wa:* Identical in alignment, terminus, and location of service yard to SG-W; SG-Wa spans Frederick Avenue and Westmore Road on an aerial structure.

- SG-Ea: An aerial structure carries Metro tracks over the B&O from the west to the east side of the B&O tracks; proceeding northward, the aerial structure spans Frederick.

* Two station platform locations are possible for SG-W and SG-Wa; the one described in 4.1 supercedes an earlier location 1000 feet further north of Fields Road.

Avenue and Westmore Road before the alignment returns to an at-grade position. North of Fields/Redland Road the Shady Grove Station occupies a site east of the location proposed for SG-W, and about 2000 feet further north. The Service and Inspection Yard is east of the station.

SG-WEa: This extension to Shady Grove follows the west side of the B&O Railroad to a point south of Derwood Road where an aerial structure carries the Metro tracks from the west to the east side of the B&O. Station and yard locations are identical to SG-Wa.

SG-WEt: A tunnel under the B&O tracks near Derwood Road carries Metro from west to east, the alignment is identical to SG-WEa.

GD-W: The Gude Drive alternative places the terminal station north of Gude Drive, about one mile short of the Shady Grove terminal. GD-W follows the west side of the B&O tracks (identical to SG-W); north of Gude Drive, a station is provided. Yard tracks north of the station go through a tunnel under the B&O tracks to a Service and Inspection Yard on the east side of the railroad, north of Gude Drive.

GD-Wa: This alternative is identical to GD-W, except that an aerial structure on the west side of the B&O spans Frederick Avenue and Westmore Road.

GD-Ea: This alternative crosses from the west to the east side of the B&O railroad on an alignment identical to SG-Ea. Frederick Avenue and Westmore Road are spanned as in SG-Ea. The terminal station is north of Gude Drive on the east side of the B&O, with the S&I Yard immediately north of the station.

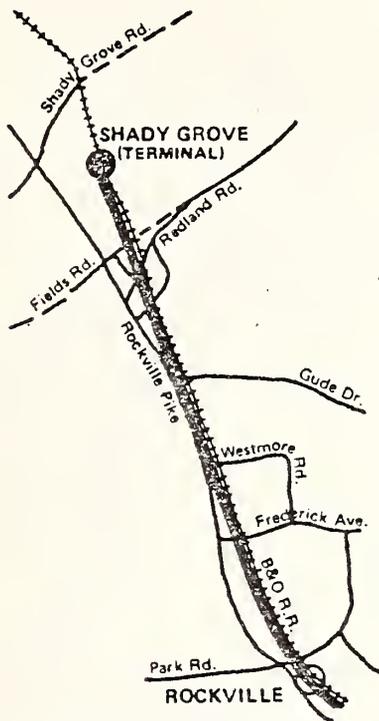
SG-W: Following the same alignment as SG-W, but it would be an underground alignment to a surface station and service yard at Shady Grove. Construction would be accomplished by excavating a trench, building a double-box tube and refilling the excavation.

No Action: Adoption of this alternative would require
 (RK-W) a terminal station at Rockville and a Service and Inspection Yard in downtown Rockville, between Hungerford Drive and the B&O tracks, north of Park Road as planned in the Adopted Regional System (ARS-1968).

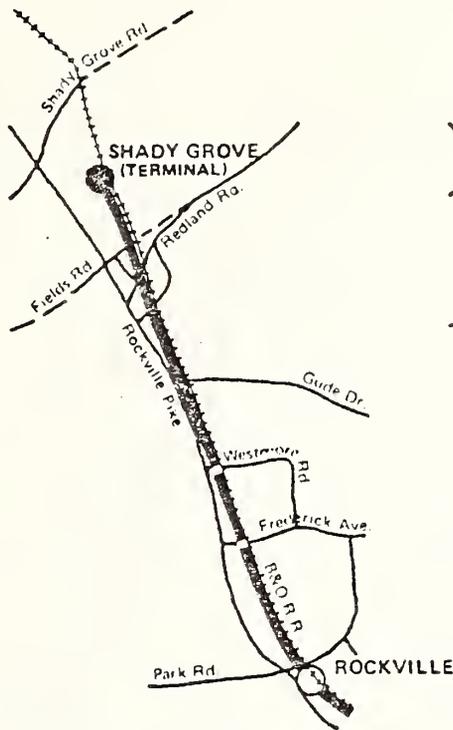
Synopsis of Alternatives

	<u>Length in Feet</u>			Westmore Road and Frederick Avenue	Redland Road
	Surface	Aerial	Total		
SG-W	14,220	400	14,620	Closed	Closed
SG-Wa	10,120	4,500	14,620	Open	Closed
SG-WE	12,900	2,200*	15,100	Closed	Closed
SG-Ea	10,300	4,800	15,100	Open	Closed
GD-W	9,300	400	9,700	Closed	Open
GD-Wa	5,200	4,500	9,700	Open	Open
GD-Ea	6,300	4,800	11,100	Open	Open
No Ac- tion (RK-W)	0	0	0	Open	Open
SG-Wt	tunnel	14,620	14,620	Open	Open

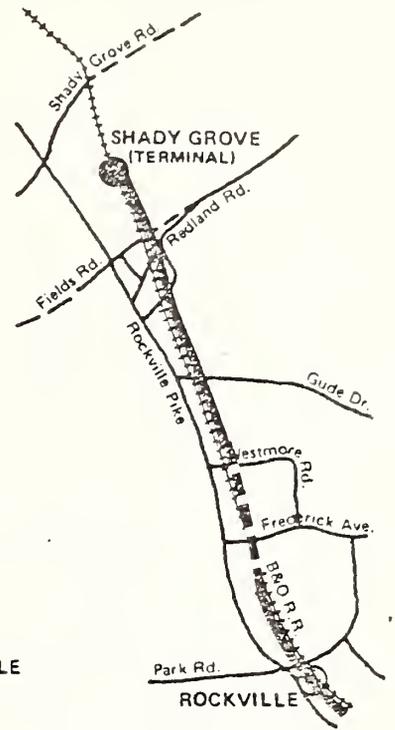
*Aerial (SG-WEa) or tunnel (SG-WEt)



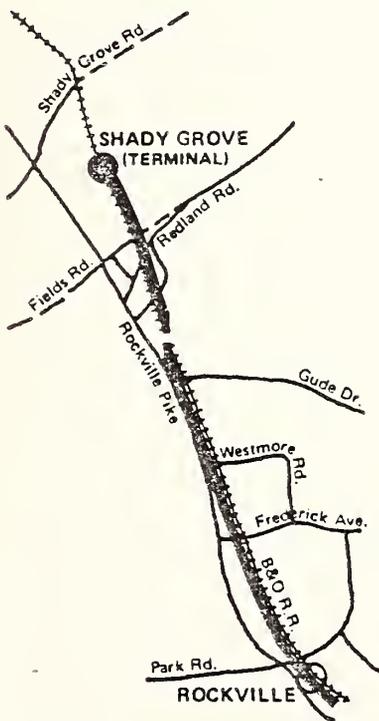
SHADY GROVE W



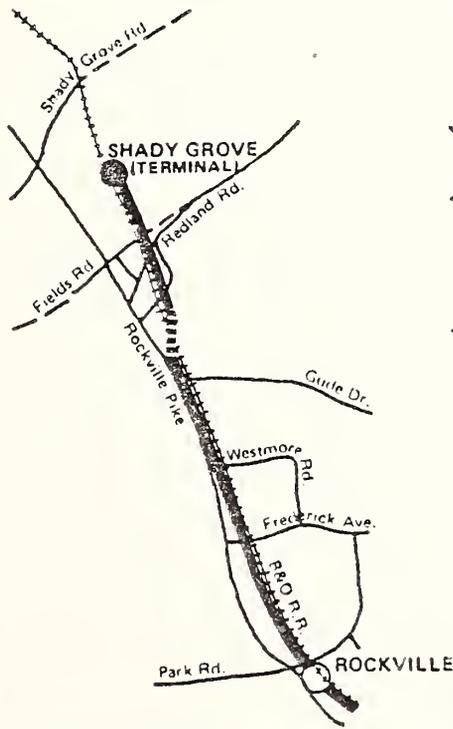
SHADY GROVE Wa



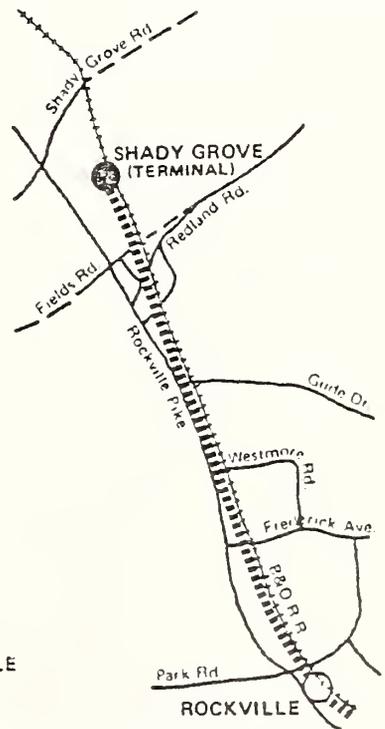
SHADY GROVE Ea



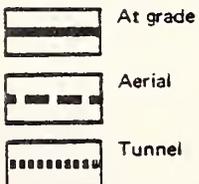
SHADY GROVE WEa



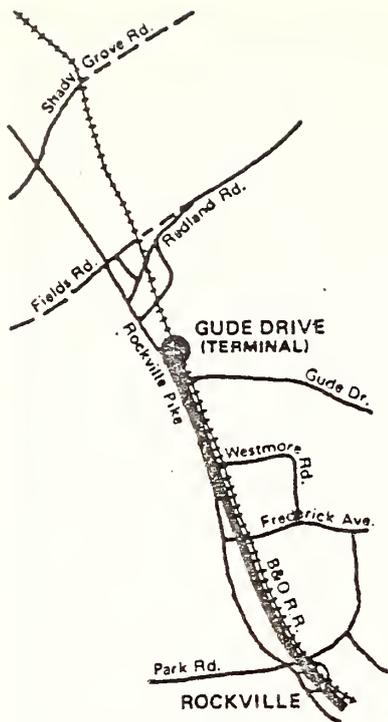
SHADY GROVE WEt



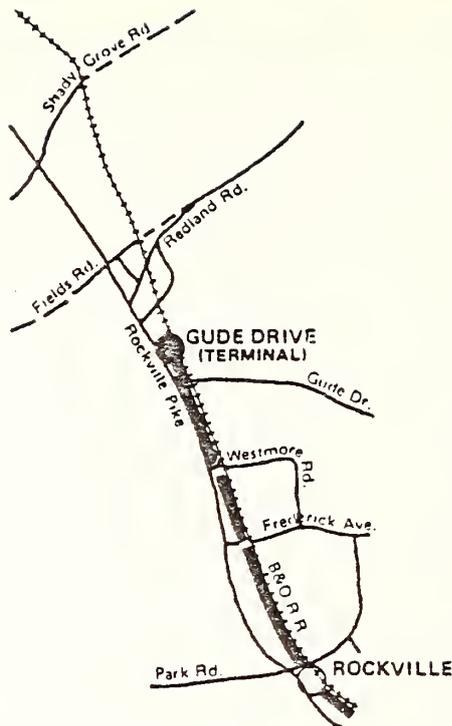
SHADY GROVE Wt



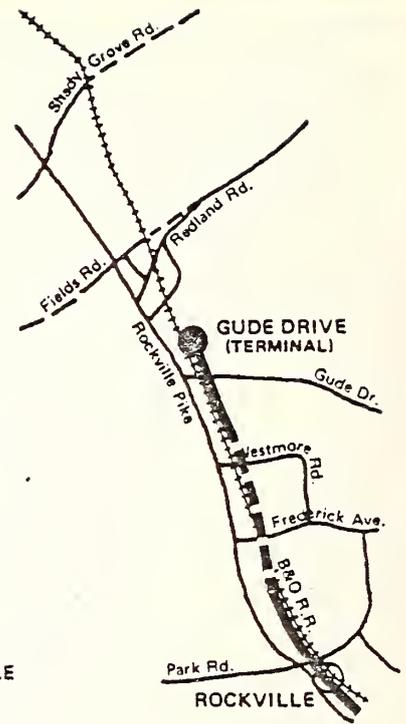
ALIGNMENT ALTERNATIVES



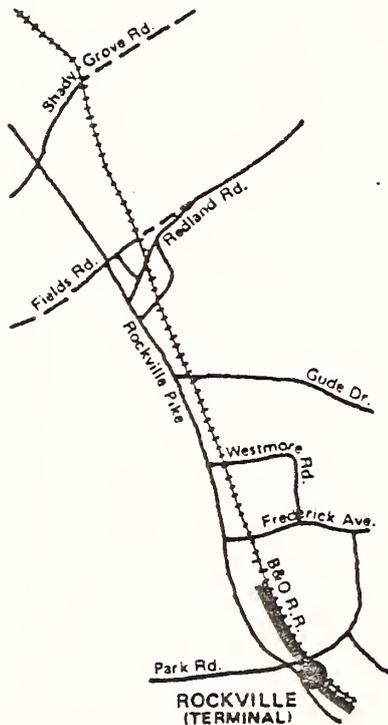
GUDE DRIVE W



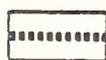
GUDE DRIVE Wa



GUDE DRIVE Ea



NO ACTION

-  At grade
-  Aerial
-  Tunnel

ALIGNMENT ALTERNATIVES



COMPARATIVE ENGINEERING DATA BASED ON PRELIMINARY STUDIES FOR THE PROPOSED ROCKVILLE ROUTE EXTENSION TO GUDE DRIVE AND SHADY GROVE ROAD

PRELIMINARY
THIS MATERIAL IS
SUBJECT TO REVISION

SCHEME (1)	TYPE OF CONSTRUCTION (IN L.F.)			ESTIMATED COST-ESCALATED (IN MILLIONS) (2)					DISPLACEMENTS (3,4,7)		IMPACT ON STREETS		
	Af-Grade	Aerial	Total	Construction (3)	ROW (3)	Total (3)	Subway	Grand Total	Affected	Passive	Closed	Open	Business Impacted
TO GUDE DR	GD-W	8,300	400	8,700	66.8	3.0	28.8	16.4 (8)	41.0	11	3	FREDERICK, WESTMORE	GUDE DR
	GD-We	6,400	4,800	8,700	32.8					11	3	FREDERICK, WESTMORE	GUDE DR
	GD-Ea	8,300	4,900	11,100	32.8					8	1	FREDERICK, WESTMORE	GUDE DR
TO SHADY GROVE RD	SG-W*	17,300	400	17,900	39.8					8	3	FREDERICK, WESTMORE, REDLAND	GUDE DR
	SG-We*	13,400	4,900	17,800	42.0					8	3	REDLAND, FREDERICK, WESTMORE	GUDE DR, DERWOOD
	SG-Ea	13,100	4,800	17,800	42.0					8	1	REDLAND, FREDERICK, WESTMORE	GUDE DR, DERWOOD
	SG-WE	12,800	2,200	16,100	32.0	-0.8	31.2 (10)	8.4	39.8	8	3	FREDERICK, WESTMORE, REDLAND	GUDE DR, DERWOOD
	SG-W	14,220	400	14,820	31.0	-0.4	30.8 (11)	8.2	38.8	8	3	FREDERICK, WESTMORE, REDLAND	GUDE DR
SG-We	10,140	4,800	14,840	39.0					8	3	REDLAND, FREDERICK, WESTMORE	GUDE DR	

NOTES

- Refer to sketch for alignment and station location
- Costs are escalated (Mid-point of construction - about 1980)
- Cost of Scheme minus the cost for the ARS Rockville Yard
- Does not include (4) buildings which were previously affected by the ARS Rockville Yard. Buildings affected by mainline are included
- The above totals do not include costs for railroad siding relocations, if any
- Early schemes revised (See note 8)
- For additional station of Gude Drive, add \$19.4 Mil to "B" Scheme
- All are commercial displacements
- Revised west alignments, with SBI Yard and Station to the west of the B&O/C&O R.R.
- Includes 19.0 for station and facilities
- Includes 15.8 for station and facilities
- Includes 16.2 for station and facilities
- Includes 2.0 for access road, Fields Rd to Gude Dr

PRELIMINARY
THIS MATERIAL IS
SUBJECT TO REVISION

CAUTION: These are order-of-magnitude figures — use for planning purposes only.

REV NOV 5, 1973

TABLE 1 TOTAL METRO COSTS

		A	B	C	D	E	F	G	H	I	J	K
		STRUCTURAL	STAGE	FINISH	SUB TOTAL A+B+C	SUB TOTAL D-ARS YARD (2.2)	STA FAC (Parking @ Ped. Tunnels)	SUB TOTAL E+F	Exc (2.0) and Construction 1980	ROW	ROW - ARS YARD ROW (7.3)	TOTAL H+J
1	GD-W	6.0	4.6	1.2	11.8	9.6	3.2	12.8	25.6	10.5	3.0	28.6
2	GD-We	9.3	4.8	1.2	15.3	13.1						
3	GD-Ea	8.6	5.4	1.2	15.2	13.0						
4	SG-W*	8.3	6.9	1.2	16.4	14.2						
5	SG-We*	11.8	7.2	1.2	20.0	17.8						
6	SG-Ea	10.7	8.3	1.2	20.2	18.0						
7	SG-WE	7.9	6.1	1.2	15.2	13.0	3.0	16.0	32.0	6.7	-0.8	31.2
8	SG-W	7.7	5.6	1.2	14.5	12.3	3.2	15.5	31.0	7.1	0.4	30.6
9	SG-We	10.9	6.4	1.2	18.5	16.3						

* Early schemes revised

TABLE 2 STATION COSTS

	STRUCTURE & FINISH	STATION FACILITIES		SUB TOTAL	ESC. (2.0) (1980)	R.O.W.	TOTAL	
		FOOD CAR PARKING	PEDEST. TUNNEL					
1	Station @ Gude	4.2	3.0	0.2	7.4	14.8	4.2	19.0
7	Station @ Shady Grove (W/E)	4.2	3.0	—	7.2	14.4	1.4	15.8
8	Station @ Shady Grove (W)	4.2	3.0	0.2	7.4	14.8	1.4	16.2

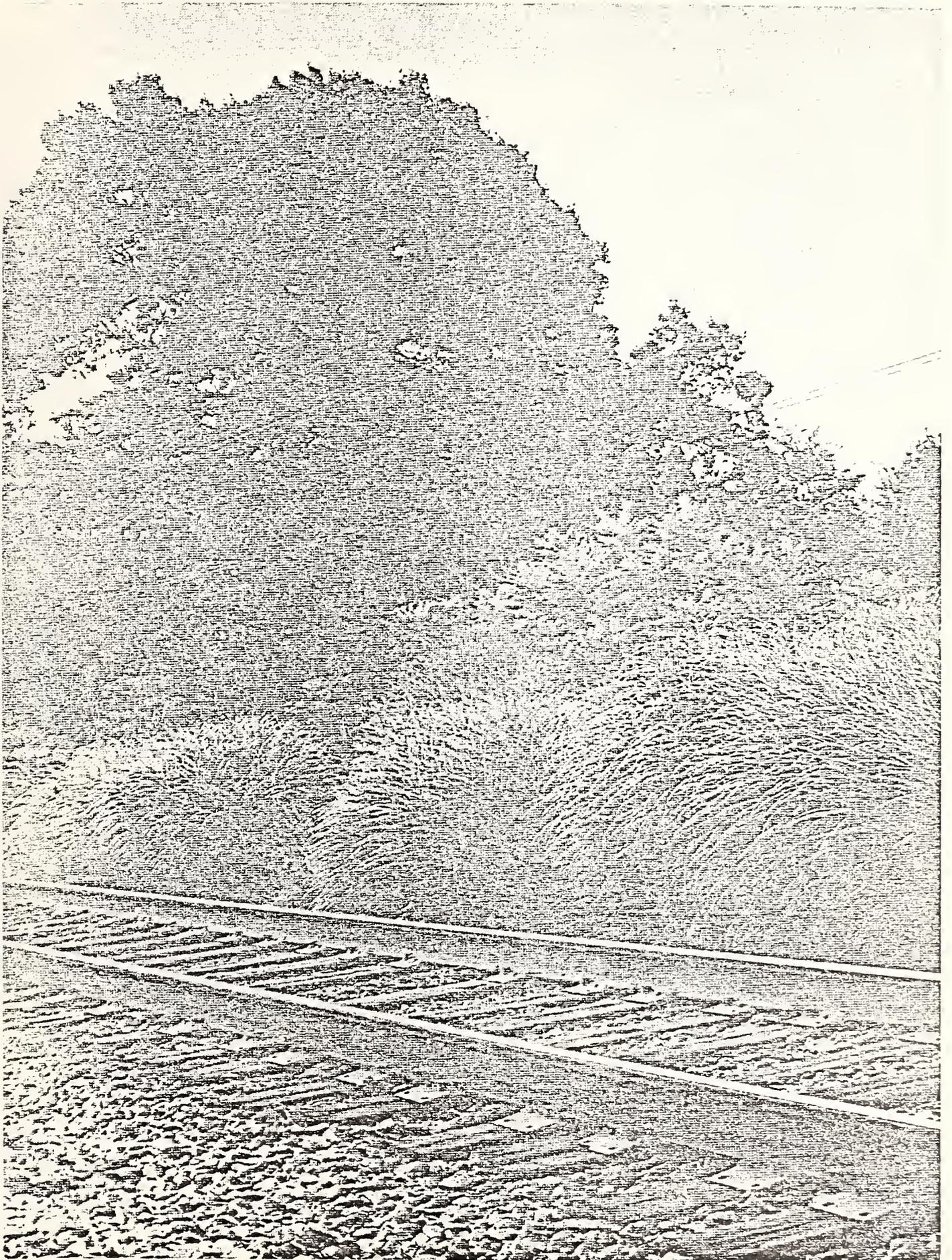
TABLE 3 YARD COSTS

	STRUCTURE	ESCALATED MID CONSTRUCTION 1978 UZS	ESCALATED MID CONSTRUCTION 1980*	R.O.W.	TOTAL*		
	ARS Yard	2.2	3.5	7.5	11.0		
1	Yard @ Gude	3.0		6.0	4.0	10.0	
7	Yard @ Shady Grove E. Side	2.3		4.6	2.5	7.1	
8	Yard @ Shady Grove W. Side	3.3		6.6	3.0	9.6	

* Cost of the SB Shop assumed identical in all cases, is not included in these figures.

TABLE 4 BUSWAY COSTS

BUSWAY		Approx. Length (ft)	Width (ft)	Const. Cost (\$/Sq. ft)	Escalated (1980)	R.O.W.	Major Buildings	Sub Total	Grand Total
To Shady Grove (Yard on W.)	705 Thru Gaithersburg	17,000	80	1.36	2.72	3.4	1.0	7.12	
	Gaithersburg to Shady Grove	4,000	80	0.32	0.64	0.4	—	1.04	8.2
To Shady Grove (Yard on E.)	Add Bridge over yard leads			0.2	0.4			0.4	8.6
To Gude Dr	705 to Shady Grove Sta.	21,000	80	1.68	3.36	3.8	1.0	8.16	
	Shady Grove to Gude Dr.	3,000	80	0.40	0.80	1.0	—	1.80	
	Bridge over yard leads			0.2	0.4			0.4	
	Roadway (4 lanes w. median) Fields Rd. to Gude Dr.	5,000	100	0.5	1.0	1.0	—	2.0	12.4



VEGETATION AT EDGE OF B&O TRACK ALIGNMENT NORTH OF ROCKVILLE, MARYLAND

5. PRELIMINARY EVALUATION -- PROBABLE IMPACT OF THE PROPOSED ACTION AND OF ITS ALTERNATIVES ON THE ENVIRONMENT

5.1 Introduction

As stated in Task II of the Scope of Services, two studies for the end sections of the Rockville Route have been done simultaneously. The first study deals with Sections A014, A015 and A016. The second study treats A017 (proposed extension north of Rockville) and will be circulated under CEQ Guidelines. The completed studies have separate reports. However, for the purpose of the Preliminary Evaluation, all sections of the Rockville Route from A014 to the terminal station and S&I Yard were examined together in order to assess the performance of the System as a whole. It is impossible to examine the service area implications and regional impacts of adding, deleting or moving a station within these Sections of the Rockville Route without looking at the entire A Route System from Grosvenor (Parkside) to its terminus.

The objective of the Preliminary Evaluations Report of Alternatives for the Rockville Sections A014, A015, A016 and A017 (extension beyond Rockville) is to make a first-cut analysis of all feasible and proposed alternatives. As stated in Task III of the Scope of Services; after 30 days of study, "those alternative alignments that prove to be unacceptable shall not be studied beyond this point."

Within the four segments under consideration, there are six system alternatives, four variations on the basic route alignment, and more than fourteen station platform location options with numerous site design variations.

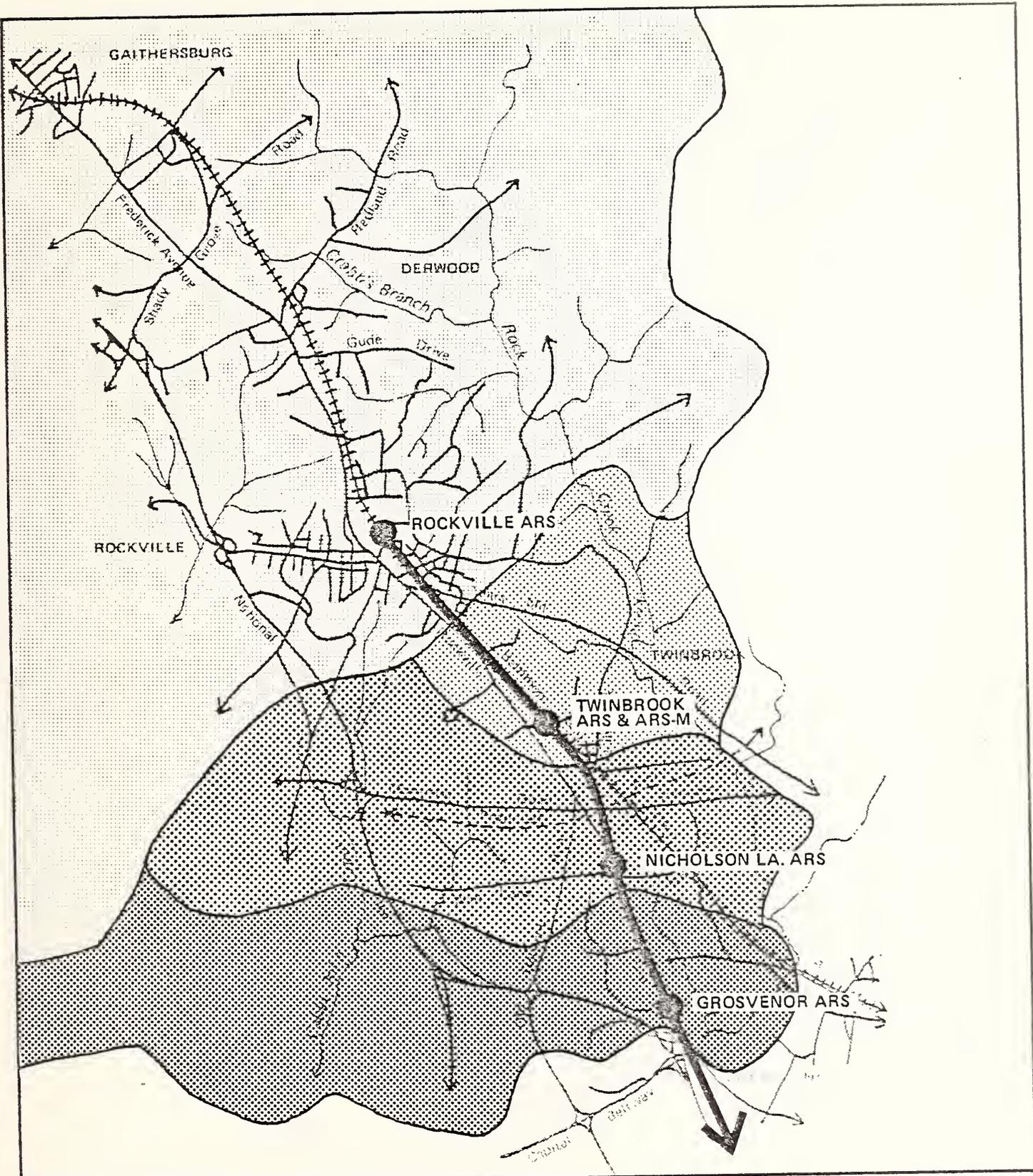
In order to carry out a Preliminary Evaluation of all these alternatives, different levels of system design concern were established. The Rockville alternatives were first grouped in terms of alternative systems, as defined by alignment and station options.

The six alternative systems are defined as follows:

System Alternatives

1. ARS-68 -- ARS-68 System alternative includes Alignments A014, A015 and A016 with stations at Nicholson Lane, Halpine Road (two ARS platform options) and a terminal station and yard at Rockville (A016).

2. Rockville A -- Rockville A System alternative includes Alignment A014 and A015 with the alternative of Alignment B-C, and A016. The stations are Nicholson Lane Combined (three platform options) and a terminal station and yard at Rockville (A016).



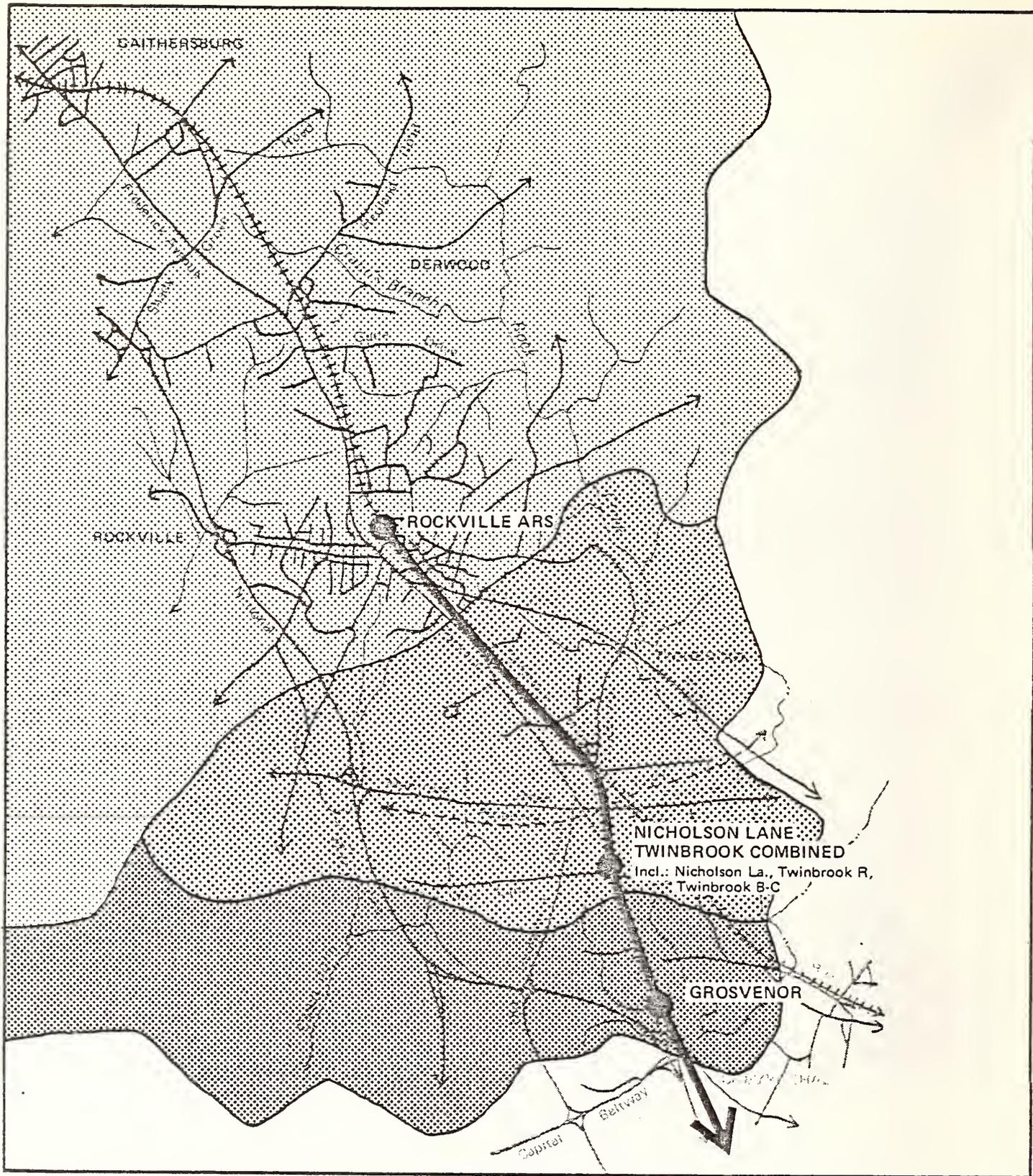
-  Grosvenor Service Area
-  Nicholson Service Area
-  Twinbrook Service Area
-  Rockville Service Area

SERVICE AREAS
ARS-68 SYSTEM ALTERNATIVE



metro

REVISED

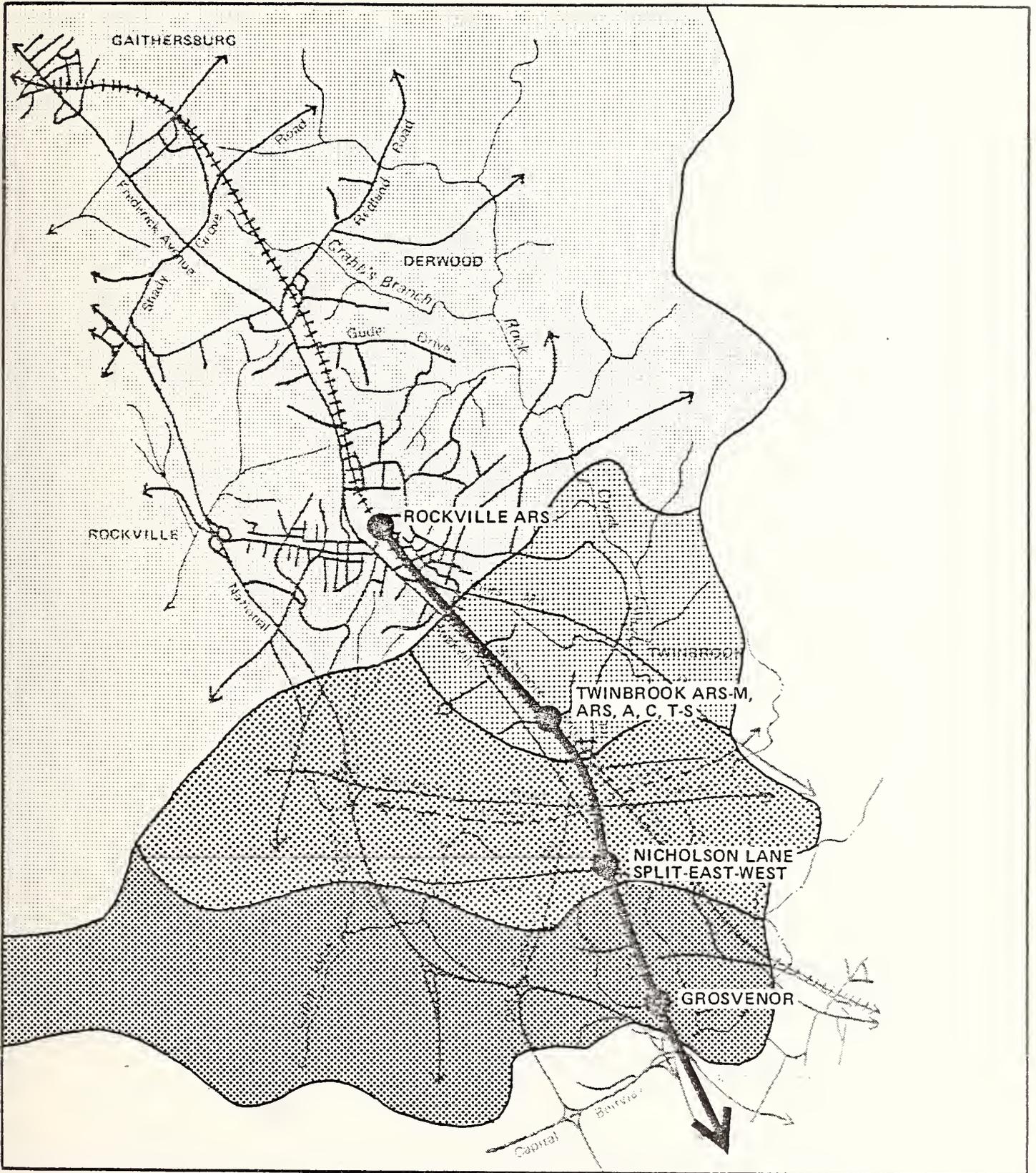


-  Grosvenor Service Area
-  Nicholson Lane/Twinbrook Service Area
-  Rockville Service Area

**SERVICE AREAS
ROCKVILLE A SYSTEM ALTERNATIVE**



metro
REVISED



-  Grosvenor Service Area
-  Nicholson Lane Service Area
-  Twinbrook Service Area
-  Rockville Service Area

SERVICE AREAS
ROCKVILLE B SYSTEM ALTERNATIVE





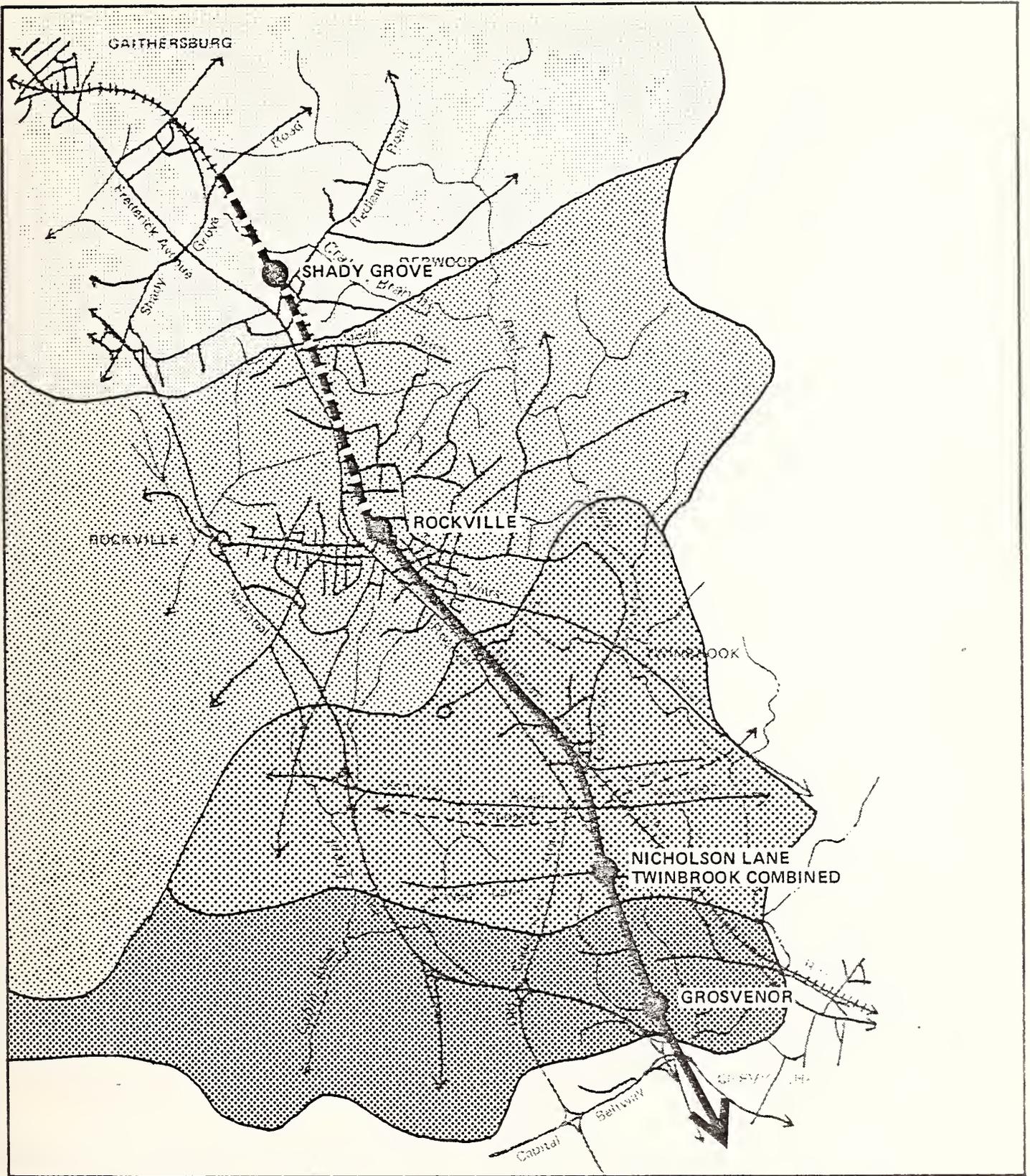
 Grosvenor Service Area

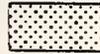
SERVICE AREAS
NO ACTION



metro

REVISED

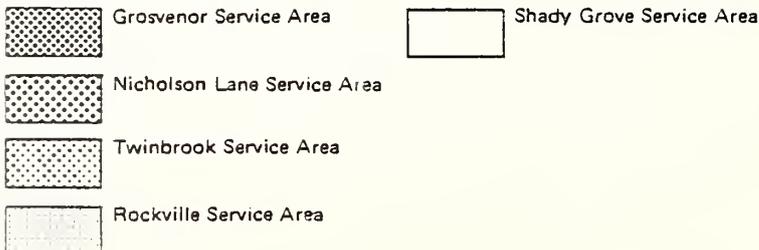
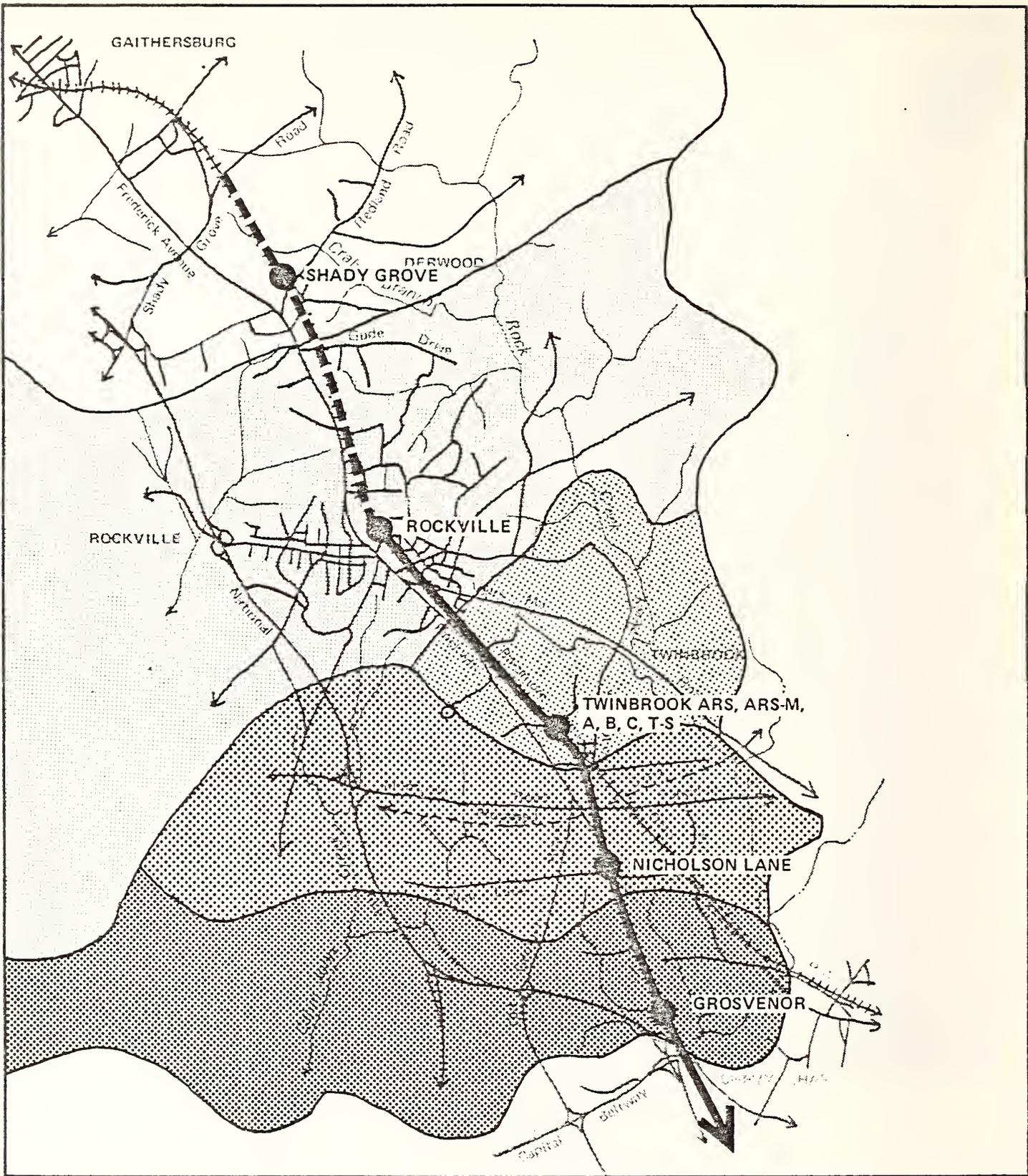


-  Grosvenor Service Area
-  Nicholson Lane/Twinbrook Combined Service Area
-  Rockville Service Area
-  Shady Grove Service Area

**SERVICE AREAS
ROCKVILLE C SYSTEM ALTERNATIVE**



metro
REVISED



SERVICE AREAS
ROCKVILLE D SYSTEM ALTERNATIVE



metro

REVISED

3. Rockville B -- Rockville B System alternative includes Alignments A014 and A015 with the alternative of Alignment B, and A016. The stations are Nicholson Lane, and Twinbrook (six platform options), and a terminal station and yard at Rockville (A016).

4. Rockville C -- Rockville C System alternative includes Alignments A014 and A015 with the alternative of Alignment B-C, and A017. The stations are Nicholson Lane Combined (three platform options), Rockville (two platform options), and extension of the Route beyond Rockville to a terminal and yard at Gude Drive or Shady Grove.

5. Rockville D -- The Rockville D System alternative includes Alignments A014 and A015 with the alternative Alignment B, and A017. The stations are Nicholson Lane and Twinbrook (six platform options), Rockville (two platform options), and extension of the Route to a terminal and yard beyond Rockville at Gude Drive or Shady Grove.

6. No Action -- The No Action System alternative amounts to terminating the A Route at Grosvenor Station.

The six system alternatives are shown on the map entitled "System Alternatives for End Segments of the Rockville Route."

5.2 Impact Factors Considered

Environmental Impact in the Preliminary Evaluation as in the National Environmental Policy Act of 1969, is broadly defined. It encompasses the ecology of both the natural and man-made environment, and its relationship to the visual-physical, cultural and socio-economic aspects of the human experience. Positive as well as negative impacts are considered. The impact factors listed and defined below are used throughout this Report.

2.1 Ecological Factors: Those elements of climate, atmosphere, soils, geology, water quality and hydrology (floodplains, surface and subsurface water), wildlife, vegetation, noise and other physiographic factors (land forms, topography, slopes) which make up the natural environment.

a. Geological conditions, soil conditions:

1. Conditions of the soil and rock affecting the construction of a surface alignment.
2. Excavation, spoil disposal.
3. Fill, source of borrow material.
4. Stability of slopes.
5. Effects on ground water of fill or excavation.

b. Terrain - plant cover:

1. Impacts of construction on forest or agricultural resources.
2. Impacts of construction on the terrain; relationship of proposed action to land forms, drainage basins and streams.
3. Unique plant communities, wildlife habitats.

c. Runoff, Drainage Management:

1. Changes in runoff or stream channel generated by the proposal.
2. Changes in quality of surface water.
3. Effects on groundwater and on baseflow in streams.

d. Air Quality:

1. Metro's impact on regional air quality.
2. Impact on local air quality where park-and-ride, kiss-and-ride, and bus route commuter traffic is focused on Metro stations.

e. Noise and Vibration

2.2 Visual, Physical Factors: Those elements of line, slope, space and form that constitute the visual experience, including scenic resources and the design of structures.

1. Appearance of the alternative alignments.
2. Appearance of stations and parking lots.
3. Appearance of Service and Inspection Yard.
4. Appearance of aerial structures in alternatives which require aerial structures.

2.3 Cultural Factors: Those factors that denote a particular stage of advancement in a civilization, such as historical or archaeological sites and objects, parks and recreational facilities, and certain institutions such as museums and libraries and schools.

1. Effects on parks, playgrounds, recreation areas.
2. Effects on historical, cultural, or archaeological sites.
3. Effects on public institutions.

4. Effects on schools.

2.4 Social and Economic Factors: Those factors which influence man's subsistence, and his interaction with other men, such as: population distribution, community structure and cohesiveness, housing or business displacement, employment, the use of land including shopping, retail and commercial activity, industrial production, and traffic patterns.

1. Takings and easements.
2. Traffic and access by roads.
3. Adjacent land uses.
4. Future impacts on the development of land around the terminal.
5. Effects on community structure.
6. Displacements of housing, businesses.
7. Displacements of vehicle or pedestrian traffic.
8. Permanent street closings.

5.3 Short-Term and Long-Term Impacts

Those displacements, inconveniences, and losses occasioned by the construction of Metro which can be corrected or replaced when the System is built are short-term impacts. Noise and dust, temporary street closings, construction easements, and landscape disturbances endure only until the Route is built. Permanent easements, land takings, physical obstructions, traffic changes, stations, parking lots and rail-yards are long-term impacts; they are the consequences of Metro's continuing operation.

Choice among alternatives is mainly on the basis of long-term impacts since it is by its ultimate consequences that the Metro System will be evaluated.

Construction factors such as traffic disruption, construction noise or erosion of excavated material, will fit within the above impact factors, and are treated as a time dimension. For example, the noise from construction of the System is treated as a short-term impact, whereas the noise from the operation of the Metro cars is treated as a long-term impact, or one of continuing duration.

5.4 Method and Work Process

The evaluation/comparison of A Route alternatives has been organized as a simple decision tree which incorporates all alternatives, related to the six alternative systems, and proceeds through a qualitative evaluation and comparison of each with the objective of narrowing the field to those alternative systems that exhibit the least negative and most positive impacts on a regional basis. The remaining systems are then re-evaluated in more detail for their local impacts with respect to alignment and station location. From this analysis, the system which represents the least negative and most positive impacts in terms of overall regional and local performance is recommended as the preferred alternative after a Final Evaluation is made on the basis of relative impacts on factors whose own relative importance is assumed to be equal. Comparison between factors such as housing displacement and stream quality is fraught with problems of mensuration and value. The number of houses displaced can be counted and their value estimated from tax data, but the effects on stream quality are difficult to estimate and even harder to compare with effects on dwellings, since such comparison must assume a universally accepted system of values that includes both houses and streams.

The choice of an alternative is based on the net preponderance of positive long-term impacts over the other alternatives. Alternatives equal in their long-term impacts are distinguished according to their short-term impacts.

A field reconnaissance was conducted along the alignments under consideration to record information regarding the existing natural, social, and economic environment. A Preliminary Evaluation of the impact of Metro construction and operation was made. This step is represented by the Environmental Impact Summary Matrix which records verbally all impacts related to 21 impact factors (see Matrices which follow). Then, a Preliminary Evaluation of environmental impacts was made by assigning values (positive or negative), magnitude (major, moderate, or minor) and duration (long-term or short-term) to each impact estimate.

The ranking is shown in the Environmental Impact Evaluation Matrix by the following symbols:

<u>Major</u>	<u>Moderate</u>	<u>Minor</u>	
			negative long-term
			negative short-term
			positive long-term
			positive short-term

5.5 Evaluation Matrices

Environmental Impact Summary Matrices deal with the terminal alternatives and the Environmental Evaluation Matrices assess the relative impact of each system, alignment, station platform location and site-design alternative. The Summary Matrices describe impacts while the Evaluation Matrices compare alternatives. The first set of Matrices contains data; the second contains interpretations from those data.

ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

ROCKVILLE ARS

Alternative Preliminary
Evaluation/Comparison

SOCIO-ECONOMIC

CULTURAL

ECOLOGICAL

VISUAL/PHYSICAL

STATION	Displacement/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources	
Richardson Lane ARS	●	○	○	●●●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook ARS	●	○	○	●●	○	○	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○
Twinbrook ARS M	●	○	○	●●	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Rockville W/S&I Yard	●	○	○	●●●	○	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 REGIONAL IMPACTS
SYSTEM ALTERNATIVES

ROUTE	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL					
	Patronage	Access	Traffic	Experience	Safety	Operation	Convenience	Construction	Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	School/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
ARS-68	○	○	●●●	○		●	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●
Rockville A	○	○	●●●	○		●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●
Rockville B	○	○	●●●	○		●	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●
Rockville C	○	○	●●●	○		○	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●
Rockville D	○	○	●●●	○		○	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●
No Action	●	●	●●●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	●



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 REGIONAL IMPACTS
SYSTEM ALTERNATIVES

ROUTE	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL					
	Portage	Access	Traffic	Experience	Safety	Operation	Convenience	Construction	Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
AHS 6B	+2	+2	-2 _h	+2	---	-2	+2	-2	-2	-2	-4	-4	-4	-4	-1	-1	-1	-1	-1	-2	---	-1
Rockville A	+1	+1	-3	+1	---	-2	-2	-1	-1	-4	-2	-2	-2	-4	-2	-1	-1	-1	-1	-2	---	-1
Rockville B	+2	+2	-3	+2	---	-2	+2	-2	-1	-2	-2	-2	-2	-4	-1	-1	-1	-1	-1	-2	---	-1
Rockville C	+4	+4	-1 _h	+4	---	+2	+2	-4	---	-1	-4	-1	-1	-4	-2	-1	-2	-2	-2	+4	+4	-2
Rockville D	+4	+4	-1 _h	+4	---	+2	+4	-4	-1	-1	-1	-1	-1	-4	-1	-1	-2	-2	-2	+4	+4	-2
No Action	-4	-4	-4	-4	---	-2	-4	---	-2	-4	---	-4	-4	---	---	---	---	---	---	---	---	---



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS
 SOCIO-ECONOMIC

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL				
	Displacement/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soil/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
Nicholson Lane Combined (Split)	●	●	○	●●	○	○	○	●	○	○	○	○		●		●●	●	○	○	○	○
Twinbrook II Combined	●	●	○	●●	○	○	○	●	○	○	○	○				●●	●	○	○	○	○
Twinbrook B Combined	●		○	●●	○	○	○	●	○	○	○					●●	○	○	○	○	○
Rockville W/S&T Yard	●	●	○	●●	○	○	○	●	○	○	○			●	●	●●	●	○	○	○	○



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

ROCKVILLE AHS

Alternative Preliminary Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL				
	Displacement/Rickard	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conference w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
Nichols Lane AHS	---	---	+2	-3	-1/2	+4	+1	-1	+4	+4	---	+2	---	-4	---	-1/2	-1 1/2	-1	---	+2	-1
Twinbrook AHS	-4	-2	+2	-1 1/2	-3	+4	-4	-1	-1	-1	-4	-2	---	---	---	-1/2	-1 1/2		+2	+1	---
Twinbrook AHS M	-1	-2	+4	-1 1/2	-3	+4	-2	-1	+1	+4	-2	-2	---	---	---	-1/2	-1 1/2		+2	+2	---
Rockville W/S&I Yard	-2	-1	+2	-5	-3	+4	+4	-1	-4	-1	-4	-4	---	-2	---	-1 1/2	-2 1/2	-1	-2	+2	---



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

ROCKVILLE AHS

Alternative Preliminary Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL					
	Displacement	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Investment	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Design	Scenic Resources	
Richardson Lane ARS			○	●●	●	○	○	●	○	○	○	○		●		○	○	○	○	○	○	●
Twinbrook ARS	●	●	○	●●	●●	○	●	●	○	○	●	●				○	●		○	○	○	
Twinbrook ARS M	●	●	○	●●	●●	○	●	○	○	○	●	●				○	●		○	○	○	
Rockville W/S&T Yard	●	●	○	●●	●●	○	●	●	○	○	●	●		●	●	○	●	●	○	○	○	



HOCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS
 HOCKVILLE A
 (Without A-17)
 Alternative Preliminary
 Evaluations/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL				
	Displacement/ Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/ Archaeological	Parkland/ Recreational	Schools/ Institutions	Soils/Geology	Water/ Hydrology	Vegetation/ Wildlife	Parking	Site Det. Opinion	Scenic Resources
Nicholson Lane Combined (Split)	-1	-1	+4	-4	-1	+2	+2	-1	+2	+4	---	+4	---	-4	---	-3	-2	-2	+4	+2	-2
Twinsbrook B Combined	-2	-1	+2	-2	-1	+4	+4	-2	+2	-4	---	-4	---	---	---	-1	-1	+1	-2	-2	-1
Twinsbrook B Combined	-2	---	+2	-3	-1	+2	+2	-4	+1	-4	---	-1	---	---	---	-1	-1	+2	+2	---	---
Hockville W/S&I Yard	-2	-1	+2	-5	-3	+4	+4	-1	-4	-1	-4	-4	---	-2	---	-1	-2	-4	+2	---	---



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS
 SOCIO-ECONOMIC

VISUAL/PHYSICAL

ECOLOGICAL

CULTURAL

SOCIO-ECONOMIC

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL					
	Dependent/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Det. Comment	Scenic Resources	
Richardson Lane ARS			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Richardson Lane Split	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Richardson Lane West	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook ARS	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook ARS M	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook C	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook FS	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook A			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Twinbrook B	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Rockville W/S&T Yard	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS
SOCIO-ECONOMIC

ROCKVILLE B
(Without A1)
Alternative Preliminary
Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL			ECOLOGICAL			VISUAL/PHYSICAL				
	Displacement/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
Nicholsom Lane AHS	---	---	+2	-3	-4	+4	+1	-1	+4	+4	---	+2	---	-4	---	-2	-1 1/2	-1	+1	+2	-1
Nicholsom Lane Split	-1	-1	+4	-4	-4	+4	+1	-2	+4	---	+4	---	-2	-2	---	-2	-1 1/2	-2	+1	+4	-1
Nicholsom Lane West	-1	-1	+2	-4	-4	+4	+1	-2	+2	+1	---	+1	---	---	---	-2	-1 1/2	-4	+1	+2	-1
Twinbrook AHS	-4	-2	+2	-1 1/2	-2 1/2	+4	-4	-1	-1	-4	-2	---	---	---	---	-4	-1 1/2	---	+2	+1	---
Twinbrook AHS M	-1	-2	+4	-1 1/2	-2 1/2	+4	-1	-1	+1	-4	-2	---	---	---	---	-4	-1 1/2	---	+2	+2	---
Twinbrook C	-4	-4	+4	-1 1/2	-2 1/2	+2	-1	-1	-1	-4	-2	---	---	---	---	-4	-1 1/2	---	+2	+2	---
Twinbrook TS	-4	-2	+2	-1 1/2	-4	-2	+4	-1	+2	-1	---	---	---	---	---	-4	-1 1/2	---	+4	+4	---
Twinbrook A	---	---	+2	-1 1/2	-4	-2	+1	-1	+4	-1	---	---	---	---	---	-1 1/2	-1 1/2	-1	+4	+4	---
Twinbrook B	-2	-1	+1	-3	-4	+4	-2	-4	+2	-1	---	---	---	---	---	-1 1/2	-1 1/2	---	+2	+2	---
Rockville W/5&1 Yard	-2	-1	+2	-5	-3	+4	+4	-1	-4	-4	-4	---	---	-2	---	-1 1/2	-2 1/2	-1	-4	+2	---

ENVIRONMENTAL EVALUATION MATRIX



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

HOCKVILLE C
(With A-17)

Alternative Preliminary
Evaluation/Comparison

SOCIO-ECONOMIC

CULTURAL

ECOLOGICAL

VISUAL/PHYSICAL

STATION	Displacement/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation	Wildlife	Parking	Site Development	Scene Resources	
Nicholson Lane Combined (Split)	●	●	○	●●●●	●	○	○	●	○	○	○	○		●		○	○	○	○	○	○	○	○
Twinbrook H Combined	●	●	○	●●●●	●	○	○	●	○	○	○	○				○	○	○	○	○	○	○	○
Twinbrook B Combined	●		○	●●●●	●	○	○	●	○	○	○	○				○	○	○	○	○	○	○	○
Rockville AHS	●	●	○	●●●●	●●●●	○	○	●	○	○	○	○			○	○	○	○	○	○	○	○	○
Rockville WMRT	●	●	○	●●●●	●●●●	○	○	●	○	○	○	○			○	○	○	○	○	○	○	○	○
Grude Drive W/S&I Yard			○	●●●●	●●●●	○	○	●	○	○	○	○				○	○	○	○	○	○	○	○
Shady Grove W/S&I Yard			○	●●●●	●●●●	○	○	●	○	○	○	○				○	○	○	○	○	○	○	○



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

SOCIO-ECONOMIC

ROCKVILLE C

(With A 17)
Alternative Preliminary
Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL				ECOLOGICAL				VISUAL/PHYSICAL		
	Dispersed/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Soils/Geology	Water/Hydrology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources
Nicholson Lane Combined (Split)	-1	+4	-4	-4	+2	+2	+2	-1	+2	+4	---	+4	---	-4	---	-3	-2½	-4	+4	+2	-2
Twinbrook II Combined	-2	+2	-2	-½	+4	+4	-2	+2	+2	-4	---	-4	---	---	---	-1½	-1½	-1	+1	-2	-1
Twinbrook B Combined	-2	---	+2	-3	+2	+2	-4	+1	-4	---	-1	---	---	---	---	-½	-1½	---	+2	+2	---
Rockville AHS	-2	+4	-4	-3	+4	+4	-1	-1	+1	---	-1	---	---	-½	---	-½	-½	---	+2	+4	---
Rockville WMBT	-2	+2	-3	-3	+2	+4	-1	-1	-1	---	---	---	---	---	---	-½	-½	-1	+2	+4	---
Garle Drive W/S&I Yard	---	+1	-1½	-3	+1	+1	-1	+2	-1	---	---	---	---	---	---	-3	-1½	-2	+2	+1	-1
Shady Grove W/S&I Yard	---	+4	-1½	-3	+4	+4	-2	+4	+4	---	+4	---	---	---	---	-3	-4	-1	+2	+4	-1



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACTS

ROCKVILLE D
(With A-17)

Alternative Preliminary
Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL				ECOLOGICAL				VISUAL/PHYSICAL			
	Displacement/ Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/General Plans	Community Involvement	Government Agencies	Historical/ Archaeological	Parkland/ Recreational	School/ Institutions	Soil/Geology	Water/ Hydrology	Vegetation/ Wildlife	Parking	Site Devel. Comments	scenic Resources	
Nicholson Lane ARS			○	●●●●●	○	○	○	●	○	○	○	○	○	○		●●●●●	○	○	○	○	○	●
Nicholson Lane Split	●		○	●●●●●	○	○	○	○	○		○		○	○		●●●●●	○	○	○	○	○	●
Nicholson Lane West	●		○	●●●●●	○	○	○	○	○		○		○	○		●●●●●	○	○	○	○	○	●
Twinbrook ARS	●●	●●	○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Twinbrook ARS M	●	●●	○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Twinbrook C	●●	●●	○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Twinbrook T S	●●	●●	○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Twinbrook A			○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Twinbrook B	●●	●●	○	●●●●●	○	○	○	○	○	○	○	○				○	○					○
Rockville ARS	●		○	●●●●●	○	○	○	○	○		○	○		○		●●●●●	○					○
Rockville W/ART	●		○	●●●●●	○	○	○	○	○		○	○		○		●●●●●	○					○
Gable Drive W/S&I Yard			○	●●●●●	○	○	○	○	○		○	○				●●●●●	○					○
Shady Grove W/S&I Yard			○	●●●●●	○	○	○	○	○		○	○				●●●●●	○					○

ENVIRONMENTAL EVALUATION MATRIX



ROCKVILLE ROUTE, SEGMENTS 14, 15, 16, 17 LOCAL IMPACT
SOCIO-ECONOMIC

ROCKVILLE D
(WITH A-17)
Alternative Preliminary
Evaluation/Comparison

STATION	SOCIO-ECONOMIC										CULTURAL				ECOLOGICAL				VISUAL/PHYSICAL		
	Displacement/Relocation	Employment	Access	Traffic	Safety	Operation	Convenience	Construction Costs	Land Use/Value Intensity	Conformance w/ General Plans	Community Involvement	Government Agencies	Historical/Archaeological	Parkland/Recreational	Schools/Institutions	Water/Geology	Vegetation/Wildlife	Parking	Site Development	Scenic Resources	
Nicholson Lane ARS	---	---	+2	-3	-½	+4	+1	-1	+4	---	+2	---	---	-4	---	-2	-1½	+1	+2	-1	
Nicholson Lane Split	-1	-1	+4	-4	-½	+4	+1	-2	+4	---	+4	---	-2	-2	---	-2	-1½	+1	+4	-1	
Nicholson Lane West	-1	-1	+2	-4	-½	+4	+1	-2	+1	---	+1	---	---	---	---	-2	-1½	+1	+2	-1	
Twinbrook ARS	-4	-2	+2	-1½	-2½	+4	-4	-1	-1	-4	-2	---	---	---	---	-½	---	+2	+1	---	
Twinbrook ARS M	-1	-2	+4	-1½	-2½	+4	-1	-1	+1	-4	-2	---	---	---	---	-½	---	+2	+2	---	
Twinbrook C	-4	-4	+4	-1½	-2½	+2	-1	-1	-1	-4	-2	---	---	---	---	-½	---	+2	+2	---	
Twinbrook TS	-4	-2	+2	-1½	-½	-2	+4	-1	+2	-1	---	---	---	---	---	-½	---	+4	+4	---	
Twinbrook A	---	---	+2	-1½	-½	-2	+1	-1	+4	-1	---	---	---	---	---	-1½	-1	+4	+4	---	
Twinbrook B	-2	-1	+1	-3	-½	+4	-1	-4	+2	-1	---	---	---	---	---	-1½	---	+2	+2	---	
Rockville ARS	-2	-1	+4	-4	-3	+4	+4	-1	-1	---	-1	---	---	---	---	-½	---	+2	+4	---	
Rockville WMRT	-2	-1	+2	-3	-3	+2	+4	-1	-1	---	---	---	---	---	---	-½	-1	+2	+4	---	
Gunle Drive W/S&I Yard	---	---	+1	-1½	-3	+1	+1	-1	+2	---	---	---	---	---	---	-3	-1½	+2	+1	-1	
Shady Grove W/S&I Yard	---	---	+4	-1½	-3	+4	+4	-2	+4	---	+4	---	---	---	---	-3	-4	+2	+4	-1	



1990 AM Peak Hour Arrivals – All Modes* for Rockville Route

Stations – Route A	1	2	3	4	ARS
	1990 AM Peak 2-Hour Transit Work Trips (Bus Only & Rail Related)	1990 AM Peak 1-Hour Transit Work Trips (Bus Only & Rail Related) (60% - 1)	1990 AM Peak 1-Hour Total Transit Trips (Bus Only & Rail Related) (100%-2)	1990 AM Peak 1-Hour Total Transit Trips* (Rail Related Only) (95%-3)	ARS 1990 AM Peak 1-Hour Total Transit Trips* (Rail Related Only)
Nicholson	2276	1366	1503	1428	2134
Twinbrook	1526	916	1008	958	1647
Rockville:					
– with Twinbrook eliminated	9048	5429	5972	5673	–
– with Twinbrook included (ARS)	8808	5295	5814	5523	5391
– with Shady Grove added & Twinbrook eliminated	4588	2753	3028	2877	–
– with Shady Grove added & Twinbrook included	4360	2616	2878	2734	–
Shady Grove	4575	2745	3020	2869	–
Nicholson/Twinbrook Combined	3506	2104	2314	2198	–

Source WMATA Planning Staff, 1974.

1990 24 Hour Total Transit Trips (Rail Related Only)

Nicholson	9,125
Twinbrook	6,121
Rockville	
A. with Twinbrook eliminated	36,249
B. with Twinbrook included (ARS)	35,291
C. with Shady Grove added & Twinbrook eliminated	18,383
D. with Shady Grove added & Twinbrook included	14,045

Note: Conversion factor from one hour to 24 hour total is 15.65%

Source: WMATA planning staff, 1974.

Rockville Route: 1990 Park/Ride

Station	1990 AM Park Hour Auto Trips to Station (Park/Ride Only)	Parking Space Req'd to Meet Daily Park/Ride Demand	Parking Spaces Currently Programmed
Nicholson	397	860	1000
Twinbrook	120	260	1000
Rockville			
– with Twinbrook eliminated	1557	3425	500
– with Twinbrook included (ARS)	1581	3373	500
– with Shady Grove added & Twinbrook eliminated	547	1185	500
– with Shady Grove added & Twinbrook included	527	1142	500
Shady Grove	1060	2297	3000
Nicholson/Twinbrook combined	484	1048	2000

Source: WMATA Planning Staff, 1974.

5.6 Findings of the Impact Evaluation Matrix with Respect to Alternative Systems

a. Systems

The evaluation of the system alternatives was strongly influenced by a study of the service areas for the Rockville Route. The "Service Areas Map" shows the ridership catchment area for each station on the Proposed ARS-68 System: Grosvenor, Nicholson Lane, Twinbrook, and Rockville. The impact of adding or deleting a station from the ARS-68 System was assessed in terms of the distribution of patronage, traffic patterns and parking demands.

The Table of "1990 AM Peak Hour Arrivals--All Modes" suggests the distribution of ridership based on Alternative Systems ARS, A, B, C, and D. Working from this Table, a chart of "1990 AM Peak One Hour Arrivals" (rail-related only) shows the distribution of demand for each alternative.

Obviously, if an extension beyond Rockville is not built (the No Action alternative), a heavy demand is put on the Rockville terminal. The "Service Area Maps" show the ridership catchment areas for each alternative.

Ridership demand is reflected in the parking figures. The Table "Parking Demand and Supply for Four Rockville System Alternatives" shows the surplus or deficit in parking spaces. In terms of daily demand for parking alternatives, Systems A and B show substantial deficits at Rockville and Twinbrook, of 2009 and 1993 spaces respectively. Systems C and D, on the other hand, show surpluses of 977 and 941 spaces respectively. Peak hour demands show the same relationship; C and D have greater surpluses than A and B. Systems A and B also have a deficit of over 1000 cars at the Rockville Station for the peak hour. This deficit, of course, forces patrons to drive farther south to find parking space at Twinbrook or Nicholson Lane. This tendency, which is reported in the series of maps entitled "1990 AM Peak Hour Park/Ride Traffic Diversion from Rockville Station Service Area" shows the added traffic problems imposed by Systems A and B.

Diversion of ridership must inevitably reduce the level of traffic service in the Rockville Pike corridor. The Table entitled "Level of Traffic Service Comparison for Twinbrook and Nicholson Lane -- Transit Station Alternative Conditions" shows the impact of each system on major intersections in the corridor. Systems A and B have a worse effect than C or D.

The service area implications of the six system alternatives were weighed with the other impact factors considered in the Environmental Evaluation Matrix to select the most promising alternatives for study in the Final Evaluation.

Of the six system alternatives, Rockville D has more positive impacts and fewer negative impacts on the 20 socio-economic, cultural, ecological and visual/physical factors examined. Rockville C equals Rockville D in positive impacts but has more negative impacts. All other systems, including ARS-68, exhibit significant negative impacts. The following table summarizes the Regional Evaluation of the Six Alternative Systems considered for the end of A Route.

<u>System</u>	<u>Alignments</u>	<u>Comments</u>
ARS-68	A014, A015, A016 (a No Action alternative to the Rockville extension, A017)	.Projected parking deficit .Reduction in existing level of traffic service .Restricted access to service area .City and County opposition .Already funded <u>RECOMMENDATION</u> Deserves further study
Rockville A	A014, A015(or B-C), and A016 (a No Action alternative to the Rockville extension, A017)	.Projected parking deficit .Reduction in existing level of traffic service .Restricted access to service area .Governmental opposition .Discouragement of patronage <u>RECOMMENDATION</u> Drop from consideration
Rockville B	A014, A015(or B), and A016 (a No Action Alternative to the Rockville extension, A017)	.Projected parking deficit .Reduction in existing level of traffic service .Restricted access to service area .Governmental opposition <u>RECOMMENDATION</u> Drop from consideration
Rockville C	A014, A015(or B-C), and A017 (extension system)	.Projected parking surplus .Good access to service area .Minor effect on existing levels of traffic service .Excellent operational efficiency .Governmental support <u>RECOMMENDATION</u> Deserves further study
Rockville D	A014, A015(or B), and A017 (extension system)	.Projected parking surplus .Overlap of service areas .Minor effect on existing traffic service levels .Operational inefficiency .Additional cost

<u>System</u>	<u>Alignment</u>	<u>Comments</u>
		.Governmental support <u>RECOMMENDATION</u> Deserves further study
No Action	Terminate A Route at Grosvenor Station, no S&I Yard on the Route, no service to Rockville (i.e., eliminate A014, A015, and A016)	.Severely restricted service area .Discouragement of ridership .Projected parking deficit .Operational inefficiency .Governmental opposition <u>RECOMMENDATION</u> Drop from consideration

Conclusion

From this analysis it is evident that in terms of the regional impacts on patronage, access, traffic, travel expense, operation and community involvement, the Rockville C and D system alternatives show clear superiority over the other four alternatives. Final Evaluation therefore included study of ARS-68 and Rockville C and D; systems Rockville A and B were not further considered.

Status

After a series of public hearings where all concerned citizens and groups were able to express their views, the Montgomery County Council and the WMATA Board approved resolutions in 1975 to proceed with alternative System D. Work on General Plans of the system was begun.

5.7 Terminal-Alignment Alternatives for the 'A' Route Extension

There are several options for the location of a terminal station and service and inspection yard north of Rockville, and for the alignment to serve the terminal.

A Route Extension Alternatives

<u>Alignment in Relation to the B&O Tracks</u>	<u>Terminal and Yard Locations</u>		
	<u>Rockville</u>	<u>Gude Drive</u>	<u>Shady Grove</u>
West, at grade	RK-W (No Action)	GD-W	SG-W*
West, aerial in part		GD-Wa	SG-Wa
West, then east, at grade			SG-WE+
West, underground			SG-Wt
East, aerial in part		GD-Ea	SG-Ea

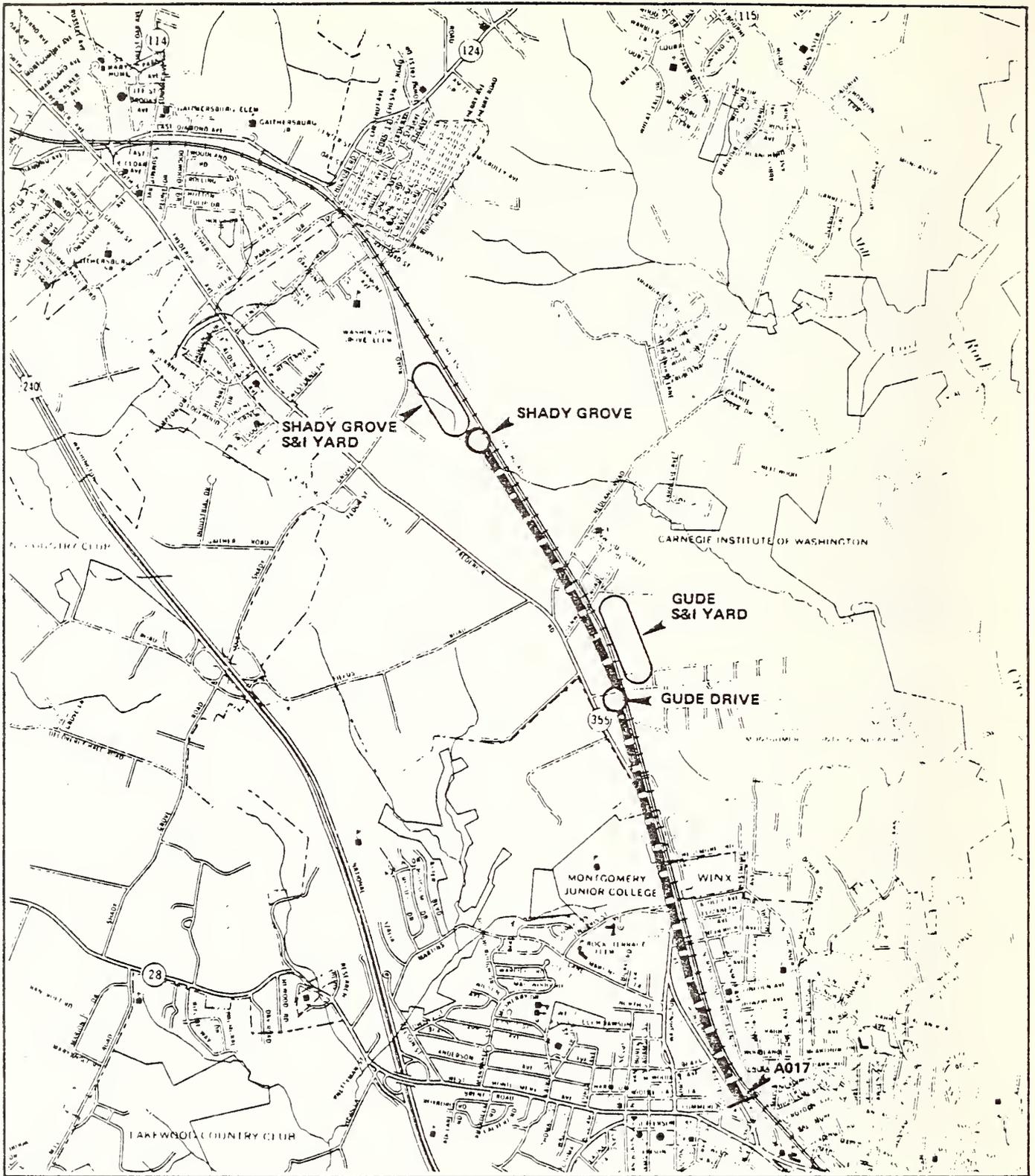
*SG-W has two platform options; an early platform location was dropped in favor of one closer to Fields Road.

+SG-WE has two options for carrying the Metro tracks from the west to the east side of the B&O: aerial (a) or tunnel (t) structures.

Details of the alignment, station, and yard alternatives are discussed in Chapter 4 of this Report, "Description of the Proposed Action and Its Alternatives". Station site designs are also discussed there.

The No Action alternative (RK-W) would, of course, be one of the three system alternatives for a terminal station and service yard in Rockville (ARS-68, A or B).

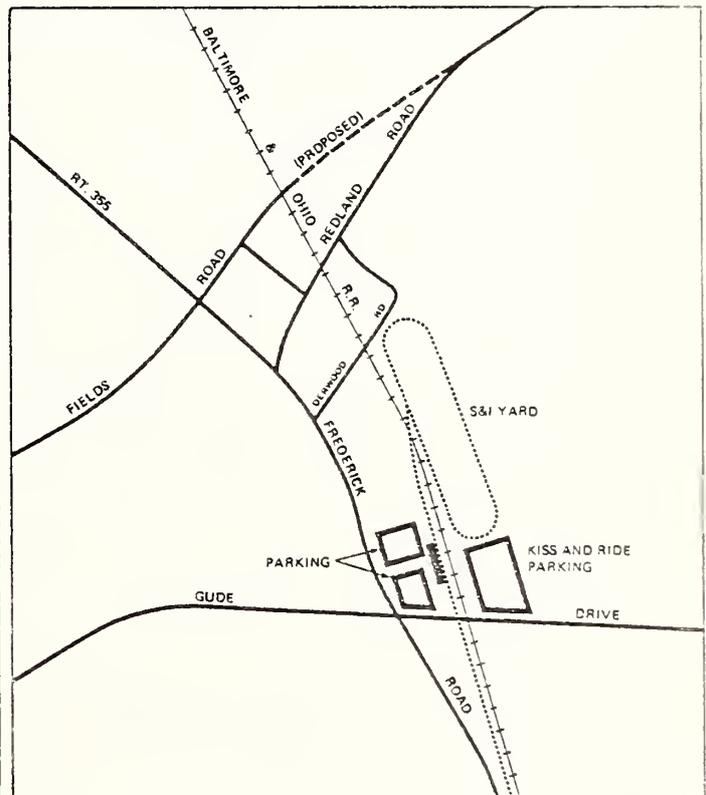
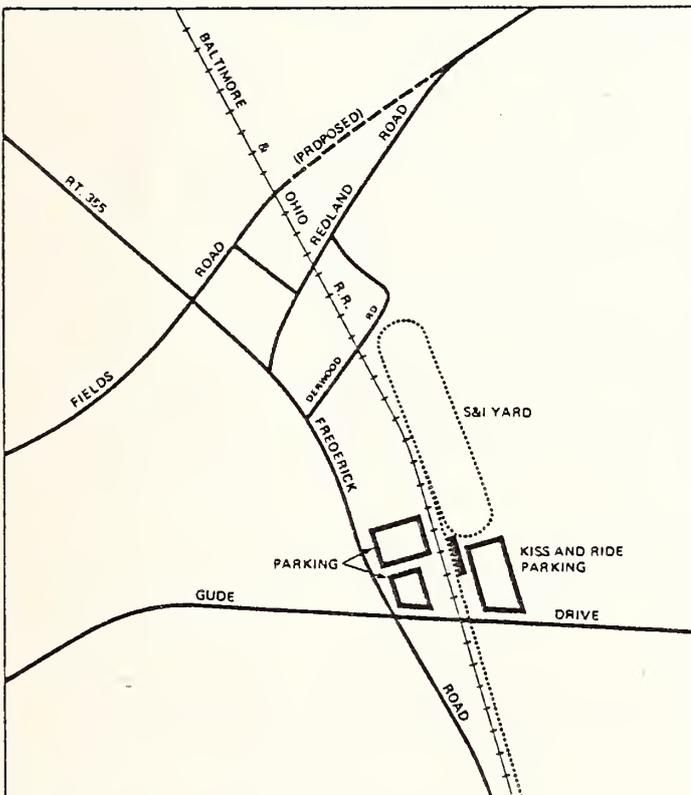
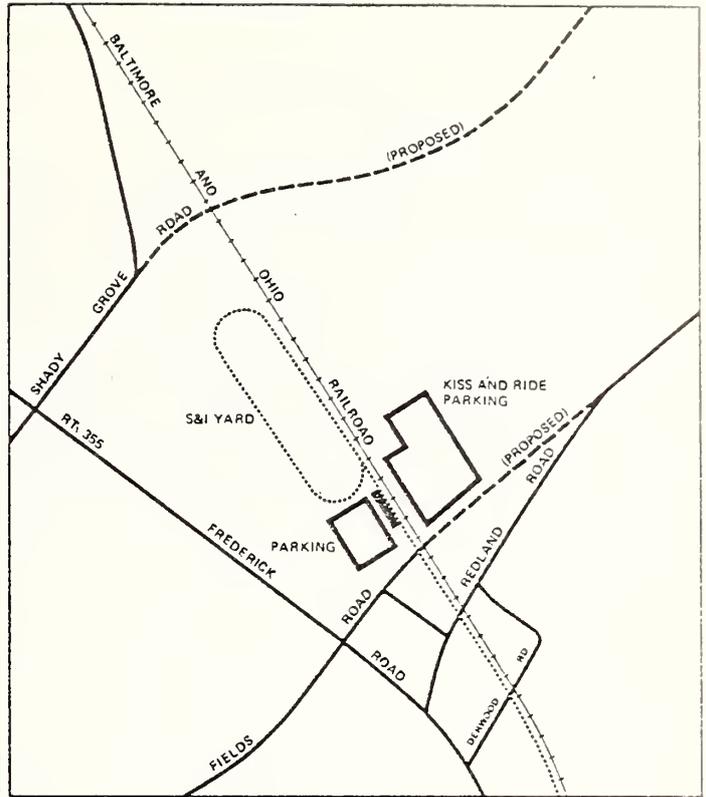
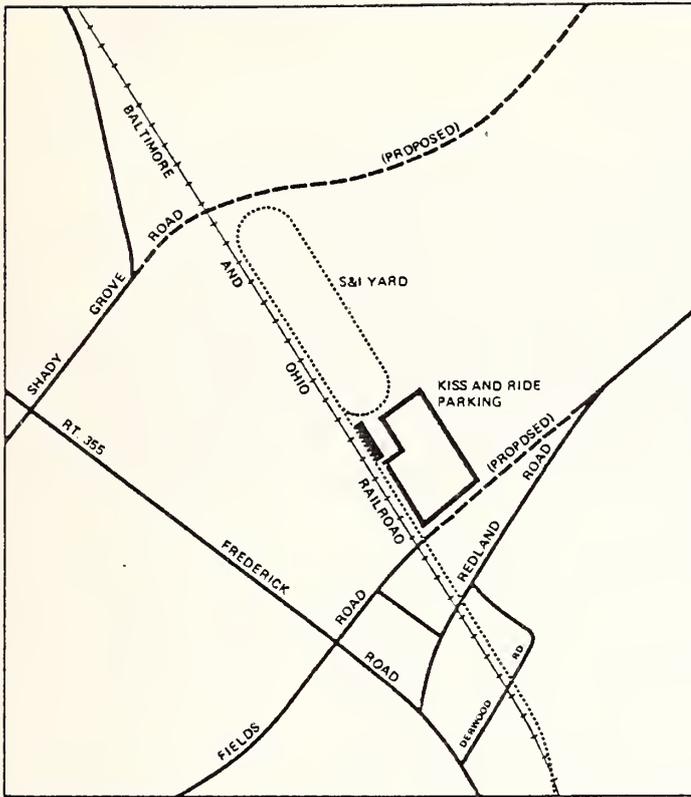
For any of the three systems (A, B or ARS-68), the station and yard in Rockville are the same. For the sake of comparing an adopted and funded alternative with the proposed action (extending the system), the ARS-68 terminal and service yard at Rockville are evaluated.



-  Station
-  Alignment

ROCKVILLE ALTERNATIVES





ALTERNATIVE STATION DESIGNS



5.8 Alignment Evaluation Matrices

Impacts for the nine alignments studied as alternatives for the Rockville Extension are tabulated according to Long-Term Impacts (Table A) and Short-Term Impacts (Table B). The tables record impacts as negative or positive, with purely judgmental dimensions assigned to them: major, moderate, minor. The judgments are based upon a well-informed understanding of the magnitude each impact will have, but it should not be assumed that these magnitudes are based upon any real measure of impact. Impact categories are assumed to be co-equal in the absence of any universally accepted value system. Magnitudes are on the order: Major: 2X Moderate: 2X Minor for purposes of aggregating them.

ALIGNMENT-TERMINAL ALTERNATIVES	MAJOR MOD	MINOR	LONG TERM NEGATIVE	MAJOR MOD MINOR	SHORT TERM NEGATIVE	LONG TERM POSITIVE	IMPACT FACTORS	PAGE TOTAL OF POSITIVE IMPACTS	PAGE TOTAL OF NEGATIVE IMPACTS
RK W							HOUSING DISPLACEMENT BUSINESS DISPLACEMENT COST (1970'S, MILLIONS) COST OF BUSWAYS (MILLIONS) PARK RD/MIDDLE LA. FREDERICK ROAD WESTMORE ROAD HUNGERFORD DRIVE GUDE DRIVE DERWOOD ROAD FIELDS RD./REDLAND RD. TRAFFIC DISRUPTIONS TRAFFIC PATTERN ACCESS TO STATIONS PARKING AT STATIONS BUS ACCESS OPERATIONAL EFF. SYSTEM OPERATIONAL EFF. YARD SAFETY OF METRO PASS. COMMUNITY SAFETY EFFECT ON COMMUNITY GOVERNMENT REACTION CONFORMANCE WITH LOCAL PLANS SCHOOLS/INSTITUTIONS PARKS/RECREATION HISTORICAL SITES APPROPRIATE TO SURROUNDINGS STATION & YARD APPEARANCE TOPOGRAPHIC RELATIONSHIP ALIGNMENT APPEARANCE RIDER EXPERIENCE	0-4-2	0-1-0
GD W								0-5-4	0-1-0
GD W ₁								0-4-5	0-1-0
GD E ₁								0-5-5	0-0-0
SG W								0-4-0	0-0-0
SG W ₁								0-3-0	0-0-0
SG WE								0-4-0	0-1-0
SG E ₁								0-4-0	0-1-0
SG-WT								1-1-0	0-1-0

ALIGNMENT-TERMINAL ALTERNATIVES

IMPACT FACTORS	SOCIO ECONOMIC	CULTURAL	VISUAL
HOUSING DISPLACEMENT			
BUSINESS DISPLACEMENT			
COST (1970'S, MILLIONS)			
COST OF BUSWAYS (MILLIONS)			
PARK RD/MIDDLE LA.			
FREDERICK ROAD			
WESTMORE ROAD			
HUNGERFORD DRIVE			
GUDE DRIVE			
DERWOOD ROAD			
FIELDS RD./REDLAND RD.			
TRAFFIC DISRUPTIONS			
TRAFFIC PATTERN			
ACCESS TO STATIONS			
PARKING AT STATIONS			
BUS ACCESS			
OPERATIONAL EFF. SYSTEM			
OPERATIONAL EFF. YARD			
SAFETY OF METRO PASS.			
COMMUNITY SAFETY			
EFFECT ON COMMUNITY			
GOVERNMENT REACTION			
CONFORMANCE WITH LOCAL PLANS			
SCHOOLS/INSTITUTIONS			
PARKS/RECREATION			
HISTORICAL SITES			
APPROPRIATE TO SURROUNDINGS			
STATION & YARD APPEARANCE			
TOPOGRAPHIC RELATIONSHIP			
ALIGNMENT APPEARANCE			
RIDER EXPERIENCE			

ENVIRONMENTAL EVALUATION MATRIX
LONG TERM



KEY TO TOTALS

MAJOR MOD MINOR

LONG TERM NEGATIVE

SHORT TERM NEGATIVE

LONG TERM POSITIVE

MAJOR MOD MINOR

0 - 3 - 0

ALIGNMENT-TERMINAL ALTERNATIVES	IMPACT FACTORS										ECOLOGICAL										TOTAL NEGATIVE IMPACTS FROM PRECEDING PAGE	TOTAL POSITIVE IMPACTS FROM PRECEDING PAGE	TOTAL NEGATIVE IMPACTS	TOTAL POSITIVE IMPACTS	NET IMPACTS	RANK						
	HK W											NOISE	VIBRATION	REGIONAL AIR QUALITY	LOCAL (STATION AREA) AIR QUALITY	SOIL STABILITY	SOIL EROSION	FILL REQUIRED	SOIL DISPOSAL	GROUND WATER							STREAM DISRUPTION	WATER QUALITY	VEGETATION	AGRICULTURAL USES	WILDLIFE	PAGE TOTAL OF NEGATIVE IMPACTS
HK W																											0.31	6.42	6.73	6.73	4111	
GD W																											0.32	0.55	0.87	0.87	230	
GD W _a																										0.32	0.45	0.77	0.10	0.67	19F	
GD E _a																										0.32	0.30	0.87	0.00	0.87	21E	
SG W																										0.24	0.40	0.64	0.64	16D		
SG W _a																										0.24	0.40	0.64	0.00	0.64	14C	
SG W _E																										0.24	0.40	0.64	0.64	16D		
SG E _a																										0.24	0.31	0.64	0.00	0.64	16B	
SG WT																										0.35	1.10	1.45	0.20	1.26	19A	



ENVIRONMENTAL EVALUATION MATRIX
LONG TERM

KEY TO TOTALS
MAJOR MOD MINOR

LONG TERM NEGATIVE
SHORT TERM NEGATIVE
LONG TERM POSITIVE

0 - 3 - 0

MAJOR MOD MINOR

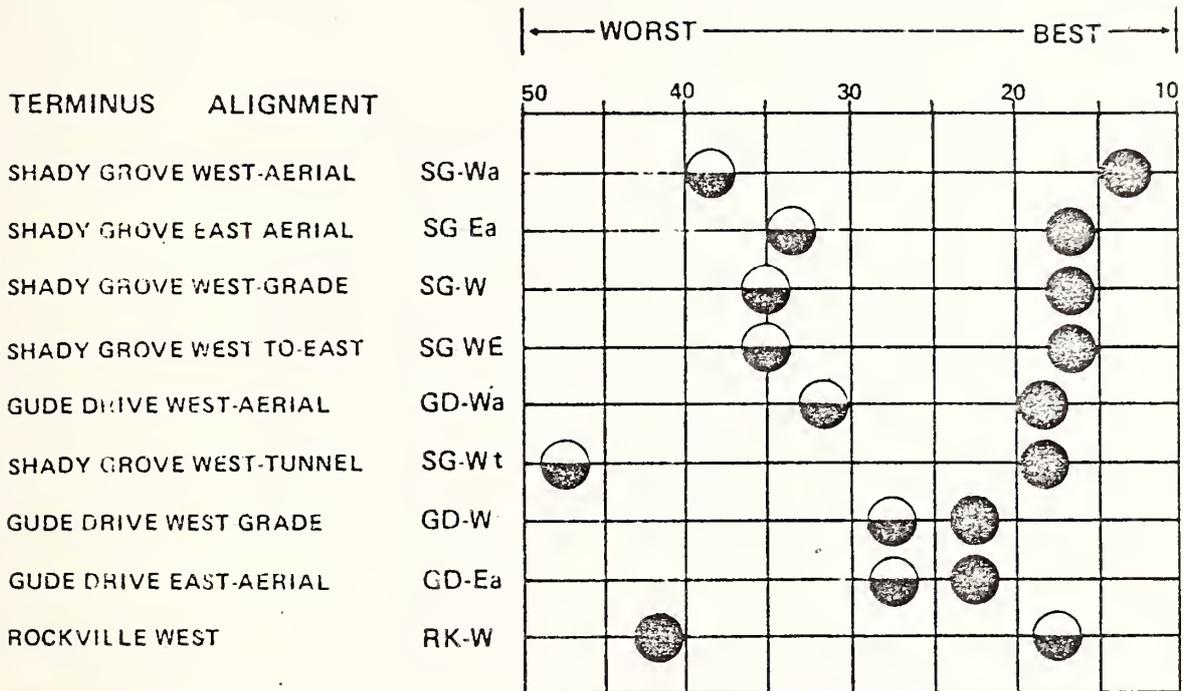
LONG TERM NEGATIVE
SHORT TERM NEGATIVE
LONG TERM POSITIVE

5.9 Alignment Evaluation Conclusions

The alignments, when evaluated according to their long-term impacts, fall into the following interval order.

A ROUTE EXTENSION

INTERVAL ORDERING OF ALIGNMENT ALTERNATIVE



Long-term negative impacts



Short-term negative impacts

Alignments are ranked according to long term impacts, alignments with equal long-term impacts are then ranked according to short-term impacts

The Shady Grove site for a terminal location has better impacts for all but one alignment than does the Gude Drive site. The Shady Grove terminal location has better access and is more in conformance with surrounding uses than does Gude Drive.

The west-of-the-B&O alignment to Shady Grove is superior to the east side alignment. There are problems of dislocation and safety on the east, where Metro would be very close to the underground tanks of the Washington Gas & Light Company's storage farm. Metro would also pass close to the only two communities on the Route, Lincoln Park and Derwood, both on the east of the B&O.

Of the west side alignments, SG-Wa, an alignment featuring an aerial structure above Frederick Avenue and Westmore Road, is ranked highest. It would, however, be an obtrusive element in an otherwise small-scale and suburban setting. More important, Metro's investment in an aerial structure to permit Frederick Avenue and Westmore Road to remain open will be for a short-term, high-cost remedy whose only virtue is that it permits a presently bad condition (grade crossings of the B&O) to be continued. The presence of an aerial Metro structure parallel to an at-grade B&O alignment will make it difficult to replace the grade-crossings; any route across the B&O, where accidents have been experienced, must go over the railroad and under the transit line. Alternatively, the B&O tracks could be raised on an embankment to overpass the two roads.

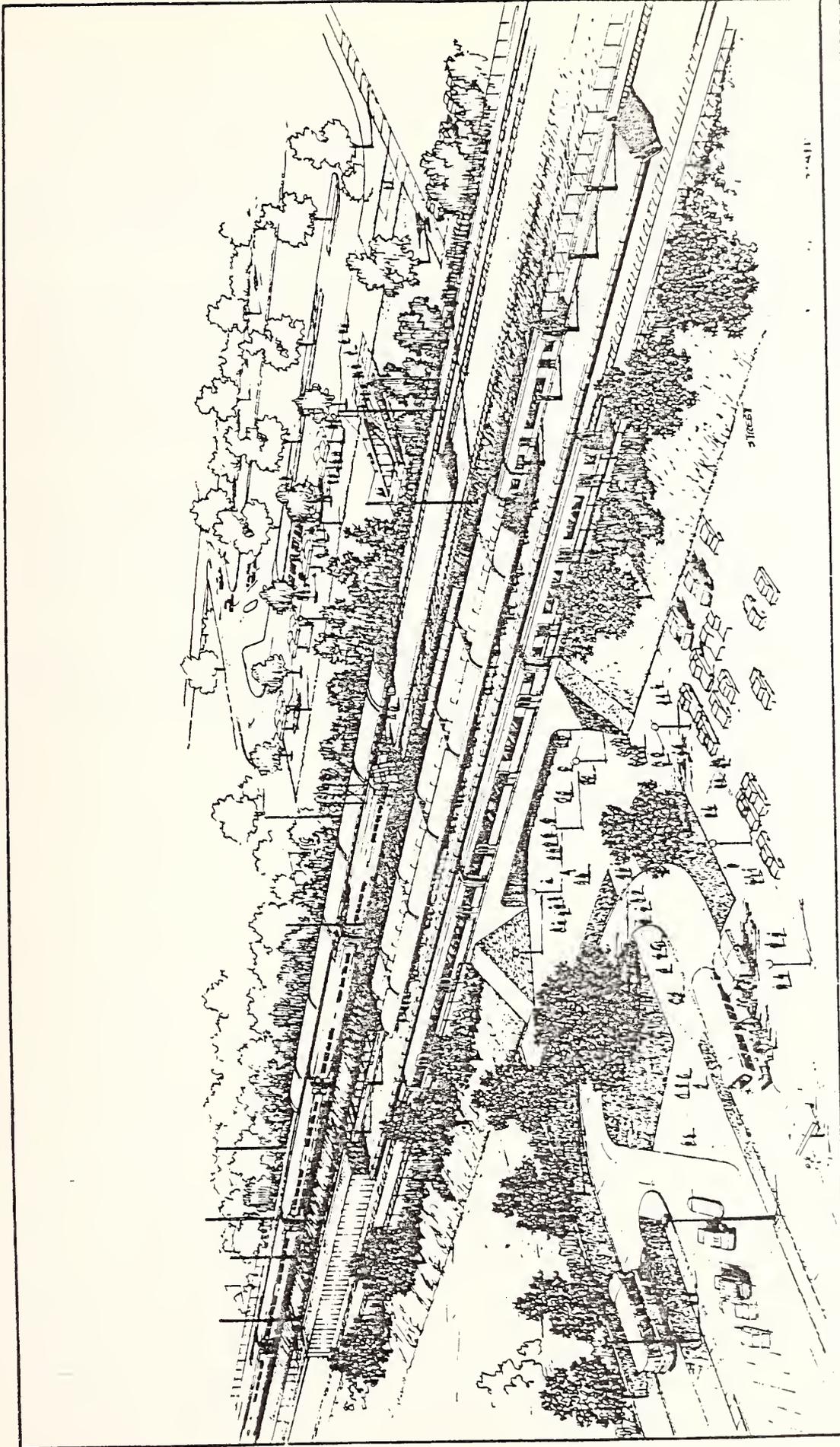
A better solution to the problem of communication between Lincoln Park and the Rockville business district would be to examine the location and construction of a bridge over both Metro and B&O rails. A pedestrian-bicycle overpass would be an interim solution which might, in the long-run, be better than vehicular access with its attendant traffic and safety problems in a residential neighborhood. Such considerations apply to all the proposed aerial alignments. At present local jurisdictions are studying the cost/benefit of connections across the project.

The Shady Grove west-to-east alignment (SG-WE) is equal to the west side alignment in terms of impacts. It is a longer and more expensive alignment, however, as it requires a bridge or tunnel to cross from the west side of the B&O to the east. The only reason for such a maneuver would be the superiorities of the east side rail yard location over the west side rail yard. No superiority can be discovered, however; effects on streams would be worse on the east, though soils are better drained.

Current County plans for a Service Park in the same area would be completely upset, and negotiations over condemnation rights would add a minimum of one year to the construction schedule.

That leaves Shady Grove terminal with an at-grade west-of-the-B&O alignment (SG-W) as the preferred, if not the highest ranking alternative.

The negative impacts of the No Action alternative (RK-W, a terminal in Rockville) are many. They primarily concern the alternative's unsatisfactory impact on system operations, the inability of such a terminal location to accommodate the influx of riders which it is the purpose of the Metro system to attract, and the strong opposition from City and County based on the



9-411

STATION CONDITION ANALOGOUS TO SHADY GROVE
NEW CARROLLTON STATION



Source: Harry Weese & Associates - Architects

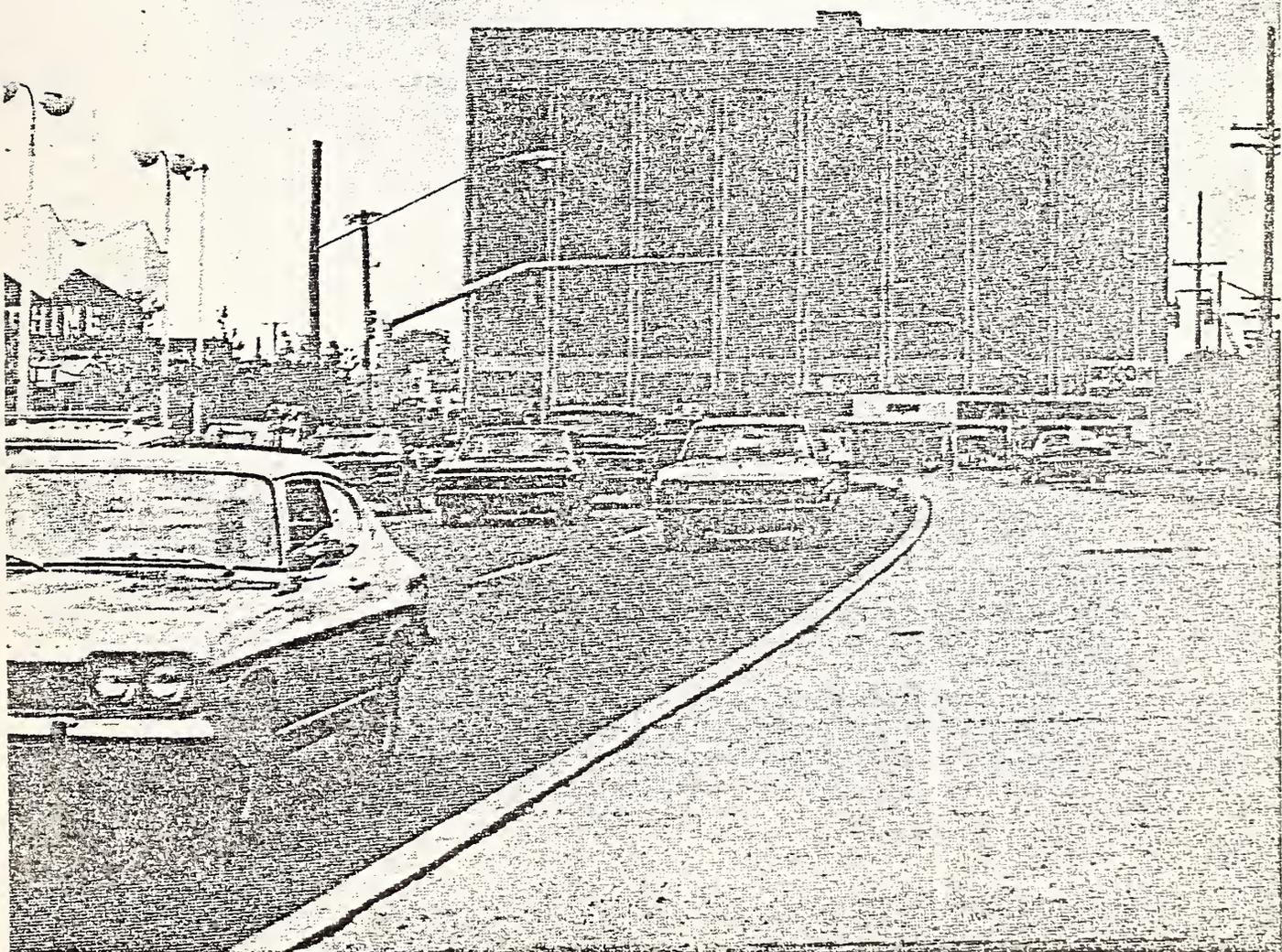
blighting effect a railyard and Metro-generated traffic would have on downtown Rockville (see EIS for A014-A015).

The cut and cover alignment (SG-Wt) for Segment A017 was also considered. The construction of a cut and cover tunnel instead of the proposed at-grade construction would have a greater short-term impact on the community and the environment than an at-grade alignment.

Cut and cover construction will cause considerable short-term disruption to utility lines which presently cross the B&O Railroad corridor. These utilities serve both the community and the B&O. It may also necessitate additional construction work and underpinning to the existing B&O track. Furthermore, cut and cover construction will produce many thousand cubic yards of spoil.

The major impact, however, would be economic. It is estimated that construction costs will average \$2,000.00 more per foot than at-grade construction (additional costs may be incurred depending on depth and obstructions). This means that the 14,620 foot Segment (A017) will cost approximately \$29,240,000 more than an at-grade route.

Such an expenditure to hide Metro tracks in a corridor already occupied by railroad tracks can hardly be justified, less so when one considers that most of the adjacent land uses are existing and zoned industrial.



HUNGERFORD DRIVE IN ROCKVILLE, MARYLAND

6. DESCRIPTION OF THE ACTION'S PURPOSES

6.1 Function of Station North of Rockville

When WMATA approved the Regional Metro System (ARS) in 1968 the terminal station for the Rockville Route (also called the 'A' Route) was designated for downtown Rockville, at a site between the B&O Railroad and the recently built Rockville Mall. While this decision may have been appropriate at the time, subsequent analyses and events have combined to indicate that Rockville is no longer an appropriate location for a terminal station due to the immense traffic problem serving the developing up-County residential and employment areas imposes upon the City. Significant, negative impacts would ensue from heavy roadway congestion throughout Rockville. Public consensus now indicates the need for a terminal station at a location beyond Rockville.

As the terminal station on the Route, Rockville is attractive to potential park-and-ride patrons from a service area that is much larger than the service areas for stations at intermediate points, closer to the District of Columbia (see Service Area Map). Moreover, Rockville's service area has been developing, and is expected to continue developing rapidly in accordance with the regional and County corridor development policies. A demand analysis conducted in 1974 by WMATA's planning staff indicates a need for almost 1600 spaces to meet peak hour park-ride demand and in excess of 3000 parking spaces to meet total daily park-ride demand at Rockville. However, the number of park-ride spaces programmed for Rockville is 500 and the constrained nature of the site indicates that this many spaces will be difficult to provide. Even if more spaces could be provided, a substantial negative community impact could be expected because prime downtown land would be consumed by parking instead of commercial and other uses which benefit the community.

With the ARS System demand for parking at Rockville significantly greater than the supply, the overflow is expected to go into neighboring commercial and residential areas, and it is admitted that some transit traffic would spill over from the Rockville Station to Twinbrook and Nicholson Lane Stations even though this is not reflected in the WMATA demand analysis. This diversion of traffic to the two stations south of the Rockville Station would in turn create congestion along the approaches to Twinbrook and Nicholson Lane Stations. Such a problem would discourage potential patronage of Metro. There is also a strong possibility that additional park-and-ride patronage at Twinbrook and Nicholson Lane would exceed the number of parking spaces programmed for them. In addition, such an overflow and diversion of Metro patrons would entail unnecessary miles traveled and fuel consumed.

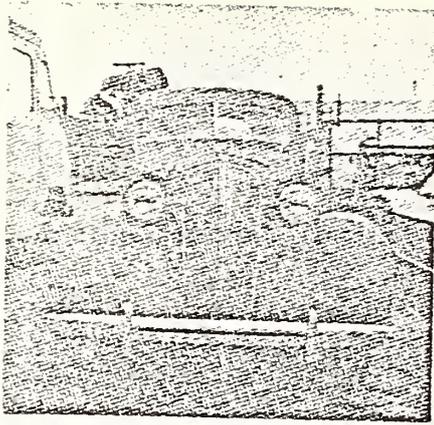
If one ignores the foregoing concerns for a moment and assumes that it is possible to park 3000 cars near the Rockville Station, the street network leading to the Station is unable to accommodate such traffic. Existing traffic conditions in central Rockville are inadequate for present needs, as documented in the 1973 Traffic Operations to Increase Capacity and Safety (TOPICS) Study conducted by Maryland DOT. This study indicates that many roadways leading into Rockville, Montgomery Avenue (Md.355) being an outstanding example, are not, and will not be, suited for handling the non-Rockville demand that a terminal station will generate. (The maps and chart at the end of this Chapter indicate Rockville demand volumes for Rockville as a terminal station.) Even more crucial are the existing poor levels of service found at several key intersections on Hungerford Drive and Montgomery Avenue, two names for Md. 355, a key access roadway for Metro patrons. In addition, within a 2500 foot radius of the Station are two of Rockville's major accident locations; the City's worst accident location being approximately one block from the Station at the intersection of Jefferson Street and Hungerford Drive.

From the foregoing it is evident that a terminal station at Rockville would cause serious problems for Rockville's street system, with spill-over effects on the proposed Twinbrook and Nicholson Lane Stations; a terminal station at Rockville would negatively affect commercial and residential areas adjacent to the proposed Station; moreover, a terminal station at Rockville would result in the City's being less attractive as a shopping and employment center contrary to the regional wedges and corridors plan which envisions Rockville as an urban center to attract business, industry, and new residential development.

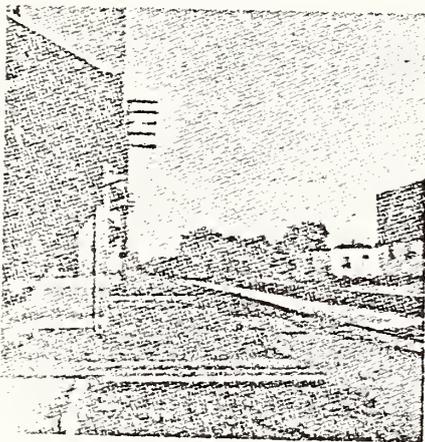
A terminal station north of Rockville is essential if the City of Rockville is to survive as anything but a massive parking lot (level of service F at most intersections), and is equally essential to give Rockville the opportunity to fulfill its regional role as an attractive urban nucleus.

6.2 Function of Storage and Inspection Yard North of Rockville

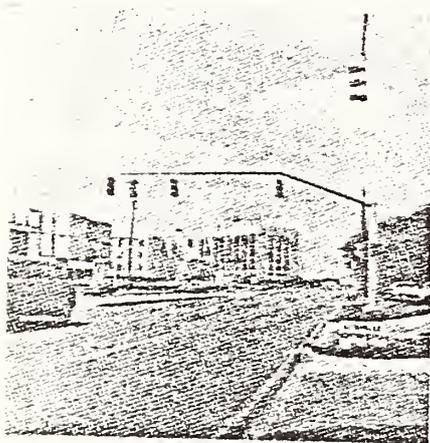
The Regional Metro System adopted by WMATA in 1968 designated the Storage, Service and Inspection (S&I) Yard for the Rockville Route in downtown Rockville at a site just beyond the proposed Rockville Station on a relatively unimproved tract of land between the B&O Railroad and Hungerford Drive (Route 355). Similar to the problem with a terminal station in Rockville, subsequent analyses and refinements of system



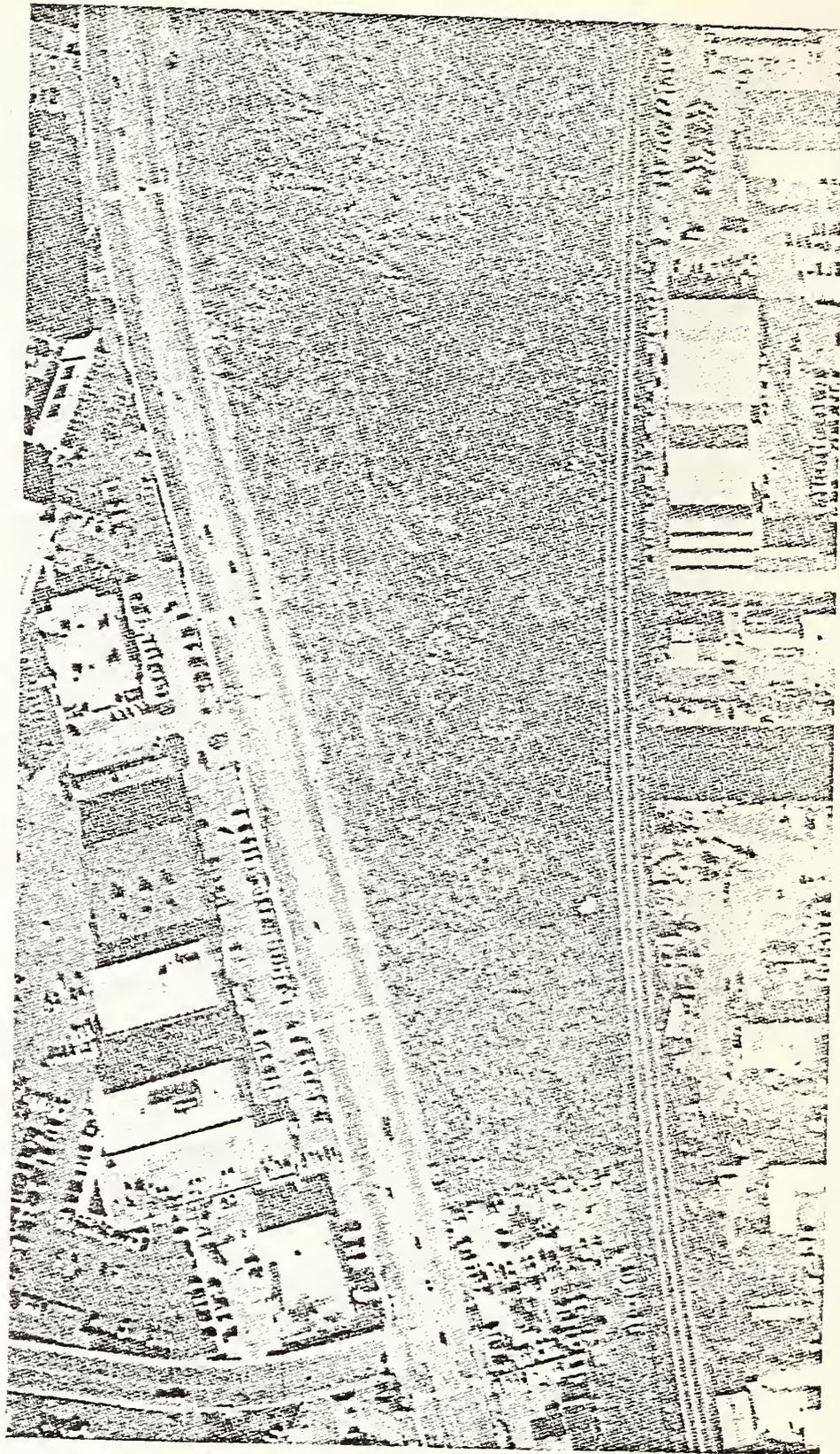
Car on Rockville Station site



Historic Rockville Station



Hungerford Dr. in Rockville



Aerial view of Rockville Yard site

design criteria by WMATA indicate that an S&I Yard in Rockville is inappropriate. The S&I Yard cannot be eliminated since it is operationally necessary to serve the Rockville Route if Metro is to extend north on this Route beyond Grosvenor Station. The necessity for Metro to extend to Rockville has been amply established, and since an S&I Yard is therefore necessary to the Route, it is necessary to look beyond the City of Rockville for a location for this facility.

The City of Rockville is a poor location for such a facility because a 26.5 acre S&I Yard (the ARS-Modified design for the Rockville S&I Yard approved in 1974) would have a severe blighting influence on the downtown area.¹ In addition, such a facility would be contrary to the City's efforts to upgrade the downtown area and would be incompatible with the surrounding land, most of which is zoned commercial. Furthermore, an S&I Yard at the presently proposed site would result in a loss to the City of Rockville of prime taxable land.

The foregoing are socio-economic considerations which strongly indicate that a Storage and Inspection Yard serving the Rockville or 'A' Route should be located beyond the City of Rockville.

Aside from socio-economic conditions, there is also an operational consideration for locating the Yard beyond Rockville. The 26.5 acre S&I design for Rockville is the product of several design modifications to the 17.7-acre Rockville S&I Yard originally adopted in 1968. The original design no longer conformed to newer and more refined operating criteria. The ARS-Modified scheme, which takes additional space and requires additional equipment, most important of which is a turntable, meets basic operational requirements. While this scheme makes it possible to build an operable yard in Rockville, train movement within the yard is still considered inefficient because of tight spaces. A yard loop is more efficient to turn trains than is a turntable. However, space requirements do not permit a loop within the Rockville yard. (A one-loop track requires a minimum radius of 300 feet and a minimum area of 35-40 acres.) To obtain the space for a loop at a reasonable cost and without deleterious impacts on business and residential neighborhoods, the S&I Yard which serves the Rockville Route must be located beyond the City of Rockville in a less urbanized setting.

¹See EIS for A014-A016, Chapter 6 "Final Evaluation".

Rockville Route: 1990 AM Peak Hour Station Arrivals (Rail Related Only)

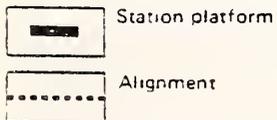
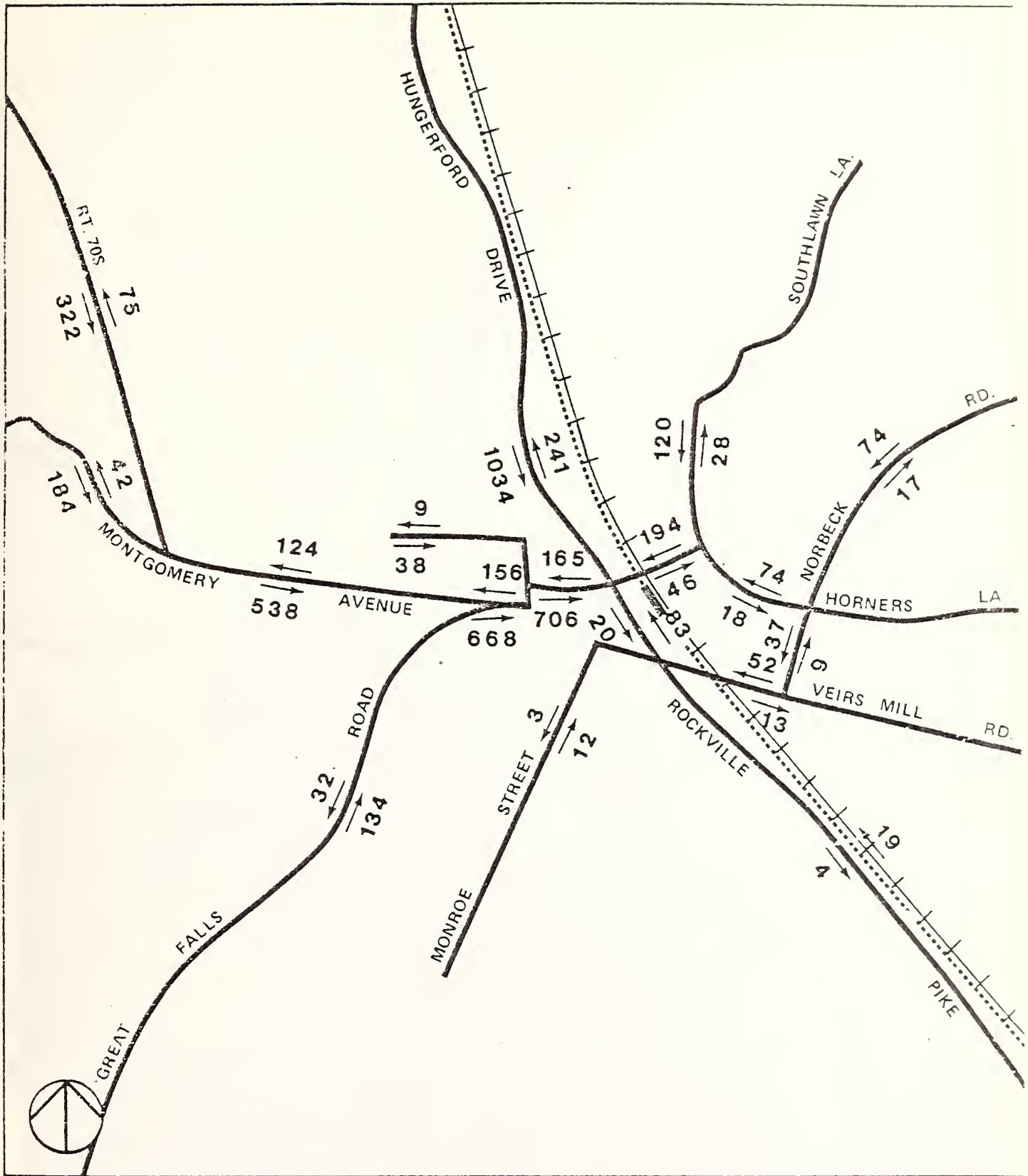
ALTERNATIVES: with/without Twinbrook
with/without Shady Grove

	ARS-68	A	B	D	C	No Action
Shady Grove				2869	2869	
Rockville	5391	5523	5673	2734	2877	
Twinbrook	1647	958		958		
Nicholson	2134	1428	2198	1428	2198	
TOTAL	9172	7909	7871	7989	7944	

Source: WMATA Planning Staff, 1974.

Parking Demand and Supply for Four Rockville System Alternatives

	Parking Req'd to Meet Daily Demand	Parking Space Under Current Design	Deficit or Surplus	1990 AM Peak Demand for Parking	Peak Parking Space Avail- able	Peak Deficit Parking Space	Deficit or Surplus
Alternative System A							
Rockville	3425	500	-2925	1581	500	-1081	
Nicholson Twin- brook Combined	2084	2000	+ 916	484	2000	+1516	
A Total	4509	2500	-2009	2065	2500	+ 435	
Alternative System B							
Rockville	3373	500	-2873	1557	500	-1057	
Twinbrook	260	1000	+ 740	120	1000	+ 880	
Nicholson Lane	860	1000	+ 140	397	1000	+ 603	
B Total	4493	2500	-1993	2074	2500	+ 426	
Alternative System C							
Shady Grove	2297	3000	+ 703	1060	3000	+1940	
Rockville	1142	500	- 642	547	500	- 47	
Nicholson Twin- brook Combined	1048	2000	+ 916	484	2000	+1516	
C Total	4487	5500	+ 977	2091	5500	+3409	
Alternative System D							
Shady Grove	2297	3000	+ 703	1060	3000	+1940	
Rockville	1142	500	- 642	527	500	- 27	
Twinbrook	260	1000	+ 740	120	1000	+ 880	
Nicholson Lane	860	1000	+ 140	397	1000	+ 603	
D Total	4559	5500	+ 941	2104	5500	+3396	

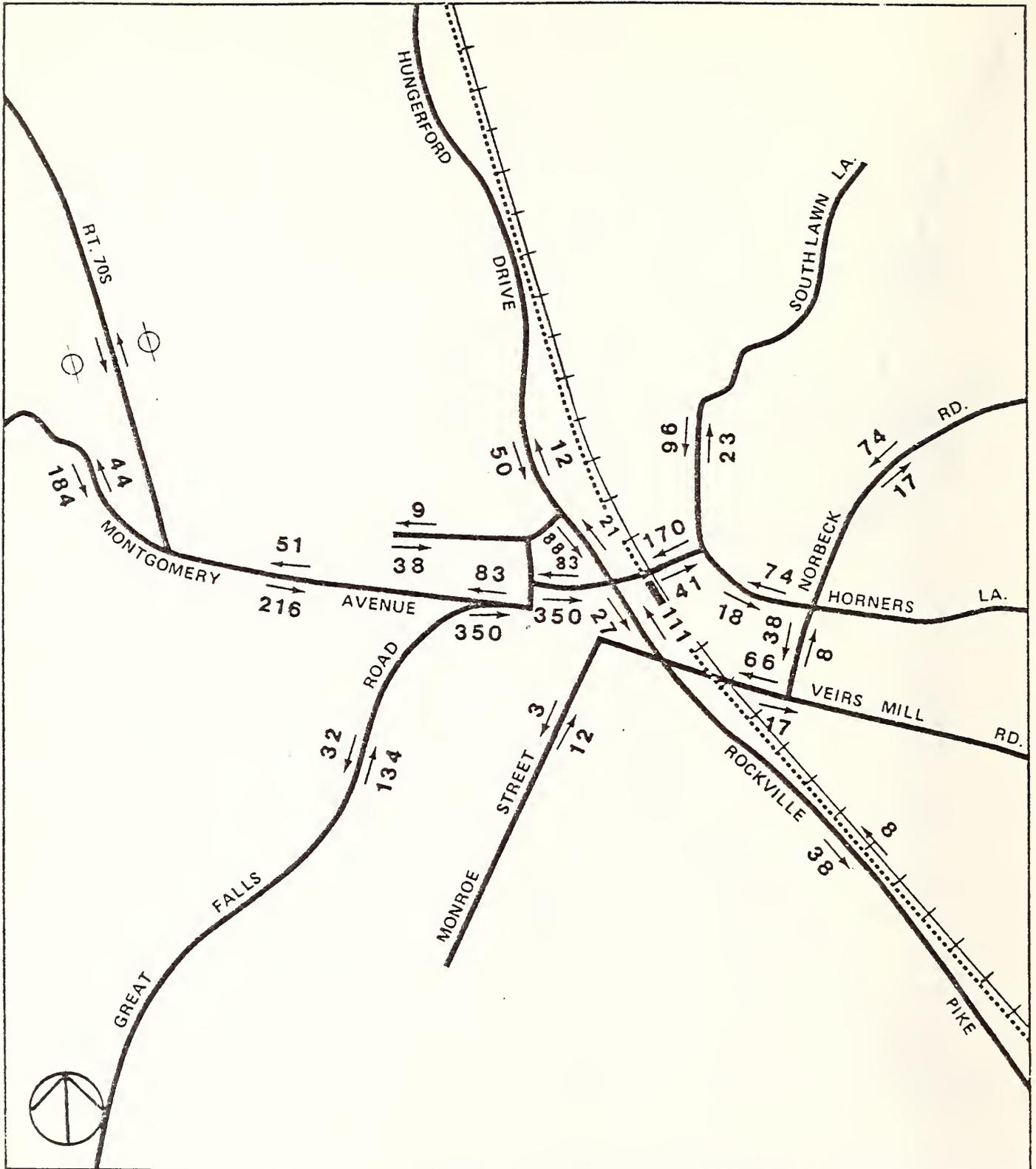


1990 AM PEAK HOUR AUTO TRIPS
 TOTAL TO STATION 2026
 TOTAL FROM STATION 471

ROCKVILLE DEMAND VOLUME
 WITH TWINBROOK INCLUDED WITHOUT SHADY GROVE



Source: WMATA Planning Staff - 1974



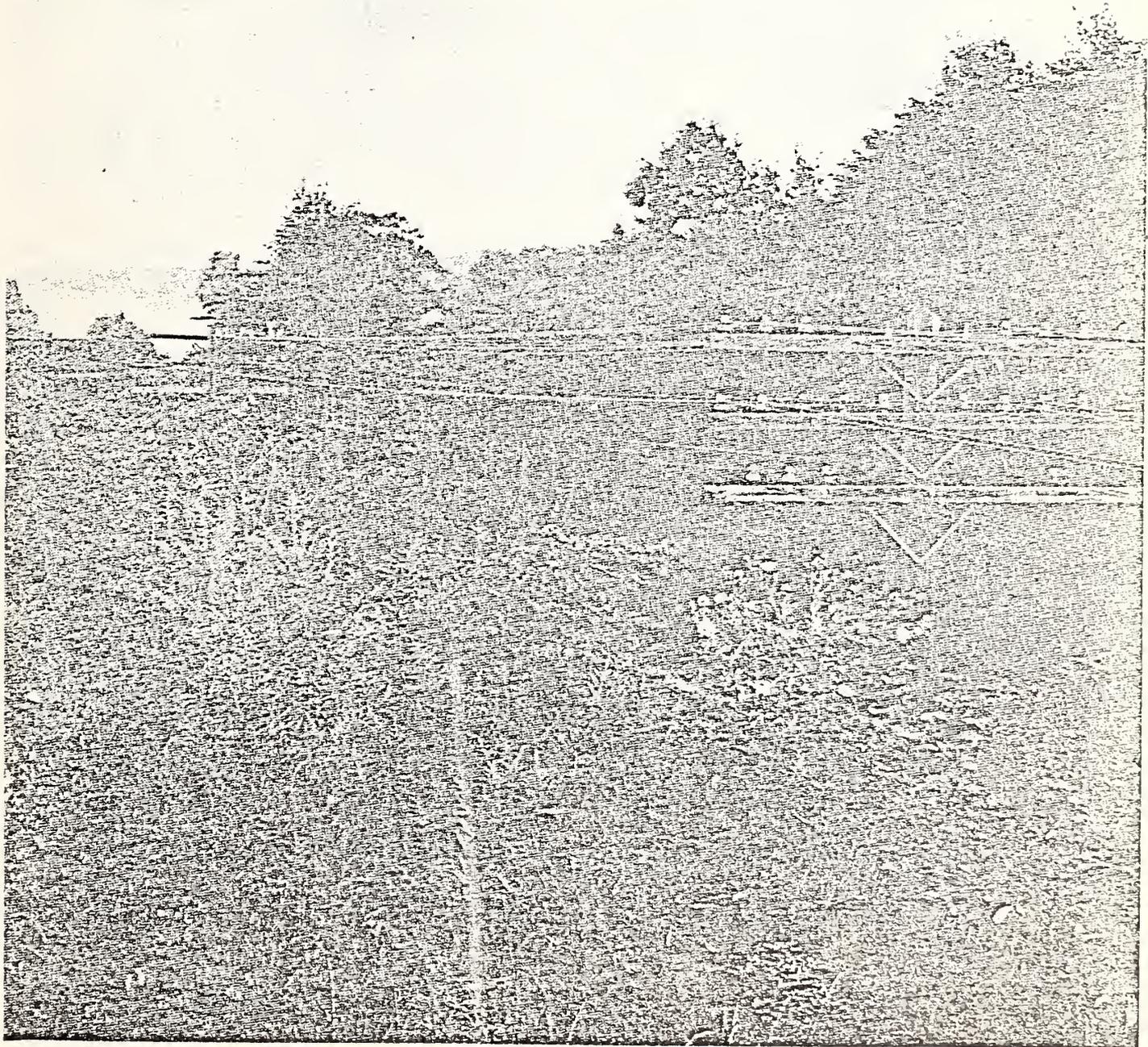
-  Not available
-  Station platform
-  Alignment

1990 AM PEAK HOUR AUTO TRIPS
 TOTAL TO STATION 719
 TOTAL FROM STATION 172

**ROCKVILLE DEMAND VOLUME
 WITH SHADY GROVE ADDED WITH TWINBROOK ELIMINATED**

Source WMATA Planning Staff 1974





B&O ALIGNMENT APPROACHING SHADY GROVE

7. FINAL EVALUATION -- PROBABLE IMPACT OF THE PROPOSED ACTION AND OF ITS ALTERNATIVE

7.1 Introduction

Based upon the findings of the Preliminary Evaluation as described and presented in Chapter 5, the Final Evaluation evaluates the alternatives recommended in greater detail for their ecological, visual/physical, cultural, traffic, air quality, noise and socio-economic impacts. The result of these analyses is a preferred alignment, station and yard for the A017 extension to the Rockville Route. Impacts are discussed in Sections 7.3 through 7.10. Conclusions are found in Section 7.11.

7.2 Impact Factors Considered

The impact factors considered in this Report were grouped into four categories in the Preliminary Evaluation: socio-economic; cultural; ecological, and visual/physical. The major problems or opportunities present in each category, either long-term or short-term, resulting from each of the three system alternatives selected for the Final Evaluation (ARS-68, Rockville C System and Rockville D System) and from the stations included by each of these systems, are studied in greater detail in the Final Evaluation of the A014-A016 Report. The A014-A016 Final Evaluation also includes a careful investigation of the air quality and noise and vibration which would result from each alternative.

In this Final Evaluation, for the A017 Segment, the potential impacts of the proposed SG-W alignment with a terminal station and S&I Yard at Shady Grove are examined in detail. The Final Evaluation includes an in-depth analysis of the air quality and noise and vibration impacts of the alignment, station and S&I Yard under consideration as well as a more detailed evaluation with respect to alignment impacts, visual/physical impacts, cultural impacts, traffic impacts, and socio-economic impacts.

7.3 Ecological Impacts

The proposed extension of A Route to Shady Grove will have moderate impacts on soil, water, vegetation and other natural features along its alignment. Far greater in extent will be the effects of the terminal station and its associated parking lots, access roads, repair shops and car storage yards.

The transformation from a rural to an industrial landscape will involve clearing, regrading, building, and paving on a 70-acre tract in the headwaters of Crabbs Branch. Problems related to soil erosion, runoff, sedimentation, and stream

health are the principle impact from this action over both the short- and the long-term. The Metro facility will require some 28 acres of parking and access roads, a 36-acre rail yard, and several acres for drainage detention. Sharing the headwaters basin with Metro will be a 130-acre County Service Park, a centralized service and storage facility that will replace pastures with warehouses, parking lots, repair shops, materials storage yards, and a commuter rail station (not related to Metro). The remainder of the basin is zoned industrial and may be expected to receive impacts from private development. Present industrial development includes a Sears Warehouse, a land-fill operation, an industrial-commercial "park" at Derwood, and two car lots on Route 355.

a. Impacts on Vegetation, Terrain, and Wildlife

Clearing for the Metro facilities will destroy the existing landscape of old fields, pastures, hedgerows, meadows, and near the Sears Warehouse, landfill. The plants are not likely to be replaced, except where pioneering old field species are allowed to grow on landscaped areas or in water management basins. Most of the area will be permanently transformed by parking lots and rail yard. Landscaped areas will most likely be mown or planted with ornamental species. The plant communities destroyed are no different from those that cover every abandoned field and grow along every fence. They are valuable for the food and cover they offer wildlife, and their loss will constitute a loss of habitat for pheasants, partridges, woodchucks, squirrels, foxes, and other animals who inhabit them. Development of the Shady Grove terminal facility will represent a particularly important loss of wildlife habitat. Mitigating actions which could potentially reduce this impact will be determined by coordination between WMATA and the Fish and Wildlife Service as required by the Fish and Wildlife Coordination Act. These will potentially involve both on- and off-site wildlife management practices.

Sedimentation and contamination of Upper Crabbs Creek, although ameliorated by stormwater management and erosion control devices, will have a negative impact on the fishery resources of the stream. Species which have shown a reduced abundance since 1950 will probably be most susceptible to contamination. These include the Blacknose Dace, the Rosyside Dace, Creek Chub, and Tessellated Darter. Invertebrate diversity and abundance and relative abundance of algae species will probably also be affected.

Transformation of the terrain and its cover will reduce the ability of the ground and soil to detain and absorb rainwater; these effects are discussed under Hydrology.

b. Impacts on Soil and Geological Materials

Construction will be in an area whose soils are predominantly Worsham, a poorly drained alluvial soil, and Glenelg, a well-drained silt loam. Regrading will completely obliterate the soil horizons and will require ditches to drain the rail yard and parking lots. Though no on-site test boring has been made as yet, it is doubtful, judging from soil descriptions, that bedrock will be encountered in any of the excavation or grading operations.

Solid waste impacts of the A017 extension to Shady Grove cannot yet be determined. The following table however generally describes the extent of cut and fill operations required along the 2.66 mile alignment.

Station Points 792+50
to 845+00:

792+50 to 815.00	On fill retained by a reinforced concrete retaining wall
815.00 to 845.00	Shallow cuts or fills (2-4 feet)

Station Points 845.00
to 845.00:

845.00 to 863.00	Cut 5 to 8 feet deep, with graded sides
863.00 to 877.00	At grade
877.00 to 885.00	Shallow cuts (2-4 feet) on the west side; a slight embankment to the east for a distance of about 20 feet and a height of 2 to 4 feet above the B&O Alignment

Station Points 885.00
to 930.00:

885.00 to 895.00	Same as 877.00 to 885.00
895.00 to 906.50	At grade or on a low embankment of fill less than 4 feet high
906.50 to 925.00	Cut 5 to 8 feet deep
(Station 920.00)	30 foot cut where Derwood Road crosses the tracks
925.00 to 927.00	10 to 20 feet cut
927 to 930.00	At grade

Station Points 930.00
to S&I Yard:

930.00 to 932.00	At grade
932.00 to 943.00	30 foot cut
943.00 Shady Grove Station)	On fill, approximately 15 to 30 foot embankment

This indicates that the line will be above ground for the entire segment, primarily in shallow cuts from 2 to 4 feet deep. The deepest cuts will be located immediately south of Shady Grove Station where the Derwood Road bridge will be reconstructed over the alignment. Much of this material will be utilized for filling and regrading for the Shady Grove Station which will be on fill retained by a 15 to 30 foot embankment. Any excess material generated by cuts at Derwood Road and those immediately north of it, as well as in the Rockville and Gude Station areas, will be removed to a disposal site, the location of which will be determined by the individual contractor. One known disposal site, identified as a Metro disposal site in the Systemwide Environmental Impact Statement, is located in Grosvenor. Should any fill be required in construction, it will be brought in by the individual contractor from presently unidentified borrow areas.

There are two basic problems related to the disposal of any excess spoils:

- Pollution problems resulting from erosion and sedimentation; and
- Transportation problems due to traffic congestion at the construction and dumping sites;

Both problems are predominantly short-term in nature.

WMATA requires the hauling contractor to provide for the removal and disposal of spoil resulting from the construction process. A disposal site will be selected after consultation with and approval by the Montgomery County Soil Conservation District. The contractor is required to obtain all necessary permits and uphold all ordinances with respect to the performance of his operations. (See Addendum.)

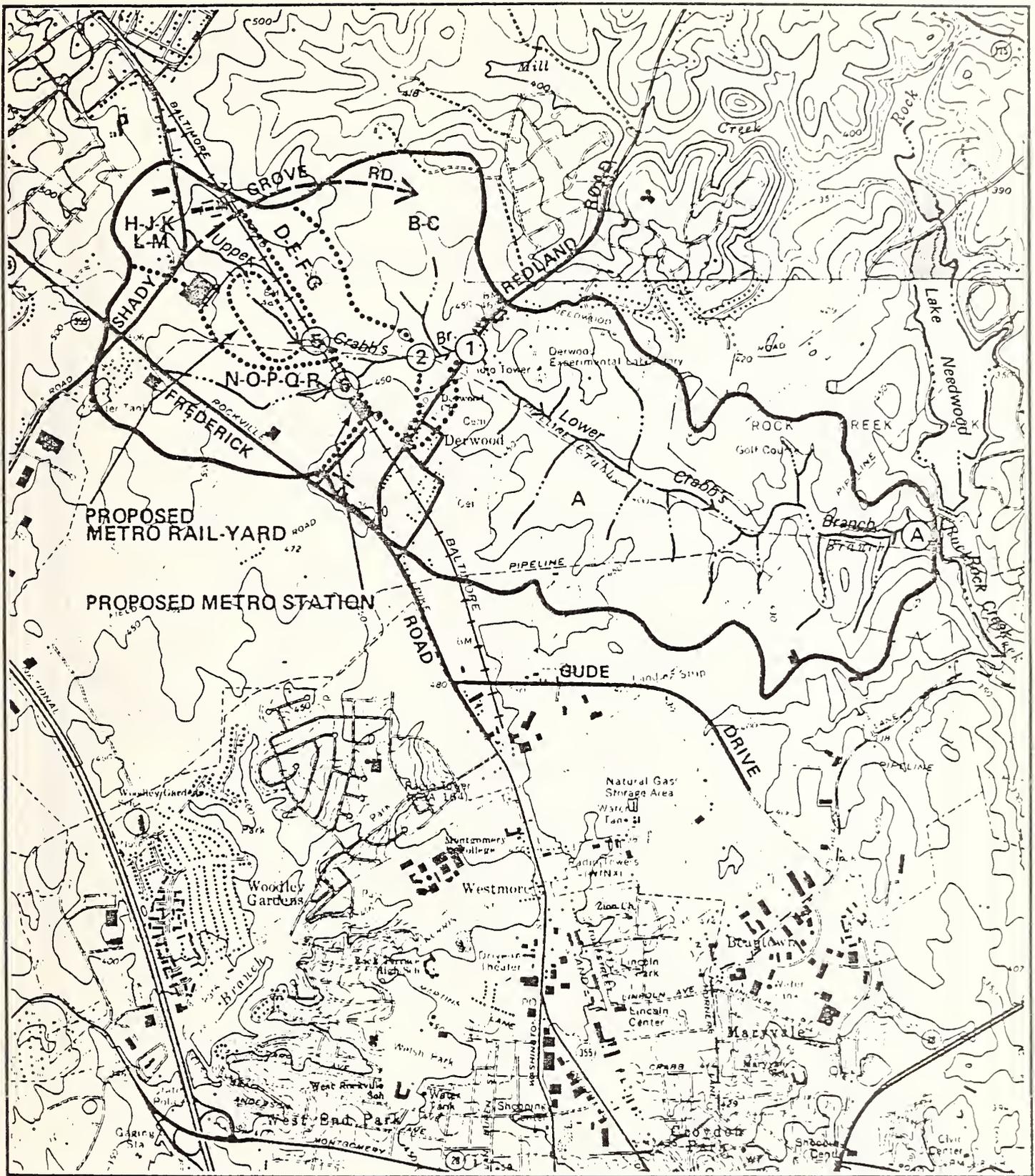
c. Impacts on the Hydrologic System, Upper Crabbs Branch Basin

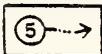
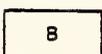
There are about 716.5 acres in the Upper Crabbs Branch basin (upstream from the point where Redland Road crosses Crabbs Branch). Uses are mostly agricultural at present, and the present peak flow in Crabbs Branch at Redland Road during a 2-year storm of 24-hour duration (3.2 inches of rainfall), is 458 cubic feet per second (cfs). (See table B for a comparison of existing and projected runoff.) Projected runoff from a 2-year storm, when the Metro facilities and the County Service Park are built, is 903 cfs, an increase of about 100%. Metro-induced increases in runoff would increase stream flow at Redland Road by 48% to 678 cfs.¹

Since streams in the Maryland Piedmont are estimated to adjust their channel profiles and cross-sections in response to the bank-full (two-year) storm, the computed doubling of stream flow at Redland Road bridge would have a dramatic effect on Crabbs Branch.

Maryland State law (Chapter 245, Acts of 1970) gives County Soil Conservation Districts the power to protect stream channels from the destructive effects of development. The Montgomery County Soil Conservation District has established standards for storm water detention based on the two-year storm (a storm whose statistical recurrence interval is two years for a total 24 hour rainfall of 3.2 inches), and on the assumption that undeveloped land has a coefficient of runoff equal to 0.20. A computation of detention storage requirements at three places on Crabbs Branch where water management structures can be accommodated shows the need for 2.63 acre-feet of storage west of the B&O Railroad tracks and 5.73 acre-feet east of the B&O tracks (Table C). It should be noted that runoff has been calculated for the entire sub-basin upstream from the noted locations; no changes in runoff other than those induced by Metro construction have been assumed, though existing land uses generate runoff in excess of that permitted by the Montgomery County Soil Conservation District formula: $Q=A (0.20) (3.2)$.

¹Flows are computed according to the Rational Formula: $Q=Ac_i$, where Q =flow in cubic feet per second, A =area in acres, c =coefficient of runoff, i =total rainfall in inches.

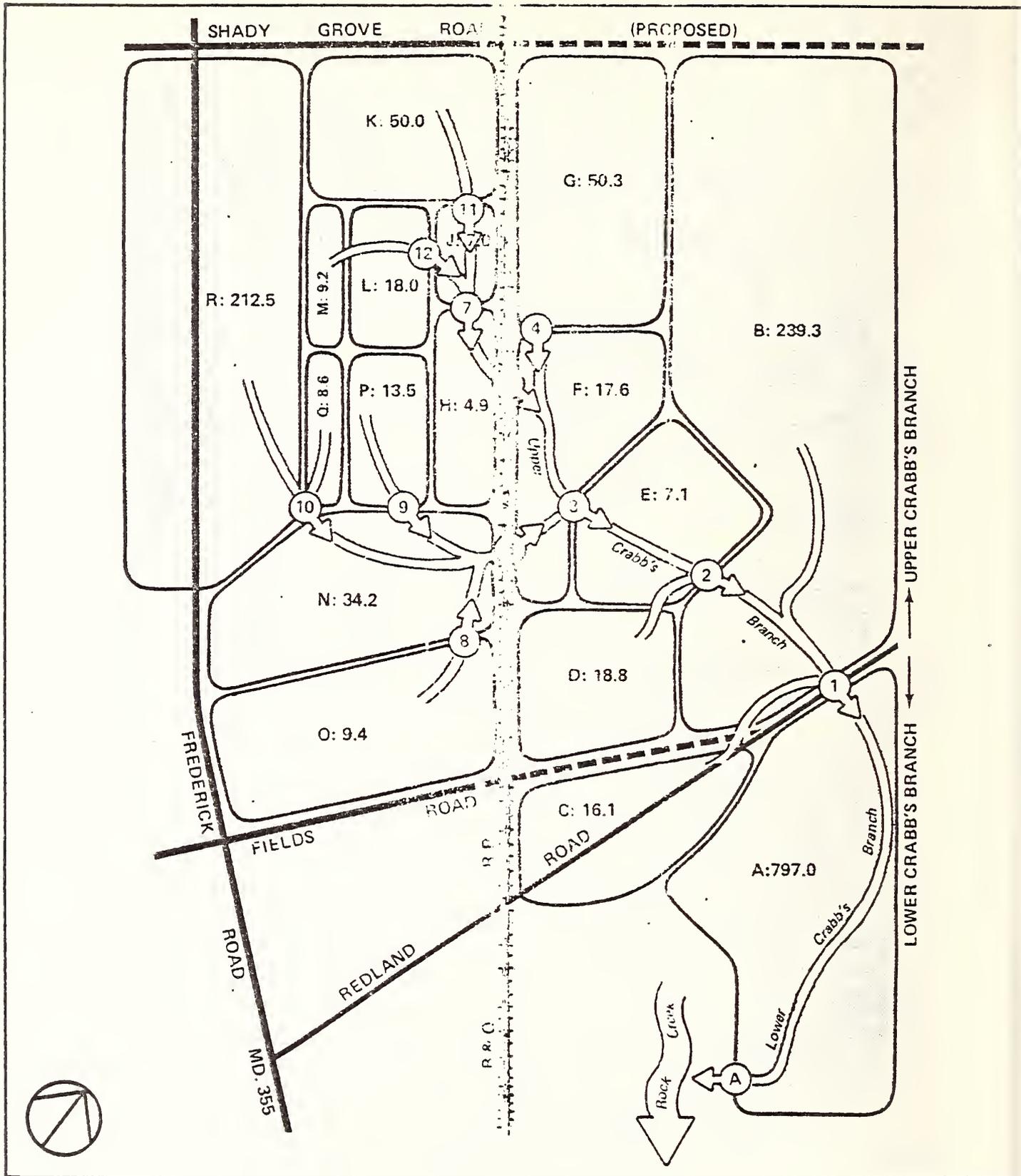


-  Water shed
-  Stream flow code
-  Sub-basin code

CRABB'S BRANCH DRAINAGE BASIN



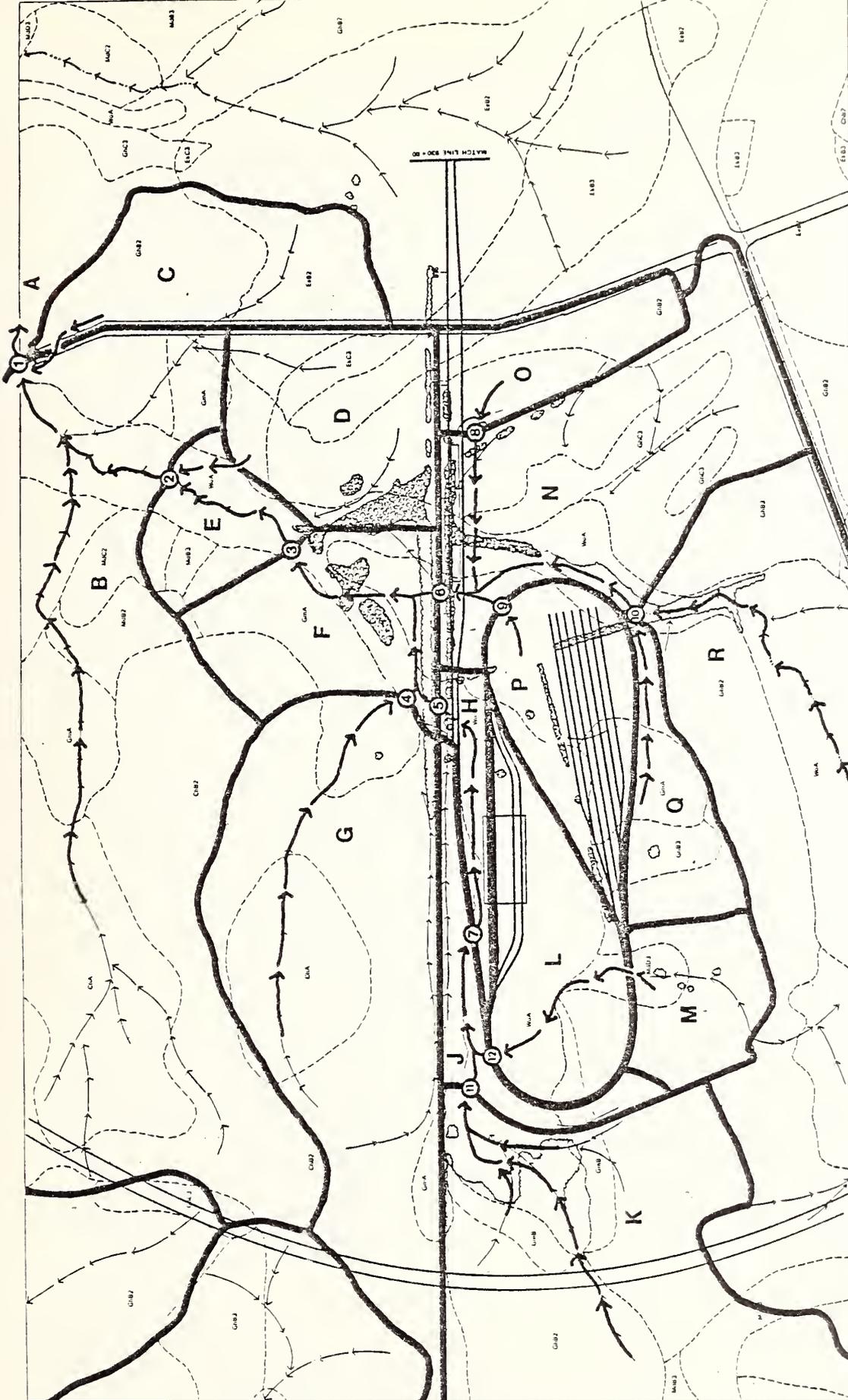
Source: U.S. Geological Survey Map-Rockville & Gaithersburg Quadrangles-1:24,000.



UPPER CRABB'S BRANCH
TRIBUTARIES & DRAINAGE BASIN

-  Streamflow calculation points
-  1-12 Upper basin
-  A Lower basin

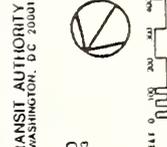




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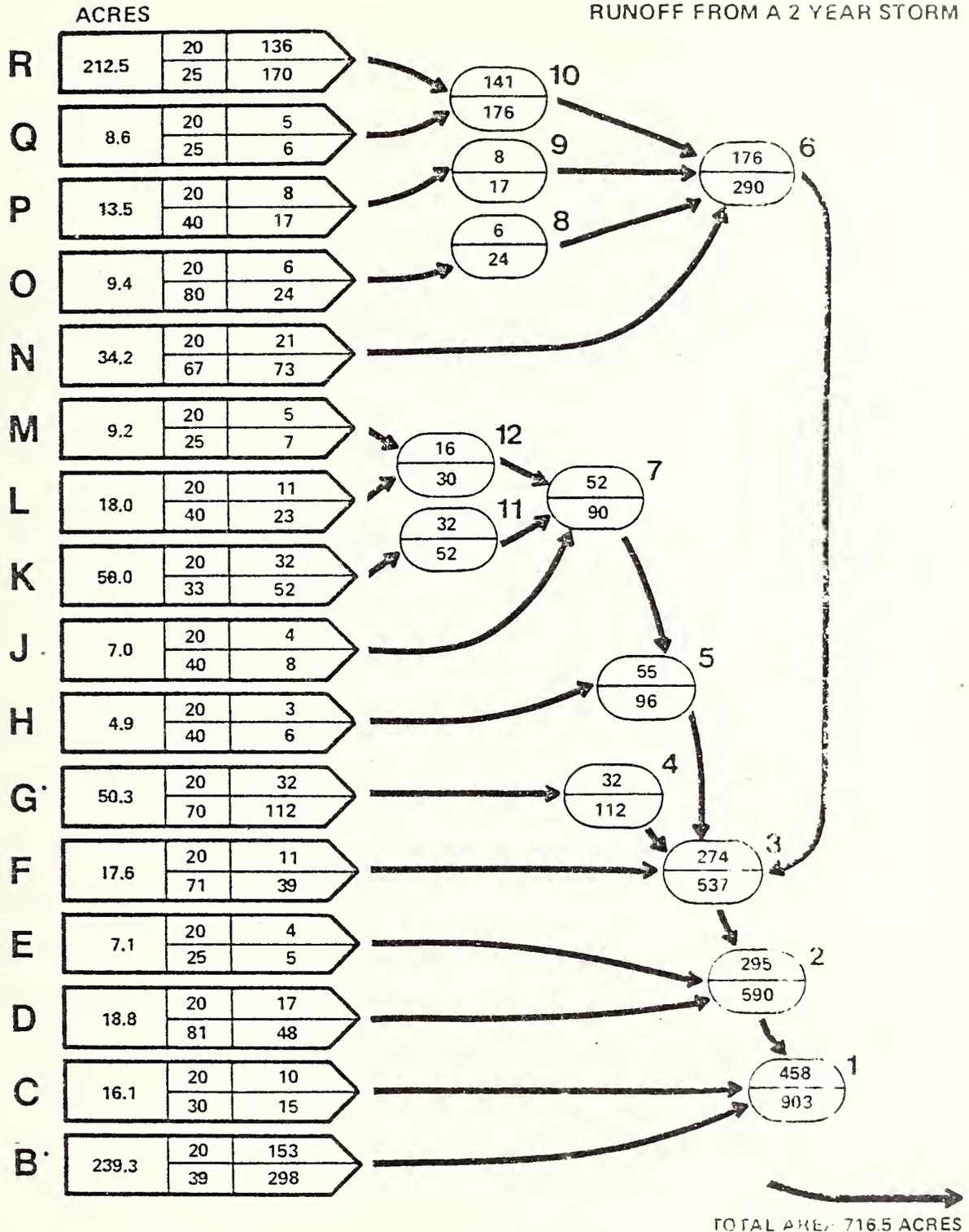
UPPER CRABB'S BRANCH
 * SUB-BASINS & FLOW POINTS

ROCKVILLE ROUTE A
 STATION POINTS 8+00 + 00
 TO 5+11 YARD



UPPER CRABB'S BRANCH PEAK FLOW TABULATIONS

TABLE B:
RUNOFF FROM A 2 YEAR STORM



* Includes runoff estimated for proportion of County Service Park in sub-basin. weight: C reflects estimated increase in runoff from 0.25 to 0.70 as a result of Service Park construction. Service Park occupies 72.2 acres of B, and 50.3 acres of G.

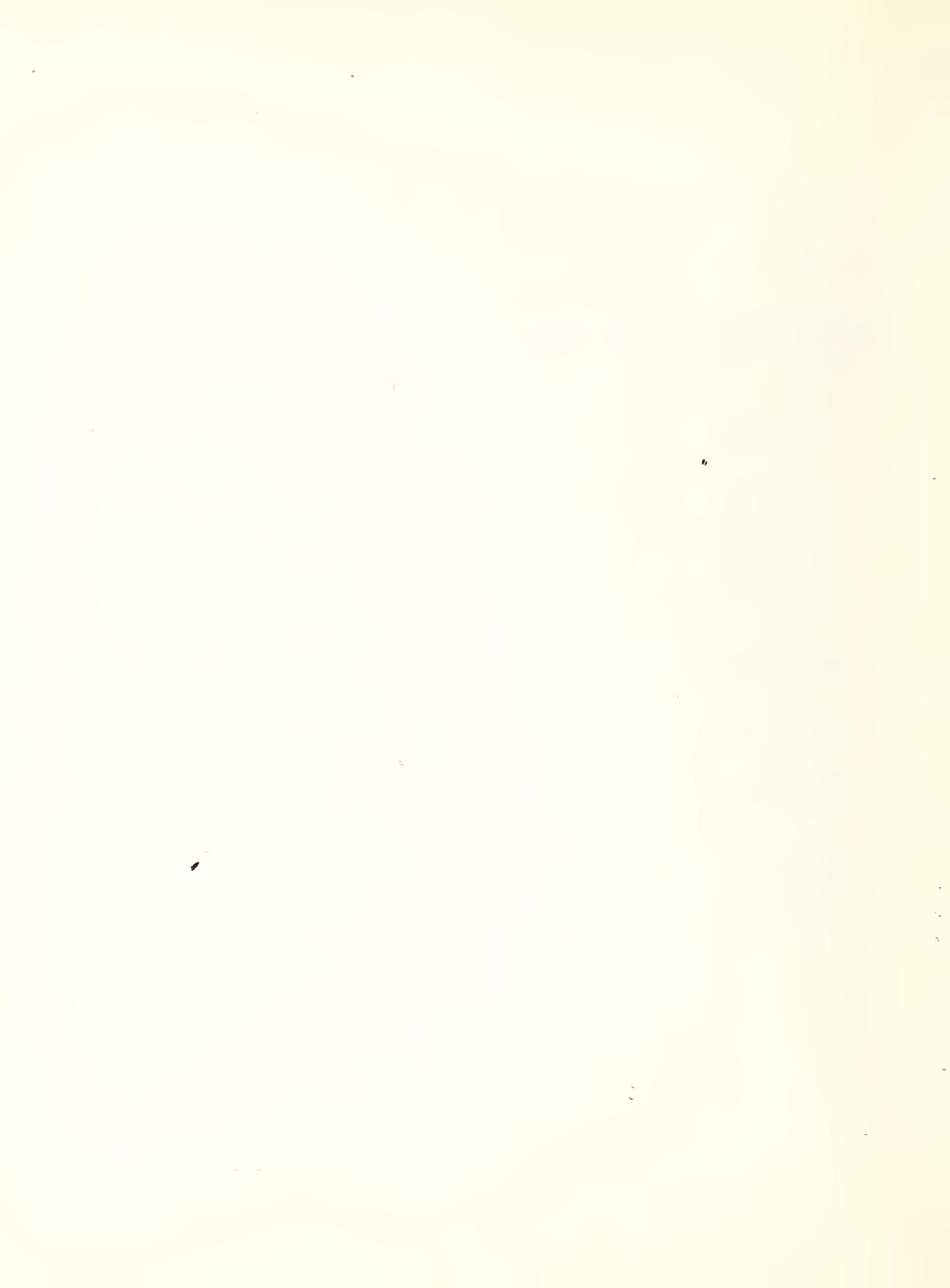
TABLE C: STORM WATER DETENTION REQUIREMENTS FOR THE SHADY GROVE STATION AREA

STREAMFLOW CALCULATION POINT	AREA OF SUB-BASIN (Includes Metro areas and all adjacent areas in the sub-basin)	WEIGHTED COEFFICIENT OF RUNOFF C	STORAGE CAPACITY FOR A 2 YR. STORM (Montgomery Co. SCD) i = 3.2", c = 0.20"	STORAGE CAPACITY FOR A 10 YR. STORM (Prince George's Co. SCD) i = 5.1", c = 0.25"
2	93.8 ACRES (Areas)	0.33	60,000 = 1.37 Cubic Ft. Acre/Ft.	80,000 = 1.83 Cubic Ft. Acre/Ft.
5	89.1 ACRES (Areas)	0.35	55,000 = 1.26 Cubic Ft. Acre/Ft.	70,000 = 1.60 Cubic Ft. Acre/Ft.
	SUBTOTAL		115,000 = 2.63 Cubic Ft. Acre/Ft.	140,000 = 3.43 Cubic Ft. Acre/Ft.
6 (1)	278.2 ACRES (Areas N, O, P, Q, R)	0.67 (1)	550,000 = 12.6 Cubic Ft. Acre/Ft.	780,000 = 17.9 Cubic Ft. Acre/Ft.
6 (2)	2.78.2 ACRES (Areas N, O, P, Q, R)	0.39 (2)	250,000 = 5.73 Cubic Ft. Acre/Ft.	350,000 = 8.03 Cubic Ft. Acre/Ft.
	TOTAL	(1)	665,000 = 15.23 Cubic Ft. Acre/Ft.	932,000 = 21.33 Cubic Ft. Acre/Ft.
	TOTAL	(2)	365,000 = 8.36 Cubic Ft. Acre/Ft.	490,000 = 24.76 Cubic Ft. Acre/Ft.

(1) Includes runoff calculated for that part of the sub-basin occupied by county service park, (25 acres) coefficient of runoff assumed to be 0.70.

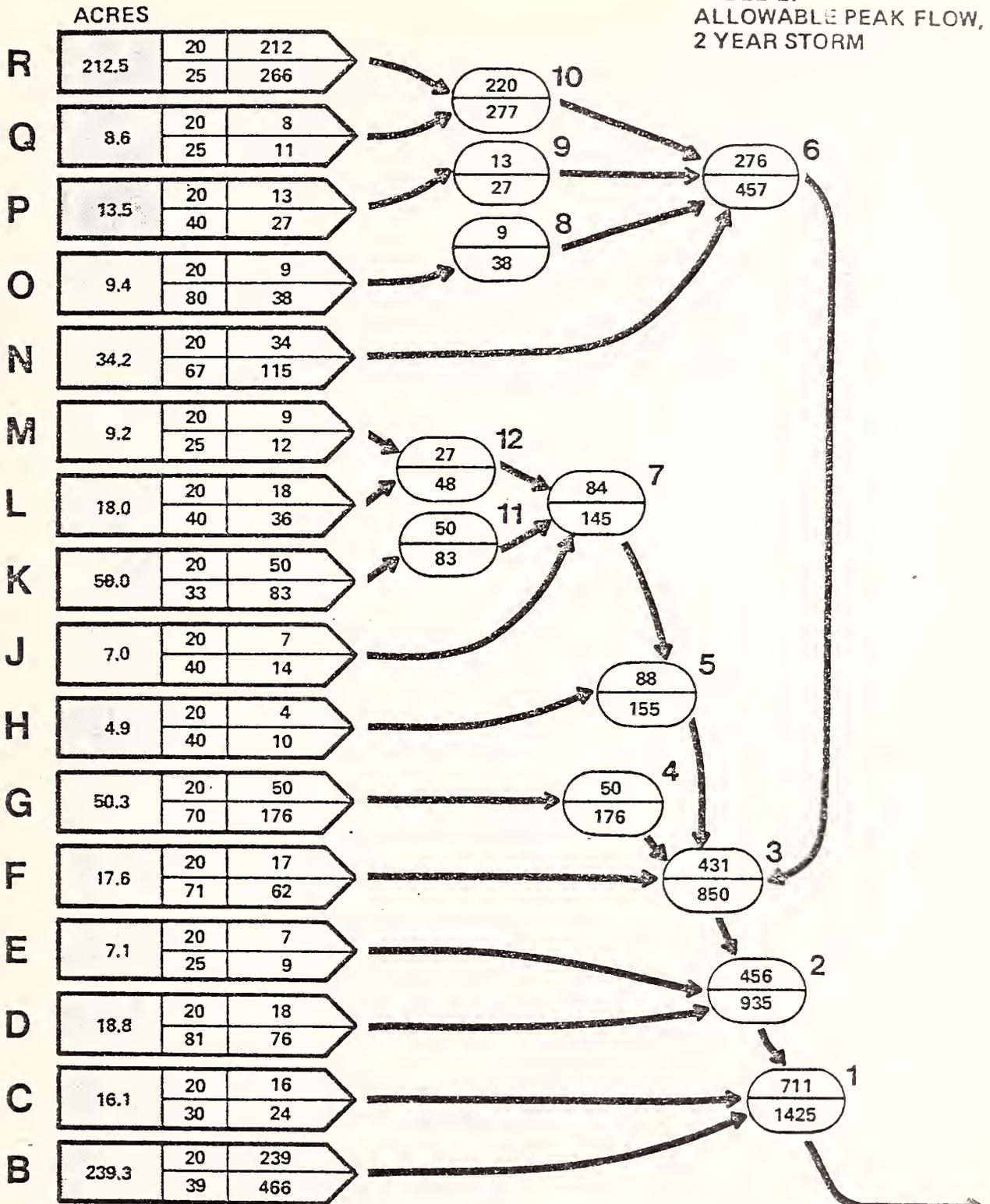
(2) Includes all of sub-basin as in (1), but no allowance for county service park.

Based on:
Montgomery County SCD Detention Requirements
and
Prince George's County SCD Detention Requirements



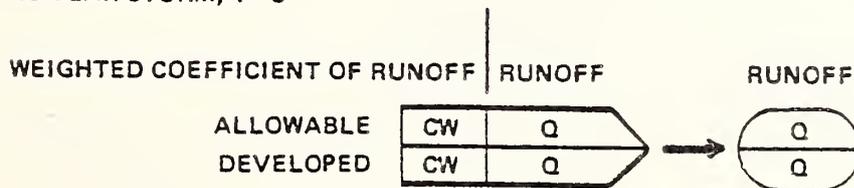
UPPER CRABB'S BRANCH PEAK FLOW TABULATIONS

TABLE E:
ALLOWABLE PEAK FLOW,
2 YEAR STORM



10 YEAR STORM, I = 5"

TOTAL AREA: 716.5 ACRES

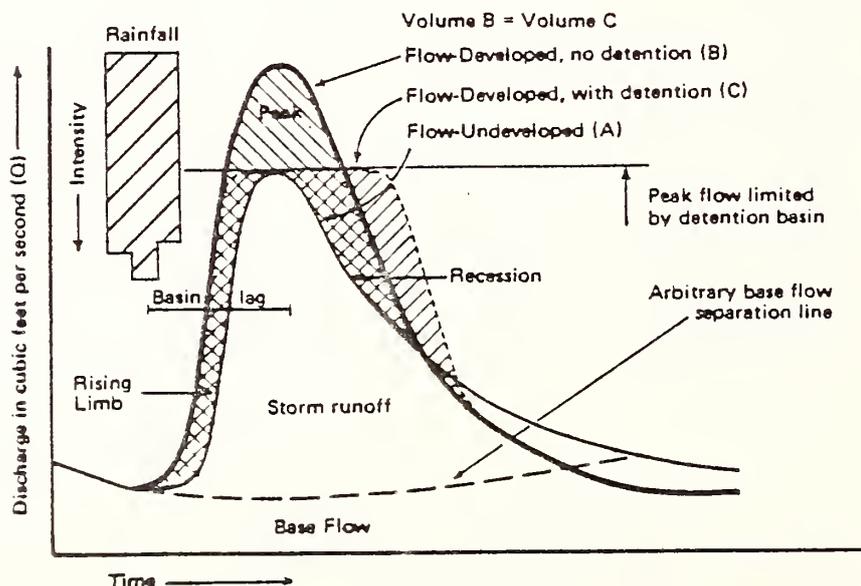


Under the existing regulations, Metro is committed to provide the required storm water detention capacity by constructing detention ponds with outlets and channels designed to release the excess runoff from parking lots and rail yards at a rate which Crabbs Branch can accommodate.

Three considerations must be noted, however:

1. Downstream flooding during low frequency storms will be more severe as a result of Metro development in the drainage basin, and it will be greatly increased by the combined developments of Metro, County, and private industry. Moreover, the structures are designed to limit peak flow in the stream, not the total runoff.

THEORETICAL HYDROGRAPH FOR THE SAME RAINSTORM, UNDER DIFFERENT CONDITIONS OF DEVELOPMENT



As the theoretical hydrograph shows, the area between the curve for a developed condition and the curve for an undeveloped condition equals the excess runoff generated by development. The area under the flattened curve (for developed with detention capacity) is the same as the area under the tallest curve. The increased runoff results in a loss to the ground water reservoir and a reduction of base flow in the stream.

The detention basins can be designed to hold permanent pools with trickle outlets, thereby compensating for some of the loss in base flow. Such provisions would require deeper basins than those which are intended to drain completely. The amount of base flow which trickle outlets can replace has not been empirically determined. The theoretical maximum would be all the excess runoff the basin can hold less evaporative losses; in effect, a reservoir to limit total yearly surface runoff rather than a detention basin to limit episodic peak flows.

3. Detention basins can reduce peak flow only from those storms which their capacity can accommodate. Thus, once a basin's capacity is reached the volume and rate of discharged stormwater will be that typical of the unregulated condition; for any storm of greater recurrence interval than two years, such as Hurricane Agnes (recurrence interval 25 years), increased flooding associated with development of the Shady Grove Site will not be ameliorated by the required detention facilities. Flood levels in Rock Creek will be higher, stream bank erosion, sedimentation and siltation more severe, and potential damages to property and hazards to public welfare more serious.

d. Impacts on Water Quality

1. Parking lot runoff, hydrocarbons, grease, oil gasoline, road salt, dirt, and debris, are washed from parking lots by the rain. The chief problems are caused by dissolved chemicals and metals used as fuel additives. Road salts will be washed from cars and, if they are applied to the drives and parking lots, from the pavement. Lead and zinc are released in exhaust, contained in the road dirt that coats automobiles and contained in the gasoline and lubricants that may leak from parked vehicles. It is difficult to estimate the quantity of such pollutants generated by Metro's 3,000 car parking lot; they will, however enter the storm drainage and cannot be removed by settling or screening.

2. Service shop drainage: water, oil and chemicals that are washed from the floors of the repair shops will be collected, treated to remove oil, grease, and solids, and discharged to the sanitary sewer systems (Watts interceptor).

3. Rail-car washing water: car washing and rinsing will require about 15,000 gallons per day (GPD) of water.

The solution used to wash the cars (based on New Carrollton specifications) will contain 2-3% oxylic acid and a 90% biodegradable detergent containing some phosphates.¹ 2.5% lime will be used in the rinse water to neutralize the acid in the wash water.

A recycling and treatment system, such as that planned for the New Carrollton terminal of Metro, will recover 70% of the water and reduce demand to 4500 GPD. Waste water from car washing will total 3750 GPD, discharged into the sanitary sewer as untreated effluent² (Watts interceptor).

4. Rail-car storage yard runoff: runoff from the storage yard will be detained in the same basins provided to control parking lot runoff. The water will contain dirt and trash washed from the cars and the ground, and hydrocarbons from lubricants. Quantities cannot be estimated, but the inability of the storm drainage management basins to remove dissolved or suspended matter will result in some addition of dissolved pollutants to Crabbs Branch.

5. Spills: accidental spills of lubricant, chemicals, detergent or acid from repair shops, carwashing buildings or rail yards are possible. Provided they are quickly contained and cleaned-up, they should cause no damage to the water quality. The detention basins provide a further check on runaway spills, though water-soluble materials will, under the best of conditions, be only partly recoverable.

Most of the deleterious effects on hydrology and, by extension, soil erosion, stream health, and aquatic life are common to any rail terminal of the size and type proposed for Shady Grove. Rain storms will sweep across 3000 cars, carrying pollutants into local streams, wherever they are parked.

¹Contents of car-washing solutions were obtained from the Key Chemical Corp., a supplier of washing chemicals to transit agencies.

²Based on preliminary estimates for the New Carrollton Yard, Nov., 1973, DeLeuw, Cather & Co.

The conditions peculiar to the Shady Grove terminal are: 2) that it is in the headwaters of a stream, an affluent of Rock Creek, in good health; b) that it occupies an area of highly erodible soils and poor drainage; and c) that it requires ditches and culverts to relocate the existing streams on the site.

a) Health is hard to assess on a stream which has never been monitored, and sampled only once. A qualitative estimate offered by Lewis H. Williams, of the Montgomery County Department of Environmental Protection was that, on a scale from "very poor" to "excellent", Crabbs Branch is "good".¹ Field reconnaissance and sampling done in August of 1974 (see Chapter 3.3) revealed that the stream channel is well-adjusted to its runoff load along the stretch from the B&O tracks to its confluence with Rock Creek. The biota are numerous, species are numerous and, though excessive amounts of nitrogen, chloride, and fecal coliforms are present in the upper part of the stream, they are assimilated by plants and animals downstream. A benefit arising from the industrial development of the upper Crabbs Branch basin is that the source of nitrogen and fecal waste, the cows, will be replaced by cars.

Given the unavoidable effects the Shady Grove terminal will have on Crabbs Branch, and without reference to similar effects such as would be common to any proposal of this magnitude, water quality in Crabbs Branch will be reduced by the proposal.

Metro affects on Crabbs Branch will be incremental and probably assimilable. It cannot be stated, however, that the cumulative effects of a Metro terminal, a County Service Park, a County Processing Facility (trash), and various existing and future private industrial developments will constitute as assimilable impact on a stream as small and rural as Crabbs Branch. When 700 acres in the headwaters of a 1500 acre basin are zoned for industries, parking lots and materials storage yards, the stream will invariably suffer.

Such point and non-point pollution sources as planned for Shady Grove will typically alter the physical, chemical, and biological characteristics of stream systems. In a headwater stream, such as Upper Crabbs Creek, physical alterations will primarily include light attenuation and temperature increases due to turbidity and siltation. Chemical alterations will result from changes in the pH, redox-potential, and natural chemical balance. In a headwater stream there will typically be a marked drop in the dissolved oxygen concentration. Biological alterations typically include changes in community structure,

¹Personal communication to Ed Boyer, WMRT.

species diversity and population size. These are most directly due to temperature increases and reduced concentrations of dissolved oxygen. The impact of such changes on the fishery resources of Crabbs Creek are discussed under Impacts on Wildlife, and generally include a loss in the abundance and diversity of fish populations.

Water Quality Protection Measures

A well managed erosion control plan, strictly adhered to during construction, a carefully designed stormwater management system, and an adequately maintained water recycling system will prevent the worst effects of erosion, siltation, and contamination of Crabbs Creek resulting from the Shady Grove construction.

Specific aspects of an erosion control plan, given the highly erodible soils of the Shady Grove area, are discussed under b. of this section.

The Shady Grove stormwater management system will combine structural and non-structural measures designed to minimize impact on the Creek as well as provide for efficient removal of runoff from the site. It will include construction of a stormwater collection system and detention pond, the construction of ditches and culverts, and the establishment of vegetated swales and parking lot landscaping. The detention pond, swales, and landscaped areas will provide for settling, filtering and some recharge of overland flow. The pond will be sized for the 2-year storm as required by the Montgomery County Soil Conservation District; 5% of the parking lot area will be committed to landscaping; and attempts will be made during design to direct some overland flow to vegetated swale areas. Provisions for trapping sediments, floating debris, and floating oil can be a part of structural measures to mitigate the worst effects from Metro-induced runoff during high-frequency storms.

The specific types, locations and design of measures to be used at Shady Grove, cannot be described at this time; such details will not be determined until the Final Design stage of the project. Vegetated areas, however, will be planted to provide for maximum erosion prevention and control while slowing the velocity of overland flow. This will include planting with grasses such as Bermuda grass, fescue, love-grass, orchard grass, and shrubs and trees such as bottom-bush, spicebush, viburnum, witch hazel, red maple, black gum, beech and willows. Such measures will reduce sedimentation and siltation of drainageways in the site area. Some heavy metals and other contaminants will also be removed from runoff water by passage through soil material prior to discharge into stream channels. Vegetative uptake of contaminants by vegetation will be limited primarily to small quantities of nickel and cadmium (contained in runoff waters resulting from the wear of rubber tires on paved surfaces). At present no other uptake processes have been researched and documented sufficiently to support use of additional

vegetative types in the removal of contaminants from parking lot runoff.

A wastewater recycling system in the Service and Improvement Yard will provide for the reuse of water in car washing operations. This will reduce demand on city water supplies and the impact on the County Sewage Treatment Plan by 70%. It will also contribute to reducing the quantity of wastewater leaving the site as overland flow which could potentially contaminate Crabbs Creek with water high in detergents. (It should be noted however that the detergent to be used is low in nutrients and is biodegradable.)

b. Because all of the soils on the site are highly erodible, erosion from cleared areas during construction and from spoils sites will have to be reduced by an effective erosion control program requiring WMATA contractors to:

- Save natural vegetation wherever possible;
- Avoid unnecessary disturbance of the soil (only the smallest practicable area should be exposed at any one time during development);
- Install permanent storm drains, roads and parking lots as early as possible;
- Plant temporary vegetation on denuded soils;
- Install permanent vegetation speedily after construction;
- Construct basins to trap sediment on-site. (These may be of various types: debris basins, desilting basins or silt traps,
- Engineer to take care of the contaminants in water run-off that follows development;
- Keep the time of exposure of bare soil to a minimum;
- Fit the development plan to the topography and soil so as to create the least erosion potential.

In Montgomery County all contractors will be required by the Soil Conservation Service to:

- Construct berms on the top of embankments and take water down in paved downspouts;
- Provide sediment traps before and after every culvert, and excavate collected silt;
- Construct temporary sediment basins in staging areas, parking lots and other areas which eventually will have storm drainage systems when construction is complete.

Enforcement of erosion and sedimentation control ordinances and WMATA contract provisions should result in adequate control over negative impacts due to Metro. It should be realized, however, that a completely effective sediment control program, including temporary land treatment and planting of ground cover, construc-

tion of silting basins, and use of earth and brush dikes, could be expensive in terms of time and money. Optimally, amelioration of the impacts will be achieved by trying to prevent erosion at the source. Only coarser particles can be fairly effectively trapped in silting ponds unless long residence times are allowed for sediment-laden water. Thus, despite control measures that fulfill the requirements of state and local ordinances and WMATA contracts, some sedimentation could still occur. Its significance will be limited and dependent upon the existing condition of receiving streams.

c) The site's topography is fairly level for the Maryland Piedmont; it is complicated by the presence of two small streams, the sources of Crabbs Branch. Because it is very near the uppermost parts of the drainage basin, the Shady Grove facility will not have the problem of managing large volumes of runoff from places up-stream. Water-management structures can be built on these small streams, though they would be better built off-stream.

7.4 Alignment Impacts

The alignment impacts related to Socio-Economic, Ecological, Visual/Physical and Cultural data are recorded spatially and verbally in this Section. Each impact category has a different map symbol that is referenced by number to the impact description sheets accompanying each portion of the Segment. On this description sheet a distinction is made as to whether the impact is short-term or long-term.

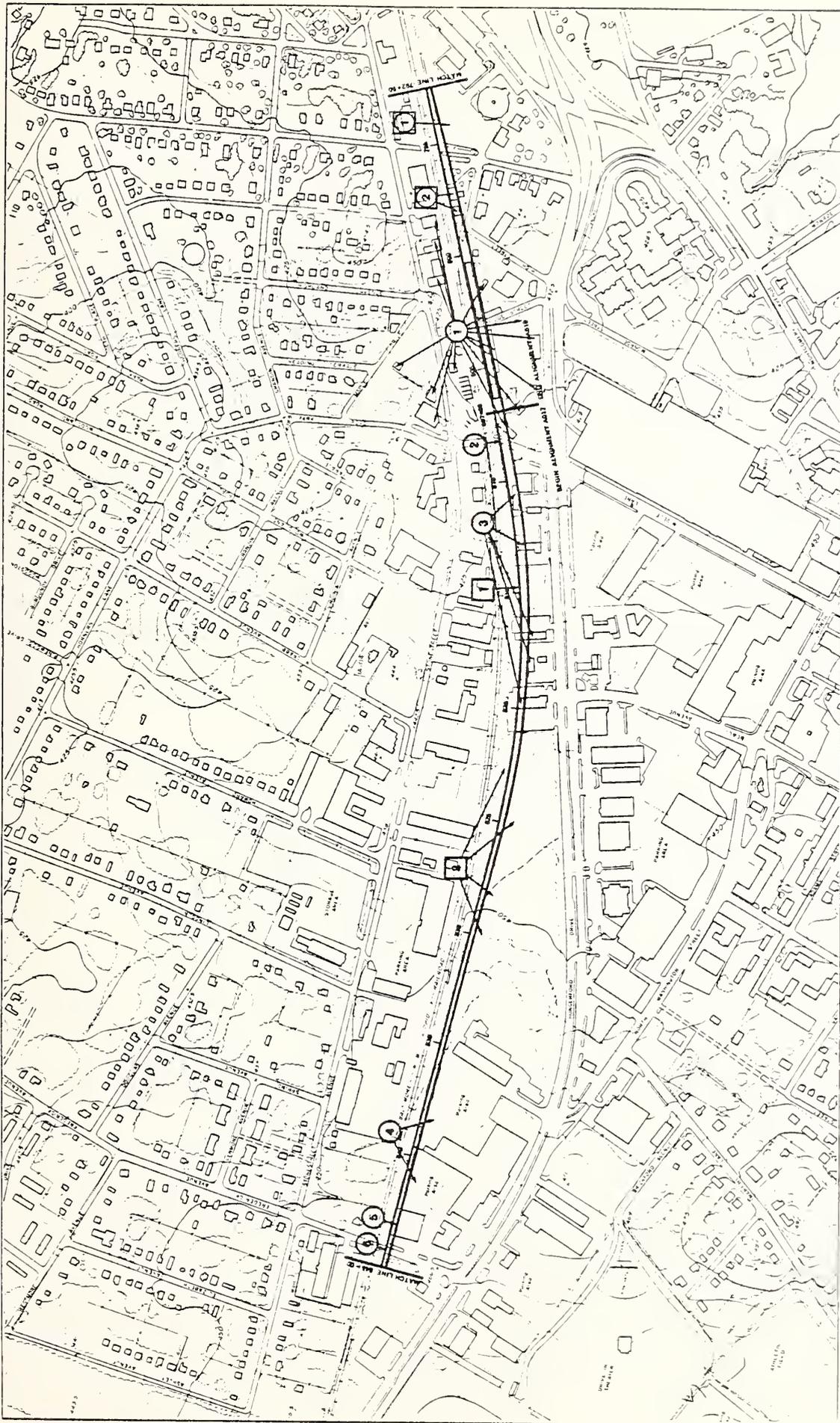
The ecological considerations related to the location of the station platforms is discussed as an integral part of the alignment impact. Platform ecological impacts, as well as station site design, are also dealt with in this Section of the Report. A more detailed discussion of ecological impacts can be found in Section 7.1 of this Report.

7.5 Visual and Physical Impacts

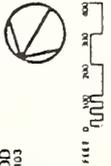
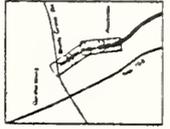
The extension of Metro 'A' Route follows the Baltimore and Ohio tracks from Rockville to Shady Grove. The alignment is on grade at elevations that are close to those of the existing rail line.

From the north end of the Rockville Station platform, the tracks to Shady Grove will be carried over a widened Middle Lane on an aerial structure. North of Middle Lane, the alignment will be on fill retained by a reinforced concrete wall about eight feet high. Between the tracks and Hungerford Drive (Md. 355), a strip of land 100 feet or more in width will be available for commercial development related to the highway. The retaining wall will be carried to Station 815+00 where the alignment will be at nearly the same grade as the surrounding land. Shallow cuts or fills (2-4 feet) will be required from this point to Station 845+00 to produce an even roadbed near grade-level. On the west, the inbound track of Metro will be at least 100 feet from Hungerford Drive. Between Stations 820+00 and 850+00, a distance of 3000 feet, the Metro tracks will be farther than 100 feet from Hungerford Drive, passing behind a wood lot filled with saplings and semi-mature trees and shrubs, then behind an existing shopping area.

From Station 845+00 to 863+00, the alignment will be in a cut 5 to 8 feet deep, whose sides will be graded slopes. From 863+00 to 877+00 (approximately) the alignment will be at grade, at least 20 feet from Hungerford Drive. The alignment from 855+00 to 875+00 will require the relocation of Hungerford Drive when it is widened because the present street veers too close to the Baltimore and Ohio tracks to allow the construction of Metro between the street and the railroad. To accommodate the alignment at this point, as well as provide for exist-



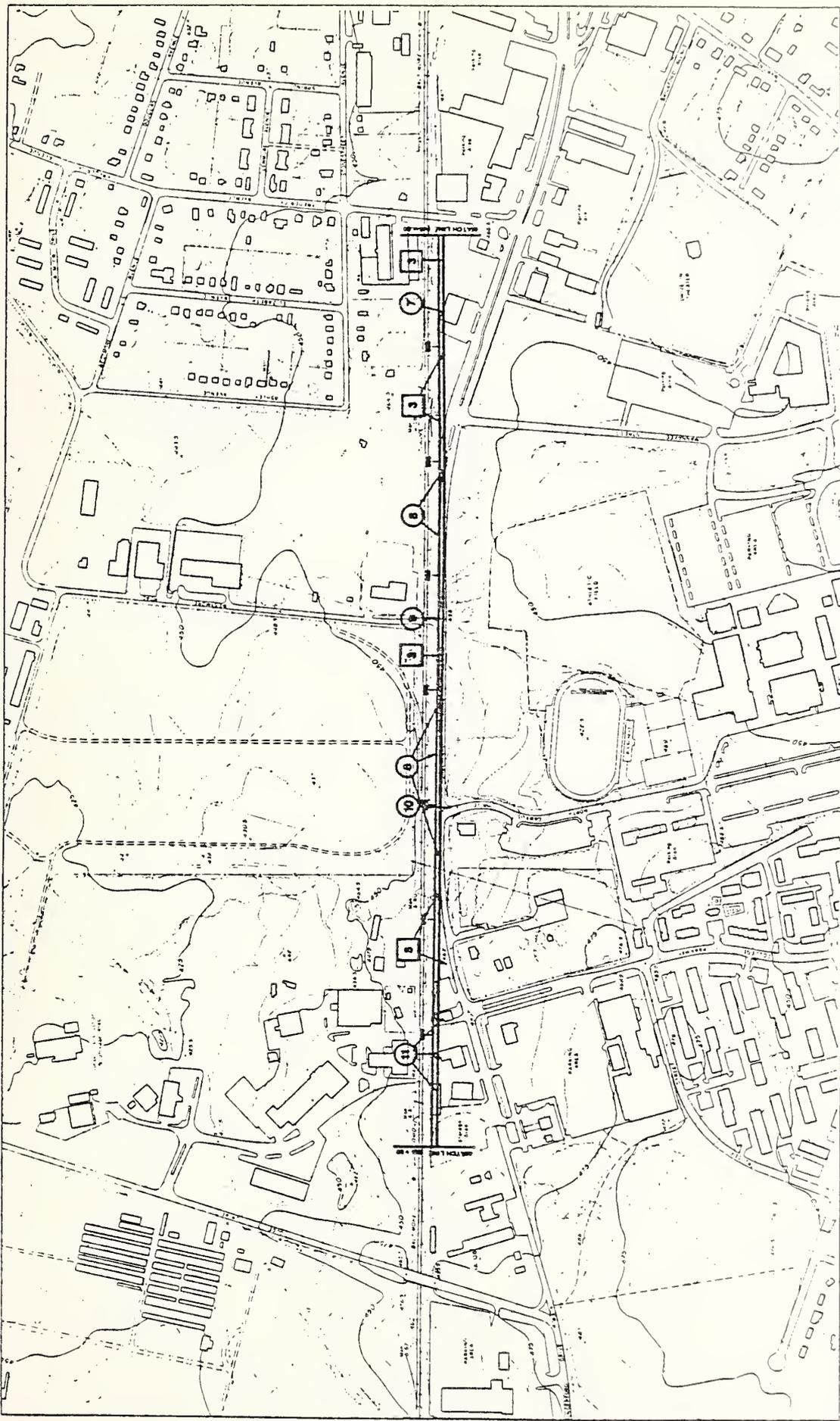
ROCKVILLE ROUTE A
 STATION POINTS 792 + 00
 TO 848 + 00



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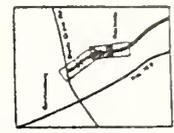
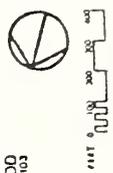


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- SOCIO-ECONOMIC
- ECOLOGICAL
- △ VISUAL-PHYSICAL
- CULTURAL

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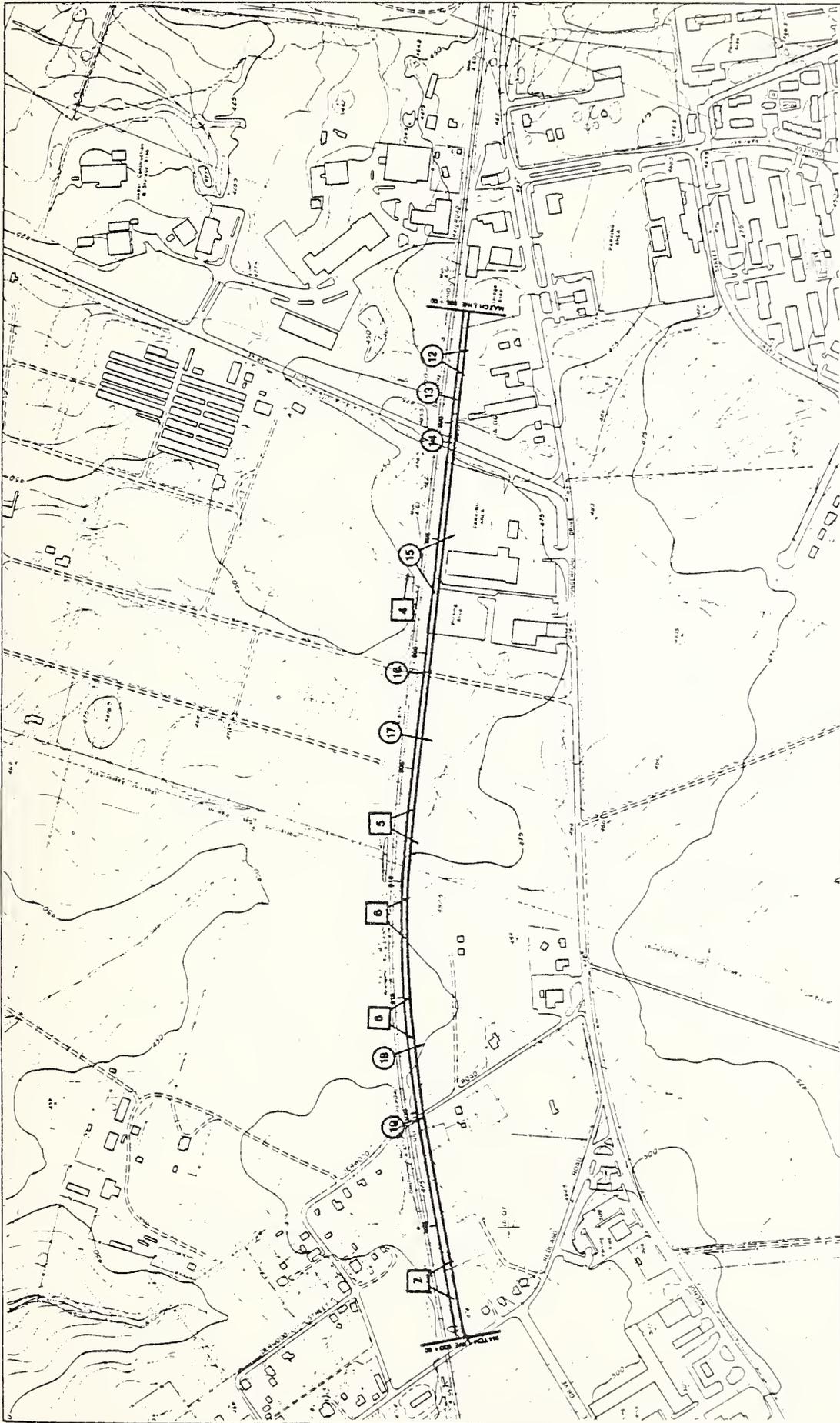
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ALIGNMENT IMPACTS

ROCKVILLE ROUTE A
STATION POINTS 844+00
TO 885+00



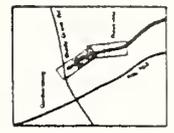


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- SOCIO-ECONOMIC
- ECOLOGICAL
- △ VISUAL - PHYSICAL
- CULTURAL

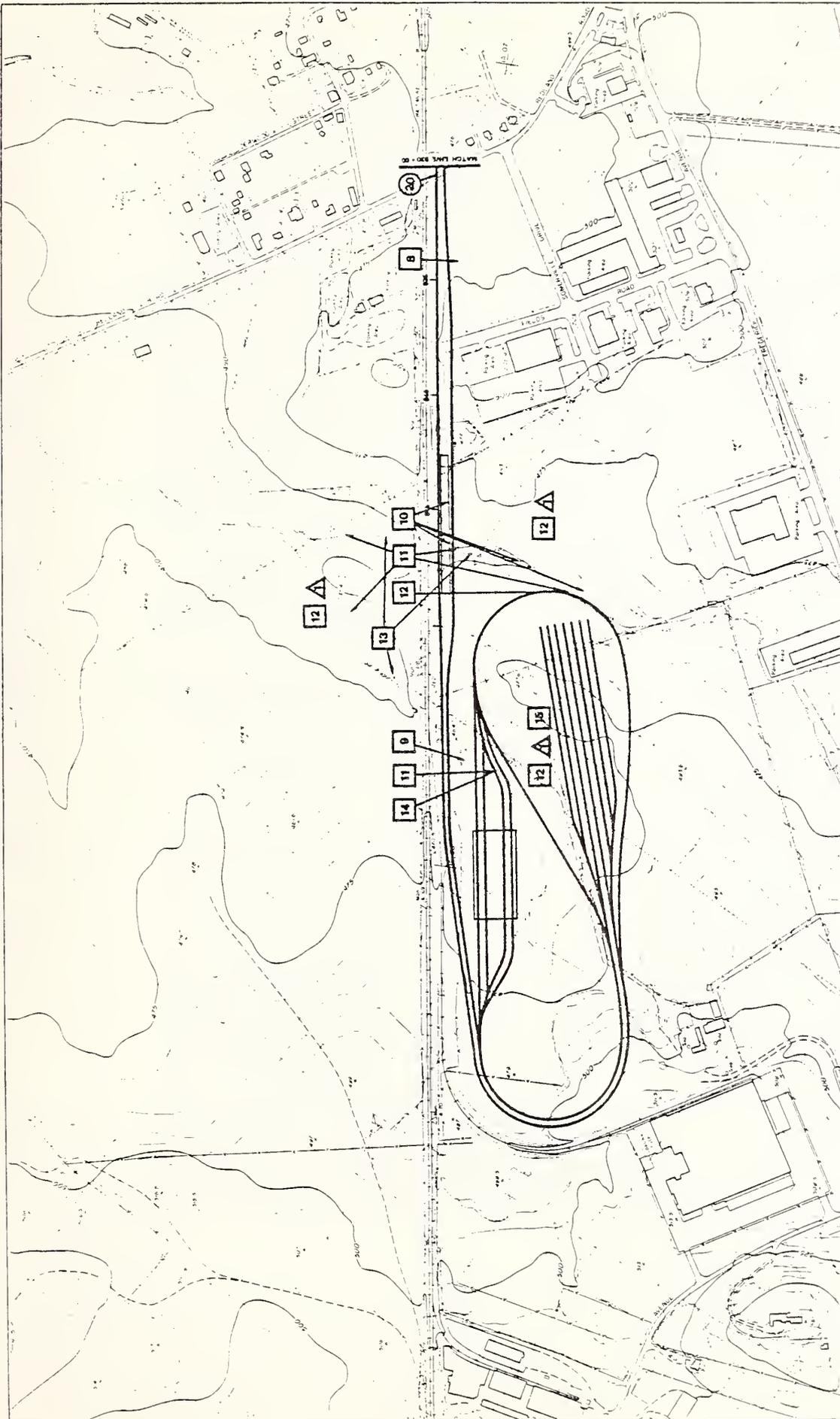
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ALIGNMENT IMPACTS

ROCKVILLE ROUTE A
STATION POINTS 885+00
TO 930+00



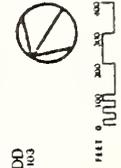
ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 400 FIFTH STREET, N.W.
 WASHINGTON, D.C. 20001

WALLACE MCHARG ROBERTS AND TODD
 107 CHESTNUT STREET
 PHILADELPHIA, PA. 19103



ROCKVILLE ROUTE A
 STATION POINTS 930 + 00
 TO 581 YARD



IMPACT NUMBER	SHORT TERM	LONG TERM	IMPACT DESCRIPTION
①		●	Loss of 15 buildings and property, including 1 home, to Rockville Station parking and right-of-way: see A015 Segment Environmental Impact Study.
②	●		Traffic disruption due to construction operations: traffic on Park Road will be disrupted during the construction of an aerial structure supporting the B&O Railroad and Metro tracks. Park Road will also be widened, causing further traffic problems and congestion, pending decision on the proposed Ashley-Manakee overpass. During this construction period east-west traffic between the Lincoln Park Community and the Rockville Central Business District will utilize the Frederick Avenue or Westmore Avenue at-grade crossings if those crossings have not yet been closed by Metro construction. Such decisions will be made in the Final Design Phase. While long traffic delays are not anticipated due to WMATA contract agreements stipulating that vehicular and pedestrian circulation be maintained throughout the construction period, it will be difficult in this instance to avoid congestion; if Frederick Avenue and Westmore Road have been closed, east-west traffic will be detoured long distances to either Gude Drive or Veirs Mill Road.
③	●		Loss of five buildings housing businesses: Exxon Auto Center (12 emp.; 50,000 sq.ft. lot) Nationwide Brake and Alignment Center (5 emp.; 6,000 sq.ft. of 16,000 sq.ft. lot) Montgomery Tire Safety Center (8 emp.; 2500 sq.ft. of 17,600 sq.ft. lot; involves only a portion of the building) Merchant's Tire Center (9 emp.; 3600 sq.ft. of 24,000 sq.ft. lot; building may be saved by a retaining wall)
④	●		Disruption of commercial parking areas due to construction: Metro construction will take approximately 24,000 square feet of parking facilities belonging to Heckingers Corporation. This represents 11% of the firm's property and a loss of 60 to 80 parking spaces.
⑤	●		Loss of two buildings along right-of-way: C&P Telephone (10,000 square feet of 48,000 sq.ft. lot) C&P Telephone Garage (storage building, 46,000 square feet taken for contractor's offices)
⑥	●		Frederick Avenue closed permanently due to right-of-way: the elimination of the existing at-grade crossing of the B&O Railroad will prevent through traffic flow on Frederick Avenue in Rockville. While from a regional traffic point of view the road closing is not significant, it will intercept local traffic flow. Those vehicles presently westbound expecting to turn onto Route 335, and those vehicles presently eastbound will have to detour to either Park Road to cross the railroad right-of-way to either exit from or enter into the Lincoln Park community. This detour represents an obstacle for local traffic in approaching the Rockville Central Business District from the east.
1	●		Right-of-way widening takes sapling to semi-mature trees and a few specimen trees: sapling and semi-mature trees typical of old field habitats in disturbed areas will be cleared from small isolated areas in the Rockville area. The trees are generally less than 30 feet in height and are in generally poor condition. A few more mature specimens of introduced trees will also be removed.
2	●	●	Right-of-way takes mature and semi-mature trees and disrupts mixed forest and old field wildlife habitat: the Metro construction will disturb or eliminate a 50 to 80 foot strip of semi-mature forest and old field vegetation for a distance of approximately 1200 feet in the City of Rockville. This strip presently borders a larger wooded area extending from the B&O tracks to Hungerford Drive which has been severely disturbed and is characterized as having poor vegetative quality. Mature and semi-mature trees and saplings which will be taken include introduced species and those typical of disturbed areas, such as trees of heaven, mulberry, cherry, and sassafras. Few trees in the entire wooded area are considered worth saving, generally of poor condition, and entangled in vines and undergrowth.
①	●		Infringement on parking and recreation area of St. Mary's Church and School: see A015 Segment Environmental Impact Study.
②	●		Loss of historically recognized B&O Railroad "Rockville Station" (c. 1875) due to track alignment: see A015 Segment Environmental Impact Study, Section 4(f) Determination (DOT Act of 1966).

-  Socio-Economic
-  Ecological
-  Visual-Physical
-  Cultural

ALIGNMENT IMPACTS

ROCKVILLE A ROUTE
STATION POINTS 792 + 50
TO 845 + 00



metro

REVISED

IMPACT NUMBER	SHORT TERM	LONG TERM	IMPACT DESCRIPTION
7		●	Loss of one building to right-of-way: Saah Furniture (31,000 sq.ft. of 92,000 sq.ft. lot; will take entire building, although moving the structure is being considered).
8		●	Hungerford Drive requires relocation due to right-of-way: Hungerford Drive is presently being reconstructed from an underdesigned two lane rural roadway to a six-lane road with a concrete median strip. The improvement extends from Shady Grove Road to Manatee Road and is scheduled for completion in the fall of 1977. It is sized to handle traffic projections in excess of those anticipated with opening of the transit system, and is expected to greatly facilitate traffic flows in the area. The land affected by the reconstruction required by the Metro alignment is vacant, wooded property owned by Montgomery Community College and vacant residential lots. Only one structure is taken by the expansion required for Metro.
9		●	Westmore Road closed permanently due to right-of-way: through traffic on Westmore Road will be shifted elsewhere with the elimination of the existing at-grade crossing of the B&O Railroad. This change taken together with the closing of Frederick Avenue will cause a long-term local impact because east-west movement to and from the Lincoln Park community will be restricted. Access from the community to the Rockville Central Business District will be possible only by Gude Drive and Park Road via several secondary and primary residential streets.
10		●	Disruption to Campus Drive and access to Montgomery Community College: the relocation and expansion of Hungerford Drive will require a 100 foot right-of-way along the western edge of the Montgomery Community College property. The campus itself is located uphill and several hundred feet from the roadway. Views of the widened road and of the Metro and B&O Railroad alignment from the college will be hidden from view by existing wooded areas and by street landscaping. Disruption to the Campus Drive access road will be temporary and will not prevent vehicles from entering or exiting at any time during the construction period. After completion of the construction access to the college will be greatly enhanced.
11		●	Loss of three buildings to right of way: LaFontaine Bleu Restaurant, Universal Printing and United Auto Parts.
3		●	Loss of vegetation to right-of-way consisting of semi-mature and mature trees: Metro construction will require clearing of semi-mature and mature trees and old field vegetation along much of its right-of-way. The majority of trees to be taken are less than 30 feet in height in this section, are of generally poor health, and are species characteristic of disturbed areas.

-  Socio-Economic
-  Ecological
-  Visual-Physical
-  Cultural

ALIGNMENT IMPACTS

ROCKVILLE A ROUTE
STATION POINTS 845 + 00
TO 885 + 00



REVISED

IMPACT NUMBER	SHORT TERM	LONG TERM	IMPACT DESCRIPTION
12		●	Loss of property along right-of-way: the amount of property to be lost along the right-of-way will vary from 50 to 80 feet depending upon local conditions. Final acreage to be committed will be determined after Final Design Phase of the alignment.
13		●	Loss of one building of Pargas Gas to right-of-way:
14	●		Disruption and loss of property along right-of-way: actual acreage to be committed will be determined after final engineering of the alignment has been completed.
15		●	Disruption and reconstruction of Gude Drive Bridge: the Gude Drive Bridge will be reconstructed to allow for both the Metro and B&O rail lines to pass beneath it. This will cause congestion during the construction period when the 11,050 vehicles utilizing the overpass on an average weekday are rerouted or confined to single lane restricted crossings.
17		●	Disruption and loss of property to Gude Nursery: the Gude Station will occupy approximately 14 acres at the intersection of Gude Drive and Frederick Road, the present site of the Gude Nursery offices, store, and parking areas.
16		●	Loss of access road to Gude Nursery: the Metro alignment will eliminate the existing at-grade crossing of an unpaved access road between the main nursery office and retail area and the greenhouses and planting fields. However, because the nursery offices will be entirely taken by Metro construction, the impact of additionally closing the access road to greenhouses becomes unimportant.
18		●	Disruption and loss of property to farm: south of Derwood Road the Metro construction will disrupt farming activities for a distance of approximately 1000 feet. A 50 to 80 foot strip of field will be permanently committed to the right-of-way. Actual acreage to be committed will be determined after Final Design Phase of the alignment.
19	●		Disruption and reconstruction of Derwood Road Bridge: reconstruction of the Derwood Road Bridge will disrupt traffic flows from Frederick Road to Redland Road. Average weekday traffic volumes of 1950 cars will be completely or partially diverted to Redland Road during the construction period. This will create temporary local congestion, particularly at the intersection of Redland Road and Frederick Road, increasing the number of cars flowing on Redland Road from 6400 to 8350. With completion of the new bridge traffic flow from Redland Road to Frederick road will be safer and less congested.
4	●		Erosion and sedimentation during construction into natural drainage: construction in the area of Gude Station could cause severely accelerated rates of erosion and sedimentation if adequate control measures are not utilized to manage stormwater and filter runoff from the site. Final Design of Gude Station and construction provisions however will ensure compliance with all Montgomery County regulations pertaining to stormwater management and erosion control. Negative impacts on the landscape and water quality, and increased construction costs, will therefore be minimized. Refer to the Montgomery County Erosion and Sedimentation Policies in the appendix to this report.
5		●	Loss of mature and semi-mature trees belonging to Gude Nursery and along railroad right-of-way: vegetation in the 50 to 80 foot Metro right-of-way to the west of the B&O tracks will be completely cleared. This will primarily disturb old field habitats characterized by species typical of disturbed areas. The few mature and semi-mature trees to be taken primarily include trees of heaven, mulberry, cherry and sassafras. Ornamental plantings belonging to the nursery in the area will not be directly affected by the construction or taking of property.

-  Socio-Economic
-  Ecological
-  Visual-Physical
-  Cultural

ALIGNMENT IMPACTS

ROCKVILLE A ROUTE
STATION POINTS 885 + 00
TO 930 + 00



metro

REVISED

IMPACT NUMBER	SHORT TERM LONG TERM	IMPACT DESCRIPTION
6	●	<p>Loss of semi-mature and mature trees along right-of-way: in this segment of the alignment most of the cleared area will be either agricultural or disturbed old field habitats. Semi-mature and mature trees will be taken in only a few areas. The majority of those to be cleared are less than 30 feet in height, are of generally poor health, and are species typical of disturbed areas.</p>
7	●	<p>Loss of farmland to right-of-way: the Metro alignment will take a 50 to 80 foot wide right-of-way of existing farmland for approximately 600 feet in the area immediately south of Redwood Road. Actual acreage to be committed will be determined after Final Design Phase of the alignment.</p>

-  Socio-Economic
-  Ecological
-  Visual-Physical
-  Cultural

ALIGNMENT IMPACTS

ROCKVILLE A ROUTE
 STATION POINTS 885 + 00
 TO 930 + 00



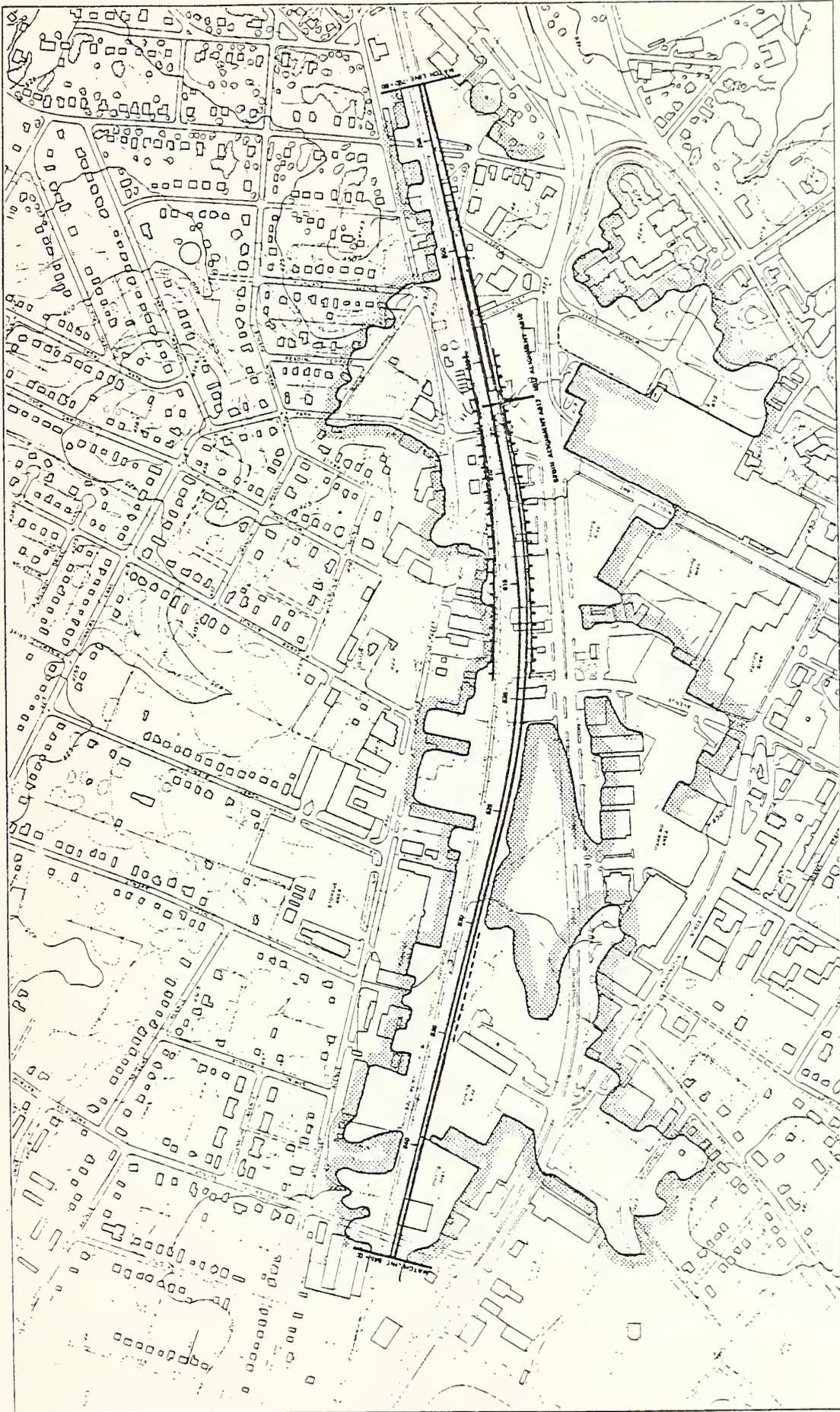
IMPACT NUMBER	SHORT TERM LONG TERM	IMPACT DESCRIPTION
20	●	Redland Road closed permanently due to right-of-way (access would be provided by possible Fields Road extension): through traffic flow on Redland Road will be prevented with the elimination of the existing at-grade crossing of the B&O Railroad. This will prevent existing movements of 6400 vehicles per day over the B&O alignment. The negative impact of this closing will be eliminated however by the extension of Fields Road from Frederick Avenue to Redland Road as a four lane roadway and bridge which will be built over the B&O and Metro tracks. It is anticipated that this will relieve traffic congestion in the Frederick Avenue/Redland Road area and will increase traffic safety by providing grade separations over the right-of-way.
15	●	Construction of yard requires extensive regrading of land: construction of the S&I yard will require regrading of approximately 48 acres of land. The volumes of material to be relocated, or in excess, can not be determined until the final design has been completed. Impacts associated with such massive earth moving can be mitigated by strictly implemented storm water management and erosion control plans.
13	●	Construction of yard requires channelization of existing streams and extension of culverts: channelization of drainageways and extension of culverts will become necessary with regrading of the 48 acre S&I Yard site. This generally can be expected to cause elevated and shortened flood hydrographs due to loss of recharge potential. This effect would therefore be observed in Upper Crabb's Creek which drains the yard area. The nature of the flood hydrograph change however cannot be described until final design of the yard has been completed and the extent of channelization and ditch and culvert location determined. Their design and construction will however conform with all County regulations.
8	●	Erosion and sedimentation during construction in open field: construction of the Metro tracks will cause accelerated erosion and sedimentation on highly erodible soils along portions of the alignment. The increase in soil loss and subsequent negative impacts will be mitigated by erosion control devices properly utilized at the appropriate time. These will include the use of straw bale filters, berms, diversions and swales, all of which will slow and filter runoff before leaving the construction site. Erosion control plans will comply with all Montgomery County regulations for all the construction operations.
10	●	Loss of semi-mature trees and minor vegetation: construction of the Service and Improvement Yard will require complete clearing of a large area of old field vegetation along Upper Crabb's Creek west of the B&O tracks. This primarily includes shrubs and herb species with only scattered semi-mature red maples, mulberries and cherries. The majority of the yard area will take agricultural fields and disturbed vegetation typical of areas used for pasture.
11	● ●	Erosion, sedimentation and disruption of natural drainage from construction of station and yard: extensive regrading during construction of the Shady Grove Station, parking lots, and Service and Improvement Yard, will permanently alter the natural drainage of the area. Without proper use of erosion control devices, clearing of natural vegetation and exposure of highly erodible bare soil to the energy of falling rain will result in accelerated soil loss and sedimentation of drainageways, particularly of Upper Crabb's Creek. Special efforts however will be taken to minimize soil loss by design of a comprehensive erosion control plan, staging construction operations and locating structural and non-structural control measures to restrict soil losses to those only slightly greater than typical of natural conditions. This will ensure compliance with all Montgomery County erosion control regulations.
12	●	Loss of prime farmland to station parking and yard: the Shady Grove Station and parking facilities will occupy land now used for farming and open pasture on both sides of the B&O tracks. The parking and station area west of the B&O will occupy about 36 acres and the parking lots and station area to the east will occupy about 30 acres or more, depending on requirements for water management ponds. The access drive from Shady Grove Road extended to the parking area on the west will occupy some 3 or 4 acres depending on right-of-way dimensions.

-  Socio-Economic
-  Ecological
-  Visual-Physical
-  Cultural

ALIGNMENT II: IMPACTS

ROCKVILLE A ROUTE
STATION POINTS 930 + 00
TO S+I Yard

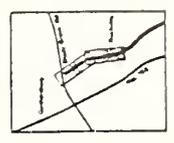




ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
WASHINGTON, DC 20001

WALLACE MCHARG ROBERTS AND TODD
107 CHESTNUT STREET
PHILADELPHIA, PA 19103

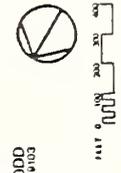


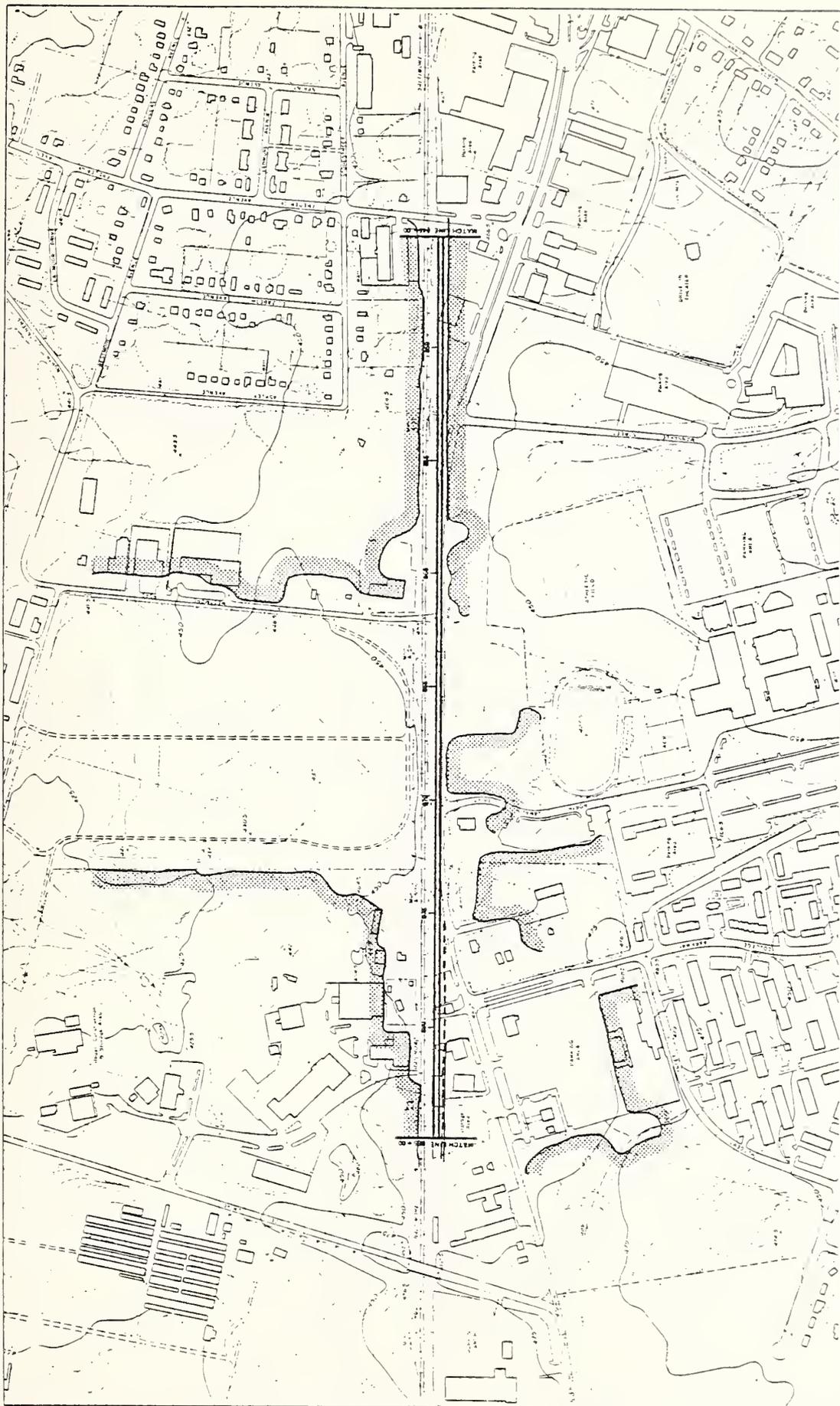
ROCKVILLE ROUTE A
STATION POINTS 322 + 30
TO 843 + 00



VISUAL-PHYSICAL

- ONE 2'-4" FEET
- ONE 4'-8" FEET
- TWO 2'-4" FEET
- ONE 4'-8" FEET
- USUAL CONCRETE



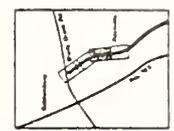
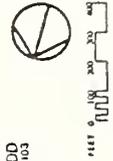


ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

- GUT 2-4 FEET
- GUT 4-6 FEET
- BL 2-4 FEET
- FR 4-6 FEET
- VEGAL CANTONMENT

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 600 FIFTH STREET, N.W.
 WASHINGTON, D.C. 20001

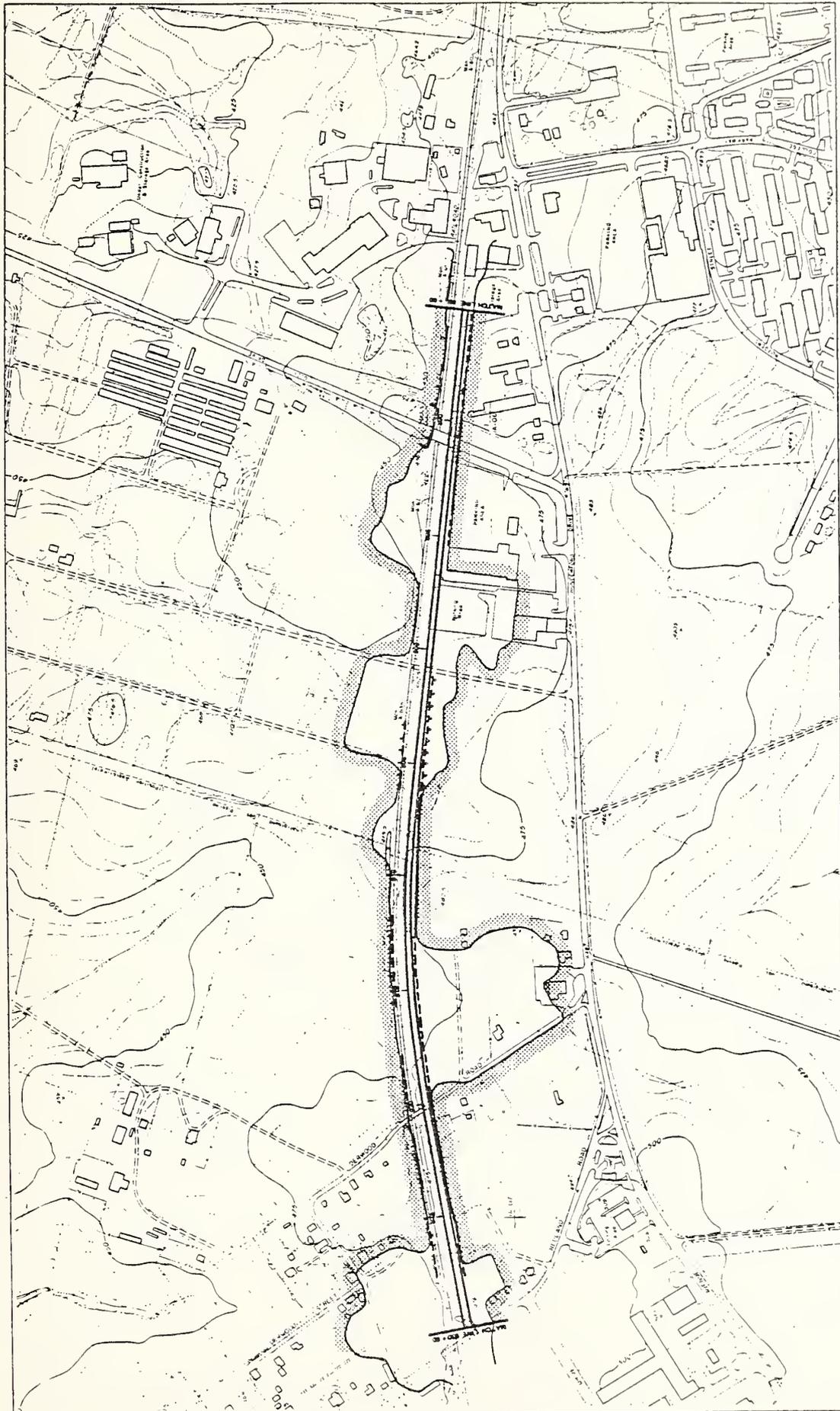
WALLACE M'CHARG ROBERTS AND TODD
 1937 CHELSTNUT STREET
 PHILADELPHIA, PA. 19103



VISUAL-PHYSICAL

ROCKVILLE ROUTE A
 STATION POINTS 848+00
 TO 883+00

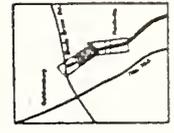




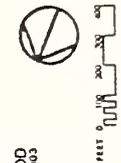
ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

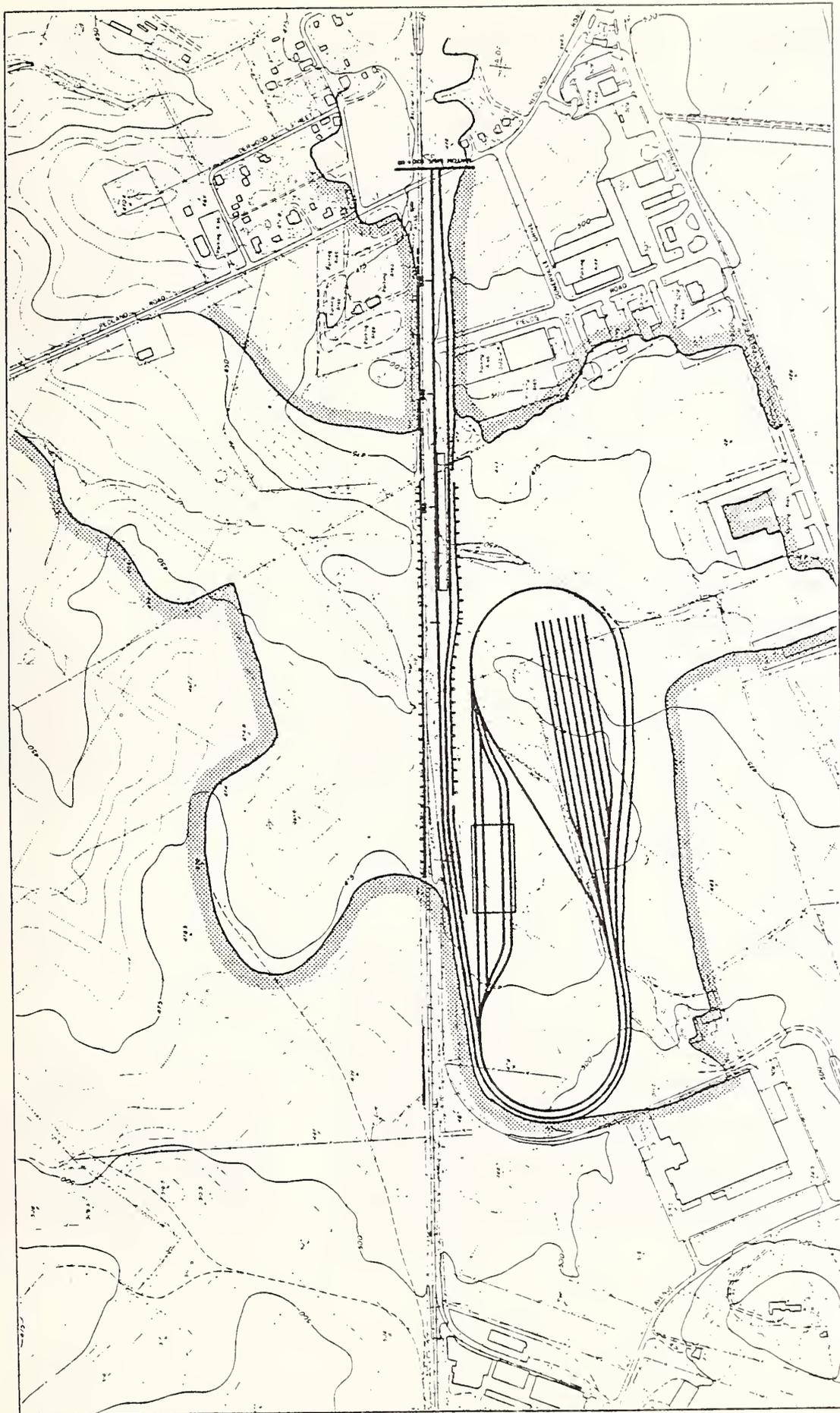
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 600 FIFTH STREET, N.W.
 WASHINGTON, DC 20001

WALLACE MCHARG ROBERTS AND TODD
 1737 CHESTNUT STREET
 PHILADELPHIA, PA 19103



ROCKVILLE ROUTE A
 STATION POINTS 888+00
 TO 930+00

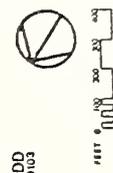
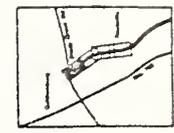




ENVIRONMENTAL IMPACT STUDY AND APPRAISAL

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
 WASHINGTON, D.C. 20001

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 1537 CHESTNUT STREET
 PHILADELPHIA, PA. 19103

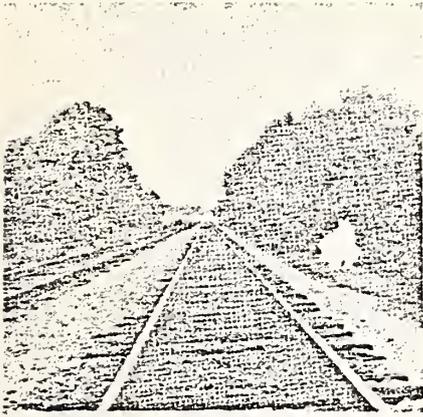


VISUAL PHYSICAL

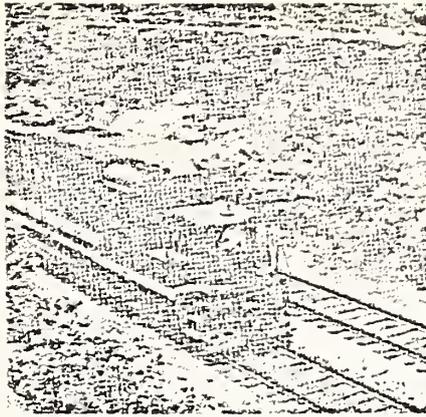
ROCKVILLE ROUTE A
 STATION POINTS 830 + 00
 TO 841 YARD



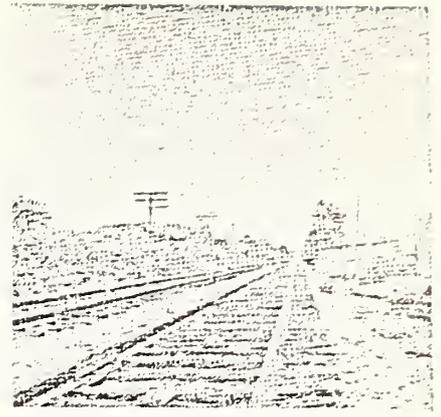
- CUT 2-4 FEET
- CUT 4+ FEET
- FILL 2-4 FEET
- FILL 4+ FEET
- VISUAL CORRIDOR



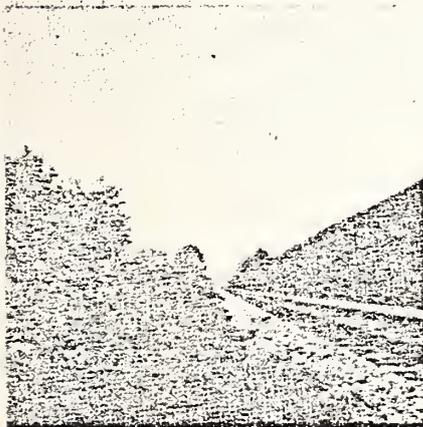
Looking north on B&O tracks



Train at Shady Grove site



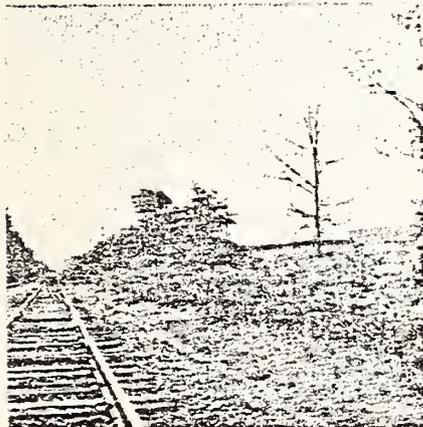
Looking north on B&O tracks



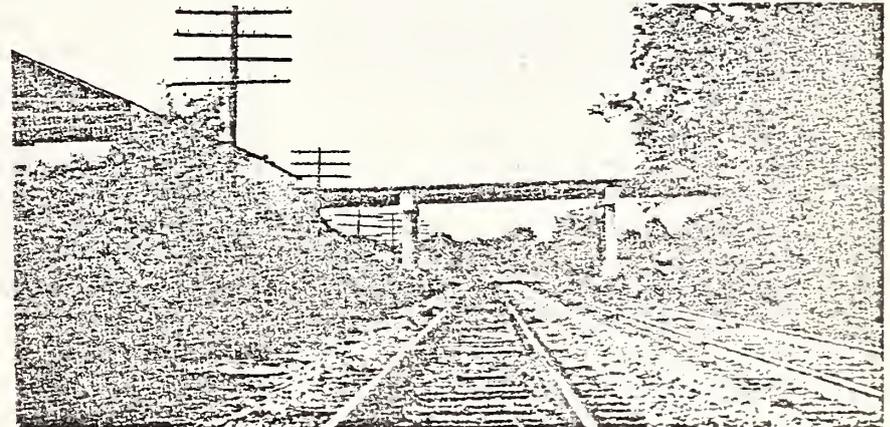
Looking north on B&O tracks



Train at Shady Grove site



Looking south on B&O tracks



Gude Drive overpass

ing and projected traffic volumes, it is being reconstructed from Shady Grove Road to Mannakee Road. Completion of the improvement is scheduled for the fall of 1977. The land affected by the reconstruction is either property of the Montgomery Community College or is vacant residential lots (one lot is occupied by a structure that will be taken for the widening of Hungerford Drive). The Community College Campus is uphill and several hundred feet from Hungerford Drive. The view of Hungerford Drive from the Campus will be of a widened street, closer to the Campus by nearly 100 feet; beyond the street, the parallel tracks of Metro and the Baltimore and Ohio Railroad will be visible. Existing wooded areas and street or specimen plantings will hide most of the highway since the relocation and widening will reduce the width of these woodlands but not their effectiveness as visual barriers. The outbound, east side of the alignment is bounded by the Baltimore and Ohio tracks; beyond the railroad are industrial and commercial buildings, parking lots and storage yards.

From Station 877+00 to Gude Drive (Station 980+00) the alignment will require shallow cuts off from 2 to 4 feet on the west side; a slight embankment will separate Metro from the existing B&O tracks on the east side (a distance of about 20 feet and a height of 2 to 4 feet above the railroad alignment). At the Gude Drive overpass, the cut will be deeper and the bridge will be reconstructed to accommodate both railroad and Metro beneath it. Various industrial and commercial buildings with their associated parking lots occupy the area between the tracks and Hungerford Drive. On the east, the mature specimen plantings of the Gude Brothers Nursery will provide an undisturbed screen from both Metro and the B&O Railroad. From Station 895+00 (some 400 feet north of Gude Drive) to Station 906+50 the alignment will be at the existing grade or on a low embankment of fill less than 4 feet high. Adjoining lands are generally wooded with dense saplings to mature trees and a heavy undergrowth of shrubs and vines. Some lands on the west side of the alignment are cleared or developed in industrial uses.

From Station 906+50 to 925+00 the alignment is in a cut 5 to 8 feet deep. The cut is about 30 feet deep where Derwood Road bridge crosses the tracks at Station 920+00. The Derwood community lies east of the B&O tracks across a broad area of fields and hedgerows. Metro construction will not disturb the hedgerows and trees on the east side of the B&O, so the view from Derwood will be unchanged. Most of the alignment will be in a cut 10 to 20 feet deep, further reducing the visual impact of Metro on Derwood. On the west side, the tracks will be hidden from view by the same cut, Station 907+00 to 927+00. From 927+00 to 932+00, the alignment will be at grade, closing Redland Road. From 932+00 to 943+00 (approximately) the tracks will enter a 30 foot cut into the hillside where Fields Road will be extended via a new bridge to join Redland Road (by others). The Shady Grove Station and its

associated parking areas will be north of Fields/Redland Road, hidden from Derwood by a hill. Where the alignment emerges from the cut, Shady Grove Station will be built on fill above a small stream. The valley will be crossed on a 15 to 30 foot high embankment, beside the existing B&O embankment.

The large parking lots required to accommodate 3000 cars at Shady Grove will be visible from the Station and from the access road linking the east-side parking to Shady Grove Road. The Service and Inspection Yard will be partly in excavation and partly in fill. The view of the yard from Md. 355 will be partly blocked by a low intervening hill and by commercial buildings along the highway.

Surrounding buildings are for industrial or commercial uses. The land on the east side of the B&O tracks will be a County Service Park, with warehouses, garages and parking lots for County vehicles.

The historic character of the surrounding area is rural with gently rolling fields and woodlands. The present aspect shows the recent changes that have been made. Warehouses and industries appear in fields that have been abandoned from cultivation and are being held for development. The future character will be totally industrial and substantially paved over.

7.6 Cultural Impacts

As discussed previously under Section 3.4 of this Report, the cultural impacts of the A017 Metro Segment will be negligible. No historic or archaeological sites are affected, nor are parks or other recreational facilities impacted as none are in the immediate vicinity of the segment under study.

During construction of the A017 Segment, there will be a short-term negative impact on school children living in the vicinity of the construction activity. The impact will be due to temporary traffic disruption and the potential of hazards resulting from the presence of construction equipment and Metro-related construction activity. This impact can be minimized by well-designed traffic control measures and adherence to contract safety provisions by WMATA contractors.

A relatively minor long-term negative impact will also be felt by school children living along the A017 Segment due to the increased Metro-induced traffic projected for the roadways in the Shady Grove area. The impact will be greatest

during the A.M. peak hours as school trips and Metro-bound auto work trips will coincide in the A.M. However, the impact can be mitigated by grade separations for local through-traffic, pedestrian walkways, the installation and proper maintenance of traffic signals at intersections, and the presence of school crossing guards at particularly congested intersections.

The relocation and expansion of Hungerford Drive is taking a 100 foot right-of-way along the western edges of the Montgomery Community College property. The campus itself is located uphill and several hundred feet from the roadway. Views of the widened road and of the Metro and B&O Railroad alignment from the College will be hidden from view by existing wooded areas and by street landscaping. Disruption to the Campus Drive access road will be temporary and will not prevent vehicles from entering or exiting at any time during the reconstruction period. After completion of the construction access to the College will be greatly enhanced.

As discussed under Section 3.8 of this Report, Derwood Bible Church, located on the corner of Derwood and Redland Roads, would suffer a minor short-term impact during Metro construction and the potential exists for a very minor long-term negative impact when Metro is in operation along the A017 Segment. During construction of the segment, those driving to the Church will be inconvenienced by construction-related traffic disruption. As above, this impact can be minimized by well-designed traffic control measures. When Metro is in operation, the roadways in the vicinity of the Church will be more congested, partially as a result of Metro-induced traffic, but mostly due to other projected growth in the Shady Grove area. However, those using Derwood Church facilities will be using the roadways primarily during off-peak hours and should therefore not suffer any significant perceptible inconvenience due to Metro-related traffic.

7.7 Traffic Impacts

A comprehensive assessment of Metro-related traffic impacts includes average daily traffic projections and service level projections for the roadways and intersections in the Shady Grove area. These are available as 1984 Metro Peak Hour Traffic Volumes and 1984 Total Peak Hour Traffic Volumes, from studies completed by the Montgomery County Planning Board and are included at the end of this section.

It is generally recognized that without certain roadway improvements, access to a Metro Station at Shady Grove will not be feasible because the existing roadway will not have the capacity to handle additional Metro-induced traffic. These improvements include, but are not limited to: the Fields Road extension; an Outer Beltway segment, or a facility of similar capacity, from I-270 to a direct access road between Metro parking facilities and an Outer Beltway segment. Improvements underway and recently completed are the reconstruction of Maryland 355 to a six-lane urban divided road, from Mannakee Road to Shady Grove Road and the extension of Shady Grove Road from Oakmont Avenue to Muncaster Mill Road. These improvements are described under Section 3.5 of this report.

While all of these improvements are necessary for adequate access to the proposed Metro Station at Shady Grove, the segment of the Outer Beltway from I-270 to a direct Metro access road must be singled out as particularly important. Although Shady Grove Road presently provides a higher level of east-west access than is available at any location between Rockville and Gaithersburg, Shady Grove Road will be heavily used in the station areas by the proposed County Service Park and other urban growth projected for the area. Montgomery County DOT has indicated that Shady Grove Road will not be able to adequately serve both the Service Park and the Metro Station. Montgomery County DOT points out that, with both the Service Park and Metro facilities in the Shady Grove area, levels of service at the intersections of Shady Grove Road and Route 355 would be F and E in the A.M. and P.M. peak periods respectively, whereas at the intersection of Shady Grove Road and the access road to Metro, levels of service would be E and F in the A.M. and P.M. peak periods respectively. (See "Memorandum" at the end of this Section.)

¹The final draft of the Shady Grove Sector Plan was given preliminary approval by the Montgomery County Planning Board, February 4, 1977.

This situation could be alleviated by an interchange at Route 355 and Shady Grove Road and by an interchange at Shady Grove Road and the direct access road. These interchanges would alleviate congestion on Shady Grove Road and improve access to Metro facilities providing that only County Service Park (including commuter-rail auto-induced traffic) and Metro auto-induced traffic are considered. These measures do not take into account additional traffic which is expected to be generated when the vacant land adjacent to the Service Park undergoes development, as it is planned to. If one takes this factor into account, it suggests that the Outer Beltway link between I-270 and the Metro access road is crucial if one is to avoid re-creation of the very problem the extension is intended to address- inadequate access to a terminal station in a high-growth corridor.

The Shady Grove Demand Volumes maps included at the end of this Section show the projected impact of Metro-induced vehicular trips only in the A.M. peak hour in 1990 both with and without the Outer Beltway link. The Outer Beltway link is predicted to take transit traffic off of arterial approach routes in the vicinity of the Metro Station so that the roadways will be freed for development traffic and non-through transit traffic. Furthermore, the Outer Beltway link is predicted to encourage those drivers coming down I-270 to use the Shady Grove Metro Station, thereby reducing traffic on I-270 south of Shady Grove Road. Not only will the Outer Beltway link be conducive to removing automobile traffic from I-270 below Shady Grove Road as well as relieving local arteries of Metro-related traffic, but it will give the residents of northern Montgomery County and those living beyond Montgomery County better access to the D.C. area via Metro.

An assessment of Metro-related traffic impacts must also look at parking demands and capacity at the proposed Shady Grove Station. Unlike the parking spill-over that would occur at Rockville, were Rockville the terminal station for the Rockville Route, the Shady Grove Metro terminal station will have ample capacity to meet parking demands as demonstrated by the following table:¹

<u>Station</u>	<u>1980 A.M. Peak Hour Auto Trips to Station (Park/Ride Only)</u>	<u>Parking Spaces Required To Meet Daily Park/ Ride Demand</u>	<u>Parking Spaces Currently Programmed</u>
Shady Grove	1,060	2,297	3,000

¹Source: WMATA Staff, January 1974.

As the foregoing analysis should have demonstrated, a Metro Station at Shady Grove will serve upper Montgomery County and beyond, thereby giving many travelers rapid access to D.C.; it will alleviate traffic on I-270 below Shady Grove Road if the Outer Beltway link is constructed; and Metro parking facilities are numerous enough to avoid spill-over into neighboring areas.

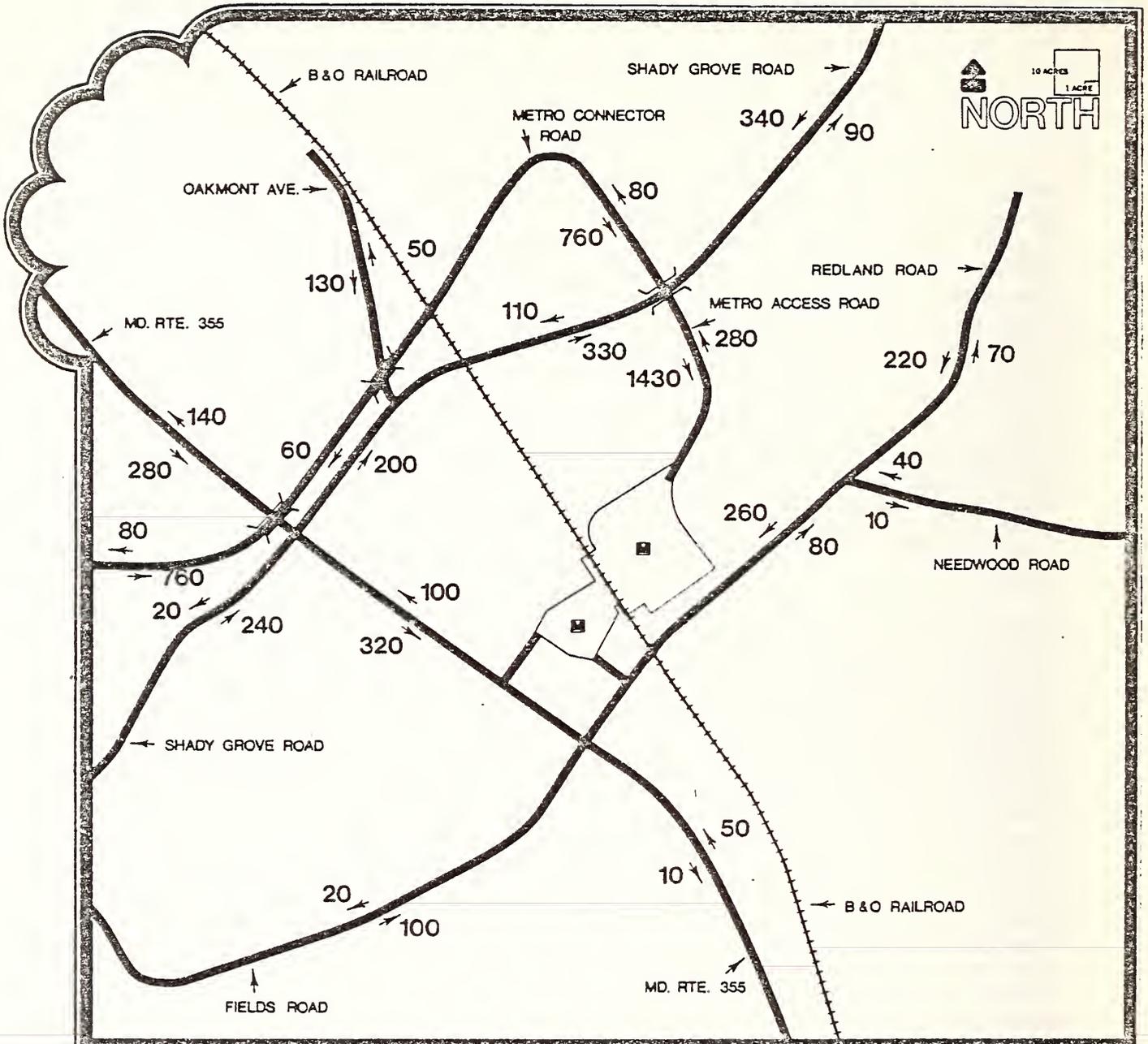
While these long-term positive impacts at the regional and local level outweigh the short- and long-term negative local impacts, it is nonetheless necessary to discuss Metro-related negative traffic impacts. These negative impacts are the result of construction activity and of the Metro alignment's closing of Frederick Avenue, Westmore Road, and Redland Road, thus eliminating existing at-grade crossings of the B&O Railroad, and the reconstruction of the Gude Drive bridge and the Derwood Road bridge over the railroad and Metro alignments. By the time Metro construction begins, Hungerford Drive will have already been reconstructed to accommodate existing and projected traffic volumes and the proposed Metro alignment; short-term negative local impacts will have already been eliminated and traffic flow through the area greatly enhanced by comparison to previous conditions.

Construction activity along the A017 Segment will disrupt traffic, thereby producing a short-term negative impact. The Redland Road, Gude Drive, and Derwood Road negative impacts will be eliminated when Fields Road is extended to meet Redland Road with a bridge built over the B&O and Metro tracks, thereby replacing the Redland Road at-grade crossing, and when Gude Drive bridge and Derwood Road bridge are rebuilt. The negative impacts on Frederick Avenue and Westmore Road are long-term in that east-west movement from and to the Lincoln Park Community will be restricted. Lincoln Park Community is located to the east of the proposed Metro alignment. The Community's access to the Rockville CBD is presently via Park Road to the south, Frederick Avenue, Westmore Road, and Gude Drive to the north. The City of Rockville has provided existing traffic data for Frederick Avenue and Westmore Road as follows:

Frederick Avenue (at Route 355)¹

During the twelve hours monitored, 4,274 vehicles crossed the B&O tracks. Of these, 1,977 were eastbound and 2,297 were westbound. Of the 2,297 westbound vehicles, 845 turned right onto Route 355 and 1,452 turned left onto Route 355.

¹Data based on counts taken 6/25/74 for twelve hours between 7:00 A.M. and 7:00 P.M. (per traffic engineer, traffic counts taken on a Tuesday, Wednesday or Thursday are representative of average weekday traffic operations).



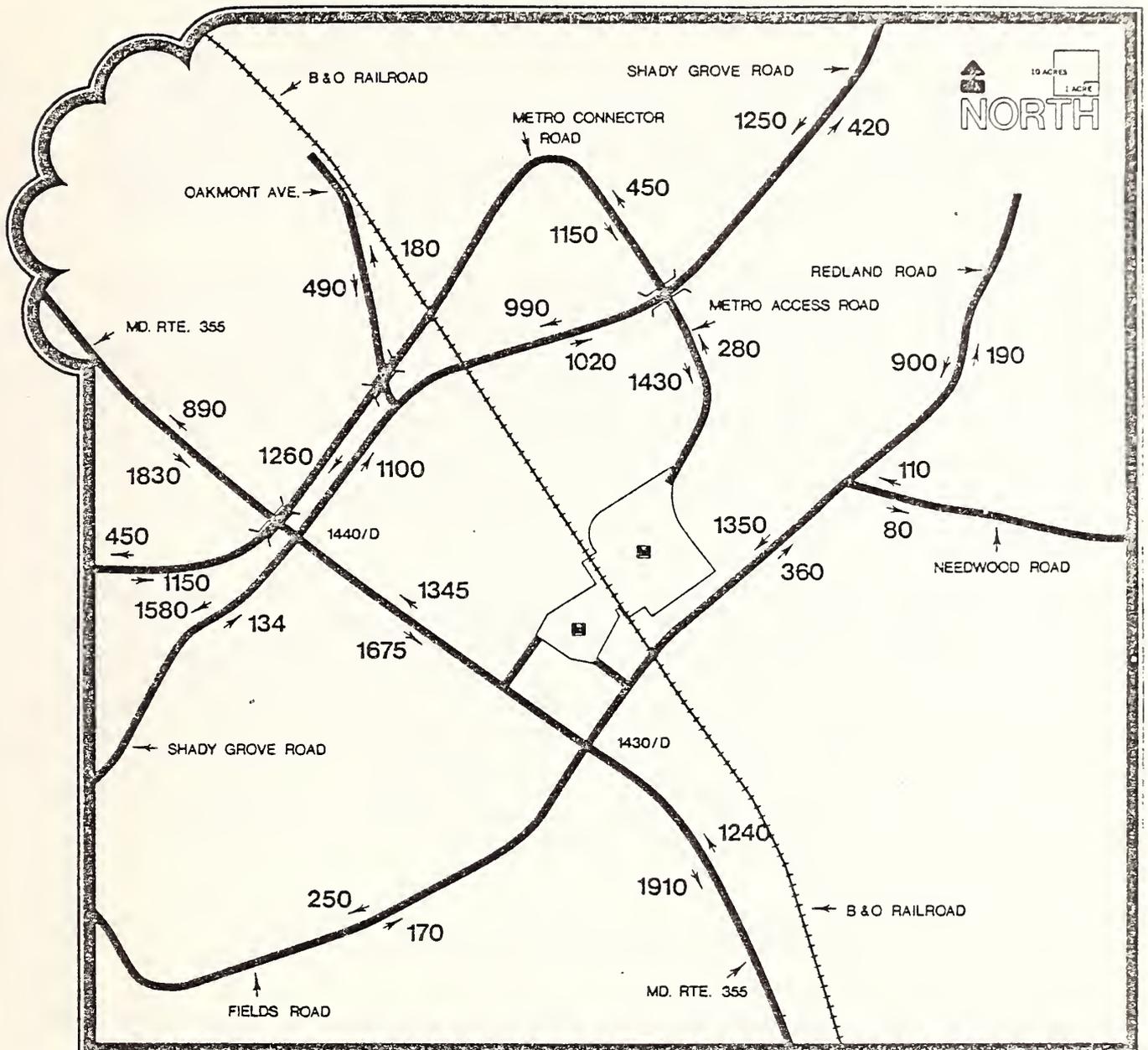
7-8 AM Traffic Volume

1984 METRO
Peak Hour
Traffic
Volumes

(With Metro I-270 Connector Road)

SHADY GROVE
SECTOR PLAN

THE MONTGOMERY COUNTY PLANNING BOARD



7-8 AM Traffic Volume
 Corresponding PM Peak Hour Data Included in Appendix
 Level of Service 1335/D

1984 Total Peak Hour Traffic Volumes

(With Metro I - 270 Connector Road)

SHADY GROVE SECTOR PLAN

THE MONTGOMERY COUNTY PLANNING BOARD

Based on the counts taken by the City of Rockville, the average hourly eastbound traffic is 165 vehicles, and the average hourly westbound traffic is 191 vehicles. The A.M. peak hour for eastbound traffic on Frederick Avenue is from 7:00 A.M. to 8:00 A.M. - 185 vehicles. The A.M. peak hour for westbound traffic on Frederick Avenue is from 7:30 A.M. to 8:30 A.M. - 282 vehicles. Of the 282 westbound vehicles, 149 turn right onto Route 355 and 133 turn left onto Route 355.

The P.M. peak hour for both eastbound and westbound traffic on Frederick Avenue is from 4:00 to 5:00 P.M. During the P.M. peak hour 205 vehicles are eastbound. Of these, 116 turn right off of Route 355 onto Frederick and 89 turn left off of Route 355 onto Frederick. 320 vehicles are westbound during the P.M. peak hour. Of these, 184 turn left onto Route 355 and 136 turn right onto Route 355.

Westmore Road, (west of the B&O Railroad tracks and east of Route 355)¹

Based on the counts taken by the City of Rockville, average weekday westbound traffic on Westmore Road is 1,362 vehicles; average weekday eastbound traffic is 1,226 vehicles; average hourly westbound traffic is 54.5 vehicles; and average hourly eastbound traffic is 51.5 vehicles. The A.M. peak hour for eastbound traffic on Westmore Road is 7:00 A.M. to 8:00 A.M. - 57 vehicles. The A.M. peak hour for westbound traffic is from 8:00 A.M. to 9:00 A.M. - 198 vehicles. Although turning movements onto Route 355 were not recorded, it should be noted that all westbound traffic must turn either left or right onto Route 355.

Westmore Road experiences no evening peak hour(s) as the 12:00 to 6:00 P.M. traffic counts do not vary significantly.

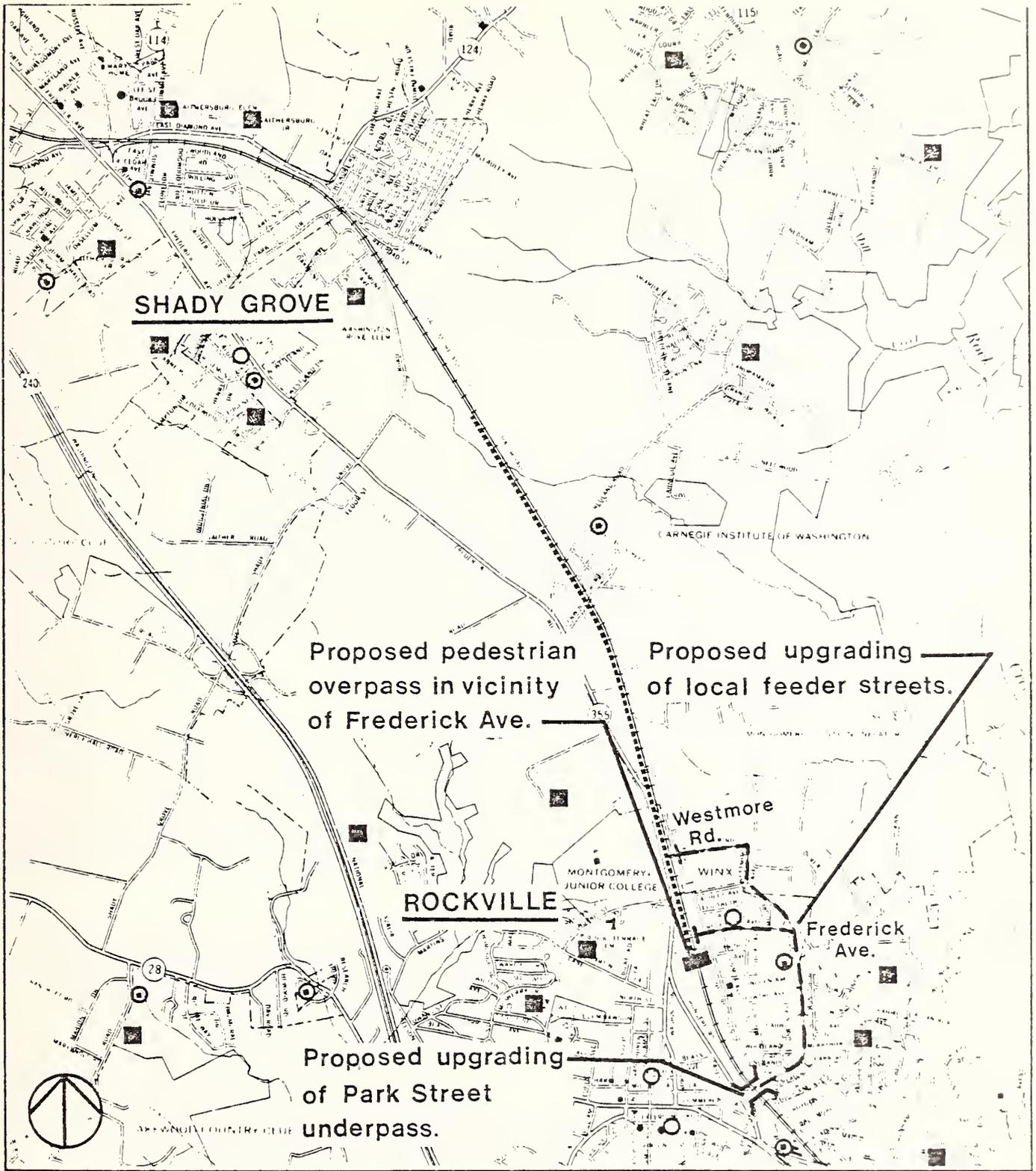
From a regional traffic point of view the closing of Frederick Avenue and Westmore Road is not significant. However, the impact at the local level is significant. Those vehicles presently westbound expected to turn onto Route 355, and those vehicles presently eastbound into the community will have to detour significantly to either exit from or enter the Lincoln Park community. This will present considerable loss of both pedestrian and vehicular access. It is estimated that approximately 800 vehicles would use Frederick Avenue and Westmore Road during peak hours at the time of the Metro opening. Frederick Avenue is also a popular pedestrian crossing. Pedestrian count taken on the overpass (May, 1975) indicated that 150 residents of Lincoln Park utilized the bridge in the 9 A.M. to 4 P.M. survey period.

1. Data based on counts taken 9/3/74 for a 24-hour period. No revised counts are available as of January, 1977.

A proposal is presently being considered to solve traffic problems resulting from the closing of these roadways. The City of Rockville has formulated a proposal and encouraged the Montgomery County Council to endorse upgrading and improving the Park Road underpass which the State has agreed to totally or partially fund, as well as upgrade Horner's Lane and other feeder streets.

The proposal will provide automobile access to the Lincoln Park community. The Park Road underpass coupled with a pedestrian overpass at the present at-grade crossing of Frederick Avenue is considered by the City to be the best alternative.¹⁾ It will provide maximum access to the community, regular traffic flow through it, and not represent an economic hardship to the City of Rockville. Industrial access from the northeast to Westmore Road will be via Dover Road and an upgraded Southlawn Lane; easterly residential access will be from Lincoln Avenue between Horner's Lane and 1st Street; and Park Road and Westerly Road will provide residential access from the southwest. Several secondary residential streets will be reclassified to primary streets and Horner's Lane improved to ensure circulation through the community and the provision of fire and police protection. (see map of proposed actions for access to Lincoln Park on next page)

1) The exact location of the pedestrian bridge is now under study by the local jurisdictions involved. At present the local jurisdictions are doing a cost/benefit analysis of additional crossings of the project.



Proposed Access to Lincoln Park

-  Public school
-  Church
-  Alignment



MEMORANDUM

March 26, 1974

To: Mr. Anthony C. Kanz, Deputy Director, Department of Transportation

From: Ronald C. Welke, Chief, Division of Traffic Engineering

Subject: Montgomery County Service Park - Shady Grove Metro Station/Rockville Metro Route

I. GENERAL DISCUSSION

The purpose of this memorandum is to provide technical evaluation of the relative impact of the proposed County Service Park as compared to full development of the site as presently zoned. The impact will be considered both with and without the presence of a possible Metro Station and corresponding connection of the necessary access road to an improved portion of Fields Road. The impact is measured by calculation of the probable level of service under the above conditions at the following intersections:

1. Md. 355 and Shady Grove Road
2. Access Road and Shady Grove Road

The following conditions will be assumed for the purpose of analysis:

Md. 355	A six lane divided highway with adequate left turn storage and phasing both north and southbound at Fields Road and at Shady Grove Road
Shady Grove Road	A four lane divided highway with adequate left turn storage and phasing both east and westbound at Md. 355 and at Access Road
Access Road	A four lane undivided highway from Shady Grove Road east of the railroad right of way and to the County Service Park or (with Metro) to improved Fields Road

The following assumptions were used for traffic generation under various conditions:

Condition #1	Actual volume data for existing system
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- Condition #2 Existing zoning of proposed site with 500 car parking facility for commuter rail (825 in, 205 out A.M.; reverse P.M.)
- Condition #3 County Service Park with 500 spaces for commuter rail service (750 in, 445 out A.M.; reverse P.M.)
- Condition #4 County Service Park (as above, Condition #3) 2,000 spaces for Metro park and ride (includes 500 for commuter rail) east of railroad tracks, with access north to Shady Grove Road and south to Fields Road. 700 park and ride spaces located west of the railroad tracks and having access to Md. 355 and Fields Road. 50 kiss and ride spaces east of railroad tracks having a peak hour turnover of 7 vehicles per hour (i.e., 350 one-way trips in; 350 one-way trips out A.M. and P.M.). Distribution was assumed to be 75% north and 25% south.
- Condition #2/3 Analysis of these conditions was accomplished by assigning 100% of all trips to and from Shady Grove Road.

The remaining trip distribution was based on data provided by WMATA relative to trip demands for the Shady Grove Metro Station Service area. Trips were generated using a percentage distribution as indicated by the demands calculated by WMATA.

II. RESULTS

The following table of Service Levels is related to the four conditions discussed in Section I of this memorandum:

Mr. Anthony C. Kanz
 March 26, 1974
 Page 3

<u>Location</u>		Condition Number			
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Shady Grove Road and Md. 355	AM	B	C	D	F
	PM	B	D	D	E
Shady Grove Road and Access Road	AM	N/A	A	B	E
	PM	N/A	C	C	F

III. CONCLUSIONS

Service Levels produced by the County Service Park are slightly worse than those resulting from development of the existing zoning during the AM peak period. Service Levels for both the County Service Park and the existing zoning are the same during PM peak period. Service Level during the PM peak will reach Level "D" at Md. 355 and Shady Grove Road and Level "C" at the intersection of Shady Grove Road and the Access Road, both acceptable operating conditions.

The Service Levels that result from Metro-related traffic added to the County Service Park without alternate access reaches Levels "E" and "F" on Shady Grove Road indicating operation beyond established limits of tolerability. This condition is not due to the presence of the County Service Park but rather due to the lack of adequate highway facilities to handle the Metro demand traffic.

RST/md

7.8 Air Quality Impacts¹

a. Construction Related Air Quality Impacts

During construction there is a potential for short-term adverse air quality due to increased emissions from construction vehicles, construction activity, spoil removal, and construction-induced congestion. The construction activity and spoil removal will influence particulate emissions while the emissions from the construction vehicles and construction-induced congestion will have an impact on local emissions of carbon monoxide, hydrocarbons and oxides of nitrogen.

The area within Segment A017 which will have the greatest potential to contribute to increased particulate emissions during construction is the proposed Shady Grove Station with its accompanying parking facilities, and the S&I Yard at Shady Grove. This potential for a greater negative short-term impact in this area of the segment is due to the large area under construction at the station and S&I sites.

When clearing and grubbing natural vegetation, construction crews remove the trees, brush and ground vegetation that serve to anchor topsoil. The earth exposed in this manner becomes a source of dust and particles as it is eroded by wind. The potential for dust is further enhanced by the movements of heavy duty vehicles over the construction sites.

The extent of this impact will depend greatly upon precautions taken during construction. If existing construction regulations are enforced, the impact will be minimized. Primary control measures which would further reduce the impact are:

- .Restriction of vehicle flow on unpaved surfaces;
- .Watering twice a day during periods of high wind and construction activity;
- .Minimizing the period during which the cleared and regraded lands are exposed.

Another potential for a short-term negative impact is due to increased emissions from construction vehicles. The impact of the local pollutant concentrations at the station and along the construction route will depend on the number of construction vehicles at a particular construction site, and on the number of vehicles which detour due to the construction impedance.

¹Source: "Air Quality Impact Analysis Metro Route Segments A014 to A017", Environmental Research & Technology, Inc., September 1974. See Appendix D for the Air Quality Report in its entirety.

While emissions from construction equipment are not significant in the context of regional emissions of transportation related pollutants, the potential for negative impacts on local air quality does exist, although it is anticipated that construction vehicles' emissions will not be significant with regard to oxides of nitrogen. For other pollutants there is the potential for local adverse impacts specifically at times of peak traffic conditions and at times of adverse meteorological conditions. This potential for negative impact on local air quality can be minimized by reducing the construction activities, or by diverting a portion of the traffic at times of adverse traffic and meteorological conditions.

As signaled above, construction activity will also result in traffic congestion which can be expected to increase local concentrations of carbon monoxide and hydrocarbons, because at the lower vehicle speeds associated with congestion, automobiles emit more carbon monoxide and hydrocarbons than at the higher speeds associated with free flowing traffic. It logically follows that the greatest congestion-related impact would occur on lanes with existing free flow conditions, for if a particular lane affected by construction is already congested, the additional traffic impedance due to construction will not increase concentration contributions. Since most inter-sections along the A017 Segment are projected to have relatively stable flow conditions when WMATA begins construction, one can conclude that Segment A017 has greater potential for negative impacts on air quality during construction than other segments of the Rockville Route where free flow conditions rarely exist. It must be remembered that the impact of construction-induced congestion, as well as other construction related impacts, are short-term and can be considerably mitigated by well-designed control measures.

b. Regional Air Quality Impact of Segment A017 of the Rockville Route¹

The A017 Segment of the Rockville Route provides potential beneficial impact on regional air quality. The construction of the Rockville extension, as the A017 Segment is often called, is consistent with the transportation control strategies attempting to reduce vehicle miles traveled (VMT) in the National Capital Interstate Air Quality Control Region. The existence of Metro inherently encourages a diversion of automobile trips to transit trips, thereby reducing the VMT and the accompanying emissions of carbon monoxide, hydrocarbons, oxides of

¹For further details, see Appendix D of this Report.

nitrogen, oxidants and particulates. Specifically, construction of a station at Shady Grove will result in a minimum reduction of 90,370 VMT per peak two hours, and additional VMT savings can be expected from the non-peak hours in each day.

c. Local Air Quality Impacts of Segments A017 and A016 to the Rockville Route¹

The potential exists in the vicinity of the Shady Grove Station site, as it does for every Metro Station, for minor short-term degradation of air quality. However, carbon monoxide emissions generated by Metro-induced traffic are not likely to exceed the 25 parts per million peak hour standard. The contribution of Metro-related emissions to the eight-hour CO levels are minimal due to the concentration of commuter trips in the peak hours. The inclusion of commercial facilities in land contiguous to the Metro station, as indicated in the Shady Grove Plan, may however reduce the number of vehicle trips in the immediate area during commuting hours. This will possibly result in somewhat smaller increases in one-hour CO levels in the Station area. Violation of eight-hour CO standards would almost invariably be the result of congestion induced by normal traffic growth which is not related to the Metro facilities.

No long-term local impacts are expected from Metro facilities within the A017 Segment of the Rockville Route since Federal vehicular emissions controls are expected to greatly reduce the impact of the automobile within a few years of the completion of the A017 Segment.

7.9 Noise and Vibration Impacts²

Introduction

Projecting the level of noise expected from Metro train operations for surface or aerial structure operations requires consideration of the design features of the transit system facilities which are being included and will be included in Metro system facilities and structures for control and reduction of noise and vibration. In making the projections of the expected noise and vibration levels, the procedure used has been to determine the expected levels for operation with standard Metro system facilities and also to determine the expected vibration and noise levels with special design features for reduction of the noise and vibration, where needed to meet the criteria for maximum allowable levels.

¹Ibid.

²Source: "Noise and Vibration Study, Alternatives for the Rockville Route Sections A014, A015, A016 and A017", Wilson, Ihrig & Associates, Inc., August 1974. The entire study is under Appendix E of this report.

Evaluation of the typical noise levels and type of occupancy in each community area provides a basis for selecting the appropriate category of maximum noise and vibration level criteria which should be applied. Comparison of the expected performance with the criteria provides a means for determining those areas where special design features are needed to reduce noise and vibration to acceptable levels.

It should be noted that the transit system industry in general and the WMATA Metro transit system in particular has established very strict criteria for maximum noise and vibration levels from new transit system facilities and equipment. This is because with a new transit system it is desirable both to provide a favorable environment for patrons of the system and to minimize transmission of noise and vibration to adjacent communities, buildings and structures. Acoustical impact is a very important factor influencing community and patron acceptance of any new transportation system and, particularly, the acceptance of a new rail transit system. Because of the importance of noise and vibration the rail transit system industry and the WMATA Metro system have established and are adhering to noise level criteria which are more restrictive than those applied to any other transportation system and are, in fact, more restrictive than are applied by most community noise standards and ordinances.

Noise Levels from Surface and Aerial Structure Operations Along A017 Segment of Rockville Route

Much of the area along A017 is open space, with only a few residential and some commercial and industrial buildings adjacent to the alignment. Approximately five houses located adjacent to Stations 923+00 to 925+50 on the outbound track side and at Stations 928+50 to 929+00 on the inbound track side indicate the need for sound barrier walls adjacent to the alignment because of the residential nature of the area. The wayside noise levels from eight-car trains traveling at 75 mph along this section of the alignment are such that a sound barrier wall is recommended at all five houses in order to achieve satisfactory wayside noise levels. However, if the normal train in this area at night do not include eight-car trains and if the speed is less than 75 mph, then sound barrier walls will be necessary only in areas where the houses are closer than approximately 200 feet from the alignment. Construction of the walls however will be delayed until found necessary.

It should not be necessary to provide sound barrier walls for wayside noise reduction at any of the industrial buildings along the A-17 section. Some reduction of the wayside noise is indicated as necessary at commercial buildings along the inbound track at about station 835+00, 839+00, 889+50 and 896+00. In these cases if the usage is light industry, then a sound barrier wall should not be necessary, however, if the usage is a commercial office or commercial retail type then sound barrier walls are indicated in order to meet the design criteria goals for maximum wayside noise.

Construction Noise

One of the impacts associated with a rail rapid transit system project is the short-term noise and vibration impact of construction activities. As with any large project, the construction of a rapid transit system involves the use of machines and procedures which, in the past, have resulted in intense noise levels and, occasionally, high vibration levels in and around the construction site.

In recent years considerable progress has been made in the reduction and control of construction noise through modifications of the equipment to reduce noise generated at the source, through modifications of construction procedures and by selection of those construction procedure alternates which are less noisy. Also, in many areas and for many types of construction projects there have been noise limits or noise standards included in the construction contracts or applied by governmental agencies in order to limit the noise impact from the construction. These efforts at reducing construction noise have produced considerable success and with new construction projects the work can be and is accomplished with considerably less noise impact than is traditionally expected.

For at-grade construction the impact will be due to demolition; clearing and grading; placement of materials, including any retaining walls and the ballast and ties and track; plus any finishing activities such as fencing and landscaping.

For the aerial structure configuration the activities will include demolition; ground clearing and grading; erection of foundations including, possibly, pile driving; construction of the aerial structure columns; erection of girders and the finishing.

Construction Equipment Noise Levels

There is considerable information available on the typical noise levels created by modern construction equipment and there is a growing body of information on lower noise levels which can be achieved with modified equipment or equipment which is designed with noise reduction and control as one of the design parameters.

Measurements made at transit system construction project sites provide the best information relative to expected noise levels from the type of construction activities which will be associated with the A Route construction. Table IX presents a series of noise levels observed for various types of machines and activities associated with the WMATA Metro construction project. These data are for construction activities using standard present day equipment without noise control or noise reduction modifications to the equipment. The data was obtained before noise restrictions and limits had been applied to the construction activities on the Metro project.

Typical noise levels at construction sites, as indicated by Table IX, do result in substantial acoustic impact on neighboring communities and in new and future projects such noise levels are considered unacceptable. There are many techniques available for reducing the noise, some of which involve little or no cost and some of which involve considerable cost. In some instances modifications of procedures or use of different procedures and equipment can result in much lower noise levels and impact. For the Metro project one of the procedures, a very effective procedure, has been to include noise limit specifications in the construction contracts in order to reduce or limit acoustic impact due to construction activities.

Ground-Borne Vibration from Construction

Because of the nature of some construction activities, high amplitudes of ground-borne vibration may result in some impact in neighboring community areas. Blasting and impact pile driving are two types of activities traditionally associated with high levels of ground-borne vibration. It is also possible that some types of heavy vehicles and excavation activities can generate sufficient ground-borne vibration levels to be perceptible or noticeable in nearby buildings.

The vibration levels created by the normal movement of vehicles including graders, loaders, dozers, scrapers and trucks generally are of the same order of magnitude as the ground-borne vibration created by heavy vehicles running on streets and highways. Large trucks and buses operating on city streets and on highways generate ground-borne vibration due to wheel/roadway interaction and particularly high vibration levels can be associated with truck and bus operations on rough or pock-marked streets. In general, the ground-borne vibration from vehicle operations on streets, even very rough streets, is not sufficient to create noticeable impact on adjacent community areas. This vibration is of a level that is generally imperceptible or barely perceptible and is considered acceptable, producing little or no impact. Thus, it can be expected that the normal vehicle activities at the construction sites will not generate sufficient ground-borne vibration to result in significant impact.

Construction Noise Specifications

There are numerous procedures available for reducing the noise generated by construction equipment and activities. One of the most effective methods of assuring controlled noise and minimum acoustic impact is the inclusion of noise limit specifications in the construction contract documents. Recent projects of the New York City Transit Authority and the Washington Metropolitan Area Transit Authority have included noise restrictions in the contract specifications. The experience with these noise limit specifications and with the contractors working within the requirements is that considerable success in the reduction of construction noise has been realized.

For the Rockville 'A' Route, the construction contracts will include a section on noise limits. In many instances, noise standards or limitations applied to construction or other noisy type activities have been based on average conditions in a community or, alternately, on the most severe or critical conditions. The noise limit law or standard has then been written with one set of restrictions which apply to every area. This procedure is not consistent with best economy or best benefit to the community. In many instances this results in either excessive noise in quiet residential areas or excessive cost for noise reduction in commercial or industrial areas where there is no benefit to be gained from the noise reduction. The noise limitation specifications for the Metro have four different levels of noise limitations which are applied consistent with the type of community area in which the construction takes place.

Table X in Appendix E indicates noise level limitations excerpted from the WMATA Metro construction contract documents to provide an indication of the degree of noise impact which can be expected from the construction activities along the 'A' Route.

Summary of Noise Projections

Evaluating the short- and long-term impact requires comparison of the expected or projected noise levels with existing typical noise levels and with criteria for reasonable and appropriate noise levels or the levels of noise which are considered to create intrusion or impact.

Prior to the adoption of the Montgomery County Noise Control Ordinance, the sound level data for the community assessment were taken at representative selected locations between July 15, and July 31, 1974 to determine an ambient noise level for the area. WMATA's recent review of this section, indicates that the noise level data for the community assessment taken in 1974 remains essentially the same. During the Final Design stage when the alignment and station locations are established, WMATA's consultant will re-evaluate the noise levels in light of the new adopted County Noise Ordinance.

Using these data and data obtained from various recent and new operational and experimental rail transit vehicles and systems, Metro's acoustical consultant, Dr. G. P. Wilson, examined in detail those areas where the introduction of Metro system may upset the ambient conditions, WMATA's consultant recommends preventative action to be taken. His recommendations are reviewed and evaluated objectively by WMATA's General Engineering Consultant and the WMATA staff.

Noise disturbances from at-grade and aerial transit train operations comprise the long-term noise impact of the proposed Metro alignment. The short-term noise impact is comprised mainly of construction noise, affecting the community around the proposed Rockville Route before Metro trains begin operations.

It is important to note that the ground-borne vibration from the transit trains, and from any other activities associated with operation of the transit system will not be noticeable or perceptible as a mechanical motion at any point along the Rockville Route. The levels of vibration at the source are low enough and the distance between the transit system facilities and the nearest buildings are sufficient that there will be no noticeable or perceptible vibration which residents of the area can feel. Further, there will be no effect of the vibration on existing structures. The amplitudes of vibration are many orders of magnitude less than that required for any potential effect or structural damage to the structure.

Airborne wayside noise from at-grade and aerial transit train operations is another factor which could create intrusion. This noise as opposed to noise from ground-borne vibration is attenuated by the walls or exterior boundaries of a building. Thus the noise level inside a building effecting the occupants is dependent not only on the external noise level, but also upon the amount of attenuation by the walls and windows of the structure. Since the interior noise level from this external noise is dependent upon the amount of attenuation provided by the boundaries of a building (over which Metro has no control) the noise criteria for maximum allowable wayside noise are specified as exterior levels in a particular community as discussed in Appendix D of the Noise and Vibration Report found in Appendix E of this Report.

As with noise induced from ground-borne vibration, at-grade and aerial noise is transient, occurring only at the time of a transit train passby. Thus the projected maximum wayside noise levels can be compared with L₁₀ and L₁ as presented on Table II in Appendix E, the community noise level measurement results. At most of the areas along the proposed Rockville Route, the transient sound levels due to transit train passbys will be less than transient levels produced by B&O Railroad train operations.

Review of the measured L₁₀ and L₁ levels in several areas indicates that transit trains produce lower levels of noise than L₁ observed when including railroad train passbys, but that transit trains produce higher levels of noise than L₁₀ and L₁ observed without any railroad train passbys. Thus there are a number of residential, office, and commercial buildings where the use of sound barrier walls is recommended to avoid significant acoustic impact.

With the use of sound barrier walls as indicated in the Summary of Recommendations, the impact of noise from the transit trains operating on the surface ballast and tie tracks and the short section of aerial structure will be minimized to be consistent with the noise environment existing in the areas through which the Metro trains will pass. Reference to the measured ambient noise levels given on Table II of Appendix E as the L₁₀ and L₁ noise levels and comparison of these with the expected noise levels from the transit trains given on Tables VI, VII and VIII of Appendix E shows that the transient noise levels produced by the transit train operations will be consistent with and comparable to transient or short-time duration noise levels already existing in the area near the Metro tracks. While the transit trains will add some noise to the community areas along the above-ground sections of the alignment, the impact will be minor because of the pre-existing noise levels, particularly along those sections of the alignment located near the B&O Railroad tracks.

A possible short-time impact could arise from noise during construction of the Metro facilities. The typical noise levels observed at rail transit construction projects at a distance of 50 ft. are above even the L₁ observed from all but a few locations with a B&O Railroad train passby. Thus there is potential for major noise impact from the construction activities. If the construction activities do meet the construction noise specifications of Table X in Appendix E, then the effect of construction noise will usually be negligible or at most occasionally noticeable but acceptable to the community.

Since the noise levels anticipated from the construction and operation of the transit system are based on prediction, and considering the huge cost involved in providing sound barrier walls, noise measurements will be taken again during construction and after the section is in operation to determine actual noise levels. During construction all state and local regulations will be complied with by utilizing silenced equipment and techniques. In those instances where it is determined Metro noise levels associated with operation of the system are excessive, WMATA will: install sound barrier walls to reduce the noise levels to permissible levels; apply for an exception to state and the County Noise Control Ordinance when expenditure of public funds would not justify the benefit to be gained; or purchase land adjoining the alignment where the cost of installing adequate noise control measures is found too expensive and for which an exception cannot be obtained. WMATA is committed to one of these actions in all instances where violations occur by the Master Agreement between it and Montgomery County.

Drawing DDS-108, included in the Addendum (item 5, page 306) shows the type of sound barrier wall that will be used on A017 if required.

Summary of Noise Projections

<u>Location by Station Number</u>	<u>Recommended Design</u>
Design Section A-17	
807+00 to 834+20	No special noise reduction features
834+20 to 835+90	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on west side of inbound track only
835+90 to 838+60	No special noise reduction features
838+60 to 840+30	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on west side of inbound track only
840+30 to 889+10	No special noise reduction features
889+10 to 890+10	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on west side of inbound track only
890+10 to 894+80	No special noise reduction features
894+80 to 897+30	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on west side of inbound track only
897+30 to 920+00	No special noise reduction features
920+00 to 926+10	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on east side of outbound track only
926+10 to 927+60	Sound Barrier Wall extending to 3.5 ft height above top-of-rail on west side of inbound track and on east side of outbound track

Location by
Station Number

Recommended Design

Design Section A-17 [cont.]

927+60 to 931+80	Sound Barrier Wall extending to 3.5 ft. height above top-of-rail on west side of inbound track only
931+80 to 950+00	No special noise reduction features
Shady Grove S&I Yard	No special noise reduction features
Shady Grove Station	No special noise and vibration reduction features required except possibly sound barrier walls for protection of patrons from B&O Railroad train noise

7.10 Socio-Economic Impacts

As previously discussed in this report (Section 3.8) the area surrounding the A017 Segment, the Shady Grove Station area, and the area to the north and northwest of the proposed station is anticipated to experience more growth during the next two years than other areas within Montgomery County. Growth is to be according to the Shady Grove Sector Plan, recently given approval by the Montgomery County Council. (The final approved draft is expected to be adopted by Maryland-National Capital Park and Planning Commission by spring 1977.

The basis of the plan is the Metro Station at Shady Grove and associated actions of its implementation. The sector plan covers the area between the two corporate municipalities of Rockville and Gaithersburg and extends from I-270 eastward to Mill Creek Towne. The plan is used as the foundation on which to prepare comprehensive zoning amendments, proposal of public projects, and a general outline and program for implementation of plan recommendations.

The Shady Grove Sector Plan area encompasses 2,900 acres and provides a framework for development between Gaithersburg Vicinity and Rock Creek Master Plans. Gaithersburg and Rockville through their respective master plans will guide development within these municipal limits, as Montgomery County has planning responsibility for areas lying between city limits.

A Metro Station at Shady Grove will increase accessibility to the City of Gaithersburg and the new town of Germantown, thereby doing a great deal to help fulfill the regional planning goals, as expressed in the Wedges and Corridors Plan, of having Gaithersburg and Germantown develop as urban centers as part of the development of the I-270 Corridor.

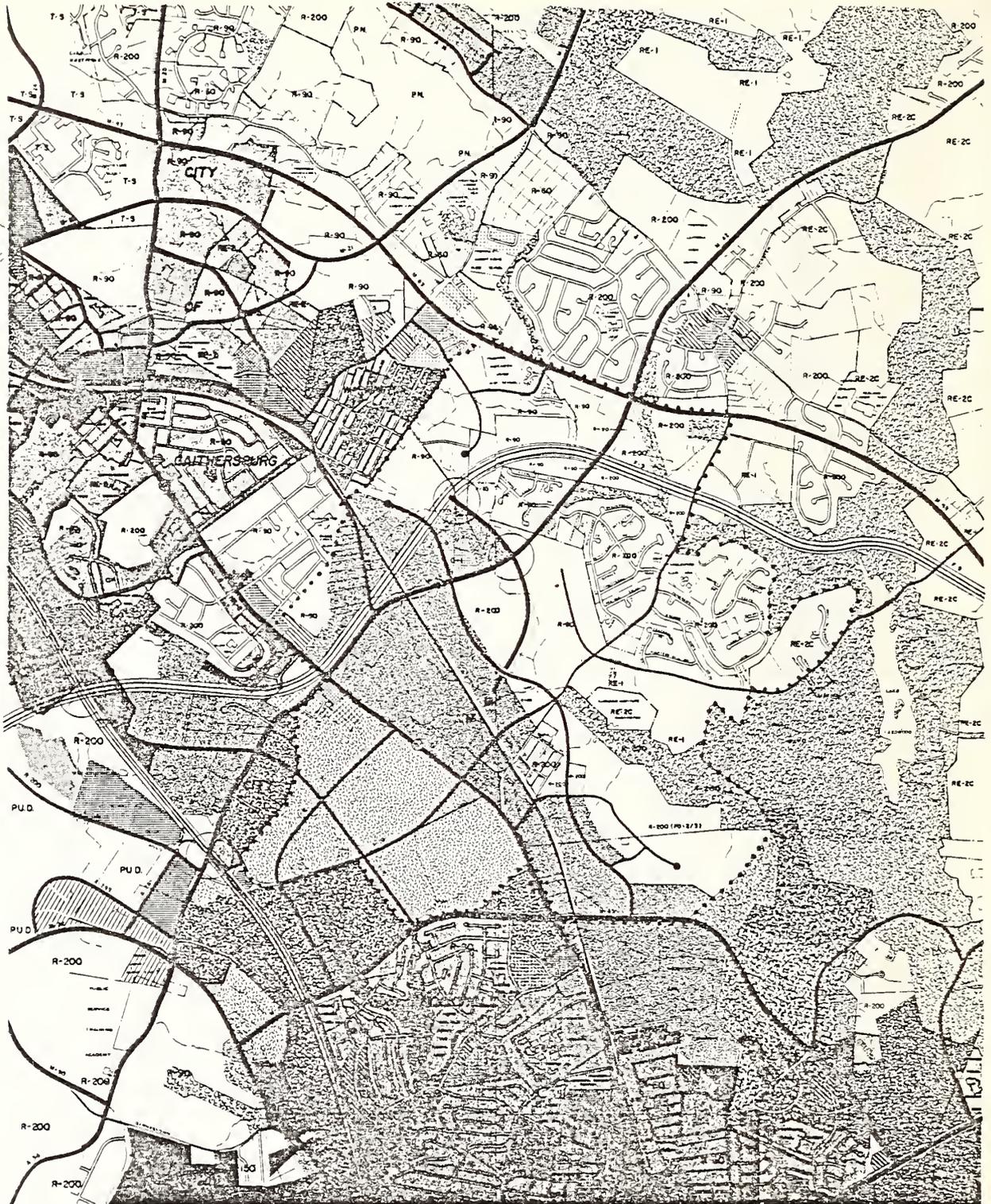
Constructing the A017 Segment of Metro concurrent with or prior to new development, will serve to foster the use of rapid rail and built Metro-oriented commuting habits before auto-centered habits are formed, thereby relieving congestion on the north-south roadways, I-270 in particular, assuming the Outer Beltway or a facility of similar capacity is constructed to serve as a direct link between I-270 and the Shady Grove Station area.

The A017 Segment of Metro will simultaneously provide D.C. residents with increased, inexpensive, and rapid access to the developing and anticipated employment centers in the north and northwestern suburbs of Montgomery County and will provide residents living in the northern and northwestern portion of Montgomery County, and even parts of southern Frederick County, with increased and rapid access to employment centers along the I-270 Corridor and within the District of Columbia.

In summary, the major socio-economic impacts expected as a result of the construction of the A017 Segment of Metro are an acceleration of population and employment growth in the northern section of the I-270 Corridor, increased accessibility to the new employment centers in this area, and increased accessibility for the growing population of the northern portion of the I-270 Corridor to employment opportunities located to the south and southeast.¹ It should be pointed out that even without the proposed Metro, growth will occur in the areas of the alignment from Rockville to Shady Grove. The impacts typically resulting from this growth however, which will occur with or without construction of the transit facility, can be mitigated by good local planning for the adequate provision of services, utilities, and roadway improvements.

1. See "Summary of the Plan" - Final Draft Shady Grove Sector Plan, October, 1976 - in Addendum.

PROPOSED ZONING & HWY. PLAN



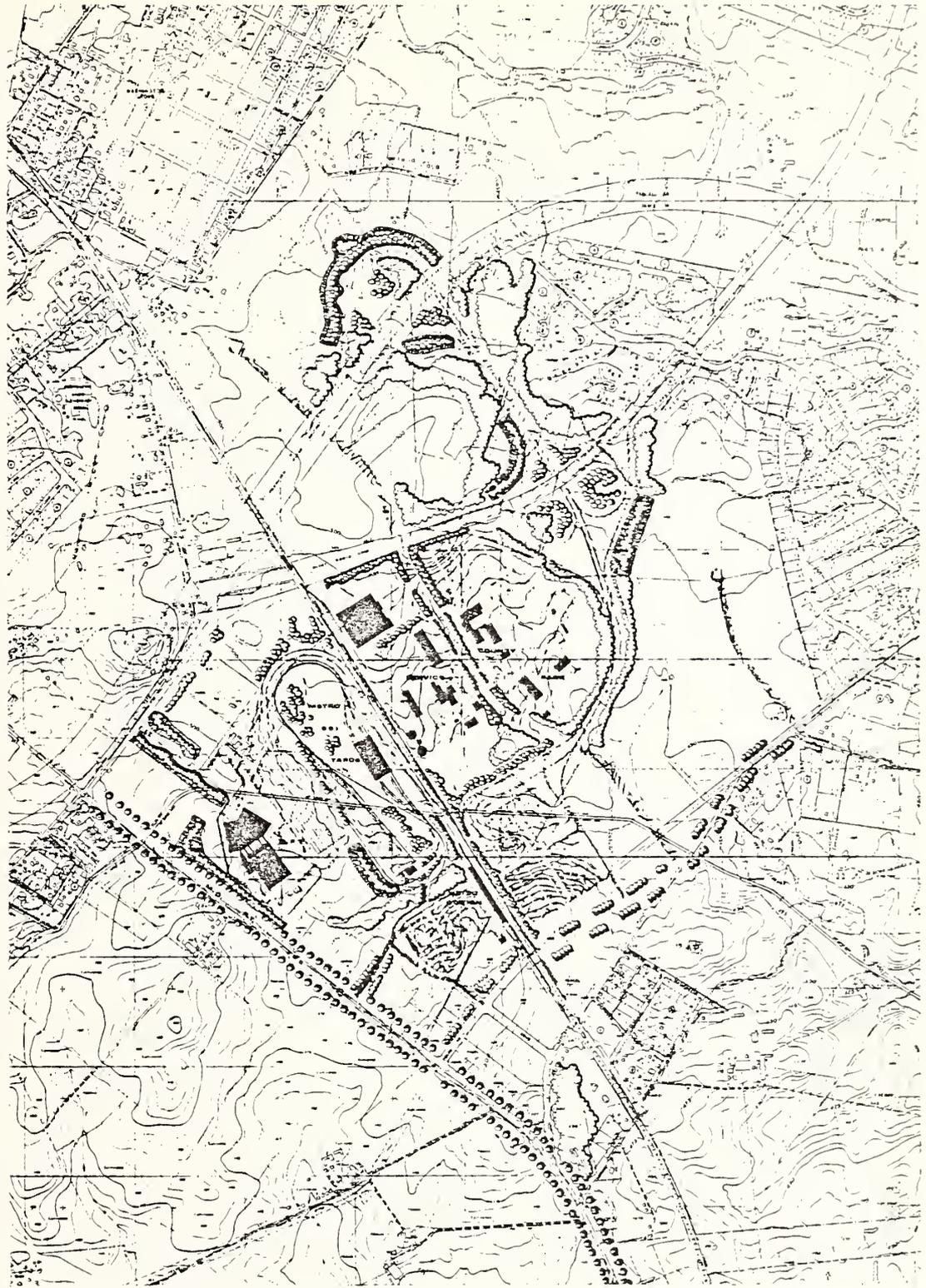
LEGEND

RE-1 RESIDENTIAL ESTATE 2 AC.	R-100 MULTI-FAMILY LOW-DENSITY RES.	P.D. PLANNED DEV. EDGE	RAVINE
RE-2C RESIDENTIAL ESTATE 2 AC. CLUSTER	R-120 MULTI-FAMILY MED-DENSITY RES.	OFF RD. MOD. INFILL	MAJOR HIGHWAY
RE-1 RESIDENTIAL ESTATE 1 AC.	R-150 MULTI-FAMILY HIGH-DENSITY RES.	C-1 COMM. OFF. BLDG.	INTERNAL INDUSTRIAL ROAD
R-200 ONE-FAMILY DETACHED, LARGE LOT	R-180 MULTI-FAMILY HIGH-DENSITY RES. PLANNED RES.	C-2 COMM. OFF. BLDG.	PRIMARY RESIDENTIAL ROAD
R-100 ONE-FAMILY CONTROLLED DENSITY	R-200 RES. CENTRAL BUSINESS DISTRICT	C-3 COMM. OFF. BLDG.	METRO LINE AND STATION
R-90 ONE-FAMILY DETACHED RESTRICTED RESIDENTIAL	T-5 TOWN SECTOR	C-4 COMM. OFF. BLDG.	INTERCHANGE
R-50 ONE-FAMILY DETACHED RESIDENTIAL		C-5 COMM. OFF. BLDG.	BRIDGE
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SHADY GROVE SECTOR PLAN

MONTGOMERY COUNTY PLANNING BOARD

Source: Montgomery County Planning Board



LEGEND



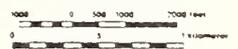
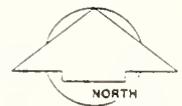
TREES PROPOSED FOR THE LANDSCAPE



TREES ON SITE



EXISTING TREES TO BE RETAINED



SHADY GROVE ILLUSTRATIVE LANDSCAPE PLAN
 MONTGOMERY COUNTY PLANNING BOARD

Source: Montgomery County Planning Board. 204c

NEW

7.11 Conclusion

The foregoing sections of this Chapter (Sections 7.1 through 7.8) have described and analyzed Metro-related impacts for the A017 Segment of the Rockville Route, often referred to as the Rockville Extension or the Shady Grove Extension. The following statements summarize the major findings of Sections 7.1 through 7.10.

Ecological Impacts

Short-term impacts are those associated with disturbing the ground for construction. Slight disturbance will be felt along the alignment, more serious impacts will be felt at the terminal. Highly erodible soils on the terminal site require stringent measures to protect slopes and contain and settle runoff. Short-term impacts on vegetation and wildlife are minor.

Long-term impacts are most evident at the Shady Grove terminus of the Route. Here, some 70 acres of pasture and oldfield will be bared, graded, paved and, here and there, landscaped. Vegetation and wildlife habitat on the site will be destroyed, though there are no unique or rare plants or animals. Crabbs Branch will suffer a reduction in water quality from chemicals contained in parking lot runoff. The volume of flow in the stream will increase, though detention basins will reduce the rate of flow to that which the stream can presently accommodate. The basins will not reduce peak flows from major storms of 50 or 100 year intervals. This will result in increased flood peaks in storm hydrographs in Rock Creek downstream of the Terminal Station, thus increasing potential flood hazards.

Alignment Impacts

The major short-term negative impacts expected as a result of the A017 alignment are erosion and sedimentation, particularly at the terminal station and S&I Yard sites.

The major long-term negative impacts attributable to the A017 alignment are the loss of prime farmland at the terminal station site and at the S&I site, the potential contamination of natural drainage and ground water at these sites if the precautionary measures recommended in this Report are not followed, and the disruption of traffic which will occur as a result of the closing of Frederick Avenue and Westmore Road.

Visual and Physical Impacts

Major negative impacts will result from the construction of 3000 parking spaces at the terminal station, the rail yard, and the roadways to provide access to these facilities.

The construction of these facilities and accompanying roadways will result in substantial disruption and regrading of some 70 acres of land, transforming abandoned farmland into terraces, embankments and paving. While it should be noted that these Metro facilities will be in harmony with their proposed future industrial surroundings, they will in themselves, nonetheless have negative visual and physical impacts. However, because the terminal area lies in a natural bowl, it will not be visible from anywhere but immediately surrounding sites.

Cultural Impacts

The cultural impacts of the A017 and A016 will be negligible. No historic or archaeological sites are affected, nor are parks or other recreational facilities impacted as none are in the immediate vicinity of the A017 and A016. School children will experience a minor to moderate short-term negative impact during construction and a minor long-term negative impact as a result of construction-related traffic disruption and Metro-induced traffic respectively. Derwood Bible Church will experience a minor short-term negative impact during Metro construction due to traffic disruption.

Traffic Impacts

The existing roadway network surrounding the station area in Shady Grove does not have the capacity to handle projected Metro-related traffic. For station access to be adequate, traffic congestion during peak periods to be reduced, and impacts to adjacent residential neighborhoods to be minimized, several scheduled roadway improvements must be completed prior to the operation of the Shady Grove terminal station. Particular improvements that are determined to provide adequate access to the station and improve over-all vehicular circulation through the area are a limited access road from I-270 to the Metro Station, Maryland 355 widening and improvements, Metro access road from Shady Grove Road (presently extended-opened 11/76) to station area, and Fields/Redland Roads improvements. If these roadway improvements can be completed in parallel to the Shady Grove Terminal development and operation, Metro-related impacts will be positive and long-term from a regional perspective.

Air Quality

During construction there is a potential for short-term adverse air quality due to increased emissions from construction vehicles, construction activity, spoil removal and construction induced congestion, particularly at the Station and S&I Yard sites. The extent of this impact will depend greatly upon precautions taken during construction.

The A017 Segment will have a beneficial long-term impact on regional air quality in that a Metro Station at Shady Grove is expected to reduce vehicle miles traveled and the accompanying emissions of carbon monoxide, hydrocarbons, oxides of nitrogen, oxidants and particulates. The incorporation of commercial facilities in the Shady Grove complex as planned by the County will also help to mitigate air quality impacts.

Noise and Vibration

Ground-borne vibration from the transit trains, and from any other activities associated with operations of the transit system will not be noticeable or perceptible as a mechanical motion at any point along the A017 Segment.

The air-borne noise from transit trains operating at-grade and on aerial structure will be noticeable but at an acceptable level with the use of sound barrier walls at specific locations and will produce noise which will be consistent with the existing noise environment.

The noise generated by construction activities will constitute a short-term impact of noticeable to acceptable level.

Socio-Economic Impacts

The major socio-economic impacts expected as a result of the construction of the A017 and A016 of Metro are an acceleration of population and employment growth in the area surrounding the Shady Grove Station. The Montgomery County Service Park planned adjacent to the station area will employ approximately 1,200 people. Other industrial and commercial developments are likely to occur west of the Shady Grove Station area in the corridor between I-270 and the B&O rail line. Roadway extensions and improvements to the east of the station combined with the pressure to develop large tracts of available land will result in residential growth in areas north and east of the station.

(GENERAL ROCKVILLE PHOTOGRAPH DELETED)

8. RELATIONSHIP OF PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

Land Use

The entire Baltimore and Ohio corridor, from Rockville to Shady Grove Road is zoned Light Industrial (I-1) and Industrial and Office Park (I-3)¹ (see Zoning Map). Both the Metro Station and the Storage and Inspection (S&I) Yard would be consistent with zoning for the area. Moreover, the Master Plan for Gaithersburg and vicinity recommends the Rockville Route extension and a station in the vicinity of Shady Grove Road. The Master Plan stresses that Metro service is the key to planning and development of the Gaithersburg corridor city as envisioned by the general plan for the Maryland-Washington regional district "...on wedges and corridors", adopted by the Maryland-National Capital Park and Planning Commission in 1964 and updated in January 1970.

The Gaithersburg and Vicinity Master Plan also endorses Montgomery County's proposal for a County Medical Center complex to be located at Shady Grove Road and the proposed Western Arterial (M-90). The medical center will be a major employment center occupying 280 acres and projected to have an ultimate 20,000 employees and another 10,000 or more patients, visitors and students. Approximately 80,000 daily trips would be generated by employees, not counting the trips that would be generated by patients, visitors, and students. The trips anticipated to be generated by the medical center cannot be easily handled by the existing and proposed highway network unless a substantial number of potential drivers are diverted to Metro rapid rail and feeder bus. The station at Shady Grove and feeder buses serving the center should therefore alleviate potential congestion.

The proposed Shady Grove Station, S&I Yard, and Metro parking facilities are located adjacent to an already approved County-wide facility called "The Montgomery County Service Park". It is intended that the Service Park planning effort be coordinated with the Maryland-National Capital Park and Planning Commission's area master plan studies, with WMATA Shady Grove Station studies, with the needs expressed by area civic associations, and with the improvements of Shady Grove Road and Route 355.

Although detailed plans for the Service Park are not finished, its concept is sufficiently developed to permit a description of its components. Such is necessary since the Service Park will interface with Metro facilities.

Montgomery County has acquired a 130-acre tract of land located on Shady Grove Road extended, immediately east of the B&O tracks (see County Service Park and Vicinity Map included in this Section). The County Service Park, which will occupy this parcel of land, is envisioned as a multi-agency maintenance and storage complex which will contain:

¹Source: "Approved and Adopted Master Plan Gaithersburg Vicinity", The Maryland-National Capital Park and Planning Comm., Jan. 1971.

1. The County's liquor warehouse;
2. A Department of Transportation road maintenance depot;
3. The Maryland-National Capital Park and Planning Commission's central park maintenance facility;
4. The County public school's central transportation, repair, maintenance, and regional bus storage facilities;
5. Provisions for an Amtrak commuter rail station;
6. Other public facilities which may be determined appropriate for location at this site, as detailed plans are developed.¹

In addition to the foregoing, a Central Processing Facility (CPF) for the proposed Montgomery County Solid Waste Disposal System, whose service area will be the entire County, will be constructed either within or in the vicinity of the Service Park. Site selection for the CPF is underway. The CPF will handle all residential, commercial, and industrial processible wastes for which the County has disposal responsibility.

Planned roadway improvements will provide Montgomery County Service Park with direct access to major highways serving the County, and will provide the same ease of access to Metro patrons using the proposed Shady Grove Station. The proposed improvements include the following:

1. Shady Grove Road: Construction of a 100-foot wide, divided, four-lane highway with a 24-foot median in a 120-foot right-of-way, from Md. Route 355 (Frederick Road) to Md. Route 115 (Muncaster Mill Road), a distance of 13,500 feet. This project is included in the Gaithersburg Vicinity Master Plan. As of January 1974 the detailed design is complete; construction plans are complete; and right-of-way has been acquired.² When completed, the facility is projected to have a rated capacity of 30,000 vehicles per day. As a result of this extension, there will be direct access to I-70S without having to pass through any residential areas. The extension will also provide effective access to the eastern sectors of the County.

2. Route 355 (Frederick Road) is programmed for upgrading to six-lane urban divided standards, with completion of the Rockville-Gaithersburg link scheduled for 1975.

¹Source: Maryland-National Capital Park and Planning Commission, July 1974.

²Sources: See Section 3.5 of this Report.

3. Fields Road: The Gaithersburg and Vicinity Master Plan calls for construction of Fields Road, including a grade separated rail crossing, from Route 355 to Redland Road.

4. A separate access road is proposed from Shady Grove Road Extended to the County Service Park.

5. Montgomery County DOT has proposed a direct access link to route traffic from I-70S to the Metro Station. This may involve construction of the Outer Beltway or a road of similar capacity from I-70S to the Shady Grove area and a limited access roadway from the Outer Beltway to the terminal parking area. The feasibility of a partial interchange with the Outer Beltway at Route 355 to provide maximum utilization of the direct access facility is being studied.

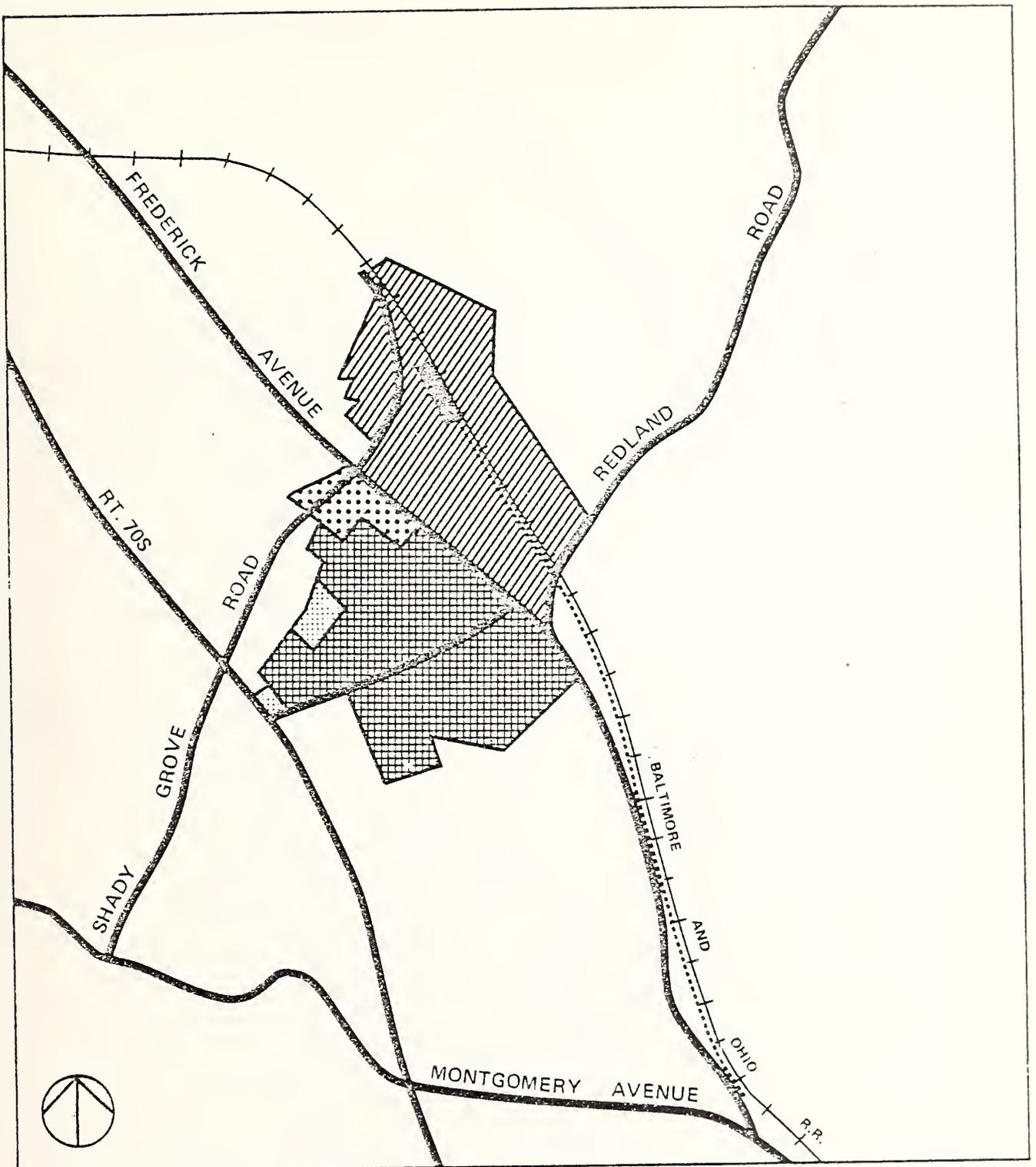
For Metro patrons to reach parking facilities that would be on the west side of the Railroad, in the area of the S&I Yard, access (under study) would be via Sommerville Drive and a new link connecting Fields Road West of Route 355 with the parking area. The intersection of this link with Route 355 would provide access for Route 355 traffic, separating that traffic from traffic destined for the Fields Road industrial/commercial complex.¹

It should be evident from the foregoing that locating a Metro Station, accompanying parking facilities, and an S&I Yard at Shady Grove Road, adjacent to the proposed County Service Park, is compatible with zoning for the area and would not disrupt any existing or planned residential communities; it is compatible with proposed adjacent land uses; enough land is available at the proposed Shady Grove site to comfortably permit an S&I Yard and ample Metro parking facilities; Metro patrons would have direct access to major highways serving the area; there would be a link between the Metro and commuter rail stations as a result of the two stations being located next to one another; a Metro Station at Shady Grove would give employees direct access to the Service Park and to nearby expected industrial and commercial facilities (see County Service and Vicinity Map).

Financing

The 1973 Highway Act includes an interstation substitution provision which authorizes the shifting of money from a given interstate route to some other urban transportation project, including transit. Proceedings are being carried out by Maryland DOT to effectuate a transfer of 80-20 funds from the I-95 and North Central Freeway projects to the Shady Grove Metro extension, to a direct access link to route traffic from I-70S to the Metro Station, and to other necessary access roads in the vicinity of the Station and S&I Yard.

¹LWMATA Staff, 1974.

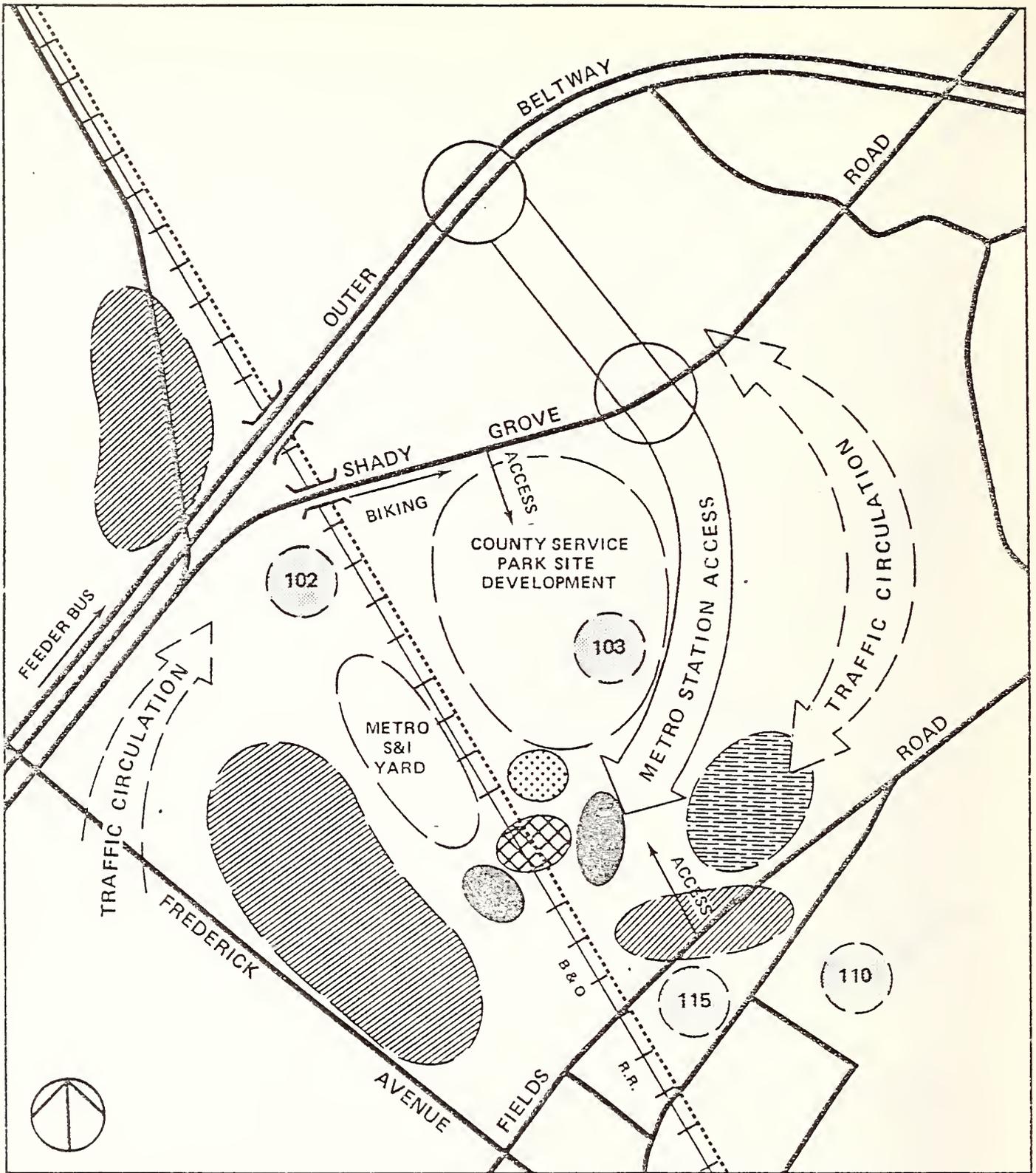


-  C-2 general commercial
-  C-3 highway commercial
-  I-1 light industrial
-  I-3 industrial park
-  Alignment

ZONING PLAN

City of Gamblersburg Master Plan - Jan. 1971



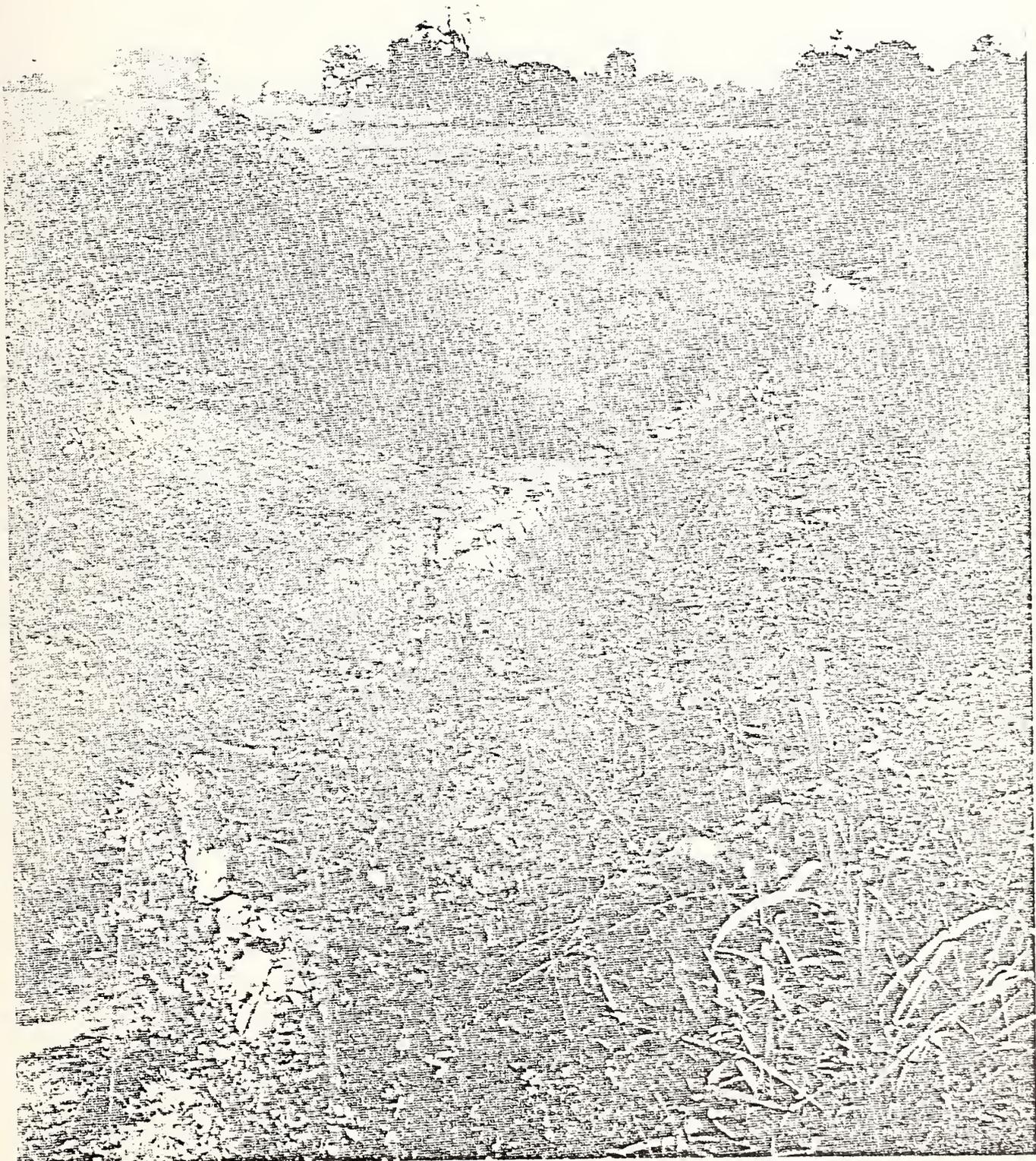


- | | | | |
|--|-----------------------|---|-----------------------------|
|  | Alignment |  | Commercial-Industrial |
|  | Metro station |  | Storm water management area |
|  | Parking |  | Central processing facility |
|  | Commuter rail station | | |

PROPOSED MONTGOMERY COUNTY SERVICE PARK & ADJACENT LAND USE

Source: Maryland-National Capital Park & Planning Comm. - 1974





CRABBS BRANCH

9. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The short-term inconveniences and displacements caused by Metro construction are the least avoidable of impacts.

9.1 Short-term Effects

Construction requires the re-routing of traffic and the temporary closing of bridges at Middle Lane, Gude Drive, and Derwood Road. The necessity of shifting Hungerford Drive away from the B&O tracks to accommodate Metro (Sta. 855+00 to 875+00) will be accomplished as a part of planned improvements to the road; inconveniences and traffic congestion will probably result.

Other short-term impacts of construction easements, where essential to gain access to the work site, or to store materials, will be required. Noise, vibration and dust will result from construction activities. The movement of equipment and materials may be necessary over some local streets. Construction in the Metro right-of-way will expose soil to wind and rain wherever cuts or fills are required. Large areas of soil will be exposed during construction of the rail-yard and parking lots at Shady Grove.

Regulations to control dust, noise, and erosion, and to protect the public's safety are applied to every contract. They are discussed in Chapter 13, "Measures Taken to Minimize Harm to the Environment."

9.2 Long-term Effects

Takings for rights-of-way and station areas constitute a long-term impact on the socio-economic environment. The taking of any open space or parkland is adverse. Thus, a discussion of park disruption and takings is included separately under the following section. Historic buildings and archaeological sites are included in this discussion. Some funding strategy must be devised to save the station at Rockville, which is an architectural period piece. There are no archaeological sites of significance along the subject alignment.

There will be a permanent loss of access to the community where at-grade crossings must be closed; at Frederick Avenue and Westmore Road. The closing of Redland Road will not be a permanent one, as there are plans to extend Fields Road across the railway to intersect Redland Road and provide an improved arterial route in the County.

The permanent loss of plant cover and wildlife habitat where parking lots and rail yards are built cannot be avoided. Drainage detention structures will compensate for increased parking lot runoff during rain storms of average (2 to 10 year interval) intensity, but exceptional storms will result in greater runoff.

(GENERAL ROCKVILLE PHOTOGRAPH DELETED)

10. IMPACTS ON PARKLAND, HISTORICAL SITES AND ARCHAEOLOGICAL SITES

The following section is a survey of those publicly owned lands which may be affected by Metro construction or operation. They include public parks, recreation areas, wildlife refuges, historic and archaeological sites of Federal, State or local significance.

In the planning and design of the Metro system, WMATA has attempted to avoid the use of parkland, historic places or archaeological sites for transit or related facilities. In those cases, however, where no feasible alternative to such use could be provided, WMATA's policy has been to minimize any potential adverse environmental impact on the area to be used.

With regard to parklands and historic places, provisions for minimizing impact have been made through master agreements between WMATA, the National Park Service, and local jurisdictions, through WMATA contract specifications for construction, and through design of shared transportation rights-of-way.

Master agreements, notably those between WMATA and the National Park Service, impose stringent conditions under which transit or related facilities may involve or affect parkland or historic places. The National Park Service Agreement with WMATA calls for consultation and coordination between the two agencies from the preparation of initial alternative plans through to their final design. In the application for and issuance of permits for parkland use, information regarding the nature and extent of work, the possible impact of the action on the site, and plans for redesign, reconstruction and relandscaping of the site will be considered. WMATA is responsible for aesthetically agreeable temporary facilities, safety and access of parkland during construction, prevention of unnecessary damage and pollution, and horticultural maintenance and replacement of areas affected by Metro activities. For permanent use of parkland, WMATA must replace it with suitably located lands to provide comparable public service. More specific information on the National Park Service Agreement is contained in Appendix B.

WMATA contract specifications are designed to uphold the master agreements and to assure contractor compliance with the standards set for the regional system. They include protection of existing vegetation and structures, co-operation with National Park Service in regard to permits and protection of park property, and precautionary measures to avoid drainage problems and stream pollution.

The sharing of transportation rights-of-way minimizes additional environmental impact attributable to Metro activities, such as the Alignment of A017 paralleling the B&O Railroad tracks. Use of existing transportation corridors reduces potential additional adverse impact on the surrounding areas, including the parklands through which the transit system may pass.

Parklands and historic sites and buildings have been located by obtaining lists and maps from State, County and local agencies. Sites on the National Register of Historic Places were located from the most recently published list. For the District of Columbia, the National Capital Planning Commission (NCPC) has published the report, Downtown Urban Renewal Area Landmarks, Washington, D.C., based upon the inventory by the Joint Committee on Landmarks. In addition, NCPC has prepared maps and supporting lists of historic landmarks outside of Urban Renewal Areas.

For the historic sites and landmarks identified in the District portion of Metro routes, the three categories established by the Joint Committee are indicated in the impact description. These categories have been identified as follows by the Joint Committee:

"Category I: Landmarks of great importance which contribute significantly to the National cultural heritage or that of the District of Columbia and its environs, and which must be preserved.

Category II: Landmarks of importance which contribute significantly to the cultural heritage or visual beauty and interest of the District of Columbia and its environs, and which should be preserved or restored, if possible.

Category III: Landmarks of value which contribute to the cultural heritage or visual beauty and interest of the District of Columbia and its environs, and which should be preserved or restored, if practicable."

On March 8, 1968, the Joint Committee issued a revised list of Category I and II landmarks in the National Capital and recommended them for inclusion on the expanded National Register of Historic Places provided for in the National Historic Preservation Act of 1966 (P.L.89-665). Category III landmarks were recommended for further study and possible nomination to the National Register at a later date.

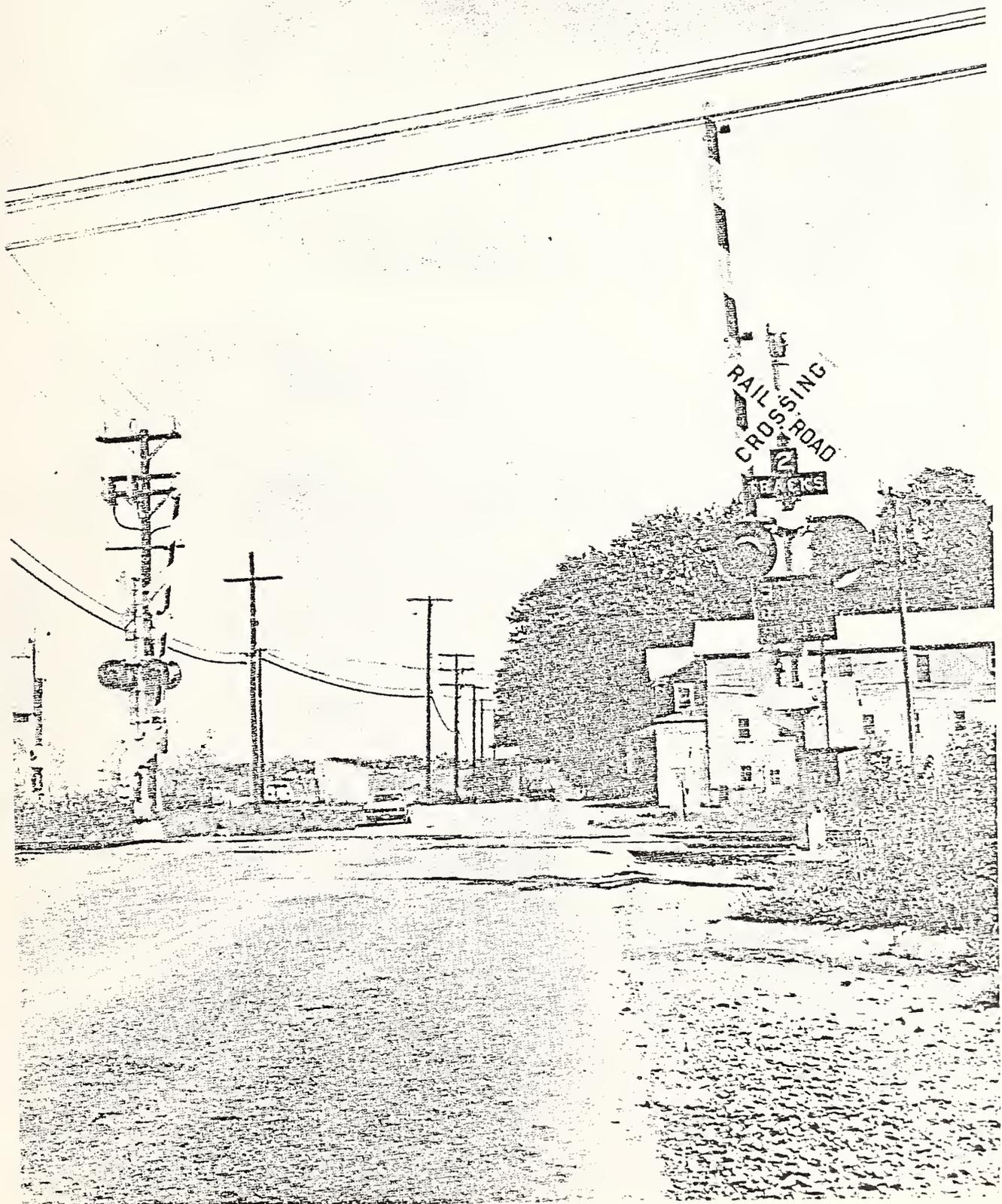
In the case of archaeological sites, discussions with Dr. Charles McNett of the Department of Anthropology, the American University, revealed that on a regional level, the Metro System poses minimal potential impact on documented archaeological sites. This is because the System closely follows existing rights-of-way and thus is usually rather than one-half mile from such sites. However, where Metro activities are close to known sites, such as Rose Hill Quarry off Connecticut Avenue (A Route), previous development has usually disrupted the area and no additional threat to the site is posed by Metro activities. Provision has been made in WMATA contract specifications for Historical and Scientific Specimens.

"All articles of historical or scientific value, including but not limited to coins, fossils, and articles of antiquity,

which may be uncovered by the Contractor during the progress of the work shall become the property of the Authority. Such findings shall be reported immediately to the Engineer who will determine the method of removal, where necessary, and the final disposition thereof."

There are no affected parklands, historic structures, or archaeological sites along the extension of the A Route to Shady Grove. This has been confirmed by the State of Maryland Historic Preservation Officer and by an archeological survey of the Rockville Route performed for WMATA by Thunderbird Research Corporation (see Addendum).¹

¹Dr. William M. Gardner (Ph. D., Anthropology), Thunderbird Research Corporation, An Archeological Survey of the Washington Metropolitan Area Transit Authority's Rockville, Glenmont, New Carrollton and Addison Routes in Maryland, December, 1976.



GRADE CROSSING AT REDLAND ROAD

11. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity of that environment for the A017 Segment of the Rockville Route is essentially the same as the relationship for the entire Rockville Route, and for the entire Metro System.

Local short-term Metro activities can generally be classified as costs: monetary costs, the costs of pollution, the costs of inconvenience and the costs of safety, all associated with construction. This is true throughout the region and along the entire Rockville Route as well as within the area of the proposed A017 Segment. Among the long-term results of those short-term construction activities, however, there appear to be many more benefits than costs.

The construction of a Metro System to serve the Washington Metropolitan Area will greatly increase accessibility within the region, thereby increasing land values, employment opportunities, labor pool availability, and mobility within the region for those who do not or cannot drive, Metro will decrease dependency upon the automobile for travel between the central portion of the District and the outlying areas of the region.¹ All of these effects can be characterized as enhancements of regional economic vitality, with accompanying social benefits.

The System will both encourage and allow implementation of the wedges and corridors concept for future development in the region. Without such a system, this concept would be virtually impossible to implement.

Long-term costs are local rather than regional and are confined primarily to a deterioration of air quality and an increase in traffic hazards in the immediate area of Metro stations, as a result of increased peak-hour commutation traffic at the stations.

Each segment of the Metro System is a nearly inseparable part of the whole. Without the A014-A017 Segments, the Rockville Route cannot be completed and without the Rockville Route, a substantial service sector would be omitted from the entire Metro System. It is therefore appropriate and important to consider the long-term regional benefits of the entire system, as well as the local short-term and long-term costs associated with any one segment in evaluating the segment's environmental impact.

¹Such increased accessibility will reduce reliance on the automobile.



SHADY GROVE SITE LOOKING EAST
225

12. IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

Resource commitments for the construction of the Metro System and, by extension, of any segment, include labor, land, money, materials, and energy.

The labor commitment necessary for the construction of the Metro System is not one that would be made elsewhere if it were not made to Metro. A decision is not being made as to whether to use a given labor force to perform one major job or another; the decision is rather whether or not to assemble the labor force necessary to perform the work. Many of the skills needed are skills in which there is substantial or fluctuating unemployment. Such a commitment would therefore be beneficial by causing increased employment of people with these skills.

Land is one of the major irretrievable commitments made to the construction of the Metro System. Where routes are elevated or at-grade, the land committed is, in effect, not only the Metro right-of-way, but also in terms of irreversible impacts, all land adjacent to such elevated or at-grade routes.

Another major resource commitment is money. While initial investments of money are irreversible, it is expected that over an extended period of time the initial investment should generate many times its original amount in indirect economic stimulation throughout the Region. Unfortunately, in the design, planning and building of a Metro System, time is money. Although planning and design time is required in order to produce the optimum alignments within given constraints, this process can become costly in terms of delays in scheduling.

The construction of Segments A017 and A016 is contingent on Segments A014 and A015 being built. The design and construction schedule included in this Section indicates that design for Segments A014 and A015 began in July 1975. Should the commencement of design for these Segments be delayed, an average escalation cost of \$250,000* per week for each week of delay, based on a six-month period, will be incurred for Segments A014, A015, A017 and A016.

The tables of estimated costs for Segments A014, A015, A016 and A017 suggest the scale of impact significant changes in construction schedules might have.

*1970 dollars

¹Source: WMATA staff, August 1974 (A016 refers to the S&I Yard)

Estimated ARS-68 Alignment Costs for Cut and Cover and At-Grade Construction¹

<u>Segment</u>	<u>Construction Costs Including Signals and Substations²</u>
A014	\$121,984,000
A015	57,968,000
A016	20,858,000
<u>Total</u>	\$208,810,000 ³

¹Source: DeLeuw, Cather, August 1974. Estimates are tentative, subject to change and approval.

²Real estate costs not included.

³Cost estimates are escalated to project mid-point of construction.

Estimated System C Alignment Costs for Cut and Cover and At-Grade Construction¹

<u>Segment</u>	<u>Construction Costs Including Signals and Substations²</u>
A014	\$123,430,000
A015	49,511,000
A017	35,000,000
S&I Yard at Shady Grove	19,819,000
<u>Total</u>	\$227,760,000 ³

¹Source: DeLeuw, Cather, August 1974. Estimates are tentative, subject to change and approval.

²Real estate costs not included.

³Cost estimates are escalated to project mid-point of construction.

Estimated Costs for Stations and Storage, Service & Inspection
Yards: Segments A014, A015, A016, A017 of Rockville Route¹

<u>Stations</u>	<u>Construction Costs² Including Structural, Finish and Stagework</u>	<u>Real Estate³</u>	<u>Total</u>
Nicholson Lane ARS	17,446,000	2,600,000	20,046,000
Nicholson Lane Split, West and East-N	35,399,000	4,465,000	39,864,000
Nicholson Lane Combined Split, West & East-N	36,753,000	5,900,000	42,653,000
Twinbrook T-S3 ⁴	12,641,000	7,175,000	19,816,000
Twinbrook ARS M-2 ⁵	10,560,000	4,660,000	15,220,000
Rockville ARS 1	7,900,000	3,420,000	11,320,000
Rockville ARS 3	10,046,000 ⁶	2,340,000	12,386,000
Shady Grove	13,652,000	2,000,000	15,652,000
<u>Totals</u>	<u>144,397,000</u>	<u>32,560,000</u>	<u>176,957,000</u>
 <u>S&I Yards</u>			
Rockville ARS-M	20,858,000	7,900,000	28,758,000
Shady Grove	19,819,000	3,500,000	23,319,000
<u>Totals</u>	<u>40,677,000</u>	<u>11,400,000</u>	<u>52,077,000</u>
 <u>Totals</u>	 <u>185,074,000</u>	 <u>43,960,000</u>	 <u>229,034,000</u>

¹Source: DeLeuw, Cather, August 1974. Estimates are tentative, subject to change and approval.

²Cost estimates are escalated to project mid-point of construction.

³Estimates include acquisition, demolition and displacement costs.

⁴The costs for a Twinbrook T-S3 and T-S4 hybrid station site design as proposed in this Report would not differ significantly from the Twinbrook T-S3 estimates.

⁵The cost for a Twinbrook ARS M-1 and M-2 hybrid station site design as proposed in this Report would not differ significantly from the Twinbrook ARS M-2 estimates.

⁶Escalated estimated cost to mid-point of construction for two-level garage is \$3,289,000.

Recent Estimated Costs for Rockville Extension to Shady Grove

	<u>Cost in Millions of Dollars</u>
Running Track including Shady Grove Station	50.5
Shady Grove S&I Yard and Shop	39.7
Bridges (highway access)	3.6
	<u>93.8</u>

Credits which can be applied to Rockville extension are as follows:

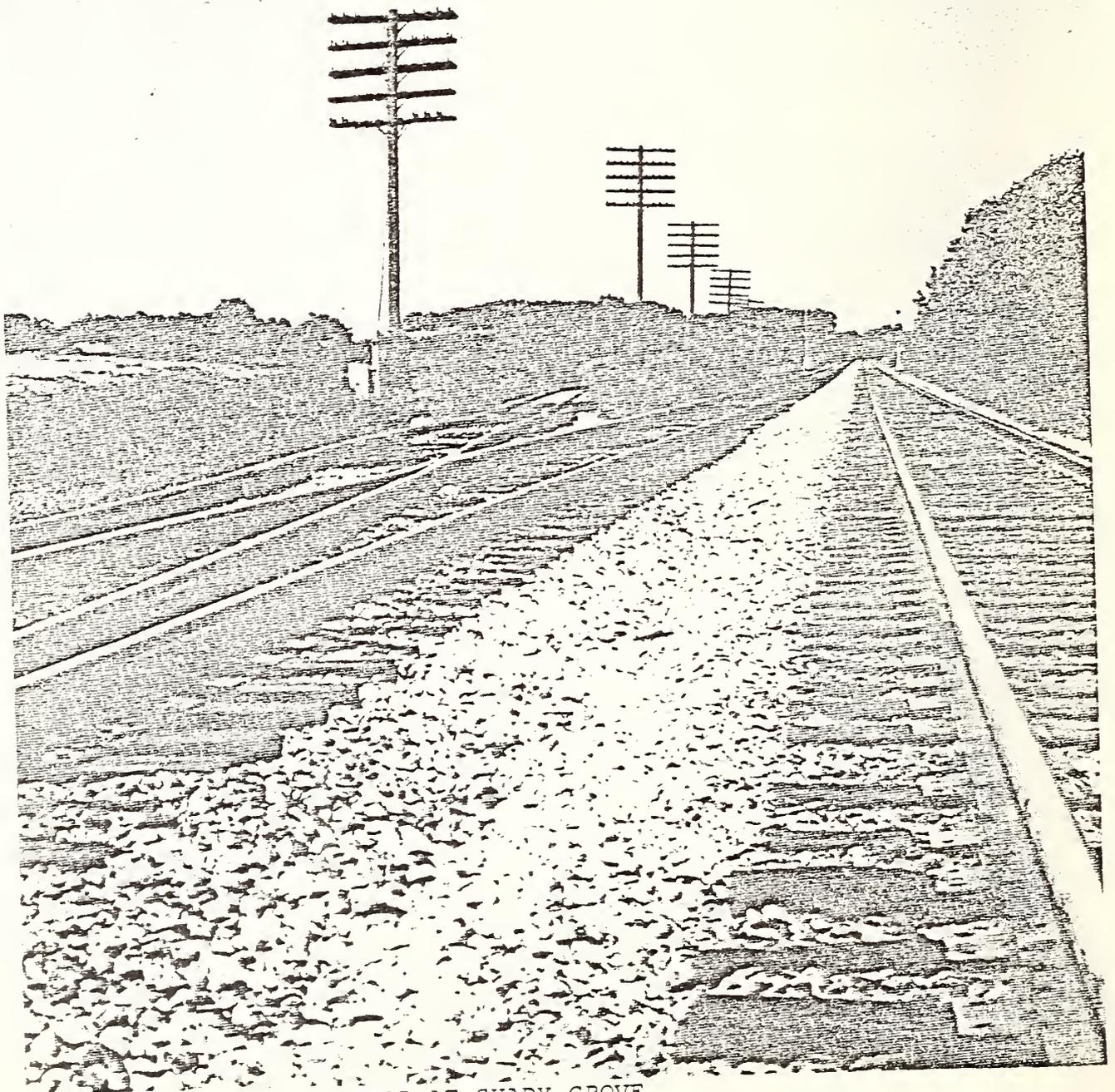
Credit of Rockville ARS-M S&I Yard (Construction Cost and Real Estate): \$28,758,000

The elimination of a Twinbrook Station at either the T-S or ARS-M sites would give the System a credit of \$8.5 to \$10.0 million in construction costs plus a credit in real estate costs of \$7,175,000 and \$4,660,000 respectively.

Source: DeLeuw, Cather 1977.

Resource commitments represented by the investment of materials in the establishment of a Metro System are quite minor in that few of such materials are rare and only limited quantities are necessary. The most irreversible aspect of this resource commitment is its form. That is, once a system is entirely constructed, it becomes difficult to incorporate changes. Clearly, however, this is not a reasonable argument against the commitment of such resources, as it would argue against any such commitment at any time.

The commitment of energy in the form of electricity to operate the system should be considerably less than would be the commitment of energy necessary to move the same projected ridership by other modes of transportation. Within the A014-A017 Segments, as discussed at length in other portions of this Study, there are few natural resources that will be irreversibly damaged by any of the proposed alternative alignments. The effects on such resources depend on the location of the terminal and service yard for the Rockville or A Route.



B&O RAILROAD AT SHADY GROVE

13. MEASURES TAKEN TO MINIMIZE HARM TO THE ENVIRONMENT

It is not possible to avoid entirely all negative environmental impacts from the proposed action. It is necessary, therefore, to establish procedures for decreasing or minimizing harm wherever feasible.

Construction contract requirements established by WMATA for minimizing harm in terms of safety factors, ecological factors, social and economic factors, and physical and design factors are set out in this Section. If performance is not in accordance with these contract requirements, work by the contractor can be stopped until the condition is corrected.

Safety Factors

Short-term safety concerns that require specific measures are those associated with construction. These short-term safety concerns include hazards from temporary disruption of traffic; from construction equipment and from the site itself during construction. Each of these areas of concern is dealt with by WMATA through the safety provisions included in all their construction contracts. Examples of these contract provisions dealing specifically with safety during construction include the following:

2.15 Safety Requirements

(a) The Contractor shall be responsible for ensuring that the most stringent provisions of statutes and regulations of the District of Columbia, State of Maryland, or political subdivision in which the work is being performed, as well as the Metro Coordinated Safety Program and Reporting Procedures Manual, issued by the Authority, and the Department of Labor, Occupational Safety and Health Administration, occupational safety and health standards pertaining to the safe performance of the work are observed. Further, that the methods of performing the work do not involve undue danger to the personnel employed thereon, the public and public and private property. Should charges of violation of any of the above be issued to the Contractor in the course of the work, a copy of each charge shall immediately be forwarded to the Engineer.

(b) The Contractor shall employ and assign to the work a full-time Safety Superintendent who has specialized training and experience in construction safety supervision, and is acceptable to the Engineer. The Safety Superintendent shall be employed exclusively for the purpose of supervising the safety of persons on or about the work and the property affected thereby. Once employed, the Safety Superintendent shall not be changed without permission of the Engineer.

(c) First-Aid Stations: (1) At the site of the work, at least two first-aid stations shall be established and fully equipped. (2) A certified first-aid attendant shall be on duty in each station at all times when work is in progress except when on emergency calls. Location of stations shall be coordinated with the Engineer.

2.23.2 Construction Staging

(a) The Contractor's particular attention is directed to the fact that both vehicular and pedestrian traffic must be maintained on the various existing streets within and adjacent to the project site at all times during the life of the contract.

(b) The particular order in which the various stages are to be performed will be optional with the Contractor, provided that stage work within the limits of one stage is completed before work in another stage is commenced; and provided that all other requirements pertaining to maintenance of traffic are complied with.

The Contractor shall prepare and submit to the Department of Highways and Traffic or the Maryland Department of Transportation, for approval, working drawings including comprehensive staging and decking plans. No work shall be started prior to approval.

2.23.3 Maintenance of Traffic

In the Central Business District and on Commercial Streets, activity of the Contractor which will interfere with the orderly movement of pedestrian and vehicular traffic will not be permitted from 10:00 a.m. to 9:00 p.m. Monday through Saturday in the Christmas Shopping period from December 1 to January 1, except for the first year of construction or in an emergency or when authorized by a special permit.

The Contractor shall be responsible for maintaining traffic, and for erecting and maintaining traffic control devices.

Maintenance of traffic shall be as required by the following authorities:

In Maryland within the right-of-way of Wisconsin Avenue - Maryland State Highway Administration

Outside of Wisconsin Avenue right-of-way - Montgomery County Dept. of Public Works

- (a) Traffic Control Devices: Traffic control devices shall include, but not be limited to the following:
 - (1) Temporary Directional and Electrical Warning and Detour Signs
 - (2) Temporary Barricades
 - (3) Temporary Lighting, Overhead Warning Lights, Flashing Lights and Lanterns
 - (4) Temporary Paving and Stripping
- (b) Traffic Control Signs: Traffic control signs and signing shall conform to the requirements of the appropriate authority. Each change in location of traffic shall be adequately posted with a minimum of two signs mounted on barricades or standard posts. When channelizing traffic with lateral transitions, the length of taper shall be the maximum possible up to 200 feet.
- (c) Striping: The Contractor shall install all necessary temporary striping required in connection with all temporary street work. The Contractor shall also obliterate striping superceded by the new striping.
- (d) Redirecting Traffic: All channelizing, shifting of traffic lanes, and barricading of traffic in connection with this work will be subject to the approval of the appropriate authority.
- (e) Temporary Closing: Prior to the temporary closing to traffic of any street, sidewalk or other access, or to changing traffic patterns from that indicated on the Contract Drawings, approval shall be obtained from the appropriate authority by the Contractor at least 30 days prior to the time of such closures and changes are to be made. Deviations from this will be by a bona-fide emergency condition only and as approved by the appropriate authority.
- (f) Contractor's Surface Operations: The Contractor shall schedule his surface operations so as not to be working intermittently throughout the area. Any excavation or construction activity shall be carefully scheduled and vigorously pursued to completion as required to permit opening of the street areas to traffic as soon as possible without any unnecessary delays.

- (g) Temporary Walkways: In areas where the removal of existing sidewalks is necessary, access to adjacent businesses, entrances, and properties shall be maintained by temporary walkways having a width of not less than six feet.
- (h) Intersections: All intersections shall be excavated and decked in stages as indicated on the Contract Drawings. Construction shall be so phased that the required number of traffic lanes on each street will be provided at all times during the operations. Upon completion of decking, traffic in all intersections shall be fully maintained.
- (i) Temporary Pavement and Patching: The Contractor shall construct, maintain any temporary pavement and patching that are required to safely and expeditiously handle vehicular and pedestrian traffic, within or adjacent to the contract site. The temporary pavement composition and patching shall conform to the requirements of Section 3.53, Restoration of Miscellaneous Surface Facilities. Any construction, maintenance or removal required by the Contractor's operations off the site shall be included under this article.

2.23.4 Access to Adjacent Property

- (a) The Contractor shall conduct construction operations in such a manner as to cause as little inconvenience as possible to owners of property affected by such operations. Convenient access to all property from roads and highways along the line of work shall be maintained. When access to adjacent properties is temporarily cut off due to the Contractor operations, the Contractor shall render every assistance to provide access to the property and the transfer of commodities, including refuse, to and from the property.

2.23.5 Protective Devices

- (a) Wherever necessary and as indicated herein and on contract drawings, the Contractor shall erect and maintain signs, fences, barricades and pedestrian bridges and provide watchmen for the protection of public travel, adjoining property and adjoining public places. The Contractor shall take positive

measures to prevent, at all times, entry to the site of the work and storage areas by children, animals and unauthorized adults.

(b) Fences:

- (1) The Contractor shall furnish and construct wooden fencing to serve two purposes: to fence off pedestrian sidewalks and to enclose parking and operating areas. The location of fences for pedestrian sidewalks shall be as shown on the Contractor's working drawings or as required by the Engineer.
- (2) All temporary fences erected by the Contractor shall be substantially constructed of sound lumber, neat in appearance and shall be painted with two coats of a suitable exterior paint of a color selected by the Engineer. Unless otherwise indicated, fences shall be six feet high and shall consist of a stud framework and a covering of tightly fitted plates. The type of fence whether fixed or movable shall be as directed by the Engineer.
- (3) Immediately prior to the end of this Contract, fencing to be left in place, as shown on the contract drawings, shall be restored to first class condition and repainted.

(c) Barricades: The Contractor shall, during the prosecution of the work, barricade or close all openings in floors, walls or other parts of the structure while the openings are not in regular use and shall similarly barricade or close the openings before final acceptance of the work. Barricades shall be substantial in character, neat in appearance, constructed of approved materials, either new or used, and be of size and arrangement satisfactory to the Engineer.

(d) Pedestrian Bridges: Bridges for pedestrians shall be constructed of suitable materials in accordance with local requirements, be provided with handrails or with sides tightly boarded in accordance with said requirements and shall have a minimum width of six feet or such greater minimum width as will accommodate the normal traffic flow at the particular location. The Contractor shall submit to the Engineer, for review, design and erection drawings for all bridges required.

- (c) Watchmen: The Contractor shall employ watchmen in adequate numbers to safeguard the site of the work at all times. If the Engineer at any time determines the staff insufficient or incompetent, personnel increase or replacements shall be provided immediately.

2.40 Utilities

- ... (b) The Contractor shall, through the Engineer, establish and maintain direct and continuous contact with the owners or operators of the respective utilities and shall cooperate with them at all times and in all places of the work. Before commencing construction, the Contractor shall verify the locations of all utilities which may be affected by his operations, and shall submit his plan for performing the work to the Engineer for his review and approval, and to the Utility Owner. No work in the vicinity of or which may affect utilities shall be started until approved by the Engineer.
- (c) The Contractor shall notify the Engineer, Utility Companies, and the jurisdictional departments at least 48 hours in advance of construction which may interfere with the operation of such utilities.

3.3.6.1 Barricades and Signs

Barricades, signs and markings, in accordance with the safety requirements of Section 2, Special Conditions, shall be furnished for all excavated areas and substantially anchored to the street on all sides of excavated areas except at entrances to access ramps. They shall be painted and maintained in good repair and in their proper position at all times.

At all times that work requiring the entry or exit of vehicles or equipment is not being performed, the entrance or exit of said ramps shall be protected by warning signs and barricades in accordance with the above-mentioned safety procedures.

4.1.3 Safety and Integrity of Structures

The Contractor shall assume full responsibility for the safety of all excavations performed under this section, as well as for the safety and integrity of all affected structures, until the completion and

acceptance of the work. In fulfillment of this responsibility, the Contractor subject to the provisions of these specifications, shall adopt any and all measures that he may consider necessary to avoid damage to excavations and structures, which might result from his work. All underground excavation not to be supported by a cast-in-place concrete lining during this contract shall be turned over to the Authority in a safe and stable condition.

All machine excavation, and conventional rock excavation and removal of material, shall be performed and surrounding rock supported, if necessary, in a manner that will insure the safety of personnel and the work.

Ecological Factors

There will be some problems in terms of adverse ecological impacts. Short-term adverse ecological impacts will include a lessening of air quality as a result of traffic congestion and construction, and noise and vibration associated with construction and loss of vegetation. Long-term adverse ecological impacts will include potential airborne noise from transit trains operating at-grade and on aerial structures, and changes in storm runoff, channel geometry and water quality that are caused by parking lots, the rail yard, and car service facilities. WMATA writes provisions for mitigating short-term ecological damage in their construction contracts, and has set construction policies designed to mitigate long-term noise and vibration impacts.

Excerpts from WMATA contracts and a description of construction policy for abatement of noise and vibration indicate measures being taken.

Standard Specification Section 225, Seeding and Sodding: short-term measures for critical area stabilization (erosion and sediment control).

PART 1 - GENERAL

2. Article 1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING: Add the following:

(C) Fertilizer for Critical Area Stabilization:

- (1) Deliver fertilizer to the site fully labeled in accordance with applicable State Fertilizer laws and bearing the name, trade name or trade mark, and warranty of the producer.

(D) Sod for Critical Area Stabilization:

- (1) Bill of lading, delivered with sod, must bear an official Maryland, Virginia, or other State "Certified Sod" label.

PART 2 - PRODUCTS

3. Article 2.1 MATERIALS:

Add the following to paragraph A:

4. Temporary seeding for critical area stabilization (erosion and sediment control): Use Spring Oats, Italian Ryegrass, Sudangrass, Millet, or Rye during the seasons specified herein-after under seeding.

5. Sod for critical area stabilization (erosion and sediment control):

- (a) Class and Composition: State certified turfgrass sod, having the following composition:

Kentucky Bluegrasses

15-40% Merion

15-40% Kenblue or South Dakota Certified

0-35% Fylking, Pennstar or Windsor

Creeping Red Fescue

20-50% Pennlawn or Illahee

- (b) Thickness of Cut: Machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Exclude top growth and thatch in measurement for thickness.
- (c) Pad Size: Individual pieces of sod cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths will be 5 percent. Broken pads and torn or uneven ends will not be acceptable.
- (d) Strength of Sod Sections: Standard size sections strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.
- (e) Moisture Content: Do not harvest or transplant sod when moisture content (excessively dry or wet) may adversely affect its survival.

- (f) Time Limitations: Deliver and install sod within a period of 36 hours. Sod not transplanted within this period will be inspected and approved by the inspecting officer or his representative prior to its installation.

Add the following to paragraph D:

3. Mulch used in critical area stabilization (erosion and sediment control): Clean, unweathered small grain wheat straw.

Add the following to paragraph E:

Liquid asphalt, AASHO M81 Type RC-70.

Add the following paragraph to the article:

- (H) Soil Tests: Have a state laboratory or recognized commercial laboratory make soil tests to determine the exact requirements for both lime and fertilizer used in critical area stabilization.

PART 3 - EXECUTION

3. Article 3.1 SEEDING:

At the beginning of paragraph A.5 insert the following:

"For permanent seeding,"

Add the following to paragraph A:

7. Temporary seeding for stabilization in areas subject to erosion: Apply lime at the rate of 4,000 pounds per acre and fertilizer at the rate of 500 to 800 pounds of 10-20-10 fertilizer (or equal) per acre and incorporate lime and fertilizer into the soil surface by discing or harrowing.

Add the following to paragraph B:

5. Temporary seeding for stabilization in areas subject to erosion: Distribute seed during one of the following seasons, using the types and quantities specified:

- (a) March 1st to April 30th:

3 bushels Spring Oats or 40 pounds Italian Rye-grass (20 pounds of annual lespedeza may be used with the above at one-half the seeding rate shown - Use hulled seed and inoculate.)

(b) May 1st to August 14th:

35 pounds Sudangrass or 35 pounds Millet.

(c) August 15th to October 31st:

40 pounds Italian Ryegrass or 3 bushels Rye.

(d) November 1st to February 28th:

In lieu of seeding, use critical area stabilization mulching or critical area stabilization sodding, as specified hereinafter.

6. Temporary seeding for stabilization in areas subject to erosion: Apply seed uniformly with cyclone, drill or culti-packer seeder at a depth of one-fourth to approximately one inch on a firm, moist seedbed. Use of hydroseeder is not recommended except if slopes are unworkable by conventional seeding equipment. On sloping land, all operations should be at right angles to the general slope or on the contour.

4. Article 3.2 MULCHING: Add the following:

(H) For Temporary Seeding in Critical Area Stabilization:

- (1) Use 1-1/2 to 2 tons per acre of wheat straw mulch.
- (2) Anchor mulch, over temporary seeding, by use of asphalt emulsion binder, pegs and twine, or mulch anchoring tools. (These methods of anchoring are described in paragraph 1.3 below).

(I) For Critical Area Stabilization Using Mulching Only:

- (1) Use 1-1/2 to 2 tons of wheat straw mulch per acre.
- (2) Spread mulch uniformly by hand or by mechanical means so that at least 75 percent of the soil surface will be covered. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square feet sections and place 3 bales, approximately 100 pounds, of mulch for distribution within each section.
- (3) Mulch anchoring should be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes and costs. On sloping land, methods c, d and e below should be done on the contour wherever feasible:

- (a) Peg and twin method: Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross within a square pattern. Secure twine around each peg with two or more round turns.
- (b) Nettings method: Staple light weight paper, jute, cotton or plastic nettings to the soil surface according to manufacturer's recommendations. (Netting is usually available in rolls 4 feet wide and up to 300 feet long).
- (c) Slit method: With a square pointed spade, cut mulch into the surface soil in contour rows 18 inches apart.
- (d) Anchoring tool method: Use tractor drawn implement especially designed to punch and anchor mulch into the surface soil. This practice affords maximum erosion control, but its use is limited to those slopes upon which the tractor can operate safely. Tool penetration should be 2-3 inches.
- (e) Pick chain method: The rolling spiked-chain implement can be operated on slopes of 3:1 gradient or steeper. It is attached to a tractor or truck which operates along the top of the slope. The pick chain can also be used for seedbed preparation and mixing lime and fertilizer with the soil.
- (f) Asphalt tie-down method: Use either liquid asphalt applied at 0.1 gallons per square yard or emulsified asphalt applied at 0.04 gallons per square yard. Spread asphalt in a manner to present a uniform appearance.

5. Article 3.3 SODDING: Add the following:

(D) For Critical Area Stabilization Using Sod:

- (1) Application rates for fertilizer: Determined by soil tests. (Under unusual circumstances where there is insufficient time for a complete soil test, fertilizer materials which supply 2½ lbs. actual N per 1000 sq. ft., 2½ lbs. actual P₂O₅ per 1000 sq. ft., and 2½ lbs. actual K₂O per 1000 sq. ft. can be applied.) Distributed fertilizer evenly over the area to be sodded.

- (2) Application rates for lime: Determined by soil tests. (Under unusual circumstances where there is insufficient time for a complete soil test, lime shall be applied at a minimum rate of 50 pounds of ground limestone or its equivalent per 1000 sq. ft.) Distributed lime uniformly over the entire area to be sodded.
- (3) Grading:
 - (a) Tillage: Lime and fertilizer uniformly mixed into the top 4 inches of soil by discing, harrowing, or other approved methods.
 - (b) Final Grading: Level any undulations or irregularities in the surface resulting from fertilizing, liming, tilling or other causes prior to sodding. Reconstruct flooded, washed out or areas damaged otherwise and re-establish grades in accordance with the Contract Drawings.
- (4) Maintenance of areas: Prior to sodding, clear the surface of all trash, debris and stones larger than 1-1/2 inches in diameter, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting or maintenance operations.
 - (a) Acceptance of areas will be given by the Engineer upon satisfactory completion of each area as shown on Contract Drawings.
 - (b) Maintain the accepted areas which are to be sodded until the effective date to begin sodding operations.
- (5) Moistening the Soil: During periods of high temperature and after all unevenness in the soil surface has been corrected, lightly irrigate the soil immediately prior to laying the sod.
- (6) Starter Strip: Lay the first row of sod in a straight line with subsequent rows placed parallel to and tightly against each other. Stagger lateral joints to promote more uniform growth and strength. Exercise care to insure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

- (7) Sloping Surfaces: On sloping areas where erosion may be a problem, lay sod with staggered joints and secure by tamping, pegging or other approved methods.
 - (8) Watering and Rolling: Water sod immediately after installation to prevent excessive drying during progress of the work. As sodding is completed in any one section, roll the entire area. Irrigate the entire area to a depth sufficient to thoroughly wet the underside of the new sod pad and soil immediately below the sod. Have adequate water available at the site prior to and during installation of the sod.
 - (9) Acceptance: Perform sodding for acceptance on a daily basis within 14 hours of completion of an area unless otherwise specified.
 - (10) Disclaimer: The Contractor will not be held liable for damages incurred to sod caused by deicing compounds, fertilizers, pesticides or other materials not applied by him or under his supervision, nor for those caused by acts of God or vandalism.
- (E) Maintenance of Critical Area Sod:
- (1) Watering:
 - (a) First Week: Keep soil on sod pads moist at all times. In the absence of adequate rainfall, perform watering daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least 4 inches. Water soil during the heat of the day to help prevent wilting.
 - (b) Second and Subsequent Weeks: Water the sod as required to maintain adequate moisture in the upper 4 inches of soil necessary for the promotion of deep root growth.
 - (2) Mowing: Do not attempt the first mowing until the sod is firmly rooted and secure in place. Do not remove more than 1/3 of the grass leaf by the initial cutting or subsequent cuttings. Maintain grass height between 1½ and 2½ inches, unless otherwise specified.

- (3) Time Limitation: Duration of maintenance responsibilities will be 30 days, unless otherwise specified.
- (4) Disclaimer: The Contractor will not be held liable for damages incurred to sod caused by deicing compounds, fertilizers, pesticides and other materials not applied by him or under his supervision, nor those caused by acts of God or vandalism.
- (5) Replacement: Replace sod that is not uniform in color and quality, and reasonably free of weeds, diseases or other visible imperfections, during the maintenance period.

PART 4 - MEASUREMENT AND PAYMENT

6. Article 4.1 BASIS: Modify to read as follows:

- (A) Topsoil: Cubic yard.
- (B) Seeding: Square yard.
- (C) Sodding: Square yard.

2.50 Pollution Abatement

- (a) The Contractor shall conduct his operations in a manner to minimize pollution of the environment surrounding the area of work by every means possible. Specific controls shall be applied as follows:
 - (1) Material Transport: Trucks leaving the site and entering paved public streets shall be cleaned of mud and dirt clinging to the body and wheels of the vehicles. Trucks arriving and leaving the site with materials shall be loaded in a manner which will prevent dropping of materials or debris on the streets. The Contractor shall maintain a suitable vehicle cleaning installation and inspection installation with permanent crew for this purpose. Spills of materials in public areas shall be removed immediately at the Contractor's expense.
 - (2) Waste Materials: No waste or erosion materials shall be allowed to enter natural or man-made water or sewage removal systems. Erosion materials from excavations, borrow areas, or stockpiled fill shall be contained within the work area. The Contractor shall develop methods for control of waste and erosion which shall include such means as filtration, settlement and manual removal to satisfy the above requirements.

- (3) Burning: No burning of waste shall be allowed without written permission. When permission is granted burning shall be conducted in accordance with the regulations of the jurisdictional authority. The contractor is put on notice that all burning of trees, rubbish or other material when so permitted shall be conducted in accordance with state and/or local regulations. All burning shall be done in a manner to minimize air pollution and no rubber, heavy oils, or other flammable agents which unduly pollute the air shall be used in the burning operations. When it becomes necessary, the (WMATA) Engineer will inform the contractor of unsatisfactory construction procedures and operations insofar as erosion control, water and air pollution are concerned. If the unsatisfactory construction procedures and operations are not corrected promptly, the Engineer may suspend the performance of other construction until the unsatisfactory condition has been corrected.

2.52 Dust Control

The Contractor shall at all times control the generation of dust by his operations in the buildings and in other construction and storage areas. Control of dust is mandatory and shall be accomplished by water sprinkling or by other methods approved by the Engineer.

3.4.3 Surface Drainage

Surface drainage shall be intercepted and diverted away from the excavations through the use of dikes, curb walls, ditches, pipes, sumps or other means satisfactory to the Engineer. When these are no longer required, they shall be demolished, all debris shall be removed, and the site or sites shall be restored to its or their original condition. Surface drainage systems shall not cause erosion, either on or off the site.

2.52 Maintenance of Highways and Waterways

The Contractor shall prevent and control pollution of waterways in the layout of his work. Storm and/or waste water carrying trash and other potential pollutants shall not be allowed to discharge into public drainage systems. The Contractor shall maintain his operation such as excavation stockpiled earthwork, graded or ungraded slopes or other areas in such a manner as to prevent and/or minimize sedimentation of any natural water course.¹

2.56 Water and Air Pollution Abatement

The Contractor shall conduct his operations in a manner to minimize erosion of soils and to prevent silting and muddying of streams and rivers. Unless otherwise provided for in the Contract, water pollution control measures will not be paid for directly but will be considered as an obligation of the Unit Price Schedule. The Contractor shall conform to the following practices and controls:

- (a) When borrow material is obtained from other than commercially operated sources, erosion of the borrow site shall be so controlled both during and after completion of the work that erosion will be minimized and sediment will not enter streams or other bodies of water. Waste or disposal areas and construction roads shall be located and constructed in a manner that will keep sediment from entering streams.
- (b) When work areas or gravel pits are located in or adjacent to live streams, such areas shall be separated from the main stream by a dike or other barrier to keep sediment from entering a flowing stream. Care shall be taken during the construction and removal of such barriers to minimize the muddying of a stream.
- (c) All waterways shall be cleared as soon as practicable of falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work.
- (d) Water from aggregate washing or other operations containing sediment shall be treated by filtration, a settling basin or other means sufficient to reduce the sediment content to not more than that of the stream into which it is discharged.

¹WMATA, Specifications excerpted from Contract C005, segment located in Virginia.

- (e) Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers and streams or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing operations shall not be allowed to enter streams.
- (f) All applicable regulations of fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied with in the performance of the contract.

The Contractor is put on notice that all burning of trees, rubbish or other material when so permitted shall be conducted in accordance with State and/or local regulations. All burning shall be done in a manner to minimize air pollution and no rubber, heavy oils or other flammable agents which unduly pollute the air shall be used in the burning operations.

When it becomes necessary, the Engineer will inform the Contractor of unsatisfactory construction procedures and operations insofar as erosion control, water and air pollution are concerned. If the unsatisfactory construction procedures and operations are not corrected promptly, the Engineer may suspend the performance of other construction until the unsatisfactory condition has been corrected.¹

4.1.6 Blast Vibration Control Associated with Construction

The Contractor shall at all times be responsible for any damage caused by vibration due to blasting or his other operations.

The Engineer will monitor vibrations by measuring the "Peak Particle Velocity" in the vicinity of blasting, or other operations causing vibration. Data from such measurements will be made available to the Contractor should the Contractor desire to use such data in controlling his operations. The Peak Particle Velocity, as measured by the Engineer on, or at, any structure in the vicinity of blasting operations, shall not exceed two inches per second. Peak Particle Velocities not exceeding three inches per second may be permitted at freshly-placed concrete, if the age of the concrete is less than seven days. Any limitations on Peak Particle Velocity do not relieve the Contractor of his responsibility in assuring the integrity and safety of adjacent structures.

¹WMATA, Specifications excerpted from Contract C004, for segment located in D.C. and Virginia, the Potomac River Crossing.

Peak Particle Velocity is defined as the maximum of the three velocity components, measured in three mutually perpendicular directions at any point by an appropriate instrument.

2.45 Short-Term Noise Control Associated with Construction

The Contractor shall extend every effort to minimize noises caused by his operation, which the Engineer may consider objectionable. The Contractor shall provide where necessary working machinery and equipment fitted with efficient noise suppression devices.

2.45.1 Protection of Public and Employees

Noise abatement measures and precautions shall be taken in order to reduce exposure to noise. Permissible noise exposure shall be calculated in accordance with the procedures established under the Walsh-Healey Public Contracts Act. Sound levels for public noise exposure due to construction will be measured at the closest point adjacent to the site in normal use by the public while construction work is in progress. Employee noise exposure levels will be measured at the employee's normal work station. In either case, sound levels shall not exceed the following:

<u>Exposure Per Day in Hours</u>	<u>Sound Level in dBA*</u>	<u>Exposure Per Day in Hours</u>	<u>Sound Level in dBA*</u>
8	90	1-1/2	102
6	92	1	105
4	95	1/2	110
3	97	1/4 or less	115
2	100		

*Measured on the A weighting network of a General Purpose sound level meter (conforms to American National Standards Institute specifications S1.4-1971) at slow response. Sound level for impulsive or impact noise (noise of duration less than one second) shall not exceed a peak sound pressure level of 140 dB when measured on an approved impact noise analyzer. In lieu of the above procedure, 125 dB measured on the C weighting network of a General Purpose sound level meter at fast response will be accepted as an equivalent measure of the peak sound pressure level.

In tunnel construction, where the above requirements may not be obtained, individual auditory protection shall be provided.

2.45.2 Noise Restrictions at Affected Structures

In addition to the provisions of Article 2.45.1, sound levels for noise due to construction activities will be monitored at the building line of structures affected acoustically by the Contractor's operations and plant.

2.45.2.1 Mobile Equipment

Sound levels for nonscheduled, intermittent, short-term noise from mobile equipment shall not exceed the following:**

<u>Residential Structures</u>	<u>Principal Arterial Streets</u>	<u>Residential Streets</u>
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	80 dBA	75 dBA
Daily, except Sundays and Legal Holidays 7:00 p.m. to 7:00 a.m.	65 dBA	60 dBA
7:00 p.m. Saturday to 7:00 a.m. Monday and Legal Holidays	65 dBA	60 dBA
<u>Business - Commercial Structures:</u> Daily, including Sunday and Legal Holidays, all hours, a maximum of 85 dBA.		

**Measured at the building line on the A weighting network of a General Purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, measurement may be taken 3 to 6 feet in front of the building face.

2.45.2.2 Stationary Equipment

Sound level limits for repetitively scheduled and relatively long-term noise from stationary equipment shall not exceed the following:**

<u>Residential Structures</u>	<u>Principal Arterial Streets</u>	<u>Residential Streets</u>
Daily, except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	65 dBA	60 dBA
Daily, except Sundays and Legal Holidays 7:00 p.m. to 7:00 a.m.	55 dBA	50 dBA
7:00 p.m. Saturday to 7:00 a.m. Monday and Legal Holidays	55 dBA	50 dBA

Business - Commercial Structures: Daily, including Sundays and Legal Holidays, all hours, a maximum of 70 dBA.

2.45.2.3 Noise Abatement Measures

The Contractor shall provide such equipment, sound-deadening devices, and take such noise abatement measures that are necessary to comply with the requirements of this contract, consisting of, but not limited to the following:

- (a) Shields or other physical barriers to restrict the transmission of noise.
- (b) Soundproof housing or enclosures for noise producing machinery.
- (c) Efficient silencers on air intakes of equipment.

**Ibid.

- (d) Efficient intake and exhaust mufflers on internal combustion engines.
- (e) Line hoppers and storage bins with sound deadening material.
- (f) The prohibition of the use of air or gasoline driven saws.
- (g) Conducting truck loading, unloading and hauling operations so that noise is kept to a minimum.
- (h) Routing of construction equipment and vehicles carrying spoil, concrete or other materials over streets that will cause the least disturbance to residents in the vicinity of the work. The Engineer shall be advised in writing of the proposed haul routes prior to the Contractor securing a permit from the local government.
- (i) Siting of stationary equipment shall be subject to the approval of the Engineer in accordance with Article 2.42.

2.45.3 Construction Equipment Noise

Powered equipment, truck or power hand tool that produces a maximum sound level exceeding the following limits shall not be used during construction operations. The sound level limits specified are referenced to a distance of 50 feet from the equipment. Sound levels shall be measured in substantial conformity with Standards and Recommended Practices established by the Society of Automotive Engineers, Inc., including the latest revisions to SAE J366a and SAE J952b.

Where required by agencies having jurisdiction, certain noise producing work may have to be performed during other than regular working hours or only at specified periods.

<u>Type of Equipment</u>	<u>Sound Level Limits</u>
--------------------------	---------------------------

- | | |
|---|--|
| <ul style="list-style-type: none"> (a) Construction and Industrial machinery, such as crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, | |
|---|--|

wagons, pavement breakers,
compressors, and pneumatic
power equipment.

90 dBA

(b) Highway Trucks

88 dBA

Long-Term Air-Borne Noise Control Associated with Metro Operation¹

With the use of sound barrier walls at specified locations, as indicated in the Summary of Recommendations within Appendix E of this Report, the impact of noise from the transit trains operating on the surface ballast and tie tracks and the short section of aerial structure will be minimized to be consistent with the noise environment existing in the areas along the A017 Segment through which the Metro trains will pass.

Social and Economic Factors

Whenever any business, family or individual is to be displaced by WMATA, a program of relocation assistance is applicable. This program is administered in accordance with the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970."

WMATA also has master agreements relating to highway facilities, water and sewer facilities with the District of Columbia, Arlington County and the National Park Service, which include guidelines and working relationships to maintain uninterrupted service and traffic in construction areas and to restore these areas to their existing conditions. There is a cooperative agreement between WMATA and the National Park Service relating to the use of the National park land.

Physical and Design Factors

WMATA contract requirements designed to mitigate any adverse physical and design factors include the following:

2.51 Restoration of Miscellaneous Surface Facilities

- (a) During construction operations on this Contract, certain areas currently grassed and landscaped may be disturbed or otherwise damaged. The restoration of these areas shall be a part of the work required of the Contractor. Restoration of pavements, sidewalks, curbs, tree boxes, and planted areas is specified in the Technical Provisions.

¹ See Appendix E, Wilson, Ihrig and Associates, Inc., Noise and Vibration Study, for additional detail.

Pavement Restoration

The Contractor shall secure permits from the District of Columbia Department of Highways and Traffic or the Maryland Department of Transportation for all pavement restoration within the limits of said Department's jurisdiction. The Contractor shall submit working drawings of such pavement restoration prepared in accordance with the requirements of the Contract Documents and the Jurisdiction Department to the Engineer for approval by the affected department.

Much of the cost expended by WMATA for the planning and development of Metro has been for the preparation of detailed design standards, directive drawings and landscape design standards for Metro structures, stations and attendant facilities. Leaders in the fields of architectural design, landscape architecture and engineering have been retained as major consultants. There is evidence that WMATA is concerned with making Metro as aesthetically meritorious as any transit system in the nation.

Detailed architectural lighting criteria have been developed by Harry Weise and Associates with the following objectives:

"Design Objectives

General. The lighting design of the Washington Metropolitan Area Transit System has been developed as an integral part of the total architectural concept with the purpose of creating an image consistent with the concepts of optimum comfort. Comfort implies freedom from visual noise, such as disorderly, irrelevant patterns or overly bright lighting fixtures.

Aboveground Stations: Because of the small quantity of enveloping surfaces, direct light sources shall be used and shall define the shape and extent of the platform and canopies. The light sources shall be consistent with the architectural elements and shall not compete with the building definition. Disturbance of the neighborhood through glare and light spillage shall be avoided.

Exterior Spaces: The lighting for parking lots, kiss-and-ride areas, bus loading areas, pedestrian walkways and similar supporting facilities shall provide safety and amenity of the user. The arrangement of lighting shall make the pedestrian and driver aware of the organization of the area by providing for the maximum clarity and amount of visual information. The lighting shall be organized as a natural lead-in to the station entrance. Disturbance of the neighborhood through glare and light spillage shall be avoided."

¹WMATA, Specifications excerpted from Contract C004, for Segment located in D.C. and Virginia, the Potomac River Crossing.

14. COMMENTS ON DRAFT EIS, A SUMMARY OF RESPONSES AND AN INDEX TO LOCATION OF RESPONSES IN REVISED OR NEW TEXT OF REPORT

14.1 Comments from Public Agencies

The following agencies submitted comments on the Draft Environmental Impact Statement: ¹⁾

- A) Maryland Department of State Planning (pages 257, 258, 258a)
- B) Advisory Council on Historic Preservation (page 259)
- C) Maryland Department of Transportation (page 260)
- D) Metropolitan Washington Council of Governments (page 261)
- E) U. S. Department of Transportation, Federal Highway Administration (pages 262)
- F) Department of Transportation, Office of the Secretary (page 263)
- G) United States Department of the Interior (pages 264 and 265)
- H) United States Environmental Protection Agency Region III (pages 266)

One copy of each responding agency's comments is included in the following pages. Each commenting letter is followed by a summary of the response made to its comments on the Draft EIS and a reference to the location within the EIS of changes made. Each paragraph of the agency letters is numbered for reference purposes.

14.2 Comments from General Public

No comments from the general public were received.

¹⁾The complete list of agencies to which copies of the Draft Statement were sent is included in the Summary at the beginning of this report.



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VLADIMIR A. WAHBE
SECRETARY OF STATE PLANNING

December 16, 1976

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transit Administration
Room 9310
400 7th Street, S. W.
Washington, D. C. 20590

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT REVIEW

Applicant: Washington Metropolitan Area Transit Authority (U. S. DOT)

Project: Draft Supplement 1 to EIS for Metro Route from Shady Grove
to Rockville #IT-23-9003

State Clearinghouse Control Number: 77-11-463

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

Dear Mr. Benjamin:

(1)

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:

(2)

Department of Economic & Community Development, Environmental Health Administration, and the Division of Transportation and Development: noted that Statement appears to adequately cover those areas of interest to their agencies.

(3)

State Highway Administration: referenced their earlier letter (copy attached) to the applicant which lists the various proposed road improvements in the vicinity of the project. The Highway Administration indicated that close coordination is needed between the applicant and their agency to minimize the possibility of potential future conflicts.

(4)

Department of Natural Resources: noted (copy attached) that further attention and information is needed on the impacts this project will have on affected waterways near the project.

(5)

Our staff reviewed the Statement and suggested that further attention should be given to the following areas of concern:

(5a)

-- Average daily traffic and service level projections for nearby roadways and intersections should be discussed.

Mr. Peter Benjamin
December 16, 1976

Page Two

(5b)

-- Methods should be developed and presented which will insure that an adequate level of access will be maintained for Lincoln Park after initiation of the project.

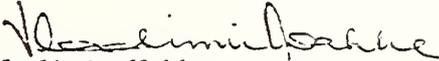
(5c)

-- Further evaluation of the no action alternative should be included. Conventional and community feeder bus and pool systems operating to the Grosvenor Station may prove to be more feasible.

(6)

We hope these comments will be helpful to your agency in their continuing evaluation of this project and we expect that the concerns raised in the review will be adequately addressed and resolved prior to the development of the final Statement. Thank you for your attention to the A-95 review process.

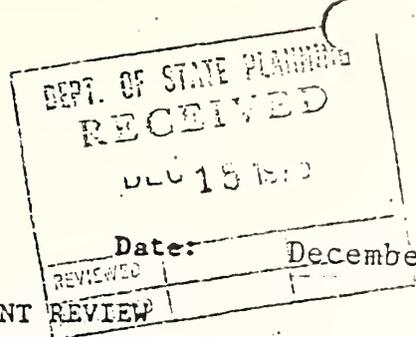
Sincerely,


Vladimir Wahbe

Att.

cc: Walter Scheiber
Lowell Frederick
Donald Noren
Clyde Pyers
Wm. Sprague
Henry Silbermann

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



SUBJECT: ENVIRONMENTAL IMPACT STATEMENT

Applicant: (U. S. DOT) Washington Metro Area Transit Authority
 Project: Draft Supplement 1 to EIS for Metro Route from Shady Grove to Rockville

State Clearinghouse Control Number: 77-11-463

We have reviewed the above draft environmental impact statement and our comments as to the adequacy of treatment of physical, ecological, and sociological effects of concern are shown below:

	Check (X) for each item	
	None	Comment enclosed
1. Additional specific effects which should be assessed:	X	
2. Additional alternatives which should be considered:	X	
3. Better or more appropriate measures and standards which should be used to evaluate environmental effects:	X	
4. Additional control measures which should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources:	X	
5. Our assessment of how serious the environmental damage from this project might be, using the best alternative and control measures:	X	

6. We identify issues which require further discussion of resolution as shown:

See attached letter and place Mr. E.T. Camponeschi Chief, Bu. of Project Planning on WMATA's mailing list regarding activities on the A-017 segment.

cc: Hugh G. Downs
 Lisle E. McCarl
 Thomas Hicks
 Jerry L. White
 Wm. F. Lins, Jr.
 Eugene T. Camponeschi

Signature *Eugene T. Camponeschi*
 Title Chief, Planning Support Section
 Agency State Highway Administration

RESPONSES TO COMMENTS OF THE
MARYLAND DEPARTMENT OF STATE PLANNING (keyed to pages and
paragraphs of letter)

1. Responses to Comments of the Department of Economic & Community Development, Environmental Health Administration and the Division of Transportation and Development. (page 1A, paragraph 2)

These agencies made no comment. The Statement appears to adequately cover those areas of interest to them.

2. Responses to the State Highway Administration as summarized by the State Clearing House (page 1A, paragraph 3)

Issue -- Proposed Road Improvements

Updated highway improvements have been included in 3.4 Traffic and Highway Characteristics. Data for this revision were obtained from the State of Maryland's Preliminary Highway Program (1978-1982) and the adopted Montgomery County Capital Improvements Program (1977-1982). (pp81-87, 184-189a) (p 364)

Issue -- Coordination with the State Highway Administration

Coordination between WMATA and the State Highway Administration is set forth by the Master Agreement with the Maryland Department of Transportation. The following sections are quoted from the Master Agreement between WMATA and Maryland DOT.

"14. The State has designated the Office of Engineering Development of the State Highway Administration as the office to receive, expedite, distribute and coordinate the plans and specifications of the Rapid Transit System for review and comments with the various State Departments affected by the rapid transit construction. The State will return two copies of plans and specifications with all the comments from various State Departments to the Authority's General Engineering Consultant."

"16. The Section Designer in coordination with the State shall prepare a plan showing how the traffic will be handled on roads which are disrupted during the construction of the rapid transit system. The plan will show the construction phases, roads to be closed, detour routes and signs, and other pertinent information needed for the review and approval by the Authority and the State." (see page 288a in the Addendum for additional references).

3. Responses to Department of Natural Resources as summarized by the State Clearing House (page 1A, paragraph 4)

Issue -- Impacts on Nearby Waterways

7.3 Ecological Impacts has been revised to describe impacts on the biological, chemical and physical characteristics of Crabbs Creek, the stream draining the Shady Grove Terminal site (p 161, pp 171-174).

4. Responses to the Maryland Department of State Planning (pages 1A, 2A and paragraphs 5, 5a, 5b and 5c)

Issue -- Average Daily Traffic and Service Level Projections for Nearby Roadways (page 1A, paragraph 5a)

Projected traffic volumes available for the Shady Grove area are based on anticipated completion of programmed roadway improvements. Both 1984 Metro Peak Hour Traffic Volumes and 1984 Total Peak Hour Traffic Volumes ensure the need for a Metro I-270 connector Road. These are included in 7.7 Traffic Impacts. (pp 184-189a)

Updated traffic volumes for the roads in the Shady Grove area have been included in 3.5 Traffic and Highway Characteristics. 1974 data included in 7.7 Traffic Impacts describing Volumes on Frederick Avenue and Westmore Road remains the most currently available. (pp 76, 77, 88-90, 185-189a)

Issue -- Access to Lincoln Park (page 2A, paragraph 5B)

A proposal for mitigating the problem of access to Lincoln Park resulting from the closing of Frederick Avenue and Westmore Road are described in 3.5 Traffic and Highway Characteristics. Specifically, this proposal is for the reconstruction of the Park Road underpass to be accompanied by upgrading or improvement of existing residential streets. (pp 189, 189a)

At the present time local jurisdictions including Maryland DOT are further studying the cost/benefit of additional connections across this project.

During construction WMATA must follow the provisions for handling traffic set forth in the Master Agreement (see #2, page 257, Responses to State Highway Administration)

Issue -- Evaluation of No Action Alternative (page 2A,
paragraph 5c)

The No Action Alternative to the A017 and A016 extension to Shady Grove would be to terminate the A Route at Rockville. The A017 segment is not part of the 1968 Adopted Regional System which extended only to Rockville. Therefore, this supplemental statement is required for conformance with CEQ Guidelines. The Adopted Regional System included Grosvenor Station and was reviewed in the systemwide EIS and accepted in 1975. Feeder bus and pool systems to serve a terminal station in Rockville were studied and considered infeasible due to problems of severe traffic congestion. The environmental impacts associated with a Service and Inspection Yard in Rockville were studied and deemed unacceptable as well.

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

November 18, 1976

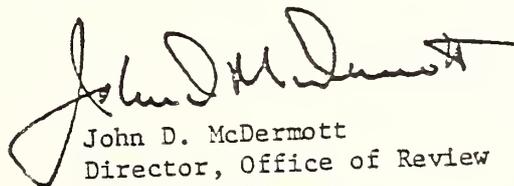
Mr. Peter Benjamin, Director
Office of Program Analysis
U.S. Department of Transportation
Urban Mass Transportation Authority
Washington, D.C.

Dear Mr. Benjamin:

- (1) Thank you for your request of November 2, 1976, for comments on the draft supplemental environmental statement for Metro "A" Route from Rockville to Shady Grove, Maryland.
- (2) Pursuant to our responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969 and the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R., Part 800), we have determined that your draft environmental statement does not contain sufficient information concerning historic and cultural resources for review purposes. Please furnish data indicating:
 - (3) (a) Compliance with Section 106 of the National Historic Preservation Act of 1966 (89 Stat. 915).
 - (3a) 1. A property listed in the National Register of Historic Places is not located within the area of environmental impact, and the undertaking will not affect any such property. In making this determination, the Council requires evidence that you have consulted the annual edition of the National Register (Federal Register, February 10, 1976, and its monthly supplements).
 - (3b) 2. A property listed in the National Register is located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental impact statement should contain evidence of compliance with Section 106 of the Council's Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R., Part 800). In this regard, the Council notes pages 221 and 222 of the environmental impact statement, in which there is a general discussion of the Joint Committee on Landmarks' Category I and Category II landmarks in the project area. However, no indication is given as to which properties may be affected by construction of the METRO "A" Route.

- (4) (b) Compliance with Executive Order 11593 of May 13, 1971
(16 U.S.C. 470). The environmental statement must demonstrate that either of the following conditions exists:
- (4a) 1. A property eligible for inclusion in the National Register of Historic Places is not located within the area of environmental impact, and the undertaking will not affect any such property. In making this determination, the Council requires evidence of consultation with the appropriate State Historic Preservation Officer and evidence of an effort to ensure the identification of such properties. The Council recommends that comments of the State Historic Preservation Officer be included in the final environmental statement.
- (4b) 2. A property eligible for inclusion in the National Register is located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental statement should contain evidence of compliance with the Executive Order through the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R., Part 800).
- (5) (c) To ensure a comprehensive review of cultural and historical resources, the Advisory Council recommends that the environmental statement contain evidence of contact with the appropriate State Historic Preservation Officer. A copy of his comments concerning the effects of the undertaking upon these resources should be included in the environmental statement. The State Historic Preservation Officer for Maryland, Mr. John N. Pearce, State Historic Preservation Officer, The John Shaw House, 21 State Circle, Annapolis, Maryland 21401.
- (6) Finally, the Council notes the statement on page 222 of the environmental impact statement regarding the Rockville Station (i.e., "Responsibility for saving the station rests with the railroad or the local government"). As you are aware, responsibility for compliance with the National Historic Preservation Act of 1966 rests with Urban Mass Transportation Administration and the Washington Metropolitan Area Transit Authority.
- (7) Should you have any questions on these comments or require any additional assistance, please contact Ellen R. Ramsey of the Advisory Council staff (202-254-3380).

Sincerely yours,



John D. McDermott
Director, Office of Review
and Compliance

RESPONSE TO THE COMMENTS OF THE
ADVISORY COUNCIL OF HISTORIC PRESERVATION
(keyed to pages and paragraph of letter)

1. Issue -- Compliance with Section 106 of the National Historic Preservation Act (page 1B, paragraph 3a)

The annual edition of the National Register of Historic Places indicates that no properties of historical significance will be affected by the A017 and A016 Metro alignment. A statement to this effect is included in 3.4 Cultural Conditions under Historic Buildings and Sites (p 69).

2. Issue -- Compliance with Executive Order 11593 of May 13, 1971 (page 2B, paragraph 4a)

Consultation with the State of Maryland Historic Preservation Office has indicated that no buildings are affected by the A017 or A016 alignment which are considered eligible for the National Register of Historic Places. Letters from the State Historic Preservation Officer documenting this finding are included in the Addendum (item 3, pages 298, 298a, 314)

3. Issue -- Comprehensive Review of Cultural and Historical Resources (page 2B, paragraph 5)

A letter from Mr. John M. Pearce of the Maryland Historical Trust is included in the Addendum (item 3, page 298) as evidence of this consultation.

4. Issue -- Historic Significance of the Rockville Station (Page 2B, paragraph 6)

The Rockville Station, Saint Mary's Church and the hardware store described on page 222 of the Draft Environmental Impact Statement, are not located in the A017 and A016 project covered by this EIS. These structures are in segment A015. Questions as to the proposed project's impact on the structure are, therefore, not required here. The 106 and 4(f) statements covering the Rockville Station and other historic properties are being prepared as part of the transfer of Interstate Highway Funds for funding of the A015 project.



Maryland Department of Transportation

State Highway Administration

Harry R. Hughes
Secretary
Bernard M. Evans
Administrator

December 14, 1976

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transit Administration
Room 9310
400 7th Street, S.W.
Washington, D.C. 20590

Dear Mr. Benjamin:

RE: Draft Supplement 1
Final Environmental Impact Statement
Metro Access Route
Rockville to Shady Grove
IT-23-9003

(1) In response to your November 5, 1976, letter requesting this agency to consider and comment on the referenced document, there are several changes which should be made regarding the scheduling of programmed highway improvements by the Maryland State Highway Administration.

(2) The latest approved Primary and Secondary State Highway Improvement Programs which may be used as references cover fiscal years 1976 through 1980. The 1976-1980 State Secondary Highway Improvement Program included two line items for the reconstruction and widening of Md. 355 and one item for reconstructing and widening Md. 586, Viers Mill Road. Line 10 indicated that funds would be available in fiscal years 1975, 1976, and 1977 to reconstruct Md. 355 to a six lane urban divided road with pedestrian/bikeways on both sides from 0.1 mile south of Westmore Road to Shady Grove Road. This project is currently under construction between Mannakee Street and Shady Grove Road (including the Shady Grove Road/Oakmont Road intersection) and is expected to be complete by November, 1977. Line 11 indicated a six lane urban divided improvement from Shady Grove Road to Diamond Avenue and a five lane reconstruction (62' street) from Diamond Avenue to Montgomery Village Avenue with pedestrian/bikeways on both sides for the entire length. Construction funding for line 11 was expected

Mr. Peter Benjamin

December 14, 1976

Page 2

to begin in fiscal year 1976 and continue through fiscal 1978. Line 17 indicated that the widening of Md. 586, Viers Mill Road as a six lane urban divided highway from Md. 355 to First Street and as a four lane urban divided highway from First Street to east of Md. 28 was expected to require construction funds in fiscal years 1976, 1977, and 1978.

(3) However, the latest analysis of the State Highway Administration's diminished allocation for the fiscal years 1977 to 1982 from the Maryland Department of Transportation's Consolidated Transportation Fund has caused the delay of construction funds on several projects. The improvement of Md. 355 from Shady Grove Road to Montgomery Village Avenue and the Md. 586 project are two of those projects on which the funding of the construction phase has been delayed until such time as additional funds become available. This is a change to that indicated on pages 78, 81, 84, 85 and 86 of the referenced report and the State's 1975-1979 Secondary Highway Improvement Program quoted therein.

(4) The 1975-1979 Primary State Highway Improvement Program indicated that project planning would be initiated on the Intercounty Connector (Outer Beltway) from the Western Arterial to the Baltimore-Washington Parkway. However, due to the extreme difficulty in funding, low priority, and political infeasibility of implementing a complete outer circumferential highway in the Washington Region in the foreseeable future, the Secretary of the Maryland Department of Transportation has deemed it appropriate to change the concept of this facility. At this time, for planning purposes the proposed limits of the Intercounty Connector are the Western Arterial in Montgomery County and I-95 in Prince George's County. Further advancement of this project will most likely be high priority segments identified in the project planning stage.

(5) The portion of the Intercounty Connector, from I-270 (formerly I-70S) to a point approximately 0.45 mile east of the Baltimore and Ohio Railroad, has been designated as I-370 and is included in the Maryland Department of Transportation's Interstate Transfer Request. This Interstate Transfer Request, approved by the U.S. Department of Transportation in July, 1975, also includes a roadway from I-370 southwards to Shady Grove Road and one-half the cloverleaf interchange (consisting of two ramps and two loops) at Shady Grove Road. The

Mr. Peter Benjamin

December 14, 1976

Page 3

remaining portion of the Metro Access Road (M-94 in the Shady Grove Sector Plan), from Shady Grove Road to the Shady Grove Metro Station, and the remaining half of the interchange at Shady Grove Road would be the responsibility of the Washington Metropolitan Area Transit Authority.

(6) Contrary to the statements "...Several interchanges with the Outer Beltway have been proposed. Among these are interchanges at I-70S, at Route 355, ..." (page 78, paragraph 2); the State Highway Administration has not proposed an interchange at the Intercounty Connector and Md. 355. In addition, such an interchange is not included in the February, 1974 Draft Master Plan of Highways; the January, 1971 Approved and Adopted Gaithersburg and Vicinity Master Plan; and the October, 1976 Final Draft of the Shady Grove Sector Plan---all of these documents were prepared by the Maryland-National Capital Park and Planning Commission.

(7) The State Highway Administration anticipates beginning a project planning study on the Intercounty Connector and the Rockville Facility in late spring or early summer, 1977, which would substantiate the need and best alignment for a facility such as the Intercounty Connector. The alternatives studied for the Intercounty Connector will address the difference in the opinions of the Cities of Rockville and Gaithersburg concerning the location of the facility. If and when the need for the Intercounty Connector is documented, the study would then investigate various alternative locations and schemes for the Intercounty Connector, with a high priority given to implementation of the I-370 segment once location approval is received from the Federal Highway Administration.

Very truly yours,



Bernard M. Evans
State Highway Administrator

BME:RWM:bh

bcc: C. E. Pyers
M. S. Caltrider
H. Kassoff
J. L. White

RESPONSE TO COMMENTS OF THE
MARYLAND DEPARTMENT OF TRANSPORTATION
(keyed to pages and paragraphs of letter)

1. Issue -- 1978-1980 State Highway Improvement Programs (page 1C, paragraph 2)

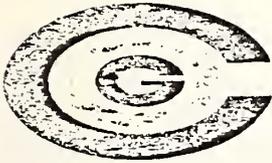
The 1976-1980 State Highway Programs have been superceded by the 1978-1982 figures. This update has been confirmed by correspondence with Wayne McDaniel of Maryland DOT. The 1978-1982 figures have been used, therefore, to update this report. (p 364)

2. Issue -- Current Approved Primary and Secondary State Highway Improvement Programs (page 2C, paragraph 3)

Updated approved highway improvements are presented in 3.5 Traffic and Highway Characteristics. This includes a list of future improvements obtained from the State of Maryland's Preliminary Primary Highway Program (1978-1982) and the adopted Montgomery County Capital Improvements Program (1977-1982). Alternative improvements under consideration by the City of Rockville are described in 7.7 Traffic Impacts, (pp 75-87, 189-189a)

3. Issue -- Revised Outer Beltway Proposal (page 2C, paragraphs 4 and 5, page 3C, paragraphs 6 and 7)

Comments pertaining to the Outer Beltway Proposal have been revised to reflect current State and County capital improvement plans. These are included in 3.5 Traffic and Highway Characteristics. (p 75)



metropolitan washington
COUNCIL OF GOVERNMENTS
1225 Connecticut Avenue, N.W., Washington, D. C. 20036 223-6800

METROPOLITAN CLEARINGHOUSE REVIEW COMMENTS

COG NUMBER: 77-M-T/EIS-1

PROJECT NAME: Draft Supplemental Environmental Impact Statement for the Metro "A" Route from Rockville to Shady Grove

FEDERAL AGENCY: Urban Mass Transportation Administration

PROJECT DESCRIPTION:

(1)

In 1972, the Washington Metropolitan Area Transit Authority (WMATA), with consultant assistance, prepared an Environmental Impact Statement for the 1968 Approved Regional Metro System (ARS-68). That EIS was prepared and evaluated with the understanding that more detailed statements would be prepared when more site-specific information on a route or segment was needed.

(2) This Draft Supplemental EIS is concerned with the environmental impacts of extending ARS-68 for 2.66 miles from Rockville to Shady Grove. The extension involves the construction of a terminal station, parking for 3,000 automobiles, and a service and inspection yard in the Shady Grove area south of the City of Gaithersburg. These facilities are proposed as an alternative to the construction of the service and inspection yard adjacent to downtown Rockville.

(3) Construction funds for the extension are included as part of the Phase B-2 Interstate Highway Transfer Application currently undergoing review by UMTA. Local matching funds to provide 20 percent of the \$68 million cost would come from the transfer of Interstate Highway funds originally programmed for I-270 and I-95 within the Capital Beltway.

(4) The extension of the Metro "A" Route from Rockville to Shady Grove was included in the Transportation Improvement Program for Fiscal Years 1977-1981, which was approved by the Transportation Planning Board on June 30, 1976. The Metropolitan Clearinghouse endorsed the proposed extension on June 1, 1976, and again as part of its review of the Transportation Improvement Program on November 15, 1976.

RELATIONSHIP TO THE METROPOLITAN PLANNING PROCESS:

(5) In considering the relationship of the Shady Grove extension to the metropolitan planning process, the adequacy of the Draft Supplemental EIS was evaluated in terms of its documentation of

the land use, transportation and noise impacts of the project and the steps needed to ameliorate those impacts.

(6)
Regional Development Impacts

The extension of the Metro "A" Route to Shady Grove is supportive of regional development policies as adopted by the COG Board of Directors. These policies encourage the development of new communities in corridors radiating from the central area of Washington, D.C. The I-270 corridor has been identified in local planning studies as an area for future urban growth and development. The Shady Grove area between Rockville and Gaithersburg has been developing in recent years as an employment center, consistent with local plans. The extension of the Metro system to Shady Grove will further the policy of providing efficient mass transit service to population and employment centers in the region.

(7) The Draft Supplemental EIS recognizes that the Shady Grove extension will increase development pressures in the I-270 corridor. Close coordination will be needed between WMATA, the Maryland Department of Transportation and the affected local jurisdictions to assure that the roads, water lines, sewers, schools and other public facilities needed to respond to these development pressures are provided in a timely and efficient manner.

(8) The Metropolitan Clearinghouse recommends that the population and employment forecasts for the I-270 corridor (pages 98-111) be updated in the Final Supplemental EIS to reflect the results of COG's Cooperative Forecasting Program. Up-to-date forecasts of population, households and employment to 1995 were developed jointly by COG and the local jurisdictions. In August, 1976, these forecasts were adopted by the COG Board of Directors for use in all metropolitan planning programs.

Transportation Impacts

(9) The traffic impact analysis in the Draft Supplemental EIS has been carried out in a competent and comprehensive manner. Both positive and negative impacts have been recognized and considered. The principal transportation impacts will be on the highways in the vicinity of the Shady Grove station, including Route 355, Shady Grove Road, and Fields-Redland Road. In their present state, these roads do not have sufficient capacity to handle the expected levels of Metro-induced traffic; however, the improvements which are planned by the State and local jurisdictions should help to alleviate these capacity deficiencies.

(10) The Draft Supplemental EIS documents the need for constructing a portion of the Outer Beltway between I-270 and the Metro station access road east of the Montgomery County Service Park. This free-way link, designated as I-370, is crucial if adequate access to the Shady Grove terminal station is to be provided, and the Draft Supplemental EIS suggests early action on this facility while a decision on the entire Outer Beltway is pending. The Maryland Department of

Transportation has programmed funds for conducting preliminary engineering studies on this link, with construction on the project expected during the 1978-1981 period.

Noise Impacts

(11) The analysis of noise and vibration impacts caused by Metro operation along the "A" Route has been adequately documented in the Draft Supplemental EIS. The measurement methodology employed is consistent with the American National Standard Methods for the Measurement of Sound Pressure Levels (ANSI S1.13-1971). The methodology is designed to obtain information useful in assessing the effects of noise on people. Each measurement consisted of a continuous ten-minute sample of noise at the site, recorded by means of a calibrated precision magnetic tape recorder and a Type I precision sound level meter. The readings were then analyzed to obtain a statistical distribution of noise levels. These recordings provide a permanent record of the noise environment at the time of measurement.

(12) The construction noise analysis in the Draft Supplemental EIS is felt to be inadequate, in that it relies on construction noise specifications as determined by WMATA which are in conflict with the Montgomery County Noise Control Ordinance. Thus, the permissible noise levels established by WMATA to determine the impact of noise on the surrounding residential environment are excessive. In addition, these construction noise limits would exceed the noise level criteria established by the Environmental Protection Agency and the Department of Housing and Urban Development for residential uses.

(13) The Clearinghouse recommends that the Final Supplemental EIS contain an analysis of construction noise based on the criteria established in the Montgomery County Noise Control Ordinance. If this analysis indicates that construction noise levels will be in excess of those allowed by the ordinance, possible methods to ameliorate or alleviate the impact of the noise on surrounding residential areas should be explored, including utilization of "quieted" equipment.

STAFF RECOMMENDATION:

(14) The staff recommends endorsement of these comments and recommendations by the Land Use Policy Committee.

COMMITTEE ACTION:

(15) The Land Use Policy Committee endorsed these comments and recommendations at its meeting on December 8, 1976. The committee emphasized the importance of timely completion of the various highway facilities needed to support the operation of the Shady Grove terminal station.

RESPONSE TO COMMENTS OF THE
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
(keyed to pages and paragraphs of letter)

1. Issue -- Close Coordination between UMTA and local jurisdictions in planning for development (page 2D, paragraph 7)
-

The Master Agreements signed between WMATA and Maryland DOT as well as with the local jurisdictions provide for this close coordination (see item 1 of the Addendum, page 267).

2. Issue - Update of Population and Employment Forecasts for the I-270 Corridor (page 2D, paragraph 8)
-

3.8 Socio-Economic Conditions of the Revised Study has been revised to include the most recent population characteristics and projections available for Montgomery County and the Washington, D. C. SMSA. 1976 estimates of population characteristics and projections for 1986 are available for Forecast Areas within the County. Revised 1980 and 1990 projections are available for Transportation Zones in the I-270 Corridor. Revised 1974 Census figures are available for jurisdictions in the Washington, D. C. SMSA, but not for individual census tracts. (pp 98-111)

3. Issue -- Construction Noise Analysis (page 3D, paragraphs 12 and 13)
-

If during construction noise levels are found not to be in conformance with regulations of the Montgomery County Noise Ordinance, measures to ameliorate or alleviate the impact will be taken. A discussion as to how this will be done is included in 7.9 Noise and Vibration Analysis (pp 200-201a). A check made with Mr. Bernstein of EPA, Office of Abatement Control, confirms the fact that EPA and HUD have no official construction noise level regulation for residential uses. A copy of Montgomery County Noise Control Regulations is included in Addendum item 9, page 341.



U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

REGION THREE
31 Hopkins Plaza
Baltimore, Maryland 21201

December 20, 1976

IN REPLY REFER TO:
03-00.4.7

Mr. Peter Benjamin
Director, Office of Program Analysis
Urban Mass Transportation Administration
400 7th Street, SW
Washington, D.C. 20590

Dear Mr. Benjamin:

We have reviewed the draft supplement to the FEIS for Metro A Route, Rockville to Shady Grove, and offer the following comments for your consideration in preparing the final statement.

- (1.) The data and information regarding proposed highway improvements appear to be based on coordination during 1974. For example, the Interstate Spur (I-370) to Shady Grove was approved in 1975. Also, the recent slow down in funding highway improvements by the State of Maryland has altered the status of other planned improvements. We would hope that the final supplement reflects more current information regarding the status of highway improvements.
- (2.) The closing of streets or roads may have significant impacts in urban areas. The alternatives to closing Frederick Avenue and Westmore Road mentioned on page 149 can hopefully be resolved prior to the final supplement. The final supplement can be strengthened by discussing the following areas of possible impacts:
 - a. Amount of traffic to be rerouted.
 - b. Secondary impacts to businesses on these streets.
 - c. Effect on fire and police protection.
- (3.) The final statement should include a better description of the impacts of relocating Hungerford Drive, and possible impacts to the community college.
- (4.) The assessment of probable impacts to historical resources should include coordination with the Maryland Historical Trust (SHPO).

2.

The impacts to the historic structure (Rockville Station) have been included in the statement. This site is outside the limits of this EIS and apparently does not require a Section 4(f) statement according to UMTA/WMATA procedures. If the approval of this supplement for Section A017 does not require a Section 4(f) statement for the Rockville Station, then the information regarding impacts to it should be deleted.

We appreciate the opportunity to review this statement and are looking forward to receiving a copy of the final supplement.

Sincerely yours,

W. H. White
Regional Federal Highway
Administrator


By: Ray W. Bergeron, Director
Office of Environment and Design

RESPONSE TO COMMENTS OF THE
U. S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINI-
STRATION (keyed to pages and number headings in letter)

1. Issue -- Updated Information Regarding the Status of
Highway Improvements (page 1E, paragraph 1)

Current primary and secondary State and County highway improvements are presented in 3.5 Traffic and Highway Characteristics. This includes data obtained from the State of Maryland's Preliminary Primary Highway Program (1978-1982) and the adopted Montgomery County Capital Improvements Program (1977-1982) (pp 75-87, 189-189a)

2. Issue -- Impacts of Closing Frederick Avenue and West-
more Road (page 1E, paragraph 2)

Impacts of closing Frederick Avenue and Westmore Road the proposed mitigating action to access problems to the Lincoln Park community are described in 7.7 Traffic Impacts. This includes a description of proposal to improve the Park Street Underpass below the B&O and Metro alignments (p 189-189a). This section of text includes general discussion of fire and police protection as well as traffic impact and circulation to business uses.

3. Issue -- Impacts of Relocating Hungerford Drive (page
1E, paragraph 3)

Hungerford Drive is presently being relocated and up-graded from Shady Grove Road to Mannakee Road, from a two lane rural roadway to a six lane highway with a concrete median strip. This improvement is being made to accommodate existing traffic flows as well as those projected from the opening of the transit system and to provide more space for the Metro alignment. The upgrading will be completed in the fall of 1977. Traffic flow in the area will be greatly facilitated well before commencement of Metro construction. Regardless of the steps taken to eliminate these impacts, adequate provision of police and fire protection to the Lincoln Park community will not be threatened; before the closing of any streets, the Master Agreement with Montgomery County provides for coordination with all police and fire departments to ensure continued provision of services. (Addendum, item 1, pages 277 and 278)

Issue -- Impacts on Montgomery Community College
(page 1E, paragraph 3)

Impacts on Montgomery Community College associated with Metro-related construction are limited to those resulting from the relocation of Hungerford Drive which is being carried out by Maryland DOT. These are addressed in 7.5 Visual and Physical Impacts. (pp 183, 177)

4. Issue -- Impacts on Rockville Station and Compliance with Section 4(f) of the DOT Act of 1966 (page 1E and 2E, paragraph 4)
-

The Rockville Station, Saint Mary's Church, and the hardware store described on page 222 of the Draft Environmental Impact Statement, are not located in the Metro A017 or A016 projects, which are covered by this EIS. These historic properties are in the A015 project. Questions as to the proposed project's impact on the structures are therefore not required here. The 106 and 4(f) statements are being prepared for these properties in the transfer of Interstate Highway Funds for the funding of the A015 project.

UNITED STATES GOVERNMENT

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE SECRETARY*Memorandum*

20 DEC 1976

Draft Supplement 1 to Final EIS, Extension
of Metro "A" Route from Rockville to Shady Grove, Maryland and Relocation of Service
and Inspection Yard from Rockville to Shady Grove (IT-23-9003)

DATE: In reply refer to: TES-72

FROM : Assistant Secretary for Environment,
Safety, and Consumer Affairs

TO : Director, Office of Program Analysis, UMTA/UTA-30

This office has reviewed the draft supplemental impact statement (EIS) for the extension of the Washington Metro "A" Route from Rockville to Shady Grove. We have comments to offer regarding a potential section 4(f) involvement, the discussion of growth impacts, and measures proposed to minimize transit vehicle noise levels. Our specific concerns are as follows:

(1) Section 4(f)

On page 222 of the EIS, there is an indication that the "A" Route alignment would require the taking of the historic Rockville Station of the B&O Railroad. Section 4(f) of the DOT Act of 1966, as amended, would appear to apply in this situation, if the Station is an historic property "of national, State, or local significance as so determined by such officials." (Section 106 of the Historic Preservation Act would also apply to any property on or eligible for the National Register of Historic Places.) Given this possibility, we believe that the final statement should include a proposed section 4(f) determination with the documentation or provide a detailed explanation as to why this matter does not fall under the section 4(f) provision.

(2) Growth Impacts

With respect to accelerated or induced population growth which might be generated by the extension of the Metro route to a station at Shady Grove, the EIS seems to treat the phenomenon solely as a beneficial impact (see, e.g., the summary sheet and pages 203, 204, and 207). A hastening of the population growth and of the anticipated expansion of employment opportunities in portions of the I-70S Corridor could also have significant adverse

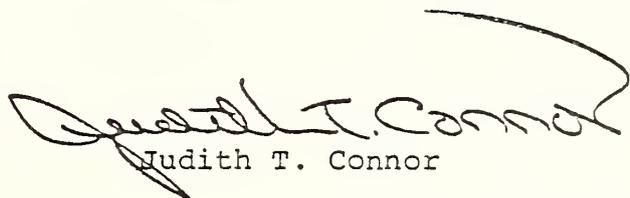
consequences, and appropriate recognition should be accorded to that consideration in the final EIS. In particular, the statement should discuss the consistency of such development with local plans, and the ability of local agencies to provide necessary facilities and services for the new development.

(3) Measures to Reduce Noise

There are a number of references in the EIS to the use of noise barriers as a means of reducing the impact of noise from transit vehicle operations along the extension of the "A" Route. On pages 202 and 203, recommended noise reduction actions (barriers) are listed for various sections of the route. However, neither these tables nor the text evidence a firm commitment to construction of noise barriers where warranted. It would be desirable for the final EIS to address this matter more explicitly.

- (4) One additional point relates to the discussion on page 25, from which it could be inferred that measures to minimize harm are more appropriately considered at the regional or system-wide level. This appears to be a misstatement and should be corrected.

Thank you for the opportunity to comment on this draft EIS. We look forward to receiving the final statement, including the comments received from other government agencies and the general public.


Judith T. Connor

RESPONSE TO COMMENTS OF THE
DEPARTMENT OF TRANSPORTATION
OFFICE OF THE SECRETARY
(keyed to pages and paragraphs of letter)

1. Issue -- Section 4(f) (page 1F, paragraph 1)

The Rockville Station, Saint Mary's Church, and the hardware store described on page 222 of the Draft Environmental Impact Statement are not located in Metro Project A017 or A016 which are covered by this EIS. These structures are located in A015 project. Questions as to the proposed project's impact on the structures are, therefore, not required here. See response number 4 on page 262a.

2. Issue -- Growth Impacts (pages 1 and 2F, paragraph 2)

7.10 Socio-Economic Impacts has been revised to address accelerated or induced growth generated by the Metro extension and its consistency with local plans and capacities for providing facilities and services. (pp 203-204a)

3. Issue -- Measures to Reduce Noise (page 2F, paragraph 3)

WMATA is committed in its Master Agreement with Montgomery County to comply with all existing regulations. Any violations of the Montgomery County Noise Control Ordinance must therefore be mitigated in one of the three following fashions:

- The construction of noise barriers as described on pp 202 and 203 and in the detail included in the Addendum (item 5, page 306);
- Application for an exception to the County Noise Control Ordinance; or
- The purchasing of land adjoining the alignment.

Copies of the Master Agreement and Noise Control Ordinances are included in the Addendum. Additional discussion is on page 201a.

4. Issue -- Discussion of Measures to Minimize Harm (page 2F, paragraph 4)

The statement in the text pertaining to the consideration of measures to minimize harm has been deleted.
(p 25))



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In reply refer to:
(ER-76/1052)

DEC 15 1976

Dear Mr. Benjamin:

This is in response to your request for Department of the Interior comments on the draft supplemental environmental statement for METRO "A" Route from Rockville to Shady Grove, Montgomery County, Maryland.

GENERAL COMMENTS

- (1) We are pleased to note that the draft supplemental statement contains a discussion of cultural resources. We suggest, however, that documentation of consultation with the State Historic Preservation Officer be included in the final supplement to support the statement (page 69) that the A017 alternatives do not affect any known historic properties or archeological sites.
- (2) The preferred alternative of the Shady Grove-West alignment requires that the terminal station and service and inspection yard occupy an area of 70 acres in the headwaters of the Crabb's Branch drainage, and that a large parking area is proposed in this location. Soils in this area are characteristically poorly drained. Although storm water runoff management retention basins and/or ponds are proposed in this area, an apparent oversight is the omission of a description of the locations and design of the proposed ponds. This should be included in the final statement.
- (3) The statement also lacks information on the fishery resources of Crabb's Creek. Although Crabb's Creek is relatively small in size, any construction in or near it will likely impact the biological resources of Rock Creek. Such impacts should be discussed in the final statement. The following publications contain information that may be of use in such a

discussion:

Dietemenn, Allen J., 1975. "A provisional inventory of the fishes of Rock Creek, Little Falls Branch, Cabin John Creek, and Rock Run, Montgomery County, Maryland." Maryland National Capital Park and Planning Commission and Montgomery County Planning Board.

"Biological Survey of Rock Creek (from Rockville, Maryland to the Potomac River)." October 1966. CB-SREB Working Document No. 4, U. S. Department of the Interior, Federal Water Pollution Control Administration, Middle Atlantic Region, Charlottesville, Virginia.

SPECIFIC COMMENTS

- (4) Page 65, Wildlife. Reference is made to water moccassins around streams near the proposed location of the terminal station at Shady Grove. We question the validity of this statement, since the approximate northern limit of water moccassins is the Dismal Swamp area in Virginia.
- (5) Page 161, Impacts on Soil and Geologic Materials. The draft statement indicates that the proposed construction "will require ditches to drain the railyard and parking lots." The final statement should discuss the location of these ditches and should indicate how they will be stabilized (i.g., riprap, vegetation, etc.,) to prevent erosion, especially during periods of excessive rainfall.
- (6) The final statement should also disclose the locations of proposed disposal areas for the material which will be excavated for the project. Impacts of this disposal and procedures to prevent erosion of the spoil material should be discussed.
- (7) Page 162, Impacts on the Hydrologic System, Upper Crabb's Branch Basin. Projected runoff from a 10-year storm indicates that there will be a significant increase in runoff in Crabb's Creek. The final statement should address precautions which will be taken to insure that the increased runoff will not result in flooding downstream or erosion of the streambanks.

- (8) Page 171, Impacts on Water Quality. We recommend that the final statement consider and discuss the vegetation of ponding areas and detention basins in order to reduce runoff and aid in filtering upland runoff. We also suggest that concrete vaults and cisterns beneath the proposed parking areas be considered in the final statement in order to reduce runoff and runoff-related impacts on water quality.
- (9) Page 173. The final statement should detail the plans required for ditches and culverts needed to relocate existing streams on the project site.
- (10) Page 205, Ecological Impacts. The final statement should discuss the anticipated impacts, such as flooding, of a 50 or 100 year storm on the detention basin areas as well as on downstream areas. We note that the draft statement indicates that the proposed detention basins will not reduce peak flows from major storms of 50 or 100 years intervals.
- (11) Page 226, Irreversible and Irretrievable Resource Commitments. Although land is addressed as a major irretrievable resource commitment, the final statement should also recognize the direct and permanent loss of upland wildlife and associated habitat.

SUMMARY COMMENTS

- (12) The final statement should address and document coordination with the U.S. Fish and Wildlife Service as required by the Fish and Wildlife Coordination Act (PL 85-624, 16 U.S.C. 661). Please contact the Regional Director, U.S. Fish and Wildlife Service, U.S. Post Office and Courthouse, Boston, Massachusetts 02109, (FTS: 223-2961) for completion of this requirement. Mitigative measures for the loss of 70 acres of upland wildlife habitat at the Shady Grove terminal station and additional measures to prevent siltation and further degradation of Crabb's Creek would be recommended by the Service.

Thank you for the opportunity to review this statement.

Sincerely yours,

(Sgd) Stanley D. Dorez

Deputy Assistant

Secretary of the Interior

Mr. Peter Benjamin, Director
Office of Program Analysis
Urban Mass Transportation
Administration
U.S. Department of Transportation
Washington, D. C. 20590

RESPONSE TO COMMENTS OF THE
U. S. DEPARTMENT OF INTERIOR
(keyed to pages and paragraphs of letters)

1. Issue -- Impact on Historic Properties (page 1G, paragraph 1)

Consultation with the State of Maryland Historic Preservation Officer has indicated that no properties or structures included in or considered eligible for the National Register of Historic Places will be affected by the A017 or A016 projects (p69). Documentation of this has been included in the Addendum of the revised report. (Item 3, pages 298 and 298a)

2. Issue -- Location and Description of Detention Ponds (page 1G, paragraph 2, Page 2G, paragraph 5, page 3G, paragraph 9)

A description of the location and design of the proposed detention ponds and plans for ditches and culverts needed to relocate existing streams in the area of the Shady Grove Station and Service and Improvement Yard will not be available until Final Design has been completed. WMATA, through its Master Agreement with the County, ensures compliance with all County and State regulations pertaining to quantity, quality and discharge rate of overland flow from development sites (pp 171, 174). Copies of all appropriate codes and ordinances are included in the Addendum of this Study. (Item 4, page 299 Item 8, page 325)

3. Issue - Fishery Resources of Crabb's Creek (page 1G, paragraph 3)

A description of fishery resources in Crabb's Creek has been included in 3.2 of the Revised Study. This includes a listing of species and numbers of individuals collected at a single collection station in the Shady Grove area. (pp 65-65a)

Issue -- Impact on Biological Resources of Rock Creek (page 1G, paragraph 3)

Impacts on the biological resources of Rock Creek are discussed in the revised 7.3 under Impacts on the Hydrologic System, Upper Crabb's Branch Basin. (p 161)

4. Issue -- Wildlife (page 2G, paragraph 4)

The reference in the text to water moccassins around streams in the vicinity of the terminal station has been deleted (p 65).

5. Issue - Spoil Disposal (page 2G, paragraph 6)

The location of spoil disposal sites, impacts of hauling procedures and measures to prevent erosion of spoil material are included in 7.3 of the Revised Study (pp 161a, 161b). Selection of a disposal site, if necessary, will be

determined after consultation with the Montgomery County Soil Conservation District. A more detailed description of these procedures can be found in the Environmental Impact Statement for the complete Metro Transit System. The Addendum of this Study includes all local codes and ordinances regulating disposal of excavated materials (item 8, page 325).

6. Issue -- Impacts on Hydrological System, Upper Crabb's Branch Basin (page 2G, paragraph 7 and 3G, paragraph 10)

Detention basins in the area of the Shady Grove Terminal will be designed to accommodate overland flow volumes from storms as required by permit-issuing authorities in Montgomery County. At present this requires ponds sized for 2-year storms. These will only partially ameliorate downstream impact of the 50-year and 100-year storm flood peaks. Impacts of flooding from 50- and 100-year storms are described under Ecological Impacts in Section 7.3 Ecological Impacts under Impacts on the Hydrologic System, Upper Crabb's Branch Basin. (pp 162, 171)

7. Issue -- Impacts on Water Quality (page 3G, paragraph 8)

Vegetative and structural measures which can be used to filter runoff and to reduce the volume of stormwater discharged to streams are discussed in 7.3 under Impacts on the Hydrologic System, Upper Crabb's Branch Basin. Specific details of these and the potential use of concrete vaults and cisterns cannot be described until Final Site Design is complete. (pp 171-174c)

8. Issue -- Irreversible and Irretrievable Resource Commitments (page 3G, paragraph 11)

The development of a Storage and Inspection Yard at Shady Grove will mean an irreversible and irretrievable loss of approximately 70 acres of upland wildlife and associated habitat.

9. Issue - Coordination with the U. S. Fish and Wildlife Service (page 3G, paragraph 12)

Appropriate measures which will help to mitigate the impact on wildlife, resulting from the loss of upland wildlife habitat, at the Shady Grove Site, will be determined by consultation with the Fish and Wildlife Service.

Arrangements have been made between WMATA and Frank Pisapia of the Fish and Wildlife Service of Annapolis, Maryland for a meeting.



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

December 15, 1976

Mr. Peter Benjamin
Director, Office of Program Analysis
U.S. Department of Transportation
Urban Mass Transportation Administration
Nassif Building
400 Seventh Street, S.W.
Washington, DC 20590

Re: METRO "A" Route Extension from Rockville to Shady Grove,
Montgomery County, Maryland (IT-23-9003)

Dear Mr. Benjamin:

- (1) We have reviewed the Draft Supplemental Environmental Impact Statement for the above proposed project and we have classified it as LO-2 in EPA's reference category. We have enclosed a copy of our Definition of Codes for the General Nature of EPA Comments to describe this rating in more detail. 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, we shall publish this rating in the Federal Register.
- (2) While we wish to commend the general scope and detail of the Supplement in addressing potential environmental effects, we note aspects of air and water quality as well as solid waste impacts which warrant further information in the final Supplement and more consideration in further project development. We also note in a positive sense that the study of alternatives is exemplary in demonstrating how a meaningful selection of alternatives can identify potential problems to the sponsor and lead towards appropriate and feasible measures to mitigate impacts through project planning and design. Our concerns in these areas are outlined below.

Air Quality
- (3) The Supplement has adequately addressed the shortcomings in air quality impact evaluation techniques we noted in our informal review letter of August 3, 1976 to Mr. Mano of your office. Nonetheless, we mention one type of possible project design modification for your consideration which might have added beneficial effects on regional air quality through reduction of vehicle trips.

- (4) The incorporation of convenience shopping facilities directly into the terminal/parking facility might eliminate the need for several vehicle trips and vehicle miles of travel in the following way: commuters asked to get groceries or other provisions either on the way to or from home could walk directly to the store (or stores) rather than making an extra trip by auto to a shopping center. This could reduce the air pollutants generated by the additional miles of travel as well as the considerable amount of emissions associated with extra engine starts and stops. Of course, the possibility of increased congestion at the site and increased microscale pollution levels from non-commuter traffic attracted to the shopping facilities must be considered. We are not sure that the benefits outweigh the detriments; nonetheless, we feel such station design alternatives warrant at least preliminary considerations at Shady Grove and other stations on fixed-guideway metropolitan systems.
- (5) We recognize that there may be many inhibitions to such changes due to zoning, funding, or policy conditions. The final statement should discuss the viability of multiple-use programming (including retail facilities) in transit stations in respect to current UMTA policy, planning and design.

Water Quality

- (6) The Supplement has provided detailed discussion about potential water quality impacts which may occur due to increased rates of run off from the facility and parking lot construction. Two mitigating measures which might be viable in this situation may warrant further consideration.
- (7) First, the illustrative drawings do not appear to indicate the possible use of landscaping dispersed within the parking lot areas themselves to act as absorbers of part of storm water falling on the parking lots. Although portions of the site include poorly drained soils, excavation and replacement of more appropriate soils in vegetative beds might mitigate the collective impacts of run off from the project.
- (8) Second, we wonder if there might not be appropriate plant types to remove through the vegetative uptake process some of the identified contaminants which are identified as non-removable by settling or screening (page 171). While we do not have specific suggestions for such a program, you may wish to contact Mr. Frank Condon of EPA (at 202-426-0287) for further information on highway related run off pollution and vegetative uptake procedures.

Disposal of Solid Waste

- (9) The Supplemental does not adequately address whether the project will entail solid waste impacts from construction materials. The final EIS should indicate whether the proposed construction will result in a surplus or deficit of excavated materials and describe the planned means of disposal of any surpluses.
- (10) We hope this review will assist you in the preparation of the final Supplement to the Environmental Impact Statement. We would appreciate receipt of a copy at such time as it is filed with the Council on Environmental Quality. If you have questions or if we can be of further assistance, you may wish to contact Mr. Sam Little of my office directly at 215-597-4388.

Sincerely,



for Nicholas M. Ruha
Chief

EIS & Wetlands Review Section

Enclosure

DEFINITION OF CODES FOR THE GENERAL NATURE
OF EPA COMMENTS

ENVIRONMENTAL IMPACT OF THE ACTION

LO--Lack of Objection

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as reasonable alternatives available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonable available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

RESPONSE TO COMMENTS OF THE
U. S. ENVIRONMENTAL PROTECTION AGENCY
(keyed to pages and paragraphs of letter)

1. Issue -- Incorporation of Convenience Shopping Into Terminal/Parking Facility (page 1H, paragraph 3; Page 2H, paragraphs 4 and 5)

Commercial facilities are not planned for inclusion in Metro station facilities due to zoning difficulties, fire regulations and expense. Access to commercial areas contiguous to Metro facilities has, however, been included in Metro station design where specific businesses have provided WMATA with the necessary funds and met the zoning requirements. At present the Shady Grove Sector Plan indicates that commercial facilities will be included in the complex to be built near the Terminal and Station area. If implemented, this Plan may reduce average daily trips in the area and have some effect upon ambient CO concentrations in the Station area. A statement to this effect is included in 7.8 Air Quality Impacts. (p 195)

2. Issue -- Landscaping Within Parking Lot Areas (page 2H, paragraph 7)

Approximately 5% of the Station parking area will be landscaped to provide for the infiltration and filtering of stormwater. Reference to this is included in 7.3 Ecological Impacts. Final location and area to be committed to landscaping, however, will not be known until Final Design of the Station has been completed. (pp 174-174c)

3. Issue -- Vegetative Uptake of Contaminants (page 2H, paragraph 8)

The possible use of vegetation for the uptake of contaminants from the parking lots and maintenance areas of the Terminal Station is discussed in 7.3 Ecological Impacts. Additional use of vegetation has been investigated and not found feasible at this time. Further research into the vegetative recycling of contaminants is needed before appropriate vegetative types and effectiveness can be determined. (pp 174, 174a) These findings were confirmed by Mr. Frank Condor.

4. Issue -- Surplus/Deficit of Excavated Materials (page 3H, paragraph 9)

The disposal of spoil materials or extent of filling required by the Metro construction is described under Impacts on Soil and Geological Materials in 7.3 Ecological Impacts as revised. (pp 161a, 161b)

ADDENDUM

FINAL SUPPLEMENT NO. 1

FINAL ENVIRONMENTAL IMPACT STATEMENT

METRO A ROUTE
SHADY GROVE TO ROCKVILLE
MONTGOMERY COUNTY, MARYLAND

IT-23-9003

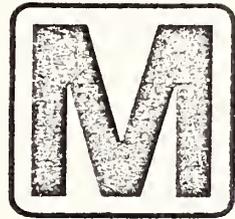
U.S. DEPARTMENT OF TRANSPORTATION

URBAN MASS TRANSPORTATION ADMINISTRATION

IN COOPERATION WITH THE

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

MARCH, 1977



metro

MASTER AGREEMENT

BETWEEN

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

AND

MONTGOMERY COUNTY, MARYLAND

COOPERATIVE AGREEMENT
BETWEEN
MONTGOMERY COUNTY
AND
THE WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

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COOPERATIVE AGREEMENT
BETWEEN
MONTGOMERY COUNTY, MARYLAND
AND
THE WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

This cooperative agreement, made and entered into this 15th day of March 1972, by and between MONTGOMERY COUNTY, MARYLAND, acting by and through its Chief Administrative Officer and the WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY, acting by and through its General Manager.

W I T N E S S E T H:

WHEREAS, the Authority was created effective February 20, 1967, by Interstate Compact by and between Maryland, Virginia, and the District of Columbia, pursuant to Public Law 89-774, approved November 6, 1966; and

WHEREAS, the Authority is an instrumentality of the District of Columbia, the Commonwealth of Virginia and the State of Maryland; and

WHEREAS, the Authority's primary function is to plan, develop, finance and provide for the operation of a rapid transit system serving the Washington Metropolitan Area Transit Zone; and

WHEREAS, the Authority is authorized to locate, construct and maintain any of its transit and related facilities in, upon, over, under or across any streets, highways, freeways, bridges and any other vehicular facilities, subject to the applicable laws governing such use of such facilities by public agencies; and

WHEREAS, the Authority shall comply with all laws, ordinances and regulations of the signatories and political subdivisions and agencies thereof with respect to use of streets, highways, and all other vehicular facilities, traffic control and regulation, zoning, signs and buildings; and in the absence of such laws; the use of such facilities by the Authority shall be subject to such reasonable conditions as the highway department or other affected agency of a signatory party may require; and

WHEREAS, paragraph 68 of the Interstate Compact provides that any highway or other public facility or any facilities of a public utility company which will be dislocated by reason of a project deemed necessary by the Authority to effectuate the authorized purposes of the Compact, shall be relocated if such facilities are devoted to a public use, and the reasonable cost of relocation, if substitute facilities are necessary, shall be paid by the Authority from any of its monies; and

WHEREAS, it is the intent of this agreement to establish herein the general guidelines and working relationship details between the Authority and the County pursuant to County laws and the enabling legislation previously mentioned in order that the Authority's rapid transit facilities may be accommodated in the County.

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties agree as follows:

ARTICLE I - DEFINITIONS

1. It is agreed that for the purpose of this agreement words and phrases shall be defined as follows:

- a. Authority shall mean the Washington Metropolitan Area Transit Authority.
- b. County shall mean Montgomery County, Maryland.
- c. CAO shall mean the Chief Administrative Officer of the County.
- d. Department shall mean the Department of Public Works of Montgomery County, Maryland.
- e. Department of Environmental Protection shall mean the Department of Environmental Protection of Montgomery County, Maryland
- f. WSSC shall mean the Washington Suburban Sanitary Commission.
- g. Authority's Engineer or Inspector shall mean the authorized representative of the Authority with such power as may be delegated to him.
- h. County's Engineer or Inspector shall mean the authorized representatives of the respective Department with such power as may be delegated to him.
- i. County's Facilities shall mean all structures, improvements, services, and other properties under the jurisdiction of the County and shall include, but be not limited to, surface markings, sidewalks, trees, landscaping, police and fire alarm systems, street lighting and traffic signal systems, and storm sewer systems including drainage structures.
- j. WSSC Facilities shall mean all structures forming a part of the sanitary sewerage and the water systems and shall include, but be not limited to, street fixtures such as manhole covers, fire hydrants, water valve boxes and covers, water pipes, water valves, water meters, and sewer pipes.

k. Public Space shall mean the area between the private property lines under the control and jurisdiction of the County and consisting of alleys, roadways, medians, grass and utility strips, automobile parking areas or any combination thereof. The term includes real property interests and easements for streets, sidewalks, highways, public parking lots, public parks, storm sewers, water mains, sanitary sewers, and other public purposes under the control and jurisdiction of the County.

l. Authority's Contractor shall mean the individual, partnership, or corporation that agrees to provide all labor, material services and perform all work required under a contract with the Authority.

m. County's Contractor shall mean the individual, partnership, or corporation that agrees to provide all labor, material services, and perform all work required under a contract with the County.

n. Section shall mean a physical portion of the Authority's rapid transit system to be constructed under one or more construction contracts.

o. Section Designer shall mean an individual engineering or architectural-engineering firm selected by the Authority to prepare contract plans, specifications and cost estimates for a section of the Authority's rapid transit system.

p. General Engineering Consultant, (GEC), shall mean an engineering firm retained by the Authority to prepare engineering design criteria, general plans, directive drawings, standard drawings and guide specifications for the rapid transit system; to review the work of the various Section Designers; and to coordinate the review of the Section Designer's plans by the public agencies affected by the work.

q. General Architectural Consultant, (GAC), shall mean an architectural firm retained by the Authority to prepare the architectural conceptual design, general plans, directive drawings, standard drawings, and to coordinate and review the architectural work during the final design phase.

r. General Soils Consultant, (GSC), shall mean a firm retained by the Authority to perform soils and geologic investigations for the rapid transit system, and to review foundation and underpinning designs prepared by the Section Designers or the Authority's Contractors.

s. General Construction Consultants, (GCC), shall mean an engineering firm retained by the Authority to provide management of construction and stage contracts, and technical inspection on the rapid transit projects.

t. Betterments shall mean and include any upgrading of County's facilities in terms of function, capacity, durability, or efficiency, made for the benefit of and at the election of the County, not attributable to the rapid transit construction as determined by mutual agreement between the Authority and the County. Replacement in kind or to meet current design criteria standards as defined in Article IV shall not be considered to be a betterment. Betterments include, but are not limited to the following examples:

(1) An increase in the gutter-to-gutter width to increase the number of lanes in the traveled way.

(2) An increase in the gutter-to-gutter width to provide for a median, with no increase in the capacity of the traveled way.

(3) Improvement in the landscaping of an area above existing conditions.

(4) Increase in material thickness and/or quality above that of current County construction standards.

(5) Increase in existing pipe size greater than the minimum size specified in the current adopted County Design Criteria Standards for storm sewer sizes.

u. Authorization shall mean approval by the County for the Authority to proceed with the construction of any phase of a Section, or approval by the Authority for the County to proceed with the design and/or construction of a related transit project.

v. Relocation and its derivation shall mean the adjustment of County's facilities required by the rapid transit system, such as removing and reinstalling the facility including necessary rights-of-way at a new location; moving; rearranging; construction; reconstruction; or abandoning the existing facilities; constructing either a permanent or temporary replacement facility; or a substitute facility functionally equal to the existing facility.

w. Dislocate shall mean to displace, disrupt, disarrange, abandon, or to put out of proper place.

x. Maintain shall mean supporting complete in-place, protecting, construction temporary replacement facility or continuing facility in service.

y. Salvage Value , shall mean either the amount which could be received for County-owned material and property if sold; or, if desired by the County, the amount mutually agreed to between the County and the Authority.

z. Arterial Streets shall mean through streets as defined by the adopted County Master Plan of Highways or Sectional Master Plans.

aa. Peak Traffic Hours shall mean the normal workday hours, normally five (5) hours per day, during which parking or standing is prohibited on the designated streets.

bb. Non-peak Traffic Hours shall mean the daylight hours between the morning and evening peak traffic hours, and weekend hours.

cc. Overnight Traffic Hours shall mean the hours during the night between the evening peak traffic hours and the peak traffic hours the following morning.

dd. Commercial and Office Streets shall mean those major highways, arterial, business or industrial streets and primary streets within the planning area boundaries of Silver Spring, Kensington-Wheaton, North Bethesda-Garrett Park and Bethesda-Chevy Chase as outlined in the respective Master Plans.

These streets shall be subject to special work restrictions in that the orderly movement of pedestrian traffic shall be maintained during business hours. Street space interruptions shall be kept to a minimum during peak traffic hours except by special permit.

ee. Central Business District shall mean all streets within the CBD boundaries of Silver Spring, Kensington-Wheaton, North Bethesda-Garrett Park and Bethesda-Chevy Chase as defined in the respective Master Plans. These streets shall be subject to special traffic and pedestrian circulation restrictions (normally from November 22 to January 8) to be mutually agreed to during the development of contractual plans and specifications.

ff. Public Setback shall mean the portion of the street between the property side of the sidewalk and the building or property lines.

gg. Sidewalk Space shall mean the portion of a street between the curb lines or the lateral lines of a roadway and the adjacent property lines intended for the use of pedestrians. It encompasses the area normally designated for grass and utility strips.

ARTICLE 11 - General

2. The County agrees to cooperate with the Authority in procuring, consistent with the authorities and responsibilities of the County those areas suitable for construction sites and for location of the Authority's permanent and temporary facilities, and utilizing land under the ownership of the County.

3. The Authority shall perform the relocation, modification or construction of the County's facilities, in accordance with the plans prepared by the Authority's Section Designers and approved by the County unless it is mutually agreed that the County shall perform the design and construction as provided in ARTICLE XII - "Design and Construction by County to accommodate the Authority".

4. The County agrees and consents to the relocation, modification or construction of the County's facilities by the Authority subject to the restrictions hereinafter set forth, and further subject to the requirements for notice and opportunity for objection as may be required by the Charter, County Code and Maryland Constitution.

5. County's facilities, affected by transit construction, which are required to be kept in service and in place shall be maintained by the Authority.

6. Replacement and modifications to the County's facilities necessitated by the reason of the Authority's rapid transit project without betterment shall be at the Authority's expense.

7. Replacement and modifications to the County's facilities which result in betterments to the County's facilities shall be paid for by the County on the basis of the additional costs arising from the betterments above the cost of replacements in kind as determined by special bid items or by mutual agreement between the Authority and the County.

8. Any new facilities added by the Authority at the County's request for the general improvement to the County's facilities and not as replacements or modifications necessitated by the rapid transit project shall be at the expense of the County. The costs of construction to be paid by the County shall be determined by use of special bid items, and the cost of design shall be determined by mutual agreement.

9. The Authority, in coordination with the County, shall make such studies as may be required to determine the need for street and highway improvements in the immediate vicinity of its stations.

a. Improvements to the County's streets made necessary by increased traffic at the Authority's rapid transit stations shall be designed and constructed by the County at the County's expense.

b. Provision of minimum roadway facilities in the nature of drive-ways necessary solely to gain access to transit facility sites from the nearest or most appropriate existing or programmed public street or highway, as determined by the Authority, shall be planned, constructed and financed by the Authority.

10. It is agreed that one set of complete specifications is desirable for all work on the rapid transit system projects. To accomplish this task, the County agrees to work with the Authority in modifying the Authority's guide specifications, as necessary to incorporate the County's requirements concerning work involved on County's facilities which work is to be performed by the Authority's contractor.

11. The Section Designer in coordination with the County shall prepare a plan showing how the traffic will be handled on roads which are disrupted during the construction of the rapid transit system. The plan will show the construction phases, roads to be closed, detour routes and signs, and other pertinent information needed for the review and approval by the Authority and County. These plans shall be submitted by the Authority's General Engineering Consultant to the Department for approval at the normal 65% review stage.

12. The Department of Public Works has been designated as the County Coordinating Agency to receive and to distribute the Authority's Plans and Specifications of the Rapid Transit System to the appropriate County Departments at 30%, 65% and 100% stages. It shall thereafter be the responsibility of the Authority's consultants to obtain the necessary permits or approvals from the various County Departments.

13. The Authority shall furnish the County a strip-map of the transit routes in Montgomery County, and shall delineate on said map such land areas where it feels that proposed developments could affect future transit construction. The County shall endeavor to inform the Authority of proposed developments in the area designated on the strip-map, such as building permits, site plans, development and improvement plans, and rezonings. The County shall furnish, upon request, to the Authority copies of such building permits and plans; however, the County shall not be liable for failure to provide complete information or be responsible for error in such data.

ARTICLE III - DESIGN AND PLAN APPROVAL

14. The design of replacements and modifications to the County's facilities for the Authority's project shall be included in the overall design of the rapid transit project.

15. Coordination of designing and development of the final plans and specifications shall be accomplished by the Authority's Section Designer conferring from time to time with the respective County's point of contact to insure that the plans conform to the County's current standards. County representatives shall endeavor to furnish the Section Designer an approval or comments on any proposed design within ten (10) working days, after submission thereof.

16. The General Engineering Consultant shall transmit three (3) sets of plans and specifications to the Department of Public Works as stated in paragraph #12 for review and comments at various review stages 30%, 65%, and 100%. The Department shall endeavor to return two (2) sets of each submission to the General Engineering Consultant with the County's comments within fifteen (15) working days. The County at the 65% review stage shall give the Authority preliminary written approval of the plans and specifications and shall give final written approval of the plans and specifications at the 100% review stage. One set of full size approved construction plans shall be submitted to the Department for its record and use prior to bidding.

17. The County's written approval of the plans and specifications shall constitute a general construction permit to the Authority to permit the construction of that section of the rapid transit system complete, with related facilities, and modifications to certain County's facilities in conformity with approved plans and specifications.

18. The Authority shall assume full responsibility and cost of obtaining any needed modification to the State Fire Safety Regulations necessary to permit the construction of subway stations.

19. The County's expenses of review, coordination and approval of the Authority's plans by the County shall be at the County's expense.

ARTICLE IV - DESIGN REQUIREMENTS AND CRITERIA

20. Relocation, modification and construction of County's facilities shall conform to the design requirements of the respective County Department and shall be in accordance with the latest edition of the following:

- a. The Authority's Guide Specifications as approved by the County Departments.
- b. Latest edition of Design Criteria for Maryland State Highway Administration.
- c. Construction standards and specifications for materials, highways, bridges, and incidental structures, Maryland State Highway Administration latest edition .
- d. County standards and specifications.
- e. Washington Suburban Sanitary Commission current adopted Sanitary Sewer and Water Main Specifications and Standards.
- f. The American Association of State Highway Officials Design Specifications.
- g. The American Society for Testing and Material Standards.
- h. The Illuminating Engineering Society Manual.
- i. Montgomery County Soil Conservation District Standards for Soil Erosion and Sediment Control.

21. In addition to the design standards above, the Authority shall locate ventilation grating openings to cause the least effect on existing features of landscaping, improvements and the environment. They shall be located preferably in raised median strips, the public setback or in other public land. Placement of ventilation gratings in sidewalks shall be avoided, if practicable. Where location in other areas is impracticable, ventilation grate openings will be authorized at approved locations immediately behind the street curbs, provided the width does not exceed forty percent of the sidewalk width. Where possible, gratings will be located outside of the far tangent points at street intersections or crosswalk area. Openings, such as mechanical access openings, will be permitted in sidewalks. A checker metal plate is permissible. All vent and fan shaft openings affecting the County's facilities shall be submitted for County approval.

22. The standard details pertaining to the relocation, modification and construction of County's facilities shall be shown on the latest revision of the Authority's Standard Utility Drawings for County's facilities. The drawings shall be incorporated in all sets of contract drawings involving the relocation, modification and construction of County's facilities.

ARTICLE V - MAINTENANCE OF TRAFFIC

23. The Authority's construction on arterial, commercial and office streets except in tunnel and under decking or on portions of roadways closed by permit, shall be conducted during peak traffic hours in such a manner so as to allow orderly movement of pedestrian and vehicular traffic. Trucking of excavated material, supplies and equipment shall be limited to streets as designated by the County and State. The Authority and the County agree that they shall jointly approve a plan which shall govern the operations of the Authority's Contractor. The plan shall consider the contractual obligations of the Authority and the economic impact on the business establishments. Any exception to the restriction requested by the Authority which cannot be mutually resolved will be referred to the Chief Administrative Officer for resolution.

24. Access to business establishments: In the operations of the Authority's Contractor, special consideration shall be given to the necessity of providing access at all times to business establishments for pedestrians, deliveries and fire-fighting equipment.

25. Street Closings: The Authority shall request permission from the County for partial or complete temporary closings to vehicular traffic of streets in accordance with Article II (11) in the construction areas during the construction period, and providing adequate detour routes over adjacent streets, subject to the following limitations:

a. Signs, Pavement Markings and Barricades shall be installed and maintained by the Authority's Contractor in accordance with (1) the "Detour Plans" prepared by the Section Designer, (2) County construction specifications, and (3) National and State Manual on Uniform Traffic Control Devices.

b. In advance of any partial or complete temporary closing of any street, the Authority's Engineer shall submit to the County for approval three (3) copies of his detailed plan showing the size, location and legends of signs, markings, and barricades which he proposes to install. The plan shall be submitted in sufficient time to permit approval at least two weeks in advance of the proposed closure.

c. The Authority shall give such notice as required by the County of the necessity to close a street as set forth in paragraph b., and shall notify the Fire and Police Departments of the street closing.

d. The Authority's Contractor shall notify the County three (3) working days in advance of implementation of the approved plan to allow verification by the County that all necessary detours, signs, pavement markings and other protective measures have been provided by the Authority's Contractor, and in order that the County may approve all said measures, which approval shall not be unreasonably withheld.

e. Partial closing of arterial cross streets shall be permitted during non-peak traffic hours and overnight traffic hours. When feasible, the County shall grant permission to partial closing arterial cross streets to traffic from 8:00 p.m. Saturday to 5:00 a.m. Monday.

f. Permanent closing of any streets shall be in accordance with the provisions of Montgomery County Code, Section 24-43 thru 55, as amended.

26. Bus Routing: The Authority shall be responsible for notifying WMATC and the County where the rerouting of bus traffic is necessitated by construction of the rapid transit system.

27. Access ramps, pits and storage areas shall be located on side streets whenever possible. Access ramps shall generally be located in the center of the roadway, except on one way streets. Trucks entering or leaving the work area via access ramps shall be operated in such a manner to minimize interference with the flow of traffic in the traveled roadway.

28. To assist the Authority in the development of construction staging plans, the County upon request from the Authority's GEC, shall furnish the following information for each section of the rapid transit system:

a. The traffic requirements in lanes "X" feet wide during the following periods, with the time duration of each period:

- (1) Peak traffic hours - desirable
- (2) Peak traffic hours - minimum
- (3) Non-peak traffic hours - desirable
- (4) Non-peak traffic hours - minimum
- (5) Overnight traffic hours - absolute minimum

b. Streets which may be closed completely during construction and the duration of the closing.

c. Parking restrictions which will be imposed during the construction period.

d. Suggested location of access ramps within the area of the street.

ARTICLE VI - LANDSCAPING

29. Trees and landscaped areas under the control of the County shall be preserved whenever practicable. Trees in the construction area and which are to remain shall be protected in accordance with the County's requirements and standards. Trees which must be removed shall be replaced with trees of a species in like kind unless otherwise designated by the County. Replacement trees shall have a minimum of two and one-half (2 1/2) inch caliper and be guaranteed for a period of one year. Landscaped areas shall be restored to the original condition to the extent practicable. The County reserves the right to dig and transplant trees and shrubs scheduled to be removed.

ARTICLE VII - SURFACE AND STREET RESTORATION

30. All pavement restoration in public streets shall be in strict conformance with the current specifications and practices of the County and shall be inspected by the Authority.

31. Restoration shall be accomplished by the Authority's Contractor at Authority's expense on the basis of a replacement in kind or to meet current standards of the County. Betterments related to surface and street restoration requested by the County and approved by the Authority shall be designated by the Authority's Section Designer and constructed by the Authority's Contractor. The design and construction costs related to the betterment shall be at the County's expense. The Authority's obligation shall be limited to the replacement cost alone.

ARTICLE VIII - STREET LIGHTING SYSTEM AND TRAFFIC SIGNAL SYSTEM

32. The County's lighting system is normally served by cables and ducts owned by the Potomac Electric Power Company except that some are owned by the County and served by private cable and ducts. The County's traffic signal system is normally served by the Potomac Electric Power Company to the County's cable and conduit within the intersection, except for detectors and interconnect cables. The Authority's plans shall, where practicable, indicate that the Authority's Contractor shall maintain the ducts and cables complete in place.

33. In those instances where the construction of the Authority's rapid transit system requires a temporary or permanent relocation of portions of the County's street lighting system and traffic signal system, the County shall order the work for installing ducts, cables, and making connections in coordination with the schedule of operations of the Authority's Contractor, except that in decked areas, temporary poles, lights and ducts shall be furnished, erected and removed by the Authority's Contractor. Temporary work shall be coordinated by the Authority's Engineer with the County. Relocations required shall be requested by letter.

34. Cost of work performed by the County in such relocations shall be at the Authority's expense on a reimbursement basis. Separate cost records shall be maintained by the County for each project. Work performed by the Potomac Electric Power Company for the County in such relocations shall be at the Authority's expense on a reimbursable basis. Billings for this work shall be direct from the Potomac Electric Power Company to the Authority and shall be accompanied by a letter from the County approving the work performed.

ARTICLE IX - PARKING METERS

35. The County shall remove and reinstall parking meters in coordination with the schedule of operations of the Authority's Contractor, as reviewed and approved by the County. The Authority's Contractor shall remove the posts for the parking meters and the County shall store and reinstall the posts.

36. Work performed by the County in the removal and reinstallation of parking meters shall be at the Authority's expense on a reimbursable basis. Separate cost records shall be maintained by the County for each project.

ARTICLE X - PROJECTIONS IN PUBLIC SPACE

37. The Authority's plans shall indicate those vaults, signs, display windows, footings, foundations, trees, and other projections in public space which must be removed to accommodate the construction of the Authority's rapid transit system. The projection into public space affected by the construction shall be identified as early as possible in the design phase by the Authority's Section Designers.

38. Upon a determination by the Authority that any projection into public space must be removed, the Authority shall notify the County which after verifying the projection relative to the County's records, will initiate action for abandonment and removal of the projection in accordance with the procedures established and agreed upon by the Authority and the County.

ARTICLE XI - INSPECTION AND APPROVAL OF CONSTRUCTION

39. The Authority and the County agree that a duplication of effort in the inspection of construction of the Authority's rapid transit system shall be avoided.

40. Work performed by the Authority's Contractor shall be inspected by the Authority. If the Authority requests the County to provide personnel to augment the Authority's inspection forces and the County agrees; and if such inspection services are performed by the County, this will be on a reimbursable basis. Contacts of the County's inspectors with the Authority's Contractors shall be through the Authority's Engineer.

41. The Authority's Engineer shall inspect the installation, maintenance and removal of sheeting and shoring. The sheeting and shoring shall be removed to a point measured vertically from the finished surface elevation 6 feet within blocks and 8 feet through street intersections unless otherwise noted on the plans or in the specifications.

42. The Authority's Engineer shall inspect the County's facilities to insure that the work has been installed in compliance with the County's standards and in accordance with the plans and specifications approved by the County. The Authority shall certify in writing to the County that the facilities have been constructed in accordance with the County's standards.

43. The Department of Environmental Protection and other County agencies as their responsibilities are involved, may from time to time inspect the construction to determine compliance with laws and ordinances of the County or the State. The Authority agrees to require that its contractors comply with all laws and ordinances that are applicable.

ARTICLE XII - DESIGN AND CONSTRUCTION BY COUNTY
TO ACCOMMODATE AUTHORITY

44. The Authority and the County, subject to available appropriation, may agree that the County shall design and construct certain structures related to the Authority's system or that the adjustment of the County's facilities is a direct result of the accommodation of the Authority's system. In such event, the approval of such projects shall be as follows:

a. A supplemental agreement covering details of financial and construction arrangements shall be executed for each project prior to start of design work. The agreement shall include provisions for progress payments to be made, the amount and degree of inspection services to be provided, monthly construction progress reports to be furnished, and provide for allocation of costs based on final contract cost.

b. Upon completion of preliminary design by the County, the County shall provide the Authority with a preliminary cost estimate of the facilities to be paid by the Authority, together with three (3) sets of the preliminary plans and specifications.

c. Upon approval of the preliminary plans and cost estimate by the Authority, the County shall complete the design. The County upon the Authority's approval of final design and cost estimate shall advertise the project for bids. The County shall then inform the Authority of the Authority's share of the cost based upon the low bidder's unit prices, and shall furnish the Authority with three (3) copies of the abstract of bids, together with three (3) sets of the final plans and specifications. The Authority shall have the right to review the bids, and reject or approve the lowest responsible bid in consultation with the County.

d. After review and approval of the budget estimate by the Authority, funds of the Authority shall be obligated. The County shall thereafter obtain the Authority's approval for modifications to the contract which will affect the Authority's portion of the project and shall inform the Authority promptly when the Department is aware that the budget estimate is likely to be exceeded.

ARTICLE XIII - DESIGN AND CONSTRUCTION BY AUTHORITY TO
ACCOMMODATE COUNTY

45. The County projects, or portions thereof, which have been authorized and for which the preliminary engineering has been completed may, by mutual agreement, be constructed by the Authority. In such event, the County shall initiate a request to the Authority for the incorporation of specific parts of the project into a future Authority final design contract. The County and the Authority shall agree in advance as to the allocable costs to each. Generally, design costs shall be reimbursed on the basis of actual costs, and construction costs shall be allocated on the basis of unit bid prices of the accepted bidder. Final allocation of costs shall be determined by the final quantities installed under the contract.

46. After the Authority has started final design of a rapid transit project, and the County determines through a review of the Authority's plans that economies in design and construction may be realized by the integration of a County project, or portion of such project, into the Authority's project, the County shall inform the Authority. Thereafter the following procedure shall be followed:

a. A supplemental agreement covering details of financial and construction arrangements shall be executed for each project prior to start of design work. The agreement shall include provisions for progress payments to be made, the amount and degree of inspection services to be provided, monthly construction progress reports to be furnished, and the allocation of costs based on final contract cost.

b. After review and approval of the proposal by the Authority, the Authority shall negotiate a modification to the existing final design contract to incorporate the design of facilities requested by the County. The County shall be obligated to reimburse the Authority for the increase in design costs.

c. Upon completion of preliminary design by the Authority, the Authority shall provide the County with preliminary cost estimates of the facilities to be paid for by the County, together with three (3) sets of the preliminary plans and specifications.

d. Upon approval of the preliminary plans and cost estimates by the County, the Authority shall complete the design. The Authority upon the County's approval of final design and cost estimates shall advertise the project for bids. The Authority shall then inform the County of the County's share of the cost based upon the accepted low bidder's unit prices, and shall furnish the County with three (3) copies of the abstract of bids, together with three (3) sets of the final plans and specifications. The County shall have the right to review the bids, and make recommendations in consultation with the Authority on rejecting or approving the lowest responsible bid.

e. After review and approval of the budget estimate by the County, funds of the County shall be obligated. The Authority shall thereafter obtain the County's approval for modifications to the contract which will affect the County's portion of the project, and shall inform the County promptly when the Authority is aware that the budget estimate is likely to be exceeded.

f. The Supplemental agreement between the Authority and the County on each project shall include provisions for progress payments by the County to the Authority for review of the amount and degree of inspection services on the project, for monthly construction progress reports to be furnished to the County by the Authority, and provisions relating to a final allocation of costs based on final contract cost.

47. In the event any publicly owned utility facilities must be relocated or rearranged to accommodate a street improvement desired by the County and is included in an Authority administered construction contract at the County's request but which is not necessitated by the Authority's rapid transit system construction, it is understood and agreed that such relocation will be accomplished at no expense to the Authority and that the County will issue all necessary notices to relocate or remove such facilities and pay all costs connected therewith that the affected utility is not legally obligated to assume.

ARTICLE XIV - FINAL INSPECTION AND ACCEPTANCE

48. In order to insure the prompt transfer of responsibility for maintenance of County's facilities as soon as the work has been completed, the Authority shall inform the respective County Department in writing that the facility has been completed, and that the facility is ready for final inspection and acceptance. In the event mechanical equipment is involved such as for a pumping station, operation manuals and maintenance data shall be forwarded with the requests.

49. The final inspection shall be attended by representatives of the Authority, the County, and the Authority's Contractor. If deficiencies are found, the Authority shall direct the required corrective work. After all deficiencies are corrected and the new facility is acceptable to the County, the County shall forward a letter of acceptance to the Authority. If keys to a facility are involved, they shall be forwarded to the County immediately after receipt of the letter of acceptance.

50. The Authority shall furnish the County one (1) set of reproducible "as-built" plans showing all County facilities constructed, relocated or modified resulting from construction of the rapid transit system.

ARTICLE XV - LAND ACQUISITION AND RIGHT OF WAY PLATS

51. The Authority will submit right of way plats to the County for their review and comments. Acceptable plats will be held by the County in a binder of a type specified by the County and furnished by the Authority until such time as the instrument of conveyance is submitted. Both the plat and the instrument of conveyance shall then be recorded. Recordation plats may be drawn to any legible scale; however, they shall conform to the County's requirements concerning size of plat, and to the information contained thereon. The Authority shall furnish the County with one reproducible copy of each plat as recorded.

52. The Authority shall assume full obligation of costs and responsibility in acquiring any County owned property. The Authority will pay to the County the fair market value, hereafter called "FMV", as such value is defined by Article 33A, Annotated Code of Maryland (1957 Ed., as amended) for any County owned land or for any interest in land. This FMV shall be determined by mutual agreement of the County and the Authority based on respective staff appraisals. If agreement on the value of the property is not reached within 14 days after exchange of staff appraisal estimates, such value shall be

determined by an independent valuation of the property made by an appraiser acceptable to both the County and the Authority, the cost of which shall be shared equally. Such valuation shall be made in accordance with terms and conditions agreeable to the County and the Authority and shall be binding on both parties.

The County will endeavor to grant to the Authority a right of way entry permit to any land or to any interest in real property owned by the County, when it has been mutually agreed by the Authority and the County that the subject land is required for rapid transit facilities. All grants hereunder shall be subject to the provisions, including notice and advertising requirements of Section 5 (B), Article 25A, Annotated Code of Maryland (1957 Ed.). The County and Authority agree that the right of the Authority to proceed with construction at the earliest time is for the benefit of both the Authority and the County; and whenever possible, the County will agree to such prior entry provisions, by written agreement, while negotiations are still pending on final determination of FMV.

Whenever permanent subsurface or temporary surface easements or other use of County's land or public rights of way are agreed to as necessary for rapid transit facilities, the County will grant such easements or use without cost.

53. The Authority agrees to restore the land and/or public rights of way disturbed by the construction of the rapid transit system. This restoration will be to its original condition; or, if desired by the County, to another configuration the cost of which will be paid by the Authority not to exceed the cost that would have been incurred to restore the property to its original condition.

ARTICLE XVI - DISPOSITION OF SALVAGED MATERIALS

54. Materials salvaged by the operations of the Authority's Contractors such as, but not limited to catch basin and manhole tops, steps, and frames; storm sewer pipe; parking meters and posts; and street light standards and traffic signals, controls and related equipment shall be used within the contract limits if approved by the County's Engineer. Material which has to be removed during construction, not reused and desired by the County shall be delivered to the County. The County shall credit the Authority for the salvaged value of the material delivered to them as stated in Article I, paragraph 1, subparagraph y. Material that is not reusable and not claimed by the County shall become the property of the Authority's Contractor, and shall be removed promptly by him, unless otherwise noted on plans.

ARTICLE XVII - AS-BUILT DRAWINGS

55. The Authority Engineer shall maintain a set of "as-built" drawings which shall be available for review by the County during the progress of the work.

56. Upon completion of the work under an Authority contract, the Authority shall furnish the County with "as-built" plans showing all facilities installed.

ARTICLE XVIII - REIMBURSEMENTS

57. The Authority shall reimburse the County for the following types of services provided by the County.

a. Construction performed and/or materials supplied by the County resulting from a relocation of any of the County's facilities.

b. Construction performed by the County resulting from a relocation of the County's Street Lighting and Traffic Signal System.

c. Construction performed by the County in the removal and reinstallation of parking meters to accommodate the Authority's construction.

d. Design and construction performed by the County under the provisions of ARTICLE XII.

e. Inspection services, if requested by the Authority and agreed to by the County.

58. Upon approval of the Authority's plans as provided in ARTICLE III, the County shall, within 25 days after such approval, provide the Authority with a budget estimate of the costs to be reimbursed to the County.

59. The Authority shall have the right to audit the County's records at such times and places as mutually agreed to, to include books, records, documents, papers, and other supporting data involving those transactions, in which the County performs construction and other services for the Authority.

60. The County shall have the right to audit the Authority's records at such times and places as mutually agreed to, to include books, records, documents, papers and other supporting data involving those transactions in which the Authority performs construction and other services for the County.

61. The Authority and the County agree that they shall jointly establish administrative procedures and guidelines which will expedite the review, approval, and payment of reimbursement invoices by the Authority and the County; and which procedures and guidelines shall adequately protect the financial interests of both parties. The Authority's Office of Comptroller shall be responsible to coordinate the above procedures with the County.

ARTICLE XIX - CONSTRUCTION PERMITS

62. The written notice of approval of final plans and specifications as stated in ARTICLE III - paragraph 17 shall constitute approval from the County to the Authority to permit the construction of The Rapid Transit System complete, including related facilities in Montgomery County and modification to certain County's facilities, in conformity with the approved plans and specifications for that section of the system.

63. The Authority's Contractor, as soon as practicable after award of the contract and after approval by the Authority's Contracting Officer, shall submit his construction time schedule to the County.

64. The Authority's Contractor shall coordinate his work completely with each County Department affected by his activity.

65. The County shall make no charge for construction permits since the Authority is paying for the cost of inspection and "as-built" plans.

ARTICLE XX - POINTS OF CONTACT

66. Until further notice, the following personnel are designated as points of contact:

For the Authority

Assistant Director
Office of Engineering 484-2695

Civil Engineer
Office of Engineering 484-2752

Director of Construction 484-2664

Director of Real Estate 484-2676

Office of Comptroller 484-2654

For General Engineering Consultant

(Deleuw, Cather & Company)

Chief Construction Engineer 554-9330

Chief Utilities Engineer 554-9330

For General Construction Consultants

(Bechtel Associates Inc.)

Construction & Inspection 484-6410

67. Until further notice, the following personnel are designated as points of contact:

For the County

Department of Public Works

- | | |
|---|----------|
| 1. Plan Review at all stages
Director | 279-1000 |
| 2. Road & Bridge Design/Construction
Chief of Bureau Engineering | 279-1000 |
| 3. Street Lighting & Traffic Sytem Control
Chief of Bureau Traffic Engineering | 279-1000 |
| 4. Parking Facilities & Parking Meters
Chief of Bureau Parking | 279-1000 |
| 5. Subdivision Permits and Right of Way Acquisition
Chief of Bureau Staff Services | 279-1000 |

Department of Environmental Protection
Sediment/Erosion Control
Chief, Division of Environmental Health Services 279-1000

Department of Environmental Protection
Building and Electrical Inspection/Permits
Director 279-1000

County Attorney

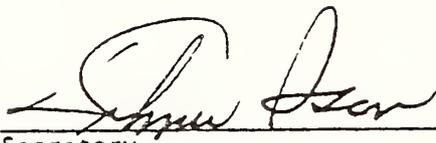
Legal Determination/Land Acquisition
Deputy County Attorney 279-1000

68. The parties agree that the article and paragraph headings are solely for convenience of reference and shall neither constitute a part of this agreement nor have any legal effect whatsoever.

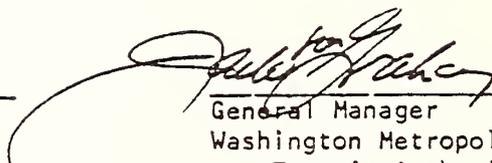
69. In witness whereof, the parties have executed this agreement as of this date entered on the first page.

ATTEST:

APPROVED:



Secretary
Washington Metropolitan Area
Transit Authority

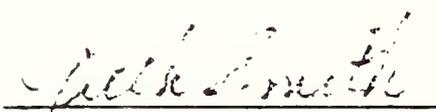


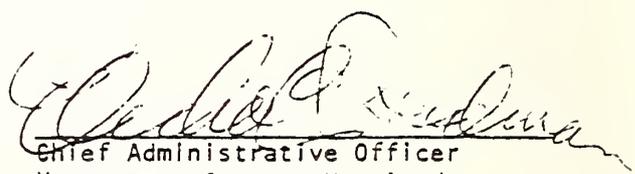
General Manager
Washington Metropolitan Area
Transit Authority

DATE 30 March 1972

WITNESS:

APPROVED:





Chief Administrative Officer
Montgomery County, Maryland

DATE March 15, 1972

The Master Agreement between WMATA and Maryland DOT is very similar in its provisions to the Master Agreement between WMATA and Montgomery County, Maryland which is included in the Addendum of this Report in its entirety. Relevant sections of the specific Master Agreements have been used in response to agency comments. For the complete text of the Master Agreement between WMATA and Maryland DOT contact

WMATA Office of Engineering
Room 4F05
600 Fifth Street, N. W.
Washington, D. C. 20001

March 5, 1977.

RESOLUTION
OF
BOARD OF DIRECTORS
OF
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

WHEREAS, the Adopted Regional System of the Washington Metropolitan Area Transit Authority provides for a alignment of the rail line from the vicinity of Tuckerman Lane to the City of Rockville and provides for rail transit stations to be located on the Rockville Route in the vicinity of Nicholson Lane, Halpine Road, and Park Road in the City of Rockville, and a proposed storage and inspection yard to be located in the City of Rockville beyond the Rockville Station; and

WHEREAS, the Adopted Regional System was modified in 1970 at the request of Montgomery County to move the Twinbrook Station from north of Halpine Road to a location south of Halpine Road, designation as ARS-Modified; and

WHEREAS, WMATA was directed by the Montgomery County Council on November 20, 1973 to proceed with the preparation of General Plans for a terminal station and storage and inspection yard in the City of Rockville, and alternatively for an extension of the Metro Route and the relocation of the terminal station and storage and inspection yard to the vicinity of Shady Grove Road; and

WHEREAS, on February 26, 1974, WMATA was requested by the Montgomery County Council to prepare preliminary plans for alternative rail transit station sites in the vicinity of Nicholson Lane and in the vicinity of Twinbrook Parkway; and

WHEREAS, on December 9, 1974, WMATA held a public hearing on the Environmental Impact Statement prepared for that segment of the Rockville Route north of the Grosvenor Station to the terminal location in the City of Rockville, including a consideration of alternative locations of the Twinbrook Station or its elimination from the system; and

WHEREAS, on December 10, 1974, WMATA held a public hearing on the Environmental Impact Statement prepared for the proposed extension of the Rockville Route from the City of Rockville to the vicinity of Shady Grove Road; and

WHEREAS, on February 11, 1975, the WMATA staff report was distributed to the Montgomery County Council and Montgomery County Executive; and

WHEREAS, on February 25, 1975, the Montgomery County Council adopted Resolution 8-130 recommending the ARS alignment from the Grosvenor Station to the Rockville Station; the location of the Nicholson Lane, Twinbrook and Rockville Stations; and the extension of the system to the vicinity of Shady Grove Road, including the relocation of the storage and inspection yard from the City of Rockville,

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Washington Metropolitan Area Transit Authority:

1. That the Nicholson Lane Station be located north of planned Marinelli Road and its western extension and designed with surface facilities on both sides of Rockville Pike at system cost; and

a. That an underground passageway and second entrance connecting the facilities shall be provided at the expense of Montgomery County at a cost not to exceed \$2.3 million; and

b. That 500 parking spaces be provided on each side of Rockville Pike but that the General Plan shall show land acquisition sufficient to accommodate a future expansion to 1000 parking spaces on each side of Rockville Pike; and

c. That cost estimates be prepared for the future expansion of the parking facilities from a total of 1000 to a total of 2000 parking spaces.

2. That the Twinbrook Station be located at the ARS-Modified site south of Halpine Road;

a. That an alternative design for the east side be prepared in preliminary form for the General Plan public hearing that will relocate the parking, bus, and kiss-n-ride facilities so as to buffer the Twinbrook community, and as part of this design, a connection be provided to Ardennes Avenue which would be closed to vehicular traffic south of Halpine Road; and

b. That an adjustment of the amount of parking be accomplished between the west side and east side so as to eliminate the need to relocate Chapman Avenue; and

c. That an alternative design for the west side be prepared in preliminary form for the General Plan public hearing that would provide bus facilities other than a curb-drop design.

3. That the Rockville Station be located immediately south of Park Road with off-street station facilities located on both sides of the B&O/C&O Railroad; and

a. That surface parking for 500 cars be provided but that an estimate for a 1000 car parking structure be prepared for comment at the General Plan public hearing; and

- b. That the station design provide for an interface between the Metrorail and commuter rail services; and
 - c. That the staff of WMATA is hereby directed to cooperate with the City of Rockville Historic District Commission regarding the preservation and relocation of the existing Rockville Railroad Station; and
 - d. That the staff of WMATA is directed to accelerate its land acquisition and parking facilities construction on the east side of the Railroad so as to maintain uninterrupted commuter rail station operation by relocating such operations prior to Metro construction on the west side; and
4. That the ARS alignment from the Grosvenor Station to the Rockville Station be approved.
 5. That the extension of the Metro Route A from the City of Rockville to the Shady Grove Road vicinity, including the relocation of the storage and inspection yard from the City of Rockville to the Shady Grove Road vicinity is hereby approved; and
 - a. That the estimated costs of said extension shall include the replacement of lost access created by the closing of Frederick Road and Westmore Road; and
 - b. That the estimated costs of the Shady Grove extension be funded by the timely Federal approval of the State of Maryland/Montgomery County request for an Interstate Highway Fund transfer; and
 6. That the Chairman is hereby authorized to execute the Memorandum of Understanding on the substitution of the Shady Grove extension as a Public Mass Transit Substitute Project within Montgomery County; and
 7. That the Authority prepare the formal UMTA grant application for the substitute project as outlined in the Memorandum; and
 8. That the dates of April 28 and April 29 are set for the General Plans Public hearing on the Nicholson and Twinbrook Stations and related alignment and on the Rockville and Shady Grove Stations and related alignment and storage and inspection yard; and

BE IT FURTHER RESOLVED that the Board of Directors finds that the proper and timely performance of its functions requires that this resolution be, and it is hereby, effective immediately.

BOARD CONSIDERATION OF PUBLIC HEARINGS ON ROCKVILLE ROUTE FROM TUCKERMAN LANE TO ROCKVILLE, AND ON SHADY GROVE EXTENSION, ROUTES A-14-16:

Mr. Platt referred the Board to furnished copies of the staff's February 10 report and General Manager's covering memorandum on the December 9 and 10 public hearings on the Rockville Route, Routes A-14-16. Mr. Platt noted that this matter had been deferred on February 27 for further review with the Montgomery County staff on the proposed resolution presented by Mr. Barnett at the February 27 meeting. Mr. Platt presented a summary of activities to date. He noted that the hearing material was distributed to the Board on January 6, 1975 and the staff report on February 10, 1975. On the same date copies of the staff report were mailed to witnesses who submitted statements for the hearing record, oral or written. He noted that the witnesses were asked to submit comments in response to the staff report. He stated that no comments had been received.

Mr. Platt reported that meetings had been held with the Montgomery County staff and summarized the proposed resolution which had been amended as result of those discussions. Mr. Platt covered the recommendations and cost information relative to each station and the Shady Grove extension. In response to questions Mr. Platt discussed the justification for the staff position as contained in the proposed resolution regarding the allocation of the various costs as a system cost or local add-on cost for the Nicholson Station and Shady Grove extension.

Mr. Platt noted that agreement had been reached to delete from the February 27 proposed resolution the request that net revenue gains be capitalized and credited to the County for the extension.

Mr. Tucker questioned whether the application of the add-on policy was being handled the same as for the second entrance for the U Street Station. Mr. Platt responded that the County is paying for the second entrance and passageway which were in addition to the facilities listed in the May 10, 1971 Resolution.

Mr. Sickles stated that his concept of the purpose of add-on costs was to cover the cost of additional facilities such as additional escalators, entrances and similar facilities and not for the purpose of funding extensions to the basic system. He stated that the approval of the resolution could be considered a precedent which may have to be broken in case of future extensions to the basic system. He stated concern over setting a precedent which might preclude Federal participation in the funding of future extensions.

Following further discussion, Mr. White moved, seconded by Mr. Barnett that the Resolution be adopted as furnished and amended by Mr. Munsey, which motion was unanimously passed. The Resolution reads as follows:

WHEREAS, the Adopted Regional System of the Washington Metropolitan Area Transit Authority provides for alignment of the rail line from the vicinity of Tuckerman Lane to the City of Rockville and provides for rail transit stations to be located on the Rockville Route in the vicinity of Nicholson Lane, Halpine Road, and Park Road in the City of Rockville, and a proposed storage and inspection yard to be located in the City of Rockville beyond the Rockville Station; and

WHEREAS, the Adopted Regional System was modified in 1970 at the request of Montgomery County to move the Twinbrook Station from north of Halpine Road to a location south of Halpine Road, designation as ARS-Modified; and

WHEREAS, WMATA was directed by the Montgomery County Council on November 20, 1973 to proceed with the preparation of General plans for a terminal station and storage and inspection yard in the City of Rockville, and alternatively for an extension of the Metro Route and the relocation of the terminal station and storage and inspection yard to the vicinity of Shady Grove Road; and

WHEREAS, on February 26, 1974, WMATA was requested by the Montgomery County Council to prepare preliminary plans for alternative rail transit station sites in the vicinity of Nicholson Lane and in the vicinity of Twinbrook Parkway; and

WHEREAS, on December 9, 1974, WMATA held a public hearing on the Environmental Impact Statement prepared for that segment of the Rockville Route north of the Grosvenor Station to the terminal location in the City of Rockville, including a consideration of alternative locations of the Twinbrook Station or its elimination from the system; and

WHEREAS, on December 10, 1974, WMATA had a public hearing on the Environmental Impact Statement prepared for the proposed extension of the Rockville Route from the City of Rockville to the vicinity of Shady Grove Road; and

WHEREAS, on February 11, 1975, the WMATA staff report was distributed to the Montgomery County Council and Montgomery County Executive; and

WHEREAS, on February 25, 1975, the Montgomery County Council adopted Resolution 8-130 recommending the ARS alignment from the Grosvenor Station to the Rockville Station; the location of the Nicholson Lane, Twinbrook and Rockville Stations; and the extension of the system to the vicinity of Shady Grove Road, including the relocation of the storage and inspection yard from the City of Rockville,

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Washington Metropolitan Area Transit Authority:

1. That the Nicholson Lane Station be located north of planned Marinelli Road and its western extension and designed with surface facilities on both sides of Rockville Pike at system cost; and
 - a. That an underground passageway and second entrance connecting the facilities shall be provided at the expense of Montgomery County at a cost not to exceed \$2.3 million; and
 - b. That 500 parking spaces be provided on each side of Rockville Pike but that the General Plan shall show land acquisition sufficient to accommodate a future expansion of 1000 parking spaces on each side of Rockville Pike; and
 - c. That cost estimates be prepared for the future expansion of the parking facilities from a total of 1000 to a total of 2000 parking spaces.
2. That the Twinbrook Station be located at the ARS-Modified site south of Halpine Road;
 - a. That an alternative design for the east side be prepared in preliminary form for the General Plan public hearing that will relocate the parking, bus, and kiss-n-ride facilities so as to buffer the Twinbrook community, and as part of this design, a connection be provided to Ardennes Avenue which would be closed to vehicular traffic south of Halpine Road; and

b. That an adjustment of the amount of parking be accomplished between the west side and east side so as to eliminate the need to relocate Chapman Avenue; and

c. That an alternative design for the west side be prepared in preliminary form for the General Plan public hearing that would provide bus facilities other than a curb-drop design.

3. That the Rockville Station be located immediately south of Park Road with off-street station facilities located on both sides of the B&O/C&O Railroad; and

a. That surface parking for 500 cars be provided but that an estimate for a 1000 car parking structure be prepared for comment at the General Plan public hearing; and

b. That the station design provide for an interface between the Metrorail and commuter rail services; and

c. That the staff of WMATA is hereby directed to cooperate with the City of Rockville Historic District Commission regarding the preservation and relocation of the existing Rockville Railroad Station; and

d. That the staff of WMATA is directed to accelerate its land acquisition and parking facilities construction on the east side of the Railroad so as to maintain uninterrupted commuter rail station operation by relocating such operations prior to Metro construction on the west side; and

4. That the ARS alignment from the Grosvenor Station to the Rockville Station be approved.

5. That the extension of the Metro Route A from the City of Rockville to the Shady Grove Road vicinity, including the relocation of the storage and inspection yard from the City of Rockville to the Shady Grove Road vicinity is hereby approved subject to the Interstate Highway Fund transfer as set forth in Section 5b; and

a. That the estimated costs of said extension shall include the replacement of lost access created by the closing of Frederick Road and Westmore Road; and

b. That the estimated costs of the Shady Grove extension be funded by the timely Federal approval of the State of Maryland/Montgomery County request for an Interstate Highway Fund transfer; and

6. That the Chairman is hereby authorized to execute the Memorandum of Understanding on the substitution of the Shady Grove extension as a Public Mass Transit Substitute Project within Montgomery County; and

7. That the Authority prepare the formal UMTA grant application for the substitute project as outlined in the Memorandum; and

8. That the dates of April 28 and April 29 are set for the General Plans Public hearing on the Nicholson and Twinbrook Stations and related alignment and on the Rockville and Shady Grove Stations and related alignment and storage and inspection yard; and

BE IT FURTHER RESOLVED that the Board of Directors finds that the proper and timely performance of its functions requires that this resolution be, and it is hereby, effective immediately.

Ayes: 5 - Mr. Alexander, Mr. Tucker, Mr. White, Mr. Munsey and Mr. Barnett.

Noes: None.

AUTHORITY TO INITIATE PROCUREMENT ACTION FOR DESIGN OF SECTION A-14 (3A0141), NICHOLSON LANE STATION:

Mr. Dodge referred the Board to furnished copies of Procurement Action No. 1, Contract No. 3A0141, requesting authority to initiate procurement action for a fixed price contract for preparation of plans and specifications for Section A-14 of the Rockville Route for one structural, one station finish, one landscaping and two parking lot contracts.



The Maryland Historical Trust

Shaw House, 21 State Circle, Annapolis, Maryland 21401
301: 267-1212 or 301: 267-1438

November 16, 1976

Mr. Vernon K. Garrett, Jr.
Director
Office of Engineering
Washington Metropolitan Area Transit
Authority
600 Fifth Street, N.W.
Washington, D.C. 20001

RE: Historic Preservation
Compliance WMATA Route
A-17

Dear Mr. Garrett:

The State Historic Preservation Office has reviewed the information of November 9, 1976, concerning the impact of Metro construction on historic sites in the vicinity of the A-17 (Shady Grove Station and Line) section and concurs with your determination of no effect for all sites except that the effect of increased traffic on the West Montgomery Avenue Historic District should be addressed.

I understand that archaeology will be treated separately as a result of your archaeological survey.

Sincerely,

John N. Pearce
State Historic Preservation
Officer

NAM/JNP/njm

cc: Ms. Eileen McGuckian
Mrs. Mary Ann Kephart
Mr. Michael Dwyer
Ms. Ellen Ramsey





The Maryland Historical Trust

Shaw House, 21 State Circle, Annapolis, Maryland 21401

301: 267-4212 or 301: 267-4438

267-2212 267-2438

Mr. Vernon K. Garrett, Jr.
Director
Office of Engineering
Washington Metropolitan Area Transit
Authority
600 Fifth Street, N.W.
Washington, D.C. 20001

March 7, 1977

Re.: Historic Preservation Compliance
WMATA Project A-17

Dear Mr. Garrett:

Thank you for the answers to my questions concerning potential traffic impact generated at the Shady Grove Station on the West Montgomery Avenue Historic District. After considering the matter I concur with your determination of no effect.

Sincerely Yours,

John N. Pearce
State Historic Preservation
Officer

NAM:JNP:bjn
cc: Ms. McGuckian
Mrs. Kephart
Mr. Dwyer
all with copy of letter from
Mr. Garrett

Enclosure





Montgomery Soil Conservation District

6110 Executive Boulevard - Rockville, Maryland 20852 - Telephone: 770-0416

REVISED
January 9, 1976

4

TO WHOM IT MAY CONCERN

ON-SITE STORM WATER MANAGEMENT POLICY

Background

The Maryland Sediment Control Act of 1970 requires Montgomery Soil Conservation District (MSCD) approval of sediment control plans in connection with clearing, grading and land development prior to the start of any clearing and/or grading.

The Attorney General of Maryland, in an opinion forwarded to the Director, Maryland Department of Water Resources by letter dated April 6, 1971, interprets the Maryland Sediment Control Act to include control of off-site erosion and subsequent sedimentation resulting from increased storm water runoff generated by development.

In June of 1971, the MSCD adopted a policy requiring the developer to manage the storm water runoff from his property to reduce the hazard of off-site erosion and resultant sedimentation following development. Included as an attachment to that policy, was the "Interim" Storm Water Management Criteria which the District had adopted.

Over the past 4 years and in particular during the past 10 months, the Supervisors of the MSCD have had the opportunity to evaluate the 1971 policy and its effectiveness. Their evaluation has indicated that the policy was very effective in most cases in preventing erosion and subsequent sedimentation, however, it also uncovered certain weaknesses and needs of the storm water management policy, which is directed at improving both the program and environment.

New Policy and Effective Date

On January 9, 1976, the Supervisors of the MSCD adopted the following storm water management policy and accompanying criteria. The old storm water management policy adopted in 1971 will be cancelled on April 30, 1976. This new policy will take effect on May 1, 1976. Therefore, all development plans initially submitted to the MSCD for approval after May 1, 1976, shall include provisions for on-site storm water management which satisfy the attached criteria.

General Definitions, Interpretations and Considerations

For purposes of clarity and administrative efficiency, the following statements shall apply to this policy and the resultant plans developed under the policy:

- A. Institutional developments shall be defined as: churches, cemeteries, rescue squads, fire departments, hospitals, libraries, schools, day care centers, nursing/convalescence homes, recreational facilities and their related buildings and parking lots.
- B. All parking lots, as conventionally constructed, shall be considered impervious and therefore included in the impervious area considerations. (Specially designed treatments with proven results and accompanying supportive documentation may be considered pervious.)
- C. Building on or resurfacing already impervious areas shall NOT require storm water management NOR shall it be included as an addition of impervious area.
- D. Impervious area calculations for buildings shall include all overhanging projections such as eaves, canopies and porticoes.
- E. Special consideration will be given to those cases where adequate off-site storm water management facilities provide the required control. In such cases on-site storm water management may be waived by the District provided that the delivery system, from the developing site to the off-site storm water management facility, is adequately protected against erosion. A letter requesting a waiver, along with supportive information and data must be submitted to the District.

Exemptions

Under this policy, the only developments exempt from the MSCD's storm water management requirements are:

1. Any minor land disturbing activity involving less than 500 cubic yards of earthwork and less than 5,000 square feet of disturbed area, and which is promptly stabilized to prevent erosion and sedimentation.
2. Any land disturbance which will qualify the owner to use the "Standard Sediment Control Agreement for Small Land Disturbing Activities on a Single Lot or Parcel" as approved by the MSCD and administered by the Department of Environmental Protection and/or other applicable municipal agencies.
3. Accepted agriculture land management practices such as: plowing, and construction of agricultural structure; and, nursery operations such as the removal or transplanting of cultivated sod, shrubs and trees and tree cutting at or above existing ground, and logging operations leaving the stump, ground cover and root not intact.

4. Individual private septic systems which do not alter the natural terrain.
5. Subdivisions consisting of lots with a minimum lot size of 2 acres or greater, however, the MSCD encourages that ponds be given due consideration on subdivisions of this size.

Waiver Categories

The development categories listed below identify those developments for which the MSCD will consider granting a waiver of the requirements for storm water management.

- A. Subdivisions of detached single family residential developments:

<u>Minimum Lot Size</u>	<u>Maximum Subdivision Size</u>
1 acre	10 acres
1/2 acre	5 acres
15,000 square feet	2 acres
9,000 square feet	2 acres
6,000 square feet	2 acres

- B. Subdivisions of multi-family residential developments:

Subdivision developments which total 2 acres or less.

- C. Institutional developments:

Developments in which there is 2 acres or less of disturbed area and, included therein, 1 acre or less of impervious area.

- D. Industrial and commercial developments:

Developments in which the total disturbed area is 30,000 square feet or less and, included therein, 15,000 square feet or less of impervious area.

NOTE: Any new projects which are additions, extensions and/or modifications to those developments listed in the above categories which have been granted a prior waiver under this policy shall be required to provide storm water management for the entire site when the acreage limitations listed for each are exceeded by the subsequent addition, extension and/or modification thereto.

Owners who have projects falling within these categories and who desire not to provide storm water management for the site must request, in writing, that the requirements be waived. (See Appendix A for sample letter to be used.) Each request will be considered individually by the District, and the owner (and engineer) will receive a written reply from the MSCD within 30 days informing him of the action taken.

It should be noted that in reviewing the waiver application, all storm drainage outfalls, receiving channels and channel capacities, velocities and other related storm drainage discharge considerations will be closely examined to determine the need for additional outfall treatment and channel protection needs. Further, the owner shall furnish the District a "declaration of adequacy" which may be obtained from the Montgomery County Department of Transportation or other appropriate municipal agencies prior to granting a storm water management waiver when adequacy of the receiving storm drain system is in question.

I. Hydrologic Criteria

All runoff shall be computed using the runoff curve number method. The peak discharges and volumes of runoff can be determined by using Chapter 2 of the SCS Engineering Field Manual or by using TR-55 "Urban Hydrology for Small Watersheds".

To determine the Q_o (allowable peak release rate) and V_s (required volume of storage), the before and after development hydrologic computations will be performed. The before-development peak Q for the 2-year storm will be the maximum allowable release rate for the after-development 2-year storm. The computations for after-development will yield the Q_i (peak Q into the structure) and V_r (total volume of runoff). Given Q_o , Q_i , and V_r , the required volume of storage (V_s) can be determined by using the routing curves in Chapter 11 of the SCS Engineering Field Manual. If needed, the more detailed flood routing procedures as presented in Section 4, SCS National Engineering Handbook, shall be used.

If the storm water management structure is considered a pond, additional criteria as outlined in Engineering Memorandum MD-2 and SCS Standard 378 shall be met. Additional information and references regarding the design of ponds can be obtained by using the "Storm Water Management Pond Design Manual" prepared by the Maryland Association of Soil Conservation Districts.

Rather than providing a single established runoff curve number for all land uses in the county, the following before-development conditions have been established by the MSCD for the following land use conditions and hydrologic soil groups:

Cropland

All cropland shall be considered as contoured, no-till row crops, good hydrologic conditions.

<u>Hydrologic Soils Group</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Runoff curve number	62	71	78	81

Pasture and Range Land

Pasture and range land shall be considered to have no mechanical treatment, good hydrologic condition.

<u>Hydrologic Soils Group</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Runoff curve number	39	61	74	80

Woodland

Woods shall also be considered to be in good hydrologic condition.

<u>Hydrologic Soils Group</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Runoff curve number	25	55	70	77

Meadow or Idle Land

Idle land will use the runoff curve numbers given for meadow, good hydrologic condition.

<u>Hydrologic Soils Group</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Runoff curve number	30	58	71	78

These runoff curve numbers listed above were selected from Chapter 2, page 2-30.4, SCS Engineering Field Manual. They also correspond with page 2-5, TR-55, Urban Hydrology for Small Watersheds. For land areas outside of the proposed development such as off-site drainage areas, the appropriate runoff curve number will be selected from Chapter 2 (page 2-30.4) SCS Engineering Field Manual or TR-55.

II. Documentation and Certification

All plans must be prepared in sufficient detail, with references to appropriate Standards and Specifications, to ensure understanding by those responsible for construction as well as by the county or municipal inspector charged with ensuring construction as per design. (See Appendix B for required certification statements.) Changes in design, or deviations from design during construction, without prior approval of the Montgomery Soil Conservation District, will not be permitted.

The individuals preparing the on-site storm water management plan(s) shall certify on the plan that the design meets the requirements of the MSCD storm water management criteria. This certification shall appear on the first sheet only with the first sheet referencing all other sheets (i.e., sheet 1 of 4). The owner shall certify on the first sheet that all clearing, grading, construction and development will be ~~done~~ strictly in accordance with the plan(s) as approved, or amended and approved by the District. (See Appendix B for required certification statements.)

Storm water management plans which include measures located on public lands or public improvements shall have the approval of the appropriate public agency prior to MSCD approval.

Plans which are not properly documented and certified, or which do not in fact reflect current on-site conditions or support the certification, will be rejected.

III. Maintenance

The responsibility, and sufficient funding, for maintenance must be agreed upon by the appropriate governmental agency prior to approval of any of the above described methods on public land. A letter accepting this maintenance responsibility, signed by the appropriate responsible agency head, must be submitted with the plan. On private land, the owner must accept this responsibility and provide for maintenance. (See Appendix B for required maintenance statement.)

REQUEST FOR STORM WATER MANAGEMENT WAIVER

Name (of Owner): _____
Address: _____

Phone: _____
Engineer: _____
Re (Site Name): _____
Waiver Category: _____

I hereby request that the Montgomery Soil Conservation District waive the requirement for storm water management for the above named site. I believe that my development falls into the waiver category indicated above based on the following information which I hereby certify as being accurate.

Proposed amount of disturbed area: _____ Acres

Proposed amount of impervious area: _____ Acres

I understand that if any changes are made in the above figures, I will notify the Montgomery Soil Conservation District in writing.

I further understand that I will receive written notification from the Montgomery Soil Conservation District informing me of the status of this request within 30 days.

Date

Owner's Signature

Attachment: Site development plan showing existing and proposed grading, including information concerning the outfall and receiving downstream conditions.

REQUIRED CERTIFICATION STATEMENTS

Owner's Certification:

"I/We hereby certify that all clearing, grading, construction and/or development will be done pursuant to this plan."

_____ Date

_____ Owner's Signature

Design Certification:

"I hereby certify that this plan has been prepared in accordance with the 'Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas', MSCD 'On-Site Storm Water Management Policy' and the 'Storm Water Management Criteria' dated January 9, 1976, and Montgomery County Department of Transportation 'Interim Storm Drain Design Criteria' dated July 1, 1968."

_____ Date

_____ (P.E. or R.L.S.)
Registration No. _____

On Sites Where Infiltration is Used, This Note MUST appear on the Plan:

"I hereby submit supportive data regarding the infiltration capacity and certify that an on-site investigation was made and this investigation has indicated that the proposed location for the storm water management infiltration structure has sufficient soil depth and the soil has acceptable infiltration capacity."

_____ Date

_____ Registration No.

_____ Date of On-Site Investigation

Maintenance Certification on Private Lands:

"I hereby certify that I assume maintenance responsibilities for all storm water management structures shown hereon. If maintenance responsibility is legally transferred, I agree to supply the MSCD with a copy of the document (signed by both parties) transferring said maintenance responsibility."

_____ Date

_____ Owner's Signature

SUMMARY OF THE PLAN FOR SHADY GROVE

2.1 INTRODUCTION

Land use, transportation, and environment are the key elements of the plan. This chapter includes a summary of recommendations for each of these elements. This summary is followed by a discussion of the need for a sector plan, in light of the development activity that the Shady Grove area is experiencing. The chapter concludes with a description of issues that confront Shady Grove.

2.2 RECOMMENDATIONS

2.21 Land Use

- Confirm the basic land use patterns recommended in the Gaithersburg Vicinity and Rock Creek Master Plans.
- Modify the recommendations of the Rock Creek Master Plan concerning the Shady Grove area to reflect the master plan relationship to the sector plan proposals.
- Provide rezoning in stages, to light industrial uses, as the road system is developed to accommodate increased traffic.
- Maintain the plan for commercial centers, rather than allowing strip commercial development.
- Maintain the plan for low-density residential areas, along with light industrial areas, around the proposed Metro station.
- Preclude the development of Shady Grove as a competing urban core between the Cities of Rockville and Gaithersburg.
- Provide a mechanism to assure unified, cohesive design and landscaping for the development of this area as a pleasing transition between Rockville and Gaithersburg, while allowing existing and future Shady Grove communities to retain their own identities.
- Schedule the construction of major public facilities (for example, sewer, water, and roads) to prevent a major lag in services and to assure their efficient development.

2.22 Transportation

- Develop all modes of transportation to the Metro station, including commuter rail service and Metro bus service, as well as facilities for bicycles, pedestrians, and cars, and the feasibility of Dial-a-Ride service.

- Reduce local traffic congestion by providing a limited-access road from I-270 to the Metro station.

- Keep roads serving industrial development separate from roads serving residential areas, where possible.

- Provide a transit easement, or right-of-way, through Gaithersburg to Germantown, adjacent to the B & O Railroad, for the future expansion of Metro or other public transportation.

- Provide a system of bikeways, as shown in Figure 18.

- Modify primary and arterial roads as shown on the Highway Plan (see folded map in back cover).

2.23 Environmental

- Minimize air pollution by providing a highly accessible public transportation system.

- Provide adequate facilities to manage both the quantity and quality of storm-water runoff from the area above Redland Road and to provide protection for the remainder of the Crabb's Branch stream valley.

- Modify land use recommendations in areas of potential noise pollution, wherever possible.

- Recognize natural constraints, especially in the preparation of land use recommendations.

2.3 SHADY GROVE IN TRANSITION

Shady Grove is characterized by open farmland and low-density residential development. Dense residential or commercial development is not proposed for the area (see Figure 1, Regional Map). The development policies established in the sector plan comply in this respect with the intent of "... On Wedges and Corridors," the county's General Plan.

Migration to this area is recent. Because of the low-density and the abundance of open space, Shady Grove has been found quite desirable by families moving from down-county and other more urban areas. The migration to Shady Grove, of course, has resulted in a decrease in open space. Residents are increasingly concerned about the impact of newcomers on the area's available space and services. All are especially concerned about an adequate road system, and many are worried about the identity of their community.

The trend toward less open space can be seen in the area's zoning and development history. Farms were predominant in the area until 1950 when a rapid change to residential development began. Ninety percent of the present homes were built after 1950; and over 50 percent since 1965. It is expected that by 1984

residential development will be complete. The Shady Grove area is now beyond the halfway mark in transition from farmland to residential communities.

Change is also apparent in employment, in the environment, and in transportation. In employment, the shift is from farming and related occupations to industrial and office jobs. About nine percent of the ultimate zoning capacity of the area for commercial and industrial employment is in use at present.

Change in the environment is indicated by the increase in developed land. More intensive development affects air quality, storm-water runoff, quality of streams, community image; hence, the area's environment.

The transition from two-lane country roads to higher-capacity suburban roads has begun. The construction of Shady Grove Road Extended is one example.

Development by the private sector--residential, commercial, and industrial--has been under way for 15 to 20 years and is about 18 percent complete. By 1984, approximately 75 percent will be developed.

Public sector development, on the other hand, characterized by schools, roads, and parks, is only 14 percent complete. The result is a lag in public services. Some of the difficulties this creates, however, can be abated by the proper timing of the construction of facilities critical to the area. With Metro coming to the area, certain facilities--primarily access roads to the Metro station--become critical (see Figure 3, "Proposed Major Public Projects").

2.4 THE FUTURE: ISSUES FOR PLANNING

2.41 Introduction

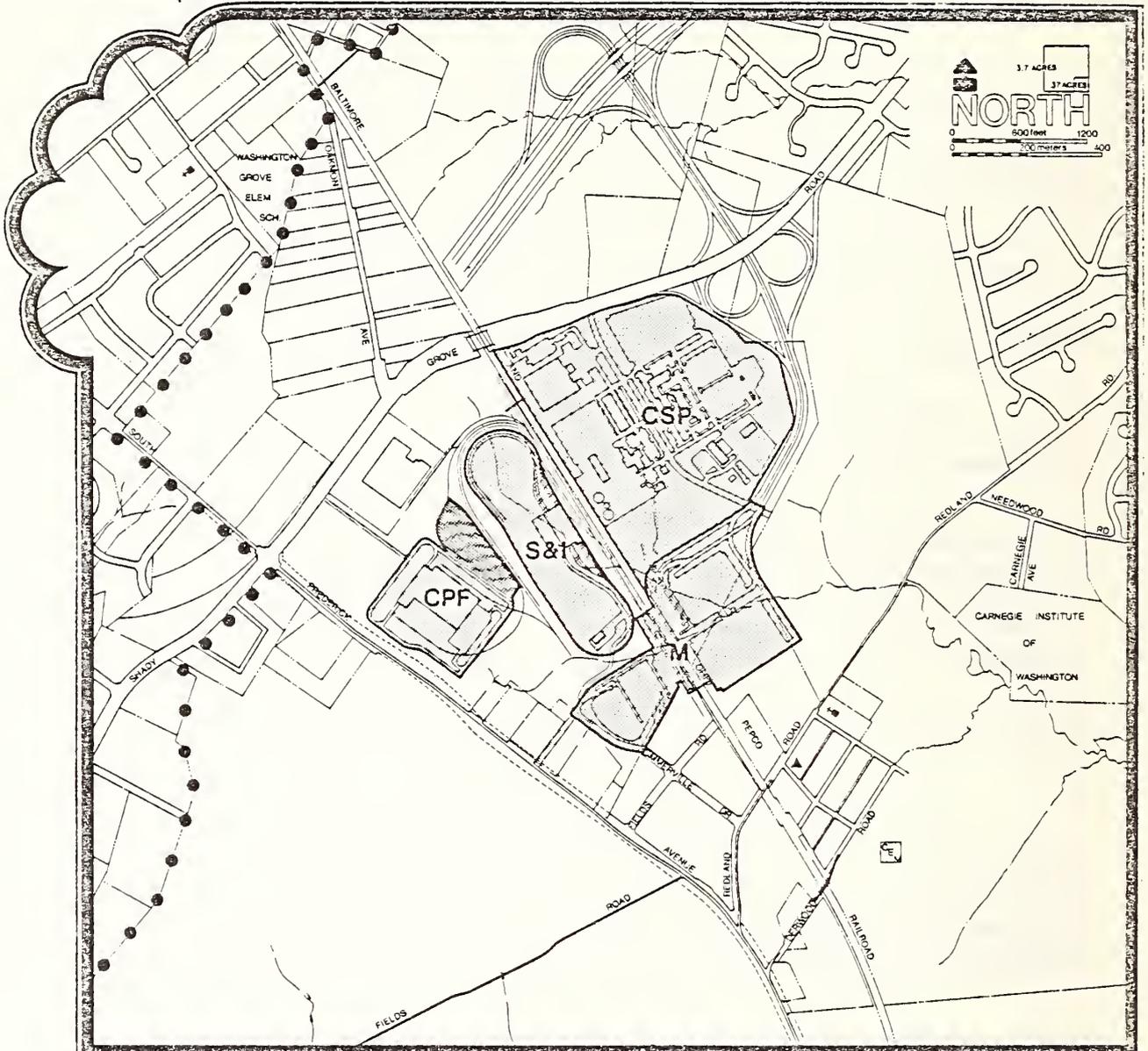
The significance of the change that will occur in the Shady Grove area requires clear identification of the issues facing the community.

Due to the presence of Metro and the proposed major road network, Shady Grove will become more accessible. This greater accessibility, along with the location of many regional and county facilities, will create enormous pressures for denser development than that which is recommended in the county's general plan.

Additionally, rapid change of an area that is presently farmland with scattered subdivision development to a low-density residential and light industrial nature may result in even greater lag in the provision of adequate public services and in a chaotic distribution of development mixed with open space. Rapid change may also bring with it potential for the loss of identity by older, established communities and for development of an amorphous "Shady Grove" community.

Pressure for light industrial development in Shady Grove is felt, as well, from the proximity of similar development along I-270 and along Shady Grove Road from I-270 to Md. 355. This pressure must be reconciled with the General Plan, which portrays Shady Grove as an area of partly industrial, partly low-density residential development. The challenge is to maintain residential integrity while meeting industrial employment needs.

FIGURE 3



-  Proposed Public Projects
- CSP County Service Park
- CPF Central Processing Facility
- S&I Storage & Inspection Yard
- M Metro Station
- Sector Plan Boundary

**Proposed
Major
Public
Projects**

SHADY GROVE
SECTOR PLAN
THE MONTGOMERY COUNTY PLANNING BOARD

2.42 County Service Park

Montgomery County has proposed a multi agency 130-acre development scheme along Shady Grove Road Extended, immediately east of the B & O Railroad tracks, which includes the following county facilities:

- County government liquor warehouse, including offices, warehousing, and distribution facilities;
- County government road maintenance and construction depot;
- M-NCPPC park maintenance depot serving the east-central region of the county;
- Department of Education regional transportation bus storage facility and its central transportation repair and maintenance facilities.

Issues involved in the development of this County service park are:

- Appropriate zoning for the county service park;
- Compatibility with existing and proposed development;
- Impact on traffic circulation patterns;
- Control of noise pollution;
- Compliance with urban design recommendations;
- Impact on Crabb's Branch stream caused by storm-water runoff; and
- Scheduling of development to coincide with the development of other public facilities.

2.43 Metro Transit Station

A 96-acre site is proposed for a Metro transit station immediately south of the county service park. The area will also include a parking area for automobiles on both sides of the B & O Railroad and for adjacent Metro storage and inspection yards west of the B & O Railroad.

Issues of concern in the development of the Metro station area are:

- Access to patrons traveling south on I-270, Md. 355, and the Eastern Arterial roadway as well as to nearby residents;
- Visual compatibility with existing commercial and residential communities;
- Impact on peak-hour traffic volume;
- Implications for development in the immediate area surrounding the station;

- Architectural characteristics of the station.

2.44 Metro Access Road/Outer Beltway

A direct Metro access road is proposed using the outer beltway right-of-way, originating a I-270 north of the existing Shady Grove Road interchange and terminating at the Metro station parking facility. The proposed roadway (I-370) will provide direct access to the Metro station without interfering with local traffic circulation patterns. An interchange with the proposed Shady Grove Road is also planned. Use of the access road may be expanded in the future for cross-county travel as part of an outer beltway.

Issues to be addressed in development of the Metro access road are:

- Scale of roadway construction;
- Effect of construction on Shady Grove traffic patterns;
- Impact of the road itself on the safety, appearance, and traffic flow in adjacent residential communities; and
- Potential for eventual expansion of the road as part of the proposed outer beltway.

2.45 Central Processing Facility

The County Executive and the County Council have chosen a site on Md. 355, in the vicinity of the Sears warehouse, for the solid waste central processing facility.

Issues of concern that emanate from the proposed facility are:

- A possible change in the character of the Shady Grove Road area from light to heavy industrial uses;
- Impact of trash trucks traveling past residential communities close to the facility;
- Visual appearance from Md. 355, adjacent residential communities, and Shady Grove Road;
- Possibility of noise pollution; and
- Design and landscaping of the facility.

2.46 Maryland Route 355

Maryland 355 is scheduled for improvement to a six-lane, divided highway in the State of Maryland Capital Improvement Program for Fiscal Years 1975-1977.

Issues to be addressed regarding this change in the highway's character include:

- Timing of necessary construction and its completion;
- Containment of strip commercial development;
- Construction of a bikeway system; and
- Provisions of landscaping.

2.47 Redland-Fields Roads

The Montgomery County Capital Improvements Program for Fiscal Years 1975-1978 provides for the extension of Fields Road from Md. 355 to Redland Road. Fields Road will be upgraded to include curbs, gutters, sidewalks, a bike lane and a bridge over the B & O Railroad.

Issues of interest in the Redland-Fields Road plan are:

- Impact on safety, appearance, and traffic flow in adjacent residential communities; and
- Timing of construction and completion;
- Extension of Fields Road west from its intersection with Md. 355, through the King Farm, to Piccard Drive. (See Figure 18. "Proposed Highway Plan.")

2.48 Urban Design

Shady Grove will be the scene of widely diverse types of development--from single-family residential to commercial, light industrial, and perhaps office uses--constructed by both the public and the private sector. There is great likelihood that, unless carefully planned and developed, the total area may appear discordant and "cluttered" with buildings.

Issues presented by the area's over all design include:

- Guidelines for the design of nonresidential structures in Shady Grove;
- A harmonious landscaping pattern;
- Flexibility in the expression of personal taste; and
- Maintenance of the present identify of established communities.

Mr. M. 7

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

600 Fifth Street N.W., Washington, D. C. 20001

(202) 637-1234



JAN 12 1977

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Mr. Daniel R. Duff
Attorney Advisor
Urban Mass Transportation
Administration
400 Seventh Street, S. W.
Washington, D. C. 20550

Re: UMTA Phase B-2
Grant No. IT-23-900 (B)

Dear Mr. Duff:

Transmitted for your information and use is a copy of the December 8, 1976 transmittal letter to the Maryland State Historic Preservation Officer with the "Archaeological Survey of the Metro Rockville, Glenmont, New Carrollton and Addison Routes in Maryland".

The archaeological survey was performed by the Thunderbird Research Corporation of Front Royal, Virginia. The survey was conducted in compliance with the requirements of Section 106 of the National Historic Preservation Act and Executive Order 11593.

The results of the survey showed that these routes will have no effect on any known archaeological sites.

Very truly yours,

Vernon K. Garrett, Jr.
Director
Office of Engineerin

Attachment
as stated



DEC. 8 1976

Mr. John N. Pearce
State Historic Preservation Officer
The Maryland Historical Trust
21 State Circle
Annapolis, Maryland 21401

Re: Compliance with the Requirements
of Section 106 of the National
Historic Preservation Act and
Executive Order 11593

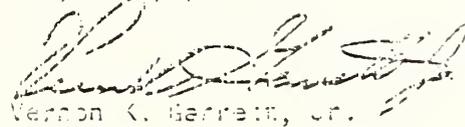
Dear Mr. Pearce:

Transmitted herewith are ten copies of "An Archaeological Survey of the Washington Metropolitan Area Transit Authority's Rockville, Glenmont, New Carrollton and Addison Routes in Maryland", in compliance with the requirements of Section 106 of the National Historic Preservation Act and Executive Order 11593. Two Metro Routes in Maryland, the Greenbelt Route and the Branch Route, were not covered by the report as their alignments are not firm at this time. When those routes are in a more definite posture, they will be studied from an archaeological standpoint and the results included in future 106 determinations.

Based upon Dr. Gardner's report and in accordance with the criteria of effect in 36 CFR 600.5, it is the determination of the Authority that our undertakings in the State of Maryland for the Rockville (A), Glenmont (B), New Carrollton (C) and Addison (G) Routes will have no effect on any known archaeological sites, and that the study and investigation complies with the 1966 National Historic Preservation Act and Executive Order 11593.

It is hoped that you will concur in our determination and finalize the review process on the previously submitted 106 reports covering impacts on historic properties in Maryland.

Very truly yours,



Vernon K. Barnett, Jr.
Director
Office of Engineering

Enclosure
as stated



THUNDERBIRD RESEARCH CORPORATION
A Non-Profit Corporation
ROUTE 1, BOX 212-D
FRONT ROYAL, VIRGINIA 22630

DR. WILLIAM M. GARDNER Phd.
President

AN ARCHEOLOGICAL SURVEY OF THE WASHINGTON METROPOLITAN
AREA TRANSIT AUTHORITY'S ROCKVILLE, GLENMONT,
NEW CARROLLTON AND ADDISON ROUTES IN MARYLAND

FINAL REPORT

INTRODUCTION

The purpose of this transmittal is to report on the results of an archeological site reconnaissance along four of the Washington Metropolitan Transit Authority's rapid rail transit routes (Map 1). These routes, Rockville, Glenmont, New Carrollton and Addison, lie in Montgomery and Prince George's County, Maryland. The area surveyed was restricted to these four right-of-ways with the outer borders being the termini of the respective routes, and the inner border corresponding to the District of Columbia boundaries.

Events leading up to this reconnaissance began in April, 1976, when Mr. Roy T. Dodge, chief of design and construction for the Authority, contacted Dr. William M. Gardner, President of the Thunderbird Research Corporation inquiring as to his interest, availability and capability for performing an archeological reconnaissance of the above mentioned segments of the rapid rail transit system. Following correspondence in May which expressed Dr. Gardner's desire to undertake the project, a meeting in late September between Dr. Gardner and Mr. Royce A. Drake resulted in the request for submission of a proposal by the Thunderbird

Research Corporation. This proposal which outlined what the TRC would do was submitted in early October and on October 15, Dr. Gardner was given notice to proceed. The reconnaissance took place during the last week of October and the first week of November.

Methodology and Results

The methodology employed for this survey was similar to that utilized in previous surveys of this nature undertaken by the Thunderbird Research Corporation. The initial basic step, which took place in the proposal stage, was the outlining through map studies of areas which had a high probability of containing prehistoric sites. The corridors all lie in the easternmost fringes of the Piedmont physiographic zone and the only streams crossed are 2nd and 3rd order. The usual expectation for archeological sites locations in the Piedmont are along or adjacent to such streams in the general proximity of specific sets of lithic raw materials. In this particular area of the Piedmont, the raw materials are cobbles from the Pliocene Potomac, quartz outcrops, and steatite beds. Cobbles are ubiquitous. Quartz intrusions are rather common. Steatite outcrops are less common. These latter two are hard to predict from map study alone. Streams on the other hand are readily discerned on natural feature topographic maps such as those printed by the U. S. Geological Survey. Accordingly the site prediction model was heavily biased in the direction of streams.

Eight areas were singled out as being the highest probability locations.

These were:

Rockville Route—The area of Grosvenor Station which is on high ground fairly close to Rock Creek and near the head of

two springs of streams which lead into Rock Creek; along Rock Creek where the footings etc. for the aerial route crosses that Creek; and at Shady Grove Station which lies on higher elevations adjacent to Crabb's Creek.

Glenmont Route—The area of the Glenmont Storage Yard which is located in what is an undeveloped area in the midst of heavy suburban development on a relatively high topographic surface between Northwest Branch and Rock Creek; and at the Wheaton and Forest Glenn Stations which are located on topographic highs between Rock Creek and Northwest branch and Sligo Creek.

New Carrollton Route—The entire route since it follows terraces and floodplain of Beaverdam Creek and the Landover Station which was near a site designated on the Potomac River Site Maps as S-19.

The next step was archival and background research. The following sources were contacted:

Mr. Tyler Bastian, Maryland State Archeologist
Dr. Charles McNett, American University
Potomac River Consortium Files
Montgomery County Hall of Records
Michael Dwyer, Montgomery County Park Historian
Montgomery County Historical Society
John Walton, Prince Georges County Park Historian

It should be noted that in the compilation of the Potomac River Consortium Files undertaken in 1968-70 by Gardner and McNett, a number of sources were consulted which were not duplicated in this reconnaissance. These included the D.C. Public Library Washingtonian Collection; the Smithsonian Institution Archives, and all available archeological publications pertinent to the area going back to the 1850's.

Only one site was encountered during this search. This is S-19 (referring to Smithsonian Archives number) which was identified only as "Woodland" site, which if the identification is correct would date it to somewhere between 1000 B.C. and 1700 A.D. Although an exact location could not be ascertained

the general area of this site was visited and it lay outside the proposed Landover Station.

Following development of the predictive model and background and archival research, field investigations were initiated. This consisted of visits to all the high probability locations and where possible augering and excavation of two-foot test squares. In addition the entire length of those areas where surface disturbance was proposed were examined, again where this was possible. No archeological sites were encountered, either in the high probability areas or in any other location within the right-of-way. The closest archeological sites to impact areas were S-19, along the New Carrollton Route, and several possible sites reported to be in the Forest Glen Park area near the Glenmont Route. A general summary of each of the routes is given below.

Glenmont Route

The Glenmont Storage Yard is a wooded and essentially undeveloped area. Several streams occur in the area. The entire area was walked over and all surface exposures such as dirt roads, bare patches in the fields, erosional cuts, and stream banks were examined. In addition, several two-foot square test pits were excavated at various areas adjacent to the streams. Cobbles were visible in the stream bed and quartz chunks were found on the higher elevations in the field. No prehistoric artifacts were found.

The area between the Wheaton Station and the proposed Glenmont Storage Yard proved to be highly urbanized and developed. Most of the proposed Metro construction in this stretch will involve minimal surface disturbance. Driving and foot reconnaissance failed to locate any archeological sites or

any areas where archeological sites might be encountered in undisturbed context.

The area in which the Wheaton Station will be located is heavily urbanized making archeological reconnaissance virtually impossible. Two wooded areas, one on either side of Georgia Avenue, were found in the Forest Glen Station area. Surface reconnaissance and several two-foot square test units failed to locate any traces of archeological sites.

The final stretch of this corridor before the District line is between the Forest Glen and Takoma Stations. The Metro tracks are being laid within the Baltimore and Ohio tracks and any cultural resources which might have been located here, would have already been heavily disturbed.

Addison Route

With the exception of the Addison Road and Capitol Heights Stations, the Addison Route in Maryland will be a tunnel operation keeping surface disturbance to a minimum. These two stations are located within already well developed urban areas. The two stations have already been under construction for some time; therefore, any cultural resources located here would have already been destroyed.

Rockville Route

The Rockville-Shady Grove Route begins at the Shady Grove Station. An intensive surface survey of this area was undertaken. Construction of the station has already begun including the erection of the station itself and an adjacent parking lot which has been graded and paved. No evidence of archeological

material was found within the impacted areas and since the impact boundaries have already been reached in this area, no further testing was deemed necessary. Between the Shady Grove station and the Twinbrook station the Metro line follows the B & O Railroad Line running both adjacent to the B & O tracks and between them. The areas directly adjacent to and between the B & O tracks have already been disturbed by that railroad line and evidence of archeological resources were lacking.

Between the Twinbrook and Grosvenor stations the major operation is tunneling with little or no surface disturbance. However, between Grosvenor station and just south of Route 495, a high priority area adjacent to Rock Creek Park and a potentially good area for finding cultural material, serious and extreme surface disturbance has taken place in the process of erecting aerial pylons. Large holes have been made and fill piles abound. No archeological material was found in the backdirt piles.

Finally, from the Medical Center station to the D.C. line, tunneling will be the major operation and the areas above the tunnels are very urbanized, being those along Wisconsin Avenue. Within this area no evidence of cultural resources can be or were found.

New Carrollton Route

The New Carrollton route was by far the most disturbed of all the routes. Construction has been under way for approximately two years beginning with the Deanwood Station going right through to the New Carrollton station. For the most part the Metro line runs between the B & O railroad and the Pennsylvania railroad lines. For this reason, along most of this line the impacted areas are those that have already been disturbed by the two

previously mentioned railroad lines. However, there are several areas along this route that have been graded off for parking lots and power substations which are close to Beaverdam Creek and could potentially have been areas where cultural material would have been located. Beaverdam Creek itself has been disturbed. In many places, the course of the creek has been channelled into culverts and from the New Carrollton to Landover stations, is disturbed from original railroad construction and present grading efforts by Metro.

The site numbered S-19 by the Potomac River Consortium Survey, located approximately five hundred feet from the Landover Station, appears not to have been disturbed. While not pinpointed by this survey team, the fields in which the site is located have not been disturbed.

The only area where subsurface testing was done along this route was a topographically high area just north of the New Carrollton station where several proposed roads are to be put. No evidence of aboriginal occupation was found.

Recommendations

No archeological sites were encountered during the reconnaissance and on the basis of this none are expected. The absence of archeological sites in the predicted areas can be related to several factors. Prime among these is a masking effect produced by urban development and construction resulting in a modification of the existing landscape and the destruction of any sites which might have been there. Equally important is the narrowness of the rapid rail transit corridors and the scattered and small nature of the

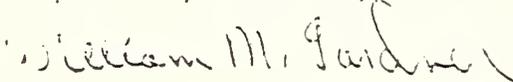
archeological sites which are prevalent in the Piedmont. Given the limited resources available for the prehistoric inhabitants and the transitory nature of their sites in the Piedmont and the amount of prior disturbance, the chances of finding archeological sites are slim. Under pristine conditions this would not be the case.

On the basis of this survey, the four corridors studied are judged to be free from any impact to prehistoric and non-standing historic resources.

Personnel

Dr. William M. Gardner served as the principal investigator for the survey. Paul Rubenstein was assistant investigator. Archival and background research were conducted by Rubenstein and Sharon Doyle. The field crew consisted of Rubenstein, Doyle, Constance Arzigian, Dennis Curry, Elizabeth Fairley, Robert Wall, Gary Haynes and William Boyer. All are staff members of the Thunderbird Research Corporation. Rubenstein, Doyle, Curry, Wall, Haynes, and Boyer are all graduate students in archeology at Catholic University and each has four or more years of field experience. Arzigian and Fairley are undergraduate majors in archeology at Catholic, each with two years field experience. Gardner has a Ph.D. in anthropology with 16 years field experience.

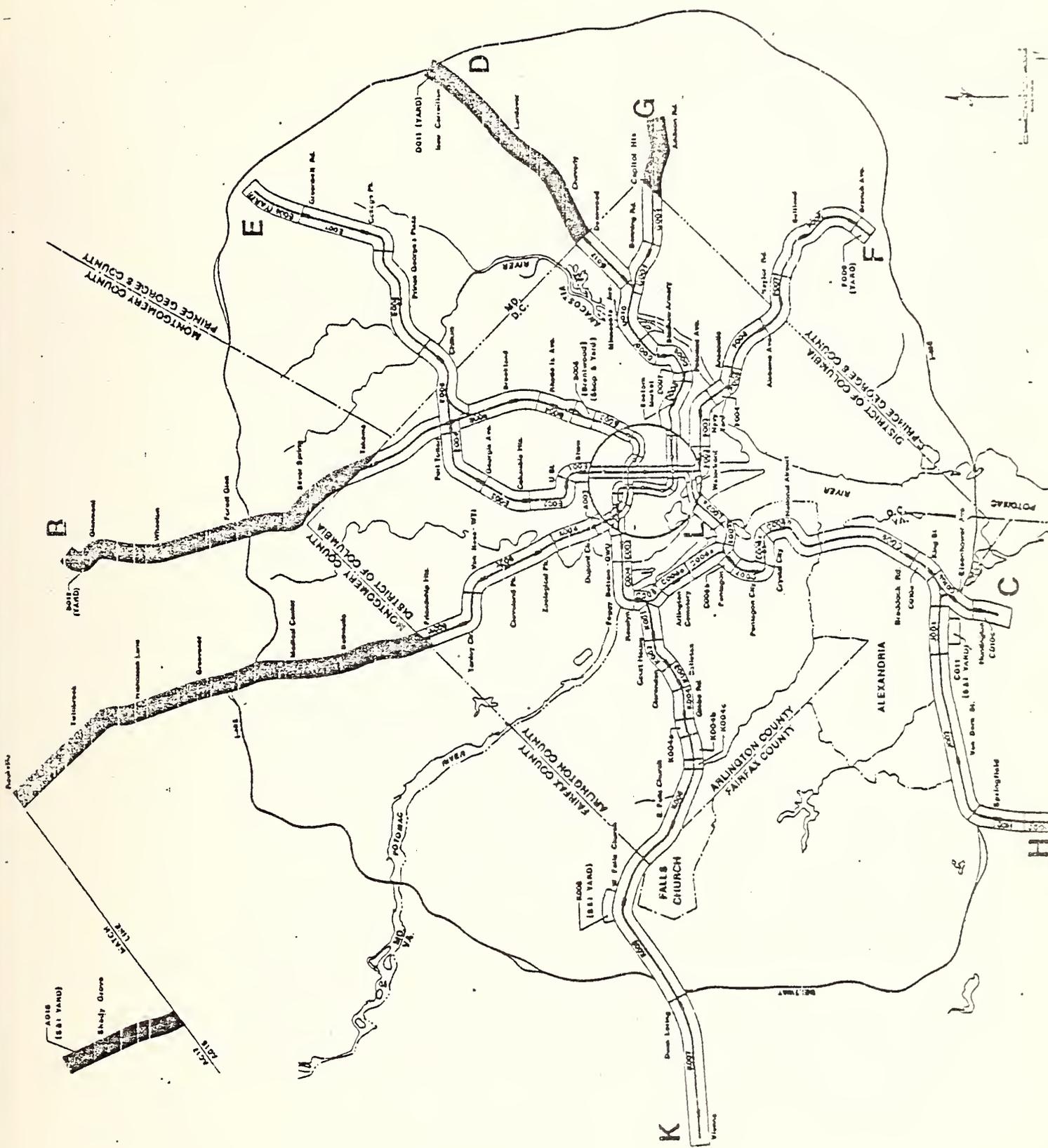
Respectfully submitted,



William M. Gardner

MAP 1

Shaded Areas Surveyed for Metro Transit System



4018
 (S B1 YARD)
 Steady Grove
 4017
 MATCH LINE

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 1002
 1003
 1004
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 1010

B
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H

C

POTOMAC

DISTRICT OF COLUMBIA

PRINCE GEORGE COUNTY

F

G

D

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MONTGOMERY COUNTY
 PRINCE GEORGE COUNTY

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Introduced: October 8, 1974
Enacted: October 14, 1975
Executive: October 22, 1975
Effective: January 6, 1976

COUNTY COUNCIL
FOR MONTGOMERY COUNTY, MARYLAND
October Legislative Session 1974

Chapter 14

AN ACT to amend Chapter 19, title "Excavation, Grading and Sediment Control," of the Montgomery County Code 1972 and to enact in lieu thereof a new Chapter 19, title "Sediment Control", to provide for a definition for approved plan, land disturbing activity and permit; permit requirements for certain land disturbing activities; permit application requirements; procedures to govern major modification of approved plans; conditions of permit issuance; permit revocation and suspension for failure to conform to approved plan specifications; performance bonds or letters of credit of amounts dependent upon the area involved in land disturbing activity; inspection of land disturbing activity, including procedures where water retention structures have been provided; prohibited conduct involving land disturbing activities; and procedures for adopting executive rules and regulations; and subject areas for such rules and regulations.

Be It Enacted by the County Council for Montgomery County, Maryland, that -

Sec. 1. Chapter 19, title "Excavation, Grading and Sediment Control," of the Montgomery County Code 1972, is hereby repealed in its entirety and a new Chapter 19 is enacted in lieu thereof to read as follows:

Chapter 19. Sediment Control

19-1. Definitions.

For the purposes of this Chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section:

Approved plan. A set of representational drawings or other documents submitted by an applicant as a prerequisite to obtaining a sediment control permit and containing such information and specifications as required by the Department

and the District under regulations adopted in accordance with procedures set forth in this Chapter in order to minimize off-site sedimentation from land disturbing activities, and approved by the District as being adequate to meet the requirements of Title 8, Subtitle 11, Natural Resources, Annotated Code of Maryland, 1974, and approved by the Department as being adequate to meet the provisions of this Chapter.

Department. The Department of Environmental Protection.

Developer. A person, partnership or corporation building more than one house, or building one house for occupancy by other than the owner.

Director. The Director of the Department of Environmental Protection.

District. The Montgomery Soil Conservation District.

Erosion. The process by which the ground surface is worn by the action of wind or water.

Excavating. Any act by which soil, earth, sand, gravel, rock or any similar material is cut into, dug, quarried, uncovered, removed, displaced, relocated or bulldozed, and shall include the conditions resulting therefrom.

Fence, approved. A permanent, semi-permanent or portable fence not less than forty-two inches in height so constructed and so located as shall be approved in the permit application to surround sediment basins, steep excavations or ponding areas where it is necessary for the safety of members of the public.

Filling. Any act by which soil, earth, sand, gravel, rock or any similar material is deposited, placed, pushed, pulled or transported and shall include the conditions resulting therefrom.

Finishing grade. The final grade or elevation of the ground surface conforming to the approved grading plan.

Grading. Any act by which soil is cleared, stripped, stockpiled, or any combination thereof.

Land disturbing activity. Shall mean any earth movement and land changes which may result in soil erosion from water or wind and the movement of sediments into State waters or onto lands in the State, including but not limited to, tilling, clearing, grading, excavating, stripping, filling and related activities and the covering of land surfaces with an impermeable material.

Natural ground surface. The ground surface in its original state before grading, stripping, excavating or filling, and other land disturbing activities.

Permit. The County sediment control permit issued by the Department authorizing land disturbing activities in accordance with the requirements of this Chapter.

Permittee. Any person to whom a permit is issued pursuant to this Chapter.

Person. Any person, corporation, partnership, joint venture, agency, unincorporated association, municipal corporation, County or State agency within the State or any combination thereof.

Professional engineer. An engineer duly registered by the State to practice professional engineering under the requirements of Article 75 1/2 of the Annotated Code of Maryland, 1957.

Professional land surveyor. A person who has been duly registered and licensed under the requirements of Article 75 1/2 of the Annotated Code of Maryland, 1957.

Sediment. Soils or other surficial materials transported by wind or surface water as a product of erosion.

Site. Any lot or parcel of land or a series of lots or parcels of land adjoining or contiguous or joined together under one ownership where grading, excavating or filling is, was or will be performed.

Slope. The inclined surface of a fill, excavation or natural terrain.

Soil. Any earth, sand, gravel, rock or any other similar material.

Stripping. Any activity which removes the vegetative surface cover including tree removal, clearing, grubbing and storage or removal of top soil.

Watercourse or drainageway. Any natural or artificial watercourse, including but not limited to, streams, rivers, creeks, ditches, channels, canals, conduits, culverts, drains, waterways, gullies, ravines or washes, in which water flows in a definite direction or course, either continuously or intermittently; and including any area adjacent thereto which is subject to inundation by reason of overflow or flood water.

19-2. Permits.

(a) No person shall engage in any land disturbing activity without first obtaining a permit from the Department of Environmental Protection, except as provided for in this Chapter.

(b) Nothing set forth in this Chapter shall be construed to be in conflict with Title 8, Subtitle 11, Natural Resources, Annotated Code of Maryland, 1974.

(c) No permit shall be required under this Chapter for the following:

(1) Any minor land disturbing activity involving less than 500 cubic yards of earth movement, and less than 5,000 square feet of disturbed surface area, and which is promptly stabilized to prevent erosion and sedimentation.

(2) Accepted agricultural land management practices such as: plowing, and construction of agricultural structures; and nursery operations such as the removal or transplanting of cultivated sod, shrubs and trees and tree cutting at or above existing ground, and logging operations leaving the stump, ground cover and root mat intact.

(3) Quarry operations subject to Chapter 38 of this Code, and the stockpiling with slopes at a natural angle of repose, of raw or processed sand, stone and gravel at quarries, concrete, asphalt and material processing plant and storage yards, providing sediment and erosion measures have been and are being employed to protect against off-site damages in accordance with an approved plan for grading, erosion, and sediment control.

(4) Refuse disposal areas or sanitary landfills operated and conducted by the County; provided, that sediment and erosion control measures have been and are being employed in accordance with an approved plan for grading, erosion and sediment control.

(5) Grading and trenching for utility installations regulated and controlled by the Washington Suburban Sanitary Commission, only to the extent of any exemption from the provisions of this Chapter required by State law.

(6) Individual private septic systems which do not alter the natural terrain.

(7) Authorized Montgomery County Capital Improvement and Public Works Projects; provided, that sediment and erosion control measures have been and are being employed in accordance with an approved plan for grading, erosion, and sediment control.

(d) Exemption from a permit does not exempt the projects listed in paragraphs (1), (2), (3), (4), and (7) of subsection (c) of this section from other provisions of this Chapter including inspection, but excluding bonding and liability insurance.

19-3. Same-Application.

(a) To obtain a permit an applicant shall first file an application therefor in writing upon forms furnished by the Department. The application must be signed by the owner of the property, or an authorized agent, where the land disturbing activity is to be performed. If the owner is a corporation, it must be signed by the president or vice-president, attested by the secretary or assistant secretary and

the corporate seal affixed. The application shall be accompanied by scale plans or drawings, including a grading, erosion and sediment control plan, and the permit fee, approval of the State Department of Natural Resources where applicable, and a bond as required in Section 19-11.

(b) The plans accompanying the application shall be prepared and certified by a professional engineer, land surveyor or architect, or other person qualified and approved by the Department, and shall contain the following:

(1) A vicinity sketch and boundary line survey of the site for which the permit is sought and on which the work is to be performed;

(2) Location of any buildings, structures, utilities, sewers, water and storm drains on the site where the work is to be performed;

(3) Relationship of site to surrounding land: existing topography, drainage and structures;

(4) Elevations, and/or contours, dimensions, location and extent of all work proposed to be done, and the existing elevations and/or contours of the land;

(5) A certification of the quantity of excavation and fill involved; and area affected by the land disturbing activity in square feet, that being the total site area less that area to remain undisturbed and certified as having effective erosion resistant ground cover.

(6) Detailed plans of all drainage provisions, retaining walls, cribbing, vegetative practices, erosion and sediment control measures, location of approved fences around sediment basins, steep excavations or ponding areas, and other protective devices to be constructed in connection with, or as a part of the proposed work, together with a map showing the drainage area of land tributary to the site, and estimated cubic foot per second runoff of the area served by any drain;

(7) A timing schedule and sequence indicating the anticipated starting and completion dates of the development sequence, stripping and/or clearing, rough grading and construction, final grading and vegetative establishment, and maintenance, and the time of exposure of each area prior to the completion of effective erosion and sediment control measures;

(8) A clear and definite delineation of the limits of work, (i.e., showing areas to remain undisturbed and showing areas to be disturbed);

(9) Other plans, drawings or materials and information as required by the Department or the District.

(c) The Department may waive the requirement for scale plans or drawings if it finds that the information on the application is sufficient to show that the work will conform to the requirements of this Chapter, provided that no such waiver shall be construed as waiving the requirements of the District.

(d) A separate permit shall be required for each separate non-contiguous site.

(e) No permit shall be transferable without the written consent of the Department.

(f) No permit shall be issued for land disturbance which is for building or development not permitted by existing zoning, special exceptions and variances applicable to the land.

19-4. Same-Referral of plans.

Prior to the issuance of a permit, a copy of the plan shall be referred to the District for review and approval of the proposed erosion, and sediment control measures, and shall be referred to the Department of Natural Resources, where required by State law. The Department of Natural Resources and the District shall notify the Department of their recommendations and/or approval so that the applicant may be notified in a timely manner.

19-5. Same-Modifications of plans.

(a) Major modifications of the approved plans shall be submitted to the Department and reprocessed in the same manner as the original plan and referred in accordance with Section 19-4 of this Chapter where:

(1) Inspection has revealed the inadequacy of the plan to accomplish the erosion and sediment objectives of the plan, and appropriate modifications to correct the deficiency of the plan are approved by the District.

(2) The person responsible for carrying out the approved plan finds that because of changed circumstances or for other reasons the approved plan cannot be effectively carried out and proposes revisions to the plan that are consistent with the requirements of this Chapter and rules and regulations promulgated pursuant thereto and the District and Department approve the proposed revisions.

(3) The Department may, in emergency situations and at its discretion, order repairs or modifications in order to protect stream channels, other properties

or the general public from damage, to remain in effect until such modifications or revisions to the plan shall have been approved and implemented.

(b) Field modifications of a minor nature may be authorized by the Department; provided, that written authorization is given to the person performing work pursuant to this Chapter, with a copy forwarded in a timely manner to the District.

19-6. Fees.

The County Executive, by written regulation, adopted pursuant to Section 2-105 of this Code, may establish, increase or decrease permit and inspection fees and set non-refundable fee schedules for filing, additional submissions, and permit renewals in an amount not to exceed the reasonable cost of administering and enforcing this Chapter.

19-7. Same-Conditions upon issuance.

In granting any permit, the Director may attach such conditions thereto as he may deem reasonably necessary to prevent sedimentation to public or private property or any sewer, storm drain or watercourse, to prevent the operation from being conducted in a manner hazardous to life or property, or in a manner likely to create a nuisance. Such conditions may include, but are not limited to, the erection or installation of walls, drains, dams and structures, plantings, erosion and sediment control measures or devices, furnishing necessary easements and a specified method of performing the work which shall be identified on the sediment control plan submitted for approval. No permit shall be issued until a sediment control plan is approved by the District, and the owner certifies that all land disturbing activities shall be performed pursuant to the sediment control plan and modifications incorporated pursuant to Sec. 19-5 herein. The approved plan shall be a condition of the permit. No person shall violate any such conditions so imposed.

19-8. Same-Expiration; renewal.

Every permit issued hereunder shall expire at the end of the period of time set out in the permit. The permittee shall fully perform and complete all of the work required to be done within one year after the date of issuance unless specified otherwise by the Department for good cause shown. If the permittee shall be unable to complete the work within the specified time, he shall, within thirty days prior to expiration of the permit, present in writing to the Department a request for an

extension of time, setting forth therein the reasons for the requested extension. If in the discretion of the Director, such an extension is warranted, he may grant additional time for the completion of the work for an additional fee. Said fee to be established by the County Executive by written regulation adopted pursuant to Section 2-105. Where the Director determines that the extension of time will require a substantial modification of the grading, erosion and sediment control plan, any extension of a permit shall be subject to approval of a revised sediment control plan by the District.

19-9. Same-Revocation or suspension.

(a) Any permit issued under this Chapter may be revoked or suspended by the Director, after notice, for:

- (1) Violation of the plan or of any other condition of the permit;
- (2) Violation of any provision of this Chapter or any other applicable law, ordinance, rule or regulation relating to the work;
- (3) Existence of any condition or the doing of any act constituting or creating a nuisance, hazard or endangering human life or the property of others.

(b) In addition to the authority set forth in subsection (a), the Director may post a site with an order directing the permittee to cease all land disturbing activity being performed under permits issued under this Chapter when such activity does not conform to the specifications, including modifications thereof, of an approved plan or other conditions of the permit issued hereunder, provided that:

- (1) Written notice to comply shall have been furnished to the permittee; and
- (2) Said notice includes the nature of the corrective measures required and the time within which corrections shall be made.

(c) Nothing contained in this section shall be interpreted as restricting the Department from proceeding directly with alternative enforcement procedures as set forth in Sec. 19-19.

19-10. Performance bond.

(a) The Director shall, before issuing a permit, require a cash or corporate bond, or an irrevocable letter of credit from a financial institution, in a form satisfactory to him and approved by the County Attorney, conditioned upon the faithful performance of the conditions in the permit and soil erosion, and sediment control measures specified in the permit within the time specified by the Director

or within any extension thereof granted by the Director. The amount of the bond or collateral required by this section shall be \$300 plus 2¢ per square foot of the area included in the land disturbing activity, plus such amounts as deemed necessary by the Director to secure the cost of improvements required in approved plans, not to exceed a total amount of \$10,000. The Director may grant a partial or complete waiver of such bond, upon application, where he finds minimal impairment of existing surface drainage, minimal erosion hazard and minimal sedimentation hazard upon any adjacent land or watercourse, and no hazard to human life or property. A corporate bond shall be maintained and renewed annually and shall be executed by a surety or guaranty company qualified to transact business in the State. A cash bond shall be deposited with the Director of Finance, who shall give his receipt therefor, reciting that the cash has been deposited in compliance with and subject to the provisions of this section. The bond shall obligate the principal, his executors, administrators, successors and assigns, jointly and severally with the surety and shall inure to the benefit of the County, its officers, employees and to any person aggrieved by the principal's failure to comply with the conditions thereof. The principal and the surety shall under the bond continue to be firmly bound under a continuing obligation for the payment of all necessary costs and expenses or liabilities which may be incurred or expended by the Department to meet the minimum requirements of this Chapter.

(b) Whenever the Department shall find that a default has occurred in the performance of any term or condition of the permit, bond or letter of credit, written notice thereof shall be given to the principal and to the surety of the bond. Such notice shall state the work to be done, the estimated cost thereof and the period of time deemed by the Department to be reasonably necessary for the completion of such work.

(c) If a cash bond has been posted, notice of default as provided by the preceding paragraphs shall be given to the principal, and if compliance is not had within the time specified, the Department shall proceed without delay and without further notice or proceedings whatsoever to use the cash deposited, or any portion of such deposit, to cause the required work to be done by contract or otherwise in the discretion of the Director.

(d) In the event of any default in the performance of any term or condition of the permit, bond or letter of credit, the County, the surety or any person employed or engaged on his behalf shall have the right to go upon the site to complete the required work necessary to control erosion and sedimentation or make it safe. In the event the Department undertakes the required work or makes the site safe with the funds from the forfeited cash or corporate bond, such funds shall be used to pay the cost of contracting,

including engineering and administration, for necessary restoration of the site to control erosion and sedimentation within the requirements of the plan, permit, bond or Chapter. If the cost of the work necessary to control erosion and sedimentation or to make it safe exceeds the amount of the cash or corporate bond, the permittee shall continue to be firmly bound under a continuing obligation for payment of all excess costs and expenses incurred by the County. The cost and expenses shall be a lien upon all property and all rights to property, real or personal, of any person liable to pay the same from and after the time said cost is due and payable. The cost shall be listed on the tax bill and shall be collected in the manner of ordinary taxes.

(e) No person shall interfere with or obstruct the ingress or egress to or from any such site or premises by an authorized representative or agent of any surety or of the Department engaged in completing the work required to be performed under the permit or in complying with the terms or conditions thereof.

(f) A corporate bond shall remain in full force and effect, until a completion certificate is issued pursuant to Section 19-14. A cash bond shall be returned to the depositor or to his successors or assigns upon issuance of a completion certificate for the work in accordance with Section 19-14, except any portion thereof that may have been used.

19-11. Liability insurance.

If in the opinion of the Director the nature of the work is such that it may create a hazard to human life or endanger adjoining property or property at a higher or lower elevation, or any street or street improvement, or any other public property, then the Director may, before issuing the permit, require that the applicant for a permit file a certificate of insurance showing that he is insured against claims for damages for personal injury and property damage in an amount not less than twenty-five thousand dollars, including damage to the County by deposit or washing of material onto County streets or other public improvements, which may arise from or out of the performance of the work, whether such performance be by himself, his subcontractor or any person directly or indirectly employed by him, and the amount of such insurance shall be prescribed by the Director in accordance with the nature of the risks involved. Such insurance shall be written by a company licensed to do business in the State and approved by the County. Neither issuance of a permit, nor compliance with

the provisions hereto or any condition imposed by the Department shall relieve any person from any responsibility for damage to persons or property otherwise imposed by law, nor impose any liability upon the County for damages to persons or property.

19-12. Inspection.

(a) No land disturbing activity shall proceed until approved by the Department. All work shall be performed in accordance with a schedule shown on the approved plan or a revised schedule approved by the Department.

(b) After commencing initial land disturbing activity the Department shall inspect at the following stages:

(1) Upon completion of stripping, clearing and the stockpiling of soil but prior to related off-site land disturbing activities;

(2) During rough grading, including hauling of imported or wasted materials;

(3) Upon completion of rough grading, but prior to placing topsoil, permanent drainage systems, ground covers, or other permanent site development improvements identified on the approved plan;

(4) Upon completion of final grading, including established ground covers and planting, and installation of all vegetative measures and all other work in accordance with the approved plan.

(c) The permittee shall notify the Department forty-eight (48) hours before commencing any land disturbing activity. Upon receiving such notice, the Department shall inspect the work and notify the permittee of its approval or in what respect there has been a failure to comply with the requirements of this Chapter. Any portion of the work which does not comply shall be promptly corrected by the permittee. The Department may make additional inspections as it deems appropriate, and shall have the right to waive inspections, excluding the final inspection as provided in Section 19-14.

(d) The Department shall maintain a permanent file of its inspections. Upon completion of the work, the permittee, or owner, shall file with the Department a certification that all grading, drainage, erosion control measures, and facilities and vegetative measures have been completed in conformance with the approved plans and specifications, the permit and the provisions of this Chapter.

(e) When sediment control plans for land disturbing activities include the use of water retention structures such as ponds, catch basins, related facilities and when such plans show by affidavit that they have been prepared by a licensed professional engineer or land surveyor and that said licensed professional engineer or land surveyor will supervise the construction of such facilities in accordance with the provisions of such plans and regulations adopted in accordance with this Chapter, the Director may waive the inspections required by this section. Before the issuance of a completion certificate in accordance with Section 19-14, said licensed professional engineer or land surveyor shall certify to the Department that the facilities included on the approved plan have been constructed in accordance with said plan or modifications made thereto and approved by the Department and District.

19-13. Maintenance of structures, measures and devices.

The permittee or the owner of any property on which work has been done pursuant to a permit granted hereunder, or any other person or agent in control of such property, shall maintain in good condition and promptly repair or restore all grade surfaces, walls, drains, dams and structures, plantings, vegetation, erosion, and sediment control measures and other protective devices. Such repair or restoration, and maintenance, shall be in accordance with the approved plans, specifications and permit as required by this Chapter until permanent measures are accepted by the Department.

19-14. Completion.

Immediately upon completion of the project, the permittee shall notify the Department. The Department shall make a final inspection and shall prepare a final inspection report, a copy of which shall be submitted to the District.

If upon final inspection of any work it is found by the Department that the work subject to inspection has been satisfactorily completed in accordance with the requirements of this Chapter, the permit, conditions, plans, drawings and specifications, as the case may be, and the required reports have been submitted, a completion certificate covering such work shall be issued to the owner by the Department.

19-15. Protection to adjacent property during excavation.

No person shall excavate on land sufficiently close to the property line to endanger any adjoining public street, sidewalk, alley or other public property

without supporting and protecting such public street, sidewalk, alley or other public property from settling, cracking or other damage which might result from such excavation. If in the opinion of the Director the nature of the excavation is such as to create a hazard to life or property unless adequately safeguarded, the applicant shall construct such walls, fences, guard rails or other structures to safeguard the public street, sidewalk, alley or other public property and persons using such, as the Director may require.

19-16. Deposits of soil, material or liquid prohibited.

(a) No person shall engage in any land disturbing activity or by any action cause or permit any soil, earth, sand, gravel, rock, stone, or other material, or liquid to be deposited upon or to roll, flow, or wash upon or over the premises of another in a manner to cause damage to such premises without the express consent of the owner of such premises affected; no person shall engage in any land disturbing activity or by any action cause or permit any soil, earth, sand, gravel, rock, stone, or other material or liquid to be deposited or to roll, flow, or wash upon or over any public street, street improvement, road, sewer, storm drain, water course, or right-of-way, or any public property in a manner to damage or to interfere with the use of such property.

(b) No person shall when hauling soil, earth, sand, gravel, rock, stone or other material over any public street, road, alley or public property allow such materials to blow or spill over and upon such street, road, alley or public property or adjacent private property.

(c) If any soil, earth, sand, gravel, rock, stone or other material or liquid is caused to be deposited upon or to roll, flow or wash upon any public or private property in violation of subsections (a) and (b) above, the person responsible shall be notified and shall cause the same to be removed from such property within thirty-six (36) hours. In the event of an immediate danger to the public health or safety, notice shall be given by the most expeditious means and the material or liquid shall be removed immediately. In the event it is not so removed, the Department shall cause such removal and the cost of such removal by the Department shall be paid to the County by the person who failed to so remove the material and shall be a debt due the County. The cost of such removal shall be a lien upon all property and all rights to property, real or personal, of any person liable to pay the same from and after the time said cost is due and

payable. The cost of such removal shall be listed on the tax bill and shall be collected in the manner of said taxes. Provided, however, that nothing contained in this section shall be interpreted as prohibiting the Department from proceeding directly with alternative enforcement procedures set forth in Section 19-19.

19-17. Rules and regulations.

(a) The Director may recommend written rules and regulations for the administration of the provisions of this Chapter and may, at his discretion, hold public hearings as part of this rule-making process, with opportunity for full participation from the Montgomery Soil Conservation District and shall obtain the recommendations from the District prior to forwarding his recommendations for rules and regulations. Such rules and regulations and amendments thereto shall not conflict with nor waive any provisions of this Chapter nor be less restrictive than its provisions and shall become effective upon their adoption by the County Executive in accordance with the procedures set forth in Chapter 2, Section 2-105 of this Code.

(b) The Director shall hold public hearings, upon adequate public notice of no less than thirty days, with opportunity for full participation from the Soil Conservation District and shall obtain the recommendations from the Soil Conservation District prior to forwarding his recommendations for rules and regulations for provisions set forth in subsection (c). Such rules and regulations shall not conflict with nor waive any provisions of this Chapter nor be less restrictive than rules or regulations promulgated and in effect as requirements of the Maryland Department of Natural Resources. Such rules and regulations and amendments thereto shall become effective upon their adoption by the County Executive in accordance with Chapter 2, Section 2-105 of this Code and upon their approval as submitted or amended by resolution of the County Council.

(c) Regulations promulgated pursuant to this Act shall establish criteria which shall not conflict with, nor waive any provisions to this Chapter nor be less restrictive than criteria adopted for the same purposes by the Soil Conservation District. These regulations shall include but not be limited to the following provisions:

- (1) Maximum duration of exposure;
- (2) Critical slope protection;
- (3) On-site grading controls;

- (4) On-site drainage controls;
- (5) Protection of specimen trees.

19-18. Exemptions.

The provisions of Sections 19-10 and 19-11 and the criminal provisions of Section 19-19 shall not apply to municipal corporations, County or State agencies within the State or any combination thereof.

19-19. Penalties.

Any person violating the provisions of this Chapter shall be guilty of a misdemeanor, and upon conviction, shall be subject to a fine of not more than one thousand dollars for each and every violation. Each day that the violation continues shall be a separate offense. In addition thereto, the County may institute injunctive, mandamus or any other appropriate action or proceedings at law or equity for the enforcement of this Chapter or to correct violations of this Chapter, and any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions or mandamus or other appropriate forms of remedy or relief.

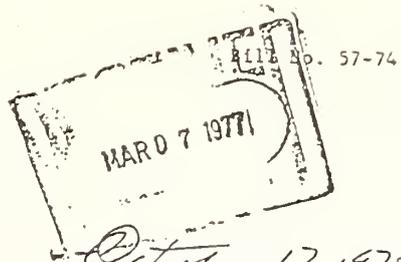
Sec. 2. Severability.

The provisions of this Act are severable and if any provision, sentence, clause, section or part thereof is held illegal, invalid or unconstitutional or inapplicable to any person or circumstances, such illegality, invalidity or unconstitutionality, or inapplicability shall not affect or impair any of the remaining provisions, sentences, clauses, sections or parts of the Act or their application to other persons or circumstances. It is hereby declared to be the legislative intent that this Act would have been adopted if such illegal, invalid or unconstitutional provision, sentence, clause, section or part had not been included therein, and if the person or circumstances to which the Act or any part thereof is inapplicable had been specifically exempted therefrom.

Sec. 3. Effective date.

This Act shall take effect on the 76th day following the date on which it becomes law.

Approved:



Rickran Y. Hovsepian
President, County Council

October 17, 1975
Date

John F. Quinn
County Executive

Oct. 22 / 1975
Date

ATTEST:

Anna P. Spates
Secretary of the County Council

Oct 24 1975
Date

BILL NO. 64-73, Noise Control

Introduced: November 20, 1973
Enacted: January 21, 1975
Executive: Returned without signature.
Effective: April 24, 1975

COUNTY COUNCIL
FOR MONTGOMERY COUNTY, MARYLAND
November Legislative Session 1973

Chapter 31

AN ACT to amend Chapter 32, title "Offenses-Miscellaneous", of the Montgomery County Code 1972, as amended, by repealing Section 32-21, title, "Radios, phonograph, loudspeakers, etc.--Operation regulated; penalty," and to add a new Chapter 31B, title "Noise Control", to the Montgomery County Code 1972, as amended, to follow immediately after Chapter 31A thereof, to relate generally to the control of unnecessary noise in Montgomery County; to establish maximum noise levels permitted generally throughout the County effective October 1, 1976 in certain areas, at certain times and under certain circumstances and to specify permitted deviations therefrom; to require the County Executive to establish in writing within six months after the effective date of this Chapter, rules, regulations, standards and procedures to measure noise limits set forth in this Chapter, to revise such limits where necessary and to carry out the purposes and intent of this Chapter; to provide for special noise limits applicable to the construction, repair and demolition of structures and to the operation of motor vehicles; to authorize the County Executive to designate noise sensitive areas in which certain noise-producing activities may be prohibited; to designate certain unlawful noise-producing activities prohibited throughout the County; to provide for temporary and special

exemptions from the provisions of this Chapter when such exemption would be in the public interest; to provide for the administration of this Chapter by the Director of the Montgomery County Department of Environmental Protection; to provide for the establishment of a Noise Control Advisory Board to advise the County in the administration and enforcement of this Chapter; to establish a procedure for the enforcement of this Chapter; to provide for the admissibility and certain presumptions with respect to sound level meter readings; to specify penalties for the violation of this Chapter; and to provide for the adoption of this Chapter by incorporated towns, villages or municipalities in the County and for the enforcement thereof by the County.

Be It Enacted by the County Council for Montgomery County, Maryland, that -

Sec. 1. Section 32-21, title "Radios, phonographs, loudspeakers, etc.-- Operation regulated; penalty", of Chapter 32, title "Offenses - Miscellaneous", of the Montgomery County Code 1972, as amended, be and it is hereby repealed in its entirety.

Sec. 2. There is hereby added to the Montgomery County Code 1972, as amended, a new Chapter to be known as Chapter 31B, title "Noise Control", to follow immediately after Chapter 31A thereof, and to read as follows:

31B-1. Declaration of Policy; Construction.

(a) The County Council for Montgomery County hereby declares it to be the public policy of the County that every person is entitled to ambient noise levels that are not detrimental to life, health and enjoyment of property. It is hereby declared that excessive or unnecessary noises within the County are a menace to the health, safety, welfare and prosperity of the people of the County. It is declared further to be the policy of the County and the intent of this

Chapter to reduce the outdoor ambient noise level in the County so as to promote public health, safety, welfare, and the peace and quiet of the inhabitants of the County, and to facilitate the enjoyment of the natural attractions and resources of the County. It is further declared that this Chapter is not intended to control internal noise levels between attached dwelling units such as apartments, condominiums, townhouses, or other structures having common or party walls.

For the purpose of reducing and controlling outdoor ambient noise levels in the County, and providing a method of measurement and enforcement which is as objective and reliable as possible, it is hereby declared to be the policy of the County to establish the standards and procedures contained herein relative to noise. In this regard, the Council notes that noise control standards for sounds resulting from quarry operations are contained in Chapter 38 of the Montgomery County Code 1972, as amended.

(b) This Chapter shall be liberally construed so as to effectuate the purposes and intent set forth herein.

31B-2. Definitions.

For the purposes of this Chapter, acoustical terminology shall be as defined by the American National Standards Institute (ANSI), except as specifically defined herein. The following words and phrases shall have the meanings respectively ascribed to them by this section:

(a) "Ambient Noise" means the total noise associated with a given environment, usually comprising sounds from many sources both near and far.

(b) "Agricultural Use" means any farming operation related directly to the commercial production of livestock, food and/or fiber.

(c) "Decibel (dB)" means the unit of measurement of relative sound pressure equal to twenty times the logarithm to the base 10 of the ratio of the effective sound pressure to a reference pressure of 20 micronewtons per square

meter In formula: $dB = 20 \log_{10} \frac{P}{P_0}$

where P is the average root-mean-squared pressure of the measured sound, and P_0 indicates the reference sound pressure.

(d) "Decibel-A-Weighted (dBA)" denotes the sound level, in decibels, measured with a sound level meter using the A-weighting network or scale as specified in ANSI 514. 71 specification for sound level meters.

(e) "Department" means the Montgomery County Department of Environmental Protection.

(f) "Director" means the Director of the Montgomery County Department of Environmental Protection.

(g) "Emergency Work" means work made necessary to restore property to a safe condition following a public disaster, work required to protect persons or property from imminent exposure to danger, or work by private or public utilities when restoring utility service.

(h) "Impulsive" noise means a short burst of acoustical energy such as that produced by weapons fire, punch press or drop hammer. A pressure time history of a single impulse includes a rapid rise to a maximum pressure followed by a somewhat slower decay, both occurring within one second.

(i) "Motor Vehicle" means a surface vehicle which is self-propelled or propelled by electric power obtained from overhead trolley wires, but not operated upon rails.

(j) "Muffler" means a device designed for and effective in reducing noise while permitting the flow of gases.

(k) "Noise" means any steady-state or impulsive sound occurring on either a continuous or intermittent basis.

(l) "Periodic Noise" means repetitive fluctuations in sound level occurring at a repetition rate not to exceed one period every half second or more.

(m) "Person" means an individual, corporation, partnership, association, organization or any other legal entity.

(n) "Sound Level" means the level observed on an approved sound level meter, as specified in Section 31B-7 hereof.

(o) "Source" means any activity, occupation, business or operation conducted on land, or water, or in or upon a building or other structure, including streets and thoroughfares.

(p) "Violator" means any person actually causing, operating, responsible for, or otherwise having direct or indirect control over any use which is proved to violate any provision, standard, regulation or rule of this Chapter.

(q) "Zone" means an area within which certain designated uses are permitted and certain others are prohibited according to established requirements which are the same for all uses in the applicable area, except as otherwise provided herein, this Chapter applies to:

(1) "Industrial Zones", which include I-1, I-2, and I-3 zones as described in the Zoning Ordinance for the Maryland-Washington Regional District in Montgomery County, as amended, and any other industrial zones which might be adopted hereafter by the District Council.

(2) "Commercial Zones", which include C-0, C-T, C-1, C-2, C-3, C-M, C-P, H-M, R-CBD, R-C-CBD, CBD-1, CBD-2, CBD-3, CBD-0.5 and Country Inn zones as described in the Zoning Ordinance for the Maryland-Washington Regional District in Montgomery County, as amended, and any other commercial zones which might be adopted hereafter by the District Council.

(3) "Residential Zones", which include R-A, RA-C, R-E, R-R, R-150, R-90, R-60, R-40, R-T, R-30, R-20, R-10, R-H, P-R-C, Town Sector, Planned Neighborhood and Planned Development zones as described in the Zoning Ordinance for the Maryland-Washington Regional District in Montgomery County, as amended, and any other residential zones which might be adopted hereafter by the District Council.

31B-3. Administration.

(a) The administration of this Chapter is hereby vested in the Director of the Department of Environmental Protection under the general supervision of the Chief Administrative Officer and the County Executive.

(b) The Director shall be responsible for:

(1) Enforcing the provisions of this Chapter.

(2) Employing individuals trained in acoustical engineering or equivalent fields necessary to assist the Director in the administration and enforcement of this Chapter.

(3) Training field inspectors to assist in the administration and enforcement of this Chapter.

(4) Procuring noise measurement instrumentation devices and training inspectors in the calibration and operation of such devices, as set forth in Section 31B-7 hereof.

(5) Providing assistance and expert testimony in connection with matters dealing with noise control litigation as may be necessary to aid in the enforcement of this Chapter.

(6) Acquiring, developing, maintaining, and making available to the public information pertinent to noise control in the community.

(7) Coordinating the County noise control program with other governmental and non-governmental agencies and activities at the federal, state, regional and local levels.

(c) At least every third year following the effective date of this Chapter, the County Executive shall evaluate, with the advice and assistance of the Director and the Noise Control Advisory Board, the effectiveness of the noise control program in Montgomery County and shall make recommendations to the County Council for any legislative changes necessary to improve that program.

(d) Within six months after the effective date of this Chapter, the County Executive, with the advice and assistance of the Director, the Noise Control Advisory Board and other appropriate governmental agencies, shall establish in writing the following:

(1) Rules, regulations and procedures to be used in measuring noise levels set forth in this Chapter.

(2) Such other noise control rules, regulations and standards as the County Executive, with the advice and assistance of the Director and the Noise Control Advisory Board, may deem necessary and proper to accomplish the purposes and intent of this Chapter including when appropriate, rules, regulations or standards promulgated by the State or federal government as well as rules, regulations or standards revising the noise limits set forth in this Chapter, if such revisions are deemed necessary. Any such rule, regulation or standard shall be established only after the County Executive or his designee, after reasonable notice to the public, shall have conducted a public hearing, at which hearing all interested persons shall be given an opportunity to testify and to submit alternative proposals for consideration. In no case shall such rule, regulation or standard become effective prior to October 1, 1976.

(e) Within six months after the effective date of this Chapter, the County Executive, with the advice and assistance of the Director and the Noise Control Advisory Board, shall propose in writing regulations and standards for the control of noise due to construction, repair or demolition of structures or facilities within 800 feet of occupied residential uses, or within 400 feet of occupied commercial uses.

(f) Unless they are superseded by regulations adopted in accordance with subsection 31B-3(d) of this Chapter, the noise standards set forth in this Chapter at the time of its enactment shall take effect on October 1, 1976.

31B-4. Noise Control Advisory Board.

(a) For the purpose of advising the County Executive and the Director in the administration and enforcement of this Chapter, there is hereby established a Noise Control Advisory Board. The Board shall consist of seven (7) members to be appointed by the County Executive, subject to confirmation by the County Council. Members of the Board shall be experienced in or familiar with the problems of noise control and to the extent possible shall be representative of business and industry, medicine, labor, the environmental field and the general public. Each of the members appointed to the Board shall serve for a term of four (4) years or until his successor has been appointed and confirmed. Initial terms of members shall be as follows: one member for one (1) year, two members for two (2) years, two members for three (3) years, and two members for four (4) years.

(b) The Board shall elect one of its members as Chairman and another of its members as Vice Chairman, each to serve at the pleasure of the Board. The Board shall meet on call by the Chairman as frequently as required to perform

its duties but not less than once each quarter. A majority of the members of the Board shall constitute a quorum for the transaction of business, and a majority vote of those present, but not less than four, at any meeting shall be sufficient for any official action taken by the Board.

(c) Members of the Noise Control Advisory Board shall serve without compensation unless the County Council shall by resolution fix a rate of compensation. Members shall, however, be reimbursed for actual reasonable expenses necessarily incurred in the discharge of their duties and responsibilities on the Board in accordance with funds appropriated therefor by the County.

(d) The Board shall provide advice and assistance to the Director in the administration and enforcement of this Chapter. In this regard, the Board shall be responsible for:

(1) Reviewing and commenting on all noise control rules, regulations and standards prior to the establishment of such rules, regulations and standards by the County Executive;

(2) Advising and making recommendations to the Executive and the Director on the effectiveness of the noise control program.

(e) The Director shall be responsible for providing administrative, secretarial and staff services to the Board.

31B-5. Maximum permissible sound levels; general.

(a). Effective October 1, 1976, except as otherwise provided in Sections 31B-6, 31B-8, 31B-9, 31B-12 and 31B-13 of this Chapter, a sound level which emanates from any operation, activity, or source and which exceeds the maximum permissible sound levels established by the following subsection (b) is prohibited.

(b) The following maximum permissible sound levels are hereby established:

(1) If the sound emanates from sources located within a commercial or industrial zone, the maximum permissible sound level is:

(i) 62 dB(A) at any point on the property line;

(ii) 55 dB(A) at any point on a boundary separating a commercial zone or industrial zone from a residential zone.

(2) If the sound emanates from sources located within a residential use zone, the maximum permissible sound level is 55 dB(A) at any point on the property line of the residential use.

31B-6. Maximum permissible sound levels for construction repair or demolition of structures.

(a) Effective October 1, 1976, during the hours from 7:00 a.m. to 9:00 p.m., the maximum permissible sound levels due to construction, repair or demolition of any structure or facility, measured at least 50 feet away from the source or at the property line, whichever is greater, shall not exceed the sum of 20 dB(A) and the maximum permissible sound levels applicable to that source under provisions of Sections 31B-5 and 31B-8 of this Chapter.

(b) In cases involving noise from the construction, repair or demolition of a public street or thoroughfare, the property line shall be the boundary of the public right-of-way.

(c) The County Executive shall, within 90 days following publication of proposed regulations and duly advertised public hearing thereon required under subsection 31B-3(e) of this Chapter, establish further requirements to minimize the noise produced where construction, repair or demolition of any structure or facility is undertaken on or after October 1, 1976 within 800 feet of an occupied use located in a residential zone, or within 400 feet of an occupied use located within a commercial or industrial zone.

(d) During the hours from 9:00 p.m. to 7:00 a.m., the requirements of Section 31B-5 of this Chapter shall be applicable to the construction, repair or demolition of any structure or facility. However, in the performance of emergency work, as defined in Section 31B-2(g) of this Chapter, conducted at any hour of the day or night, the provisions of this Chapter shall not apply.

31B-7. Admissibility of sound level meter readings; presumptions.

(a) The results of any reading of any sound meter approved for use by the Director shall be admissible in any civil or criminal action for enforcement of this Chapter and shall be presumed to be accurate to within plus or minus 2 dB(A), if it is first shown that the meter was properly calibrated, that it was manned by a competent operator, that proper operating procedures were followed and that proper records were kept. "Properly calibrated" shall mean approved by the Director as being within plus or minus 0.5 dB at a single frequency between 200 and 1000 Hz (cycles per second) prior to the reading. "Competent operator" shall mean any person who has received training in the use of equipment in a training program approved by the Director. The Director may approve for use any meter conforming at least to the requirements for Type II sound level meters, as defined by ANSI SI.4-1971 (specifications for sound level meters), or the latest revision thereof, using the A-weighting network.

(b) In any civil or criminal action for enforcement of this Chapter, it shall be presumed that any meter approved by the Director for use or calibration is in conformity with the above standards. It shall also be presumed in any civil or criminal action for enforcement of this Chapter that where any person is prima facie shown to have violated the sound level limitations set forth by or through this Chapter, the alleged violator was not within the allowable deviations of subsection 31B-8.

31B-8. Deviations from maximum permissible sound levels.

(a) The maximum permissible sound levels established by Section 31B-5 of this Chapter may be exceeded during the hours from 8:00 a.m. to 9:00 p.m.:

(1) By no more than 5 dB(A) for a duration not to exceed 12 minutes in any one hour period.

(2) By no more than 10 dB(A) for a duration not to exceed 3 minutes in any one hour period.

(3) By no more than 15 dB(A) for a duration not to exceed 30 seconds in any one hour period.

(b) The maximum permissible sound levels established by Section 31B-5 of this Chapter shall be reduced by 5 dB(A) for:

(1) sounds of periodic character, or

(2) sounds of impulsive character, or

(3) an audible tone such as a hum, whine or screech.

(c) The noises from certain sources associated with residential living, such as home workshops, power tools, power garden equipment and vehicular repairs, although not considered desirable by most residents, are nevertheless to be tolerated. Effective October 1, 1976, such activities shall be allowed to persist in excess of the noise limits specified in Section 31B-5 and in this Section only between the hours of 9:00 a.m. and 9:00 p.m. At all other times, the noise limits specified in Section 31B-5 and in this Section shall apply. Subject to approval by the County Council, the County Executive may, by written regulation, revise the noise limits and the hours of operation applicable to the types of sources covered by this subsection.

31B-9. Maximum permissible sound levels for motor vehicle operations.

(a) Effective October 1, 1976, the use or operation of a motor vehicle in such a manner as to exceed the maximum sound levels established by the

following subsection (b), measured at a point 50 feet from the centerline of travel of the motor vehicle is prohibited. In the event that it is impractical to obtain such measurement 50 feet from the centerline of travel, the distance shall be measured, and the following correction factors shall be applied to the maximum permissible sound levels for the distances listed.

25 - 29 feet	+6 dB(A)	59 - 74 feet	-2 dB(A)
30 - 37 "	+4 "	75 - 93 "	-4 "
38 - 46 "	+2 "	94 - 117 "	-6 "
47 - 58 "	0 "	118 - 150 "	-8 "

(b) Subject to the provisions of subsection (a) of this Section, the following maximum permissible sound levels are established for motor vehicle operation effective October 1, 1976:

(1) Where the posted speed limit is 35 mph or less;

(i) For motor vehicles with a gross vehicle weight of more than 10,000 lbs. operating on a street or other thoroughfare, 86 dB(A),

(ii) For motorcycles, 82 dB(A),

(iii) For all other motor vehicles, 76 dB(A).

(2) Where the posted speed limit is more than 35 mph:

(i) For motor vehicles with a gross vehicle weight of more than 10,000 lbs., 90 dB(A),

(ii) For motorcycles, 86 dB(A),

(iii) For all other motor vehicles, 82 dB(A).

(c) Nothing in this section shall be deemed to abridge or conflict with the powers of the State over motor vehicle control pursuant to Article 66 1/2 of the Annotated Code of Maryland.

31B-10. Noise Sensitive Area.

Whenever the protection of the public health, safety and welfare so require, the County Executive, after a duly advertised public hearing and with the advice

of the Director and the Noise Control Advisory Board, may designate in writing any geographical area of the County as a Noise Sensitive Area in which certain noise-producing activities may be prohibited effective Oct. 1, 1976. Such designation shall include a description of the subject area by reference to named streets, the reasons for determination as a Noise Sensitive Area, and a list of those activities which if undertaken in such area, would constitute unnecessary noise. Such designation may be limited to specified times or days of the week. In cases where the limitations imposed by Executive Regulation, promulgated under authority granted herein, are more stringent than those prescribed by restrictions within this Chapter, such regulations shall control within such noise sensitive areas.

31B-11. Special Noise Limits.

The following provisions shall be effective October 1, 1976:

(a) It shall be unlawful for any person to sound a horn or other signaling device on any motor vehicle except as an emergency or danger warning signal.

(b) It shall be unlawful to operate any radio, phonograph, loudspeaker, or other such noise producing machine or device upon public streets or thoroughfares for the purpose of commercial advertising or attracting the attention of the public in a manner which exceeds the limits contained in this Chapter or which might hereafter be established by the County Executive by written regulation.

(c) Every motor vehicle having an internal combustion engine shall be equipped with an exhaust muffler system in good working order and in constant operation to prevent excessive or unusual noise. No person shall use a muffler cutout, bypass, or similar device upon a motor vehicle on a highway. Noise levels which exceed the limits contained in this Chapter or which might hereafter be established by written regulation of the County Executive pursuant to this

Chapter shall be deemed to be excessive.

(d) It shall be unlawful for any person to sell anything by outcry between the hours of 9:00 p.m. and 8:00 a.m. The provisions of this subsection shall not be construed to prohibit selling by outcry of merchandise, food and beverages at licensed sporting events, parades, fairs, circuses and other similar licensed entertainment events.

(e) It shall be unlawful for any person to use any drum or musical instrument upon the streets and other thoroughfares between the hours of 9:00 p.m. and 8:00 a.m. This subsection shall not apply to any person who is a participant in a school band or duly licensed parade or who has been otherwise duly authorized to engage in such conduct.

(f) It shall be unlawful for any person to willfully or knowingly operate or permit to be operated a radio, television, loudspeaker or loudspeaking devices, music-making machines or other noise-making devices of any nature whatsoever, either upon private property or upon public highways or other public property in a manner which exceeds the limits contained in this Chapter or which might hereafter be established by the County Executive by written regulation.

(g) It shall be unlawful for any person owning, harboring, keeping, or in charge of any animal or fowl to allow such animal or fowl to cause noise which exceeds the limits contained in this Chapter or which might hereafter be established by written regulation of the County Executive.

31B-12. Temporary Exemption.

The Director is hereby authorized to grant a temporary exemption from the maximum permissible sound levels established by this Chapter if such temporary exemption would be in the public interest. An application for a temporary exemption shall be accompanied by a fee determined by written regulation of the County Executive in an amount sufficient to defray the administrative costs of processing the application. Upon receipt of an application for a temporary

exemption, the Director shall give public notice of the application and the fact that any adversely affected party may request a public hearing on the application. A temporary exemption must be in writing, signed by the Director or his appointed representative, and must set forth the name of the party to whom the exemption is granted, the description and location of the property for which the exemption is authorized, the maximum sound level permitted and the period of time during which the exemption shall be effective and any other conditions or qualifications deemed necessary for the protection of the public. A temporary exemption shall be granted only for a reasonable period of time in view of all the facts and circumstances. A temporary exemption shall not be renewable and shall not be granted more than three (3) times in any one calendar year with respect to a given property and location. In no case shall the holder of a temporary exemption be authorized to exceed the maximum permissible sound levels established by this Chapter by more than 25 dB(A).

31B-13. Special Exemption.

In addition to temporary exemptions provided for in Section 31B-12 of this Chapter, the Director is hereby authorized to grant a special exemption from compliance with any or all of the requirements of this Chapter in the event of hardship, or if such exemption would otherwise be in the public interest. An application for a special exemption shall be accompanied by a fee determined by written regulation of the County Executive in an amount sufficient to defray the administrative costs of processing the application. Upon receipt of an application for a special exemption, the Director shall give public notice of the application and the fact that any adversely affected party may request a public hearing on the application.

31B-14. Applicability.

(a) The provisions of this Chapter shall not apply to:

(1) Warning devices necessary for public safety such as police, fire and ambulance sirens and train horns;

(2) Motor vehicles and other equipment employed for emergency work by a governmental agency or by a public utility company;

(3) Any agricultural use as defined in Section 31B-2(b) of this Chapter.

(b) Subject to the exceptions contained in subsection (a) of this Section, this Chapter shall be applicable to all uses and activities throughout the County, except in any incorporated city, town or other municipality which by law has authority to enact regulations similar to those contained in this Chapter; provided that, should any such incorporated city, town or other municipality adopt this Chapter and request the County to enforce the provisions thereof within its corporate limits, the County shall thereafter administer and enforce the same within such incorporated city, town or municipality.

31B-15. Enforcement.

(a) Whenever the Director has reason to believe that a provision of this Chapter, or a provision of any standard, regulation or rule established pursuant to this Chapter, has been violated, the Director or his designee may, at his option and depending on the nature of the case, cause a summary criminal citation to be served on the alleged violator pursuant to Section 1-7 of the Montgomery County Code, 1972, as amended, or he may follow the below procedures:

(1) Cause written notice to be served upon the alleged violator. Such notice shall specify the provision or provisions alleged to have been violated and the facts alleged to constitute a violation, including, as

applicable, dB(A) readings noted and the date, time and place of their detection. The notice of violation shall include an order that corrective action be taken within 30 days or within such additional period of time as the Director may find appropriate in view of the nature of the action required to be taken. Any order issued pursuant to this subsection shall be deemed to be final unless, no later than 10 days after the order is served, the person named therein requests in writing a hearing.

(2) Within thirty (30) days following receipt of a request for a hearing pursuant to subsection (a)(1) of this Section, the Director or his designee, after five days' written notice to the person requesting the hearing, shall conduct such hearing at which all interested parties, either alone or with counsel, shall have the opportunity to appear and be heard. Within fifteen (15) days following the close of the hearing, the Director shall issue a written opinion affirming, modifying, or rescinding his order previously issued. The opinion shall state the evidence upon which the decision based, and shall include a notice of the right of any aggrieved party to enter an appeal pursuant to Section 31B-16 of this Chapter.

(3) If corrective action has not been initiated by the alleged violator within the time specified in an order issued pursuant to subsections (a)(1) and (a)(2) of this Section, and an appeal is not noted under Section 31B-16 of this Chapter, the Director may request the County Attorney to institute in any court of competent jurisdiction such legal proceedings as the County Attorney may deem necessary for the enforcement of the order.

(b) Any person may commence a civil action on his own behalf against any other person who is alleged to be in violation of a noise control requirement under this Chapter. The action shall not be commenced prior to the expiration

of sixty (60) days following written notice of the alleged violation from the prospective plaintiff to the alleged violator and to the Director. In no event shall the action be commenced if the County Attorney for Montgomery County has begun and is prosecuting a civil action to seek compliance by the alleged violator with applicable noise control requirements.

31B-16. Appeals.

Any person aggrieved by a final action of the Director rendered under this Chapter, or by any standard, rule or regulation established by the County Executive pursuant to the provisions of this Chapter, may appeal to the Circuit Court for Montgomery County in accordance with the Maryland Rules of Procedure for review of such action.

31B-17. Penalties.

(a) Any person who violates any provision of this Chapter shall be guilty of a misdemeanor and, upon conviction thereof, shall be subject to a fine not to exceed one thousand dollars (\$1,000.00) and costs. Each day of violation following notice thereof shall constitute a separate offense, provided the violation can be corrected immediately following notice.

(b) Action pursuant to subsection (a) of this Section shall not be a bar to enforcement of this Chapter by injunction or other appropriate remedy. The County Attorney is hereby authorized and empowered to institute and maintain in the name of the County any and all such appropriate enforcement proceedings.

(c) Nothing herein shall be construed to abridge or impair the right of any person to seek in a court of law damages or other relief on account of injury to persons or property.

Sec. 3. Severability.

The provisions of this Act are severable, and if any provision, sentence, clause, section or part thereof is held illegal, invalid or unconstitutional or inapplicable to any person or circumstance, such illegality, invalidity,

Introduced: January 21, 1975

Adopted: January 21, 1975

COUNTY COUNCIL

FOR MONTGOMERY COUNTY, MARYLAND

By: County Council

Subject: Bill No. 64-73, Noise Control - Legislative Intent

WHEREAS, members of the County Council, individually and collectively, have had under consideration for well over two years the issue of noise control legislation for the County, and

WHEREAS, during the course of its discussions on noise control legislation the Council reviewed noise control measures enacted in other jurisdictions throughout the United States, the State of Maryland and the Washington Metropolitan Area, and

WHEREAS, following a public forum conducted by several Council members on the subject of noise control in December 1972, the Council established a Noise Control Task Force composed of fifteen (15) highly qualified volunteer experts and other persons interested in the noise and acoustics fields who were ready, willing and able to assist the Council with the development of a workable noise control bill for Montgomery County, and

WHEREAS, following a period of intensive study during which the Noise Control Task Force reviewed noise control bills prepared by the Council and the County Executive, the Task Force developed and forwarded to the Council a recommended noise control bill which was introduced by the Council on November 30, 1973 as Bill 64-73, and

WHEREAS, following a public hearing and worksession on Bill 64-73, it was agreed by the Council to proceed with enactment of that measure in the interest of the health, safety and welfare of the residents of the County.

NOW, THEREFORE BE IT RESOLVED by the County Council for Montgomery County, Maryland, that -

Bill 64-73 has been enacted by the Council on January 21, 1975 with the following understanding:

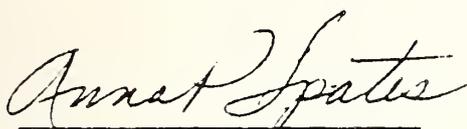
1. The Council discussed at length and was deeply concerned about the matter of noise occasioned by trash removal during the early morning hours. After considering the possibility of prohibiting trash removal between certain hours, the Council agreed that the maximum permitted noise levels as specified in Bill 64-73 would provide an adequate enforcement mechanism to deal with this noise problem without the need for an outright prohibition against trash removal. Furthermore, it is the understanding of the Council that the Executive branch is now developing and will subsequently transmit to the Council amendments to the County trash collection ordinance. It is the intent of the Council that the matter of trash removal noise be further addressed at the time such amendments are forthcoming.

2. The Council noted the concern a number of citizens expressed during the public hearing and during the discussions at the worksessions about the need for an enforcement mechanism responsive to citizen complaints and also the desirability of having the Director of the Department of Environmental Protection cooperate with and support citizens' groups by conducting noise measurements and providing advice on noise sources not specifically covered in Bill 64-73. The Council fully intends that noise control enforcement be responsive to citizens' complaints and that the Department of Environmental Protection cooperate and assist to the extent possible citizens' groups in their efforts to identify and control sources of noise pollution. In this regard, the Council urges the Director of the Department of Environmental Protection,

under authority contained in the noise control law, to use every available means to see that citizens' complaints are responded to promptly and that cooperation is fostered between the County government and citizens' groups concerned with the subject of noise control.

A True Copy.

ATTEST:



Anna P. Spates, Secretary
of the County Council for
Montgomery County, Maryland





Maryland Department of Transportation

Office of the Secretary

Division of Transportation Planning and Development
8720 Georgia Avenue - Suite 904
Silver Spring, Maryland 20910

Marvin Mandel
Governor
Harry R. Hughes
Secretary

Mr. John Patterson
Office of Engineering
Washington Metropolitan Area Transit Authority
600 Fifth Street, N.W.
Washington, D.C. 20001

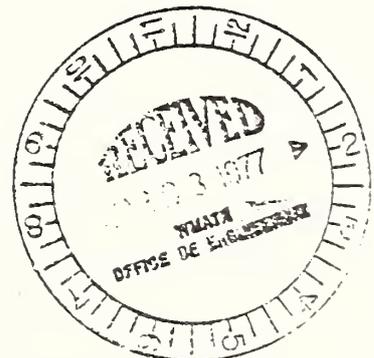
Dear John:

This is to confirm that the FY 1978-1982 Consolidated Transportation Program represents the current statement of the Maryland Department of Transportation's operational and Capital costs for all transportation activities. As such, it supersedes and replaces all previous programs, including the FY 1976-1980 State Highway Improvement Program.

If I can be of further assistance, please advise.

Sincerely,

Wayne McDaniel
Group Manager
Public Transit



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