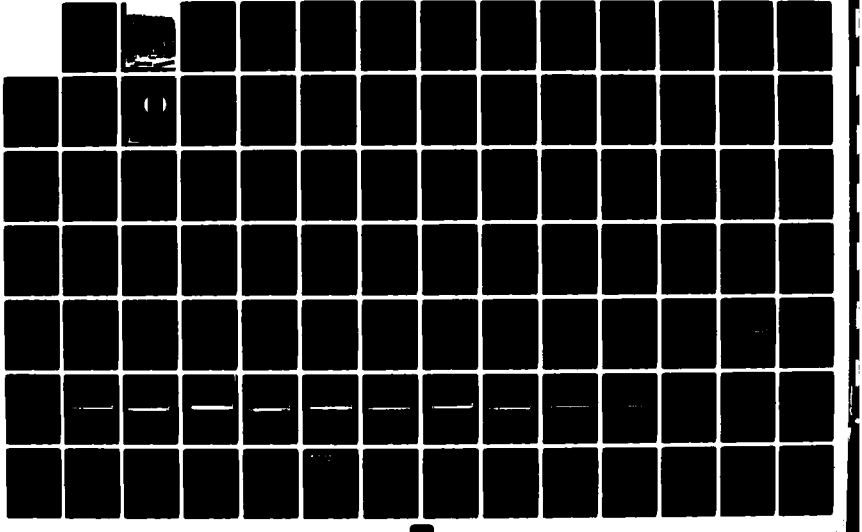
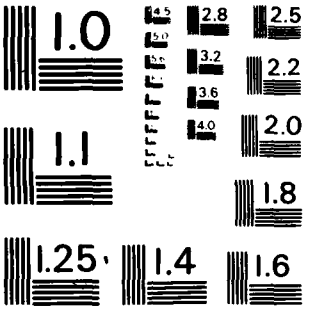
AD-A134 155 METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY 1/4
APPENDIX C PUBLIC INVOLVEMENT(U) CORPS OF ENGINEERS
BALTIMORE MD BALTIMORE DISTRICT SEP 83 MWA-83-P-APP-C
UNCLASSIFIED F/G 5/1 NL

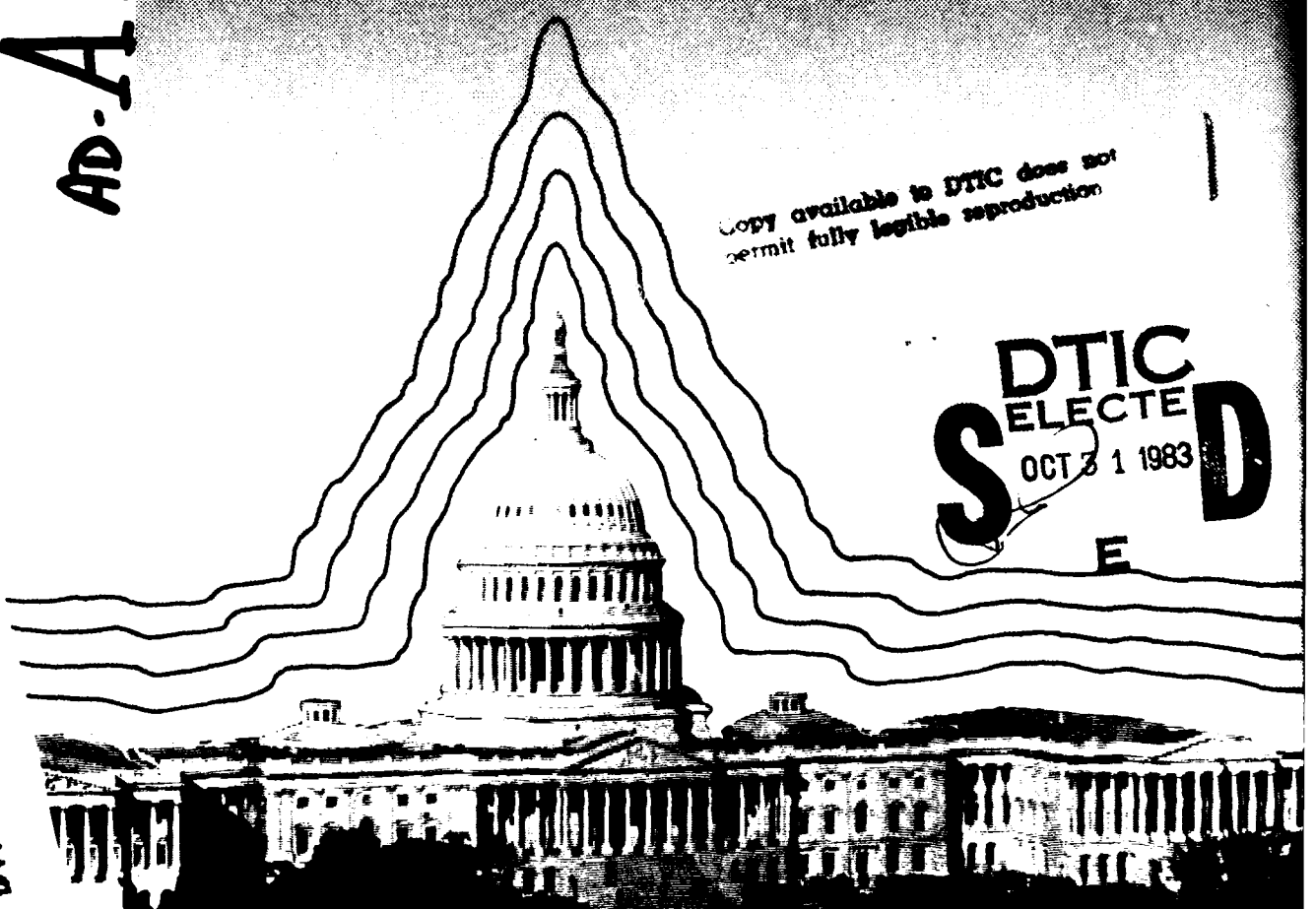




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

AD-A134155

Copy available to DTIC does not permit fully legible reproduction



DTIC
ELECTE
OCT 31 1983
S D
E

DTIC FILE COPY

This document has been approved for public release and sale; its distribution is unlimited.

83 10 28 078

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER MWA-83-P	2. GOVT ACCESSION NO. A134155	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY, [redacted] Appendi[redacted] C		5. TYPE OF REPORT & PERIOD COVERED Final 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Baltimore District U.S. Army Corps of Engineers, ATTN: NABPL P.O. Box 1715, Baltimore, Maryland 21203		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Baltimore District U.S. Army Corps of Engineers, ATTN: NABPL P.O. Box 1715, Baltimore, Maryland 21203		12. REPORT DATE September 1983 13. NUMBER OF PAGES ~~1,000 pages, 1 plate~~
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release, distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

water resources planning; water demand; water supply; Potomac River; groundwater; reservoir; raw water interconnection; Low Flow Allocation Agreement; Bloomington Lake; Little Seneca Lake; wastewater reuse; Potomac Estuary Experimental Water Treatment Plant; PRISM/COE; water pricing; water conservation; demand reduction; Cooperative Operations on the Potomac; flowby;

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

In response to the Water Resources Development Act of 1974, the Baltimore District of the U.S. Army Corps of Engineers conducted a comprehensive water supply analysis of the Metropolitan Washington Area (MWA). Severe water supply shortages had been forecast for the MWA and the study was undertaken to identify and evaluate alternative methods of alleviating future deficits. Initiated in 1976, the study was conducted in two phases over a 7-year period. The first, or early action phase, examined the most immediate water supply problems and proposed solutions that could be implemented locally. The second or long

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

19. KEY WORDS (continued)

water shortage; reregulation; finished water interconnection; Occoquan Reservoir; Patuxent Reservoir; Potomac Estuary; Water Supply Coordination Agreement; Verona Lake

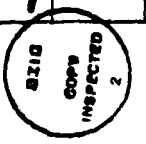
20. ABSTRACT (continued)

range phase included an analysis of the full spectrum of structural and nonstructural water supply alternatives. In addition to such traditional water supply alternatives as upstream reservoir storage, groundwater and conservation, the study also considered such innovative measures as wastewater reuse, raw and finished water interconnections between the major suppliers, the use of the upper Potomac Estuary, reregulation and water pricing. A key tool in the study was the development and use of a basin-specific model that was used to simulate the operation of all the MWA water supply systems and sources under various drought scenarios. As the study progressed, local interests used the technical findings of the Corps' study to make great strides toward a regional solution to their water supply problems. The Corps' study concluded that with the implementation of a series of regional cooperative management agreements, contracts, selected conservation measures, and the construction of one local storage project to be shared by all, severe water supply shortages could effectively be eliminated for the next 50 years. The Final Report of the study is comprised of eleven volumes which provide documentation of both the study process and the results of all the technical analyses conducted as part of the study.

METROPOLITAN WASHINGTON AREA
WATER SUPPLY STUDY

APPENDIX C
PUBLIC INVOLVEMENT

Accession For
NTIS GRA&I [X]
DTIC TAB [ ]
Unannounced [ ]
Justification
By
Distribution/
Availability Codes
Dist | Avail and/or Special
A-1



Department of the Army
Baltimore District, Corps of Engineers
Baltimore, Maryland

September 1983

REPORT ORGANIZATION*

METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

Appendix Letter	Appendix Title	Annex Number	Annex Title
	Main Report		
A	Background Information & Problem Identification		
B	Plan Formulation, Assessment, and Evaluation	B-I	Water Supply Coordination Agreement
		B-II	Little Seneca Lake Cost Sharing Agreement
		B-III	Savage Reservoir Operation and Maintenance Cost Sharing Agreement
C	Public Involvement	C-I	Metropolitan Washington Regional Water Supply Task Force
		C-II	Public Involvement Activities - Initial Study Phase
		C-III	Public Opinion Survey
		C-IV	Public Involvement Activities - Early Action Planning Phase
		C-V	Sample Water Forum Note
		C-VI	Public Involvement Activities - Long-Range Planning Phase
		C-VII	Citizens Task Force Resolutions
		C-VIII	Background Correspondence
		C-IX	Coordination with National Academy of Sciences - National Academy of Engineering
		C-X	Comments and Responses Concerning Draft Report
D	Supplies, Demands, and Deficits	D-I	Water Demand Growth Indicators by Service Areas
		D-II	Service Area Water Demand & Unit Use by Category (1976)
		D-III	Projected Baseline Water Demands (1980-2030)
		D-IV	Potomac River Low Flow Allocation Agreement
		D-V	Potomac River Environmental Flowby, Executive Summary
		D-VI	PRISM/COE Output, Long-Range Phase
E	Raw and Finished Water Interconnections and Reregulation	E-I	Special Investigation, Occoquan Interconnection Comparison
F	Structural Alternatives	F-I	Digital Simulation of Groundwater Flow in Part of Southern Maryland
G	Non-Structural Studies	G-I	Metropolitan Washington Water Supply Emergency Agreement
		G-II	The Role of Pricing in Water Supply Planning for the Metropolitan Washington Area
		G-III	Examination of Water Quality and Potability
H	Bloomington Lake Reformulation Study	H-I	Background Information
		H-II	Water Quality Investigations
		H-III	PRISM Development and Application
		H-IV	Flood Control Analysis
		H-V	US Geological Survey Flow Loss and Travel Time Studies
		H-VI	Environmental, Social, Cultural, and Recreational Resources
		H-VII	Design Details and Cost Estimates
		H-VIII	Drawdown Frequency and Yield Dependability Analyses
		H-IX	Bloomington Future Water Supply Storage Contract
		H-X	Novation Agreement
I	Outlying Service Areas		

*The Final Report for the Metropolitan Washington Area Water Supply Study consists of a Main Report, nine supporting appendices, and various annexes as outlined above. The Main Report provides an overall summary of the seven-year investigation as well as the findings, conclusions, and recommendations of the District Engineer. The appendices document the technical investigations and analyses which are summarized in the Main Report. The annexes provide detailed data or complete reports about individual topics contained in the respective appendices.

METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

APPENDIX C - PUBLIC INVOLVEMENT

TABLE OF CONTENTS

Item	Page
Introduction	C-1
Purpose of the Program	C-1
Public Involvement Program	C-1
General Information	C-1
Interaction-Dialogue	C-3
Review-Reaction	C-3
The Program and Its Relationship to the Planning Process	C-3
Coordination Structure for the Study	C-5
Corps of Engineers Management/Coordination Structure	C-5
Specific Committee Structure	C-5
Federal-Interstate-State-Regional Advisory Committee	C-5
Metropolitan Washington Council of Governments	C-7
Water Resources Planning Board	C-7
Water Supply Advisory Committee	C-8
Interagency Review Panel	C-8
National Academy of Sciences-National Academy of Engineering	C-9
Citizens Task Force	C-11
Other Coordination Groups	C-11
Summary	C-14
Initial Coordination Efforts	C-14
Objectives of the Initial Coordination Efforts	C-14
Initial Coordination Activities	C-14
Formal Public Meetings	C-15
Informal Public Meetings	C-15
Public Participation Contracts	C-16
Public Opinion Survey	C-16
Workshops	C-17
Results of Initial Coordination Efforts	C-18
Coordination During Development of Early-Action Plans	C-19
Objectives of Early-Action Coordination	C-19
Activities During Early-Action Planning	C-19
Committee Activities	C-19
Water Forum Notes	C-21
Public Workshops	C-22
Corps of Engineers Efforts	C-22

TABLE OF CONTENTS (Cont'd)

Item	Page
Public Involvement During Long-Range Planning	C-23
Committee Activities	C-23
Water Forum Notes	C-25
Workshops and Public Meetings	C-25
Other Coordination and Review Activities	C-25
Results of Public Involvement During Long-Range Planning	C-26
An Evaluation of the Public Involvement Efforts	C-26

LIST OF TABLES

Number	Title	Page
C-1	Membership, Federal-Interstate-State-Regional Advisory Committee	C-7
C-2	Membership, Metropolitan Washington Water Resources Planning Board	C-8
C-3	Membership, Water Supply Advisory Committee	C-9
C-4	Membership, Interagency Review Panel	C-10
C-5	Membership, NAS-NAE Review Committee	C-12
C-6	Membership, Citizens Task Force	C-13

LIST OF FIGURES

Number	Title	Page
C-1	Gearing Public Involvement to the Publics	C-2
C-2	Framework for Public Participation	C-4
C-3	Committee Structure for the Metropolitan Washington Area Water Supply Study	C-6

LIST OF PLATES

Number	Title
C-1	MWA Water Supply Study - Sequence of Significant Events

TABLE OF CONTENTS (Cont'd)

LIST OF ANNEXES

Number	Title
C-I	Metropolitan Washington Regional Water Supply Task Force
C-II	Public Involvement Activities - Initial Study Phase
C-III	Public Opinion Survey
C-IV	Public Involvement Activities - Early-Action Planning Phase
C-V	Sample Water Forum Note
C-VI	Public Involvement Activities - Long-Range Planning Phase
C-VII	Citizens Task Force Resolutions
C-VIII	Background Correspondence
C-IX	Coordination with National Academy of Sciences - National Academy of Engineering
C-X	Comments and Responses Concerning Draft Report

APPENDIX C

PUBLIC INVOLVEMENT

INTRODUCTION

Citizen interest in water and related land resource planning and the desire to take part in the planning process has resulted in public involvement becoming an integral part of the planning process. This increased citizen interest requires a commitment from both the citizen and the planner to be willing to communicate with each other. Once effective communication is established, common goals can be defined, conflicts resolved, and agreement reached on proposed solutions to the problems.

The public involvement program for this study was designed to establish effective communication between the planners and the many "publics" during the conduct of the study. The term "public" is defined as "any affected or interested non-Corps of Engineers entity." This includes other Federal, State and local government agencies as well as public and private organizations and individuals.

PURPOSE OF THE PROGRAM

The overall purpose of this public involvement program was to achieve three goals:

1. To solicit opinions and perceptions of problems, issues, concerns, and needs from the public; their preferences regarding water resource use and plan development; and any other information and assistance relevant to the planning process.

2. To promote public understanding of the manner and means by which water resource problems and needs are investigated and solutions proposed.

3. To keep the public fully informed regarding the status and progress of the study, and the results and implications of planning activities.

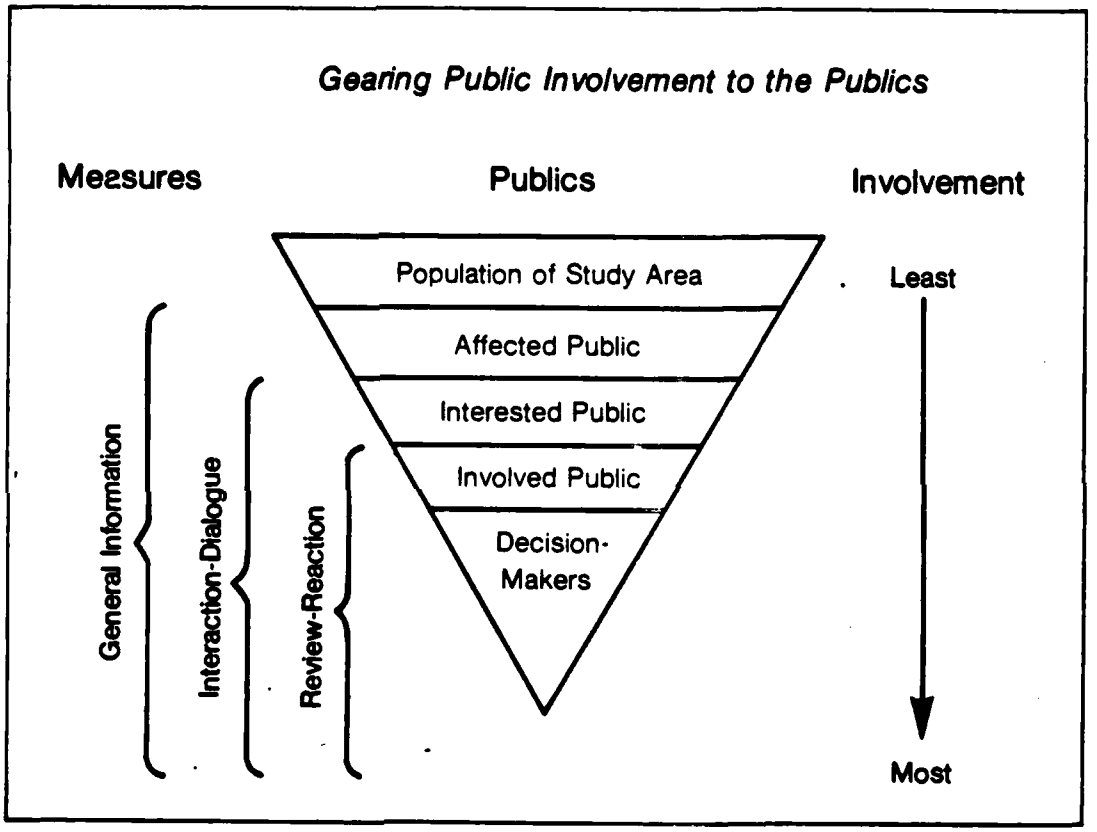
PUBLIC INVOLVEMENT PROGRAM

To promote this public involvement program, there were three basic measures used to stress a two-way communication process. These three measures provided for: (1) general information, (2) interaction-dialogue, and (3) review reaction. Each measure was designed to reach different levels of the public in the study area, as shown in Figure C-1. Likewise, each measure was geared to evoking a different degree of involvement of response from each level of the public.

GENERAL INFORMATION

This measure was used to distribute information about the MWA Water Supply Study's progress and results to as many people as possible. Usually, this measure provided for only one-way communication with the public. Mechanisms such as newsletters, newspaper articles, special publications, public displays, press releases, broad-based opinion surveys, and spot announcements through the media were used to reach most levels of the public.

FIGURE C-1


Gearing Public Involvement to the Publics
Measures
Publics
Involvement
Population of Study Area
Affected Public
Interested Public
Involved Public
Decision-Makers
General Information
Interaction-Dialogue
Review-Reaction
Least
Most

INTERACTION-DIALOGUE

Interaction-dialogue provided for a two-way communication between the planners and the public. It required a certain amount of involvement by the interested public to obtain a better knowledge of the planning process, as well as a certain amount of involvement by the planners to find out public needs and desires. Interaction-dialogue mechanisms such as workshops, planned educational programs, speeches to organized groups, opinion surveys and interviews were employed to reach those who were either interested, involved, or were decision-makers.

REVIEW-REACTION

Review-reaction was used to obtain feedback from those who were most directly involved with the MWA Water Supply Study. Special committees or advisory groups were formed to accomplish this purpose. Committee meetings, formal public meetings, progress reports, interim reports, and draft and final reports were used to garner the important opinions and values of the involved public and the decision-makers. Figure C-2 depicts the approach that was used in the public involvement process.

THE PROGRAM AND ITS RELATIONSHIP TO THE PLANNING PROCESS

The planning process employed in this study followed Corps of Engineers guidelines for implementing the Water Resources Council's Principles and Standards for Planning Water and Related Land Resources. The planning process consists of a series of steps that identifies or responds to problems and opportunities associated with the Federal objective and specific State and local concerns, and culminates in the selection of a recommended plan. The process involves an orderly, systematic approach to making determinations and decisions at each step so that the interested public and decision-makers can be fully aware of the basic assumptions employed, the data and information analyzed, the areas of risk and uncertainty, and the significant implications of each alternative plan.

The planning process consists of the following major steps:

1. Specification of the water and related land resources problems and opportunities (relevant to the planning setting) associated with the Federal objective and specific State and local concerns.

2. Inventory, forecast, and analysis of water and related land resource conditions within the planning area relevant to the identified problems and opportunities.

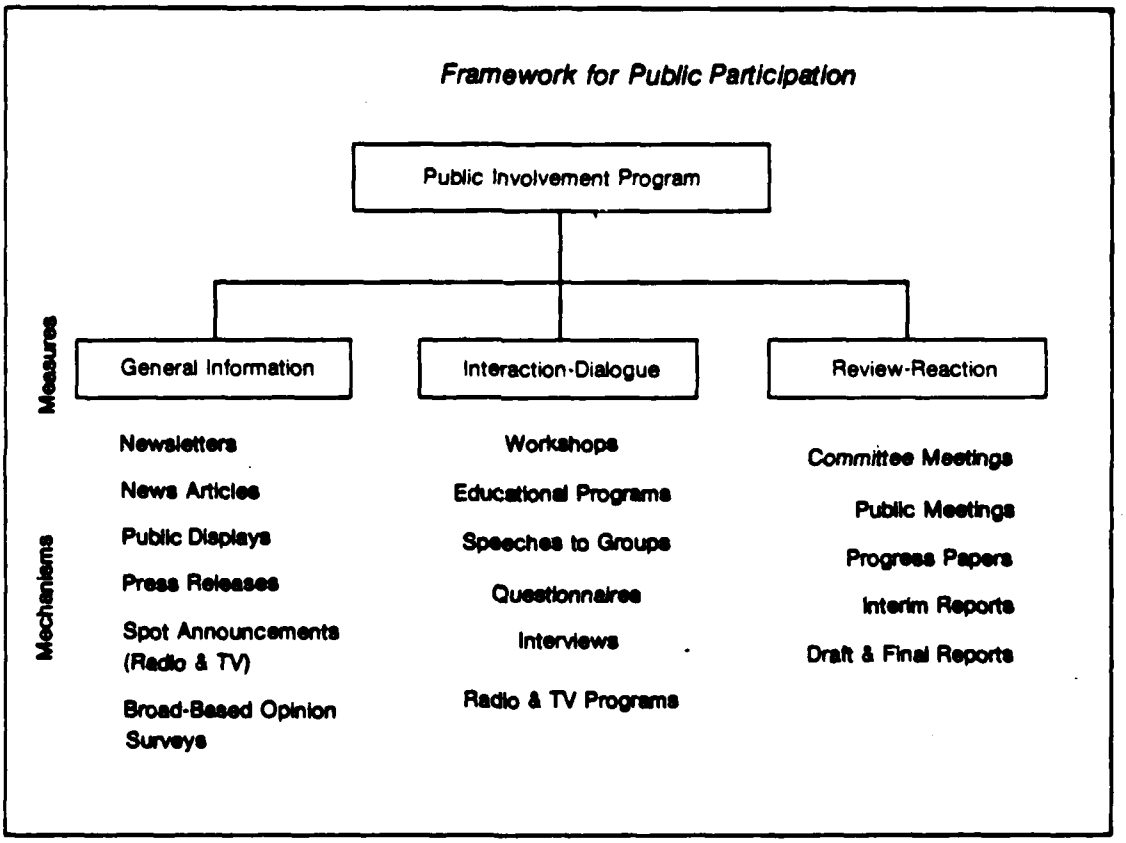
3. Formulation of alternative plans.

4. Evaluation of the effects of the alternative plans.

5. Comparison of alternative plans.

6. Selection of a recommended plan based upon the comparison of alternative plans.

FIGURE C-2


Framework for Public Participation
Public Involvement Program
Measures
General Information
Interaction-Dialogue
Review-Reaction
Mechanisms
Newsletters
News Articles
Public Displays
Press Releases
Spot Announcements (Radio & TV)
Broad-Based Opinion Surveys
Workshops
Educational Programs
Speeches to Groups
Questionnaires
Interviews
Radio & TV Programs
Committee Meetings
Public Meetings
Progress Papers
Interim Reports
Draft & Final Reports

Plan formulation is a dynamic process with various steps that should be iterated one or more times. This iterative process, which may occur at any step, can sharpen the planning focus or change its emphasis as new data are obtained or as the specification of problems or opportunities changes or becomes more clearly defined.

The public involvement program was conducted throughout the aforementioned planning process with various elements of the program conducted as appropriate during the various phases of the study. Following an overview of the management and committee structure used for the program, the scope and results of the program will be discussed as they relate to 1) initial or problem identification activities; 2) development of the early-action plans and 3) development of the long-range components and preparation of the final report.

COORDINATION STRUCTURE FOR THE STUDY

Throughout the conduct of the study, various committees and/or organizations were active in the planning, coordination and review process. This section describes both the role of these committees in the study and the agencies, organizations and individuals who served on each committee.

CORPS OF ENGINEERS MANAGEMENT/COORDINATION STRUCTURE

The study and coordination of the overall study was conducted under the general direction of the District Engineer, Baltimore District. Because of the high priority nature of the study, the District Engineer had a high degree of involvement in the coordination of the study activities and served on numerous committees related to the study and the resolution of the area's water resources problems. The routine coordination and study activities were conducted under the supervision of the Chief, Planning Division and Chief, Urban Studies Branch, Baltimore District, in order of rank, respectively. The professional staff in the Urban Studies Branch either directed or conducted the coordination and public involvement activities.

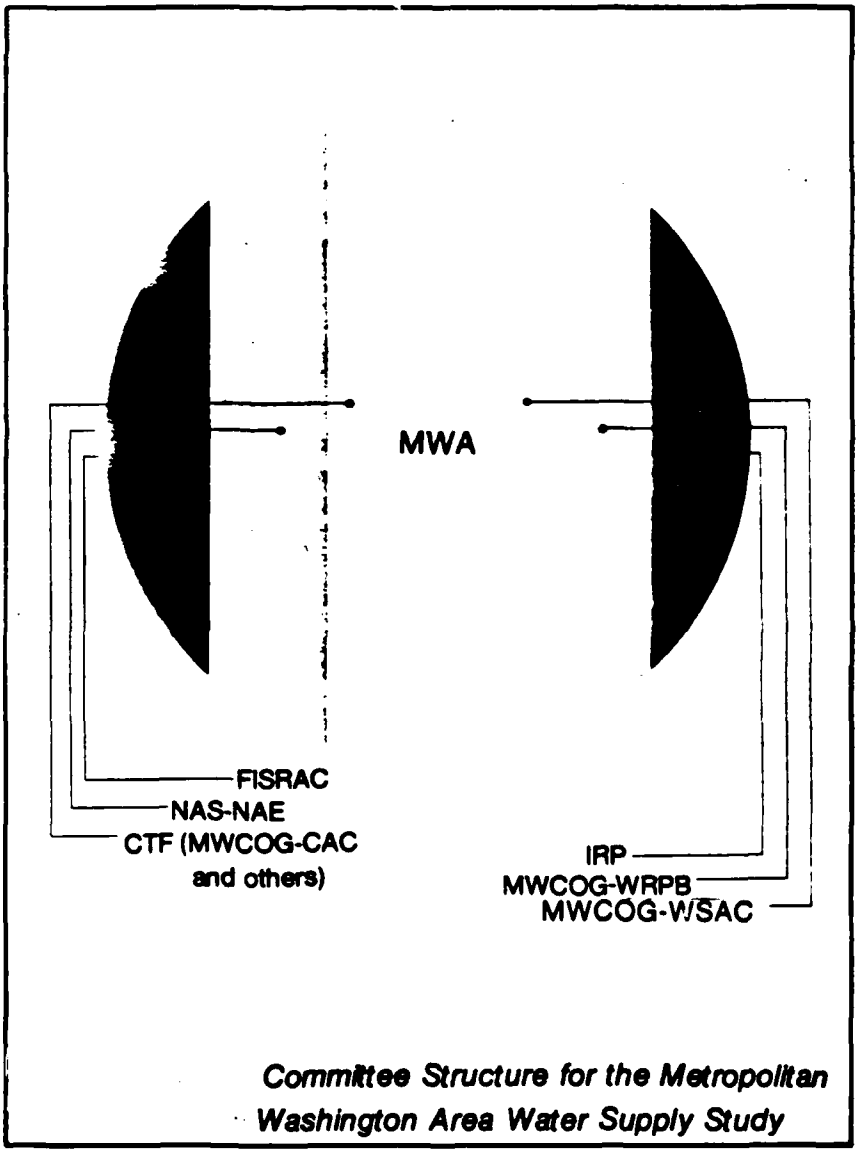
SPECIFIC COMMITTEE STRUCTURE

To encourage continued participation by other governmental, non-governmental, and individual interests, a formal committee structure, as shown in Figure C-3, was established. This formal structure included: (1) a Federal-Interstate-State-Regional Advisory Committee (FISRAC), (2) the Water Resources Planning Board (WRPB) of the Metropolitan Washington Council of Governments (MWCOG) (3) a Citizens Task Force (CTF) representing the MWA and both upstream and downstream interests in the Potomac Basin, (4) a technical review committee comprised of members from the MWCOG's Water Supply Advisory Committee (WSAC), (5) an Interagency Review Panel (IRP) of other government agencies, and (6) the National Academy of Sciences-National Academy of Engineering (NAS-NAE).

FEDERAL-INTERSTATE-STATE-REGIONAL ADVISORY COMMITTEE (FISRAC)

The FISRAC assisted in providing overall guidance and direction for the study effort, particularly during the early-action phase. Membership, shown in Table C-1, included management representatives from Federal agencies, state agencies, interstate agencies

FIGURE C-3



Committee Structure for the Metropolitan Washington Area Water Supply Study

and regional organizations currently involved with water resources management in the Metropolitan Washington Area (MWA). Assistance in policy decisions, interpretation of guidelines, and review of reports were the major contributions from the committee.

TABLE C-1

MEMBERSHIP
FEDERAL-INTERSTATE-STATE-REGIONAL
ADVISORY COMMITTEE

Corps of Engineers
State of Maryland
Commonwealth of Virginia
District of Columbia
Interstate Commission on the Potomac River Basin
Metropolitan Washington Council of Governments
Fairfax County Water Authority
Washington Suburban Sanitary Commission
U.S. Environmental Protection Agency
U.S. Department of Interior
National Capital Planning Commission

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS (MWCOG)

During the preparation of the Plan of Study, the Corps requested suggestions from the political jurisdictions in the MWA as to the best method to involve local governments and agencies in the study process. The responses indicated that the existing committee structure within the MWCOG for the "208" area-wide wastewater management study would be appropriate, since these participants were already involved in water resources planning. The existing committee structure within the MWCOG that was recommended for involvement was the Water Resources Planning Board (WRPB) assisted by the Water Supply Advisory Committee (WSAC) and the Citizens Advisory Committee (CAC), as part of a citizens task force.

WATER RESOURCES PLANNING BOARD (WRPB)

The WRPB provided the District Engineer with a local assessment of proposed water supply projects, particularly from the viewpoint of existing political, legal, financial, and institutional constraints. By involving the WRPB early in the planning process, the participants assisted the Corps in the conceptual formulation of alternative plans to solve water supply and related problems during the early-action phase of the study. Liaison between the WRPB and the Corps helped to insure that a consistent water resource management program was developed for the MWA for both water supply and for wastewater. Table C-2 lists the members of the WRPB.

TABLE C-2

MEMBERSHIP
WATER RESOURCES PLANNING BOARD
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

City of Alexandria
Arlington County
City of College Park
District of Columbia
City of Fairfax
Fairfax County
City of Falls Church
City of Gaithersburg
City of Greenbelt
Loudoun County
Montgomery County
Prince Georges County
Prince William County
City of Rockville
City of Takoma Park
Northern Virginia Planning District Commission
Interstate Commission on the Potomac River Basin
Commonwealth of Virginia
State of Maryland
Chairman, Water Resources Planning Board Citizens Advisory Committee

WATER SUPPLY ADVISORY COMMITTEE (WSAC)

A technical committee comprised of members of the MWCOG's Water Supply Advisory Committee was also used to review the study. On 30 September 1977, the MWCOG sponsored a water Supply Summit Conference for the purpose of discussing methods of improving the water supply for the Metropolitan Washington Area. Participating members adopted an eleven-point action program containing specific steps to cope with the area's water supply problems. To encourage implementation of the eleven-point action program, the Board of Directors of the MWCOG requested the WRPB to establish a special steering committee. Based on this directive, the WSAC was formed. As the WSAC's sole interest was in water supply for the MWA, this Committee was one of the primary coordination mechanisms between the MWCOG and the Corps.

Major duties of this group were: (1) to review the technical feasibility of the water supply alternatives; (2) to offer suggestions for further investigation; (3) to comment upon study reports; and (4) to provide a channel for communication among water supply experts. Table C-3 presents the membership.

INTERAGENCY REVIEW PANEL (IRP)

As many governmental agencies have a responsibility and interest in water resources management in the MWA, it was decided that a special "clearinghouse" for the MWA Water Supply Study was needed. The intended purpose of this "clearinghouse," or IRP, was to provide a focal point for review and comment by all agencies on the reports prepared for the MWA Water Supply Study. As the study progressed, it became clear that normal clearinghouse review procedures would be sufficient to coordinate with these agencies and this panel was never formally established. Coordination took the form of regular review procedures which the Corps normally follows for a traditional survey scope study. This review was also an additional management tool for the District Engineer in directing the course of the study. Table C-4 provides a list of agencies with major water resource management responsibilities.

TABLE C-3
MEMBERSHIP
WATER SUPPLY ADVISORY COMMITTEE

City of Alexandria
Arlington County
Army Corps of Engineers,
Baltimore District
Army Corps of Engineers
Washington Aqueduct Division
Chamber of Commerce, D.C.
Citizens Advisory Committee, (WRPB, MWCOG)
District of Columbia
City of Falls Church
Fairfax County
Fairfax County Water Authority
City of Greenbelt
Interstate Commission on the
Potomac River Basin
State of Maryland
Metropolitan Washington
Board of Trade
Montgomery County
National Society of
Professional Engineers
Northern Virginia Planning
District Commission
Prince Georges County
Prince William County
City of Rockville
Commonwealth of Virginia
Washington Suburban
Sanitary Commission

NATIONAL ACADEMY OF SCIENCES-NATIONAL ACADEMY OF ENGINEERING (NAS-NAE)

Section 85b-3 of the Water Resources Development Act of 1974 (P.L. 93-251) specifically directed the Chief of Engineers to "... request NAS-NAE to review and by written report comment upon the scientific basis for the conclusions reached by the investigation and study of the future water resource neeeds of the Washington Metropolitan Area and the pilot project for the treatment of water from the Potomac Estuary." As directed in the authorizing legislation, NAS-NAE reports are to be completed within one year of the completion of the referenced activities with a total of $1,000,000 to be provided for the review and coordination.

In April 1977, a contract was signed with NAS-NAE for the review of the MWA Study. Based on the terms of the contract,

> "The role of the Academy in these efforts will be to observe, review, and prepare a final report on the Corps' study that appraises the concept and methodology of the study, the nature of the data and analyses used, and the scientific merits of the conclusions. In the Academy's report, views and findings that differ from those of the Corps will be clearly stated and the rationale for the differences will be presented. To accomplish this it will be necessary for the Academy's study to proceed concurrently with the Corps' study so that the Academy can observe and comment periodically as advisable upon the entire effort as it proceeds, rather than react only in a final review made upon completion of the Corps' report. This will require a degree of interaction between the Academy and the Corps that will permit the Academy to be familiar with the Corps' study while maintaining the objectivity required by a review body. Thus, the Academy must be viewed by the Corps as a reviewer and not as a consultant."

TABLE C-4

MEMBERSHIP
INTERAGENCY REVIEW PANEL

U.S. Department of Agriculture
- Soil Conservation Service
- Forest Service

U.S. Department of the Interior
- Geological Survey
- National Park Service
- Fish and Wildlife Service

U.S. Department of Commerce
- National Marine Fisheries Service

U.S. Department of Health, Education, and Welfare

U.S. Department of Housing and Urban Development

U.S. Department of Energy

U.S. Environmental Protecton Agency

Interstate Commission on the Potomac River Basin

Potomac River Basin Advisory Committee

Potomac River Fisheries Commission

National Capital Planning Commission

Commonwealth of Virginia
- Virginia Soil and Water Conservation Commission
- State Water Control Board
- Commission on Outdoor Recreation
- Department of Game and Inland Fisheries
- Department of Health

State of Maryland
- Department of Natural Resources
  - Water Resources Administration
  - Maryland Environmental Service
- Department of State Planning
- Department of Health and Mental Hygiene

District of Columbia
- Department of Environmental Services
- City Council

Since the contract was signed in 1977, the committee or subcommittees thereof met on numerous occasions to both hear presentations from the Corps on various elements of the study and to provide formal and informal comments on the conduct of the study. This coordination was very valuable to the Corps in that it provided an impartial scientific appraisal of the study progress. Membership of the NAS-NAE Committee over the entire study period is shown on Table C-5 and pertinent correspondence with the Committee is included as Annex C-IX.

CITIZENS TASK FORCE

Formed to provide specific and direct input to the MWA Study, the MWA Citizens Task Force (CTF) to review the Corps of Engineers MWA Water Supply Study included some members of the MWCOG's CAC, as well as representatives from areas upstream and downstream in the Potomac Basin. The primary purpose of the CTF was to provide a direct channel for the participation of interested citizens in the planning process, as well as for the obtaining of additional information pertaining to the study.

The overall tasks accomplished by the CTF for the study included: (1) indentification of local concerns; (2) garnering of opinions from groups in the MWA, and areas upstream and downstream; (3) proffering of suggestions for study direction; (4) assistance in assessing alternatives; (5) review of present institutional resources to implement various alternatives; (6) sharing in the sponsorship and direction for broader public involvement and education programs; and (7) report review. This Task Force was the basic link between the Corps and citizens who were concerned about the problems of future water supply in the MWA. Membership of this Task Force is shown in Table C-6.

OTHER COORDINATION GROUPS

In addition to the aforementioned committees which had a direct role in the MWA study, there were other groups or committees that had a very significant role in the water supply planning for the MWA. The most important of these groups was the Washington Metropolitan Regional Water Supply Task Force. As a result of recommendations developed during the third meeting of FISRAC, the local governments in the MWA formed a regional task force to develop a cost effective regional management strategy as recommended in the Corps' early action plan. Formed in January 1980, the Task Force was chaired by Mr. Robert S. McGarry, General Manager, Washington Suburban Sanitary Commission and included representatives from state and local governments. The Task Force had both a Technical Advisory Group and a Citizens Advisory Group that worked very effectively in negotiating a number of institutional agreements to implement programs to meet the future water supply demands of the MWA. Included as Annex C-I to this appendix is a letter to Dr. Walter Lynn, Chairman, NAS-NAE Committee, from Mr. McGarry, which discusses in further detail the organization, objectives and accomplishments of the Task Force. The work of the Task Force is also discussed in the Main Report. Other coordination efforts worthy of note included the periodic meetings

TABLE C-5
MEMBERSHIP
NATIONAL ACADEMY OF SCIENCES-NATIONAL ACADEMY OF ENGINEERING REVIEW COMMITTEE

William W. Aultman
James M. Montgomery
Consulting Engineers

Duane D. Baumann
Southern Illinois University

Bernard B. Berger*
University of Massachusetts

Guthrie S. Birkhead*
Syracuse University

John J. Boland*
Johns Hopkins University

Paul Busch*
Malcolm Pirnie

John Cairns, Jr.
Virginia Polytechnic Institute
and State University

Kenneth P. Cantor
National Cancer Institute

Leo Eisel*
Wright Water Engineering

Jerome B. Gilbert*
East Bay Municipal Utility District

Robert H. Haveman
University of Wisconsin

Richard Hazen*
Hazen and Sawyer

Ronald A. Howard
Stanford University

Walter R. Lynn*
Cornell University

Perry L. McCarty*
Stanford University

David W. Miller*
Geraghty and Miller, Inc.

Jerome Milliman
University of Florida

Sheldon Murphy
Howard School of Public Health

Daniel A. Okun*
University of North Carolina

Leonard Ortolano*
Stanford University

Gerard Rohlich
University of Texas

W. R. Derrick Sewell
University of Victoria

* Current members of the NAS-NAE Committee to review the MWA Water Supply Study.

TABLE C-6
MEMBERSHIP
CITIZENS TASK FORCE

	JURISDICTION OR ORGANIZATION
Marian Agnew	Northern Virginia Conservation Council
William M. Breichner	City of Hagerstown
A. C. Carpenter	Potomac River Fisheries Commission
John W. Chesley, Jr.	Prince Georges County
Louise Chesnut	Arlington County
Frank J. Clark	Montgomery County
Arthur E. Cohen	Charles County DPW
Dennis J. Flynn	Southern Maryland RC&D Board
Rockwood H. Foster	Interstate Commission on the Potomac River Basin
J. R. Hawvermale	Region 9 Council West Virginia
Elizabeth Horvath	Center for Environmental Strategy
Louis Koffman	Falls Church
Martha M. Mohler	Montgomery County
John Nolen, Jr.	Committee of 100
Walter E. Raum	St. Mary's County
Lois Sharpe	Interstate Commission on the Potomac River Basin
Renay Weissberger	Metropolitan Washington Board of Trade
Edwin F. Wesely, Jr.	Potomac River and Trails Council
Jack Witten	Potomac River Association

of the signatories to the Low Flow Allocation Agrement (LFAA); meetings of the interagency Instream Flow Committee which was formed following the State of Maryland's Environmental Flowby Study in order to develop recommendations for fishery management in the Potomac; and meetings of the signatories to the Water Supply Coordination Agreement which resulted from the work conducted by the Washington Metropolitan Regional Water Supply Task Force and the Cooperative Water Supply Operation on the Potomac (CO-OP) Section of the Interstate Commission on the Potomac River Basin.

SUMMARY

The committee management structure, consisting of FISRAC, WRPB, CTF, and the WSAC was the primary mechanism used to reach the involved public and the decision-makers. Study reports furnished the basis for "review-reaction" by all participants. The NAS-NAE Committee advised the District Engineer on the basis of their review of study activities and reports. The overall purpose of the committee structure was to keep decision-makers, their staff, and the citizens aware of study progress.

INITIAL COORDINATION EFFORTS

The initial stage of the public involvement process for the MWA Water Supply Study involved meetings with the FISRAC as well as with the committee structure of the MWCOG. The process also involved the general public through media coverage, newsletters, workshops, and public meetings. This section discusses how the public involvement program related to the planning process during the initial or problem identification stage of the study.

OBJECTIVES OF INITIAL COORDINATION EFFORTS

The objective of the early public involvement activities was to inform as many interests as possible about the MWA Water Supply Study, and to seek to involve the public through specific educational activities. In other words, the initial efforts focused upon involving and informing as broad a base of the public as possible.

Not only was the publics' participative interest encouraged by the advent of the MWA Water Supply Study, but it was also prompted by other events which occurred at about the same time (1977-1979). These events involved many aspects of water supply planning: (1) a request for more water from the Potomac River by two of the major water purveyors in the MWA (Fairfax County Water Authority and Washington Suburban Sanitary Commission); (2) the negotiation and eventual signing of the LFAA which would equitably distribute available water supplies during periods of low flow to those utilities relying upon the river as a source of water supply; (3) a water shortage in several areas of the Potomac River Basin during the summer of 1977, which promoted the use of water conservation measures to decrease the impacts of the shortage; and (4) the occurrence of a system breakdown which temporarily affected and inconvenienced customers of the Washington Suburban Sanitary Commission.

INITIAL COORDINATION ACTIVITIES

The activities that were conducted during the initial or problem identification stage of the study were many and varied. The major items which comprised the program are discussed in the following paragraphs. Included as Annex C-II to this appendix is a

chronological listing of those public involvement activities conducted in the initial part of the study. Also included as Plate C-1 is a sequence diagram showing the most significant study and public involvement events over the course of the study. Pertinent correspondence for this and later study stages is included as Annex C-VIII.

FORMAL PUBLIC MEETINGS

Two formal meetings, held in March 1976, announced the completion of the Northeastern United States Water Supply (NEWS) Study and marked the beginning of the MWA Water Supply Study. The purpose of these meetings was to provide a public forum for comment on the findings and results of the NEWS Study. They were also held so that the study objectives, methodology, and management processes could be explained for the MWA Water Supply Study.

In preparation for the meeting, an announcement was mailed to about 6,000 organizations and individuals, including: elected officials; Federal, state, and local agencies; environmental groups; libraries; the media; and various other associations. The District Engineer conducted the meetings, which were attended by approximately 150 people. At the completion of the presentation, the officials and members of the various groups in attendance expressed their views on the NEWS Study as well as what they wanted to see accomplished with the MWA Water Supply Study. Concerns were expressed regarding the: (1) number and location of dams planned for the MWA, (2) population projections and existing water use characteristics, (3) lack of detailed material on water conservation measures, and (4) use of groundwater to supplement water supply.

INFORMAL PUBLIC MEETINGS

In February 1976, the Corps approached two groups to seek advice as to the best forum for involving the public. At a meeting with the League of Women Voters in Bethesda, Maryland, the members of the League made several valuable suggestions for public participation. Two of these were: (1) the use of workshops early in the planning process for the purpose of keeping the public informed about the study, and (2) the use of central local groups in the MWA to be the focal points for material dissemination and media notification for the public. Letters were also sent to members of the MWCOG to ascertain what organization would be the best forum for review, comment, and active participation in the study. In reply to that effort, the WRPB, during a briefing on the MWA Water Supply Study by the District Engineer, expressed a desire to participate in the planning process.

To carry out these suggestions, the Corps of Engineers began to develop its public involvement program to include both the MWCOG and other key local groups identified by the Interstate Commission on the Potomac River Basin (ICPRB). These groups were visualized as being able to generate the public interest in the study throughout the basin during the problem identification stage.

Events originated by others also served to highlight the Corps study. The first event involved a series of hearings sponsored by Congressmen Gilbert Gude and Herbert E. Harris II from the Committee on the District of Columbia: Subcommittee on Bicentennial Affairs, the Environment, and the International Community. These hearings, held on 2, 3, 16, 17, 23, and 24 June 1976, addressed the state of the Potomac River as to water supply and water pollution. Concerns within these two aspects of water resource development were brought to the forefront by many governmental and

non-governmental groups and individuals, including the Corps of Engineers which presented testimony about the need for using structural as well as non-structural measures to provide an adequate supply of water to the MWA.

The other event, a Summit Conference, was sponsored by the MWCOG and also involved a discusson of the problem of how to increase the available water supply for the MWA. Attending and participating in this Conference on 13 April 1977 were professional organizations, special interest groups, water purveyors, and political interests. In essence then, by the beginning of May 1977, there were many events which had provided forums for discussion of water supply and water quality in the Potomac. The problem remained, however, as to how and by what acceptable means these problems could be tackled.

PUBLIC PARTICIPATION CONTRACTS

To address the question "What is acceptable to the public?" as it pertains to the alternatives for solving the water supply problem, several special contracts were awarded.

Coordination with the NAS-NAE began with a meeting on 4-5 May 1977. At that time, the NEWS Study was reviewed for the feasibility of several of the projects proposed in the study. The NAS-NAE, as a result of the review, recommended that sections of the NEWS Study be given more emphasis. These areas included: (1) the population and demand forecasting techniques and evaluation of deficits; (2) the public health significance of continuing to draw water from the Potomac River; and (3) the institutional arrangements to implement some of the alternatives.

To gain an understanding of the issues and concerns from a local level, the Corps contracted with the MWCOG and the ICPRB to conduct a public information and public participation program from May through August 1977. The goals of the program were (1) to alert the public to the potential for water shortages in the area; (2) to inform the public of the possible methods which could be used to minimize water shortages; (3) to gain a general idea of which factors and considerations were deemed important by the public in selecting water supply alternatives; and (4) to obtain specific citizen comments on various alternatives which the Corps might examine in its study.

The contract with these two agencies consisted of two elements: (1) the development, dissemination and collection of a water supply opinion survey accompanied by a background paper; and (2) the conduct of seventeen public workshops in various areas of the Potomac River Basin. The background paper provided basic water supply information for the workshops and accompanied the opinion survey sent to the "public" prior to the workshops. It was intended that the survey would yield a general inventory of public attitudes toward water supply planning in the MWA. The seventeen public workshops provided the interactive, two-way communication channels between the agencies and the "public" which the background paper and survey could not provide.

Public Opinion Survey

The water supply survey was the first document developed as part of the public opinion exercise, and was used as a guide to write the complementing background paper entitled: Our Water; How Clean and How Much?. By following the same general sequence as the survey, the paper provided information on water supply alternatives, alerted the public to the water supply workshops, and explained the purpose of the entire public participation and information program. Twenty-five thousand surveys and

background papers were printed for distribution and 12 percent of these were returned. A copy of the survey and analysis of the results are contained in Annex C-III . In brief, the results demonstrated that people in the area would be willing to conserve water to avoid any water shortage at all and would prefer conservation and interconnection alternatives rather than large impoundments to increase water supply availability.

Several trends could also be noted from the evaluation of the survey:

1. There was a definite desire for solving water supply problems locally than in going to formerly identified upstream sites as sources for solving water supply problems.

2. There was an understanding that the water problem was a regional one. More emphasis was placed on better water quality for all, on emphasizing the least disruption to another community for a water supply alternative, and on the quality of life in the downstream reaches of the Potomac River Basin.

3. The public was well aware, and in may cases insisted, that water supply and water quality be linked together to produce a workable plan for the area.

Workshops

The agencies, with particular help from other groups, such as the Citizens Advisory Committee (CAC) of the Council of Governments, the League of Women Voters, and other local interest groups, co-sponsored 17 workshops on water supply in the MWA. In some cases, the workshops took the form of a specially designed meeting, depending upon what the local supportive groups felt would be necessary. At each meeting, the Corps presented a 15-20 minute slide presentation about the proposed MWA Water Supply Study, and the co-sponsor(s) described the water supply issues with which they were concerned. Other groups were also given time to make presentations. The remaining time of each workshop, after the presentations, was open and flexible to fit the needs and desires of the audience in each area.

At most of the meetings, the large majority were interest group representatives, public officials, water technicians, and those individuals who had always been active and vocal citizens. There were relatively few individual "walk-in" citizens. At these meetings, reactions ran the gamut from support of small impoundments to limited or no growth. Reactions often reflected localized concerns and happenings. A great emphasis, however, was expressed in favor of water conservation as well as in support of water quality to be considered on a par with water supply in the study. While considerable interest was expressed for interconnections, many people spoke out against the most economical solution to the water supply problem---large impoundments. People felt that smaller impoundments, if located with the help of the local governments, would be more acceptable. Another point expressed in common at most meetings concerned the carrying capacity of the water resource: the Corps should look at what the resource can sustain and develop a plan that would address the capacity of the resource. The following comments are provided based on the statements made by the majority of the workshop attendees.

1. Non-support for either large impoundments or extensive wellfield development for water exportation.

2. A general desire for conservation measures with the development of specific conservation programs for jurisdictions.

3. An interest in interconnections.

4. An interest in controlled growth and in water quality.

5. A desire that the Corps develop an education program for the public to discuss more fully some of the alternatives being investigated.

6. A desire that jurisdictions look to their own sources of supply for the present, and plan for the use of these sources before regionalizing their systems for future needs.

Copies of the minutes of each of the workshops and an assessment of the workshop results as prepared by the MWCOG and ICPRB are maintained in the files of the Baltimore District.

RESULTS OF INITIAL COORDINATION EFFORTS

In addition to the specific findings of the surveys and the workshops, the following general statements can also be made:

1. The workshops and surveys promoted more of a "basin consciousness" in the people who took part and provided specific input for the public.

2. For many people in the outlying counties, the workshops provided a chance to see the MWA as a much enlarged extension of the very same problems with which they were facing.

It was also possible from this public involvement process to develop a "Present Water Supply Condition Profile":

1. Disregarding that year's (1977) drought condition, citizens perceived that there was an overall long-term reduction in available groundwater supplies in all seven counties.

2. In all the counties there was perceived to be an upward trend in the number of homes on septic fields and wells, which would make the protection of groundwater more difficult.

3. In all of the counties there was a noted decrease in traditional agriculture, an increase in chemically stimulated and controlled agriculture, and increasing interest in irrigation using both surface and well water. These conditions could stress both the quantity and quality of water.

4. All counties had already experienced the failure of individual wells in some portions of the county and reduced production in others.

5. Several of the counties had experienced water quality problems in individual wells.

6. None of the counties considered themselves to own developable surface water impoundment sites.

7. In all of the counties, the projected long-term demands exceeded presently available water supplies.

8. In the estuary counties, proliferation of small sewage treatment plants had resulted in undesirable chemically treated effluents (which alter normal salinity patterns). At the same time, local groundwater levels were viewed as falling in individual and community wells which serve most of the population.

COORDINATION DURING DEVELOPMENT OF EARLY-ACTION PLANS

This segment of the appendix addresses the public involvement activities that were conducted during the early-action phase of the study. This phase involved the formulation, evaluation and comparison of those alternative plans that are required to meet the early-action needs of the MWA.

OBJECTIVES OF EARLY-ACTION COORDINATION

The objective of this stage of the study process was to provide for a coordinated, comprehensive approach to public involvement, providing opportunities for public input in the formulation portion of the study. This aspect of the study concentrated on an evaluation of those components which would make the most efficient use of existing water supplies. The components evaluated consisted of: conservation and demand reduction, raw water interconnections, local storage, reregulation and finished water interconnections.

ACTIVITIES DURING EARLY ACTION PLANNING

The major public involvement activities conducted during this phase are discussed in the following paragraphs. Included as Annex C-IV to this appendix is a chronological listing of the various activities conducted during early-action planning. Plate C-1 referenced earlier also provides an overview of the relationship between study phase/events and public involvement activities.

COMMITTEE ACTIVITIES

The public participation efforts during this stage were performed by the MWCOG along with the Corps of Engineers. The central aim of this effort was to have the Water Supply Advisory Committee, the Water Resources Planning Board, and the Citizens Task Force review and comment on the draft report. This effort began in May and concluded with a Citizens Task Force meeting in November 1978.

During this effort, the MWCOG provided support services for the Corps of Engineers, such as: (1) arranging for the meetings of all three groups (CTF, WSAC, WRPB); (2) taking minutes at the meetings; and (3) transcribing, typing, photocopying and distributing the minutes and using various media (TV, radio, newspaper and the Water Monitor) to notify the publics about the meetings.

Through this effort, the Water Resources Planning Board provided the Corps with a continuing local assessment of the study, particularly from the viewpoint of existing political, legal, financial and institutional constraints. The Water Supply Advisory

Committee provided the technical examination of the components and made comments as to their improvement. The Citizens Task Force, comprised of environmental, agricultural, business, citizens, professonal, educational and recreational interests reviewed the study with an emphasis toward making it more applicable to local matters.

Each group was able to meet approximately four times during the plan formulation stage of the early-action analysis and was able to provide comments to the Corps for further investigation and consideration. The following is a synopsis of the results.

1. Different types of water rate structures (including seasonal) should be investigated in the water conservation analysis.

2. Water metering should be investigated as a method to promote water conservation.

3. Reduction of sewage flows should be a parameter in evaluating demand reduction measures.

4. In generating water demand forecasts, population forecasts should be developed with local government participation.

5. Basic data and methodologies for generating water demand forecasts should be available for inspection by local governments.

6. Water use by local government agencies should be investigated.

7. Information used to develop water demands by water user category should be well documented to substantiate estimated flows.

8. Comparable data for water use and sewage flows should be used.

9. The Corps should be coordinating their study with other water supply studies in the Washington Area, especially regarding any basic assumptions.

10. Seven-day and one-day demands should be used in the study as well as the thirty days used at that time. This would enable planning for peak water use.

11. Water pumps that are idle between drought situations must still be maintained. These maintenance costs should be included in the project costs.

12. Computed safe yields of Patuxent Reservoirs were not the same as those computed by WSSC.

13. At that time, the committee did not express preference for the components, but chose to reserve their comments until a later stage in the planning process.

Following the development of the full range of early-action plans, the MWCOG helped the Corps perform public participation services by: (1) making its staff available to analyze and provide to the Corps written summary evaluations of the draft appendices produced by the Corps as part of the Progress Report published in August 1979; and (2) by

utilizing two existing committees, the Water Supply Advisory Committee (WSAC) and the Water Resources Planning Board (WRPB) to provide local agency review. In support of the WSAC and WRPB evaluation, the MWCOG provided services including materials and personnel to facilitate WSAC and WRPB participation. The Corps provided copies of the appropriate draft appendices of the Progress Report to the committee members and alternates for review about three to four weeks preceeding the meetings and work sessions in which the appendix was to be discussed.

Comments and recommendations relative to the early-action plans were based upon an analysis of the regional policy and planning implications of the material provided by the Corps and included an investigation of the following factors:

1. reliability of data sources,

2. validity of approach, methodologies, and interpretation of results,

3. appropriateness of conclusions, and

4. feasibility of recommendations.

The public participation programs for this phase of the study also included the provision of information to the public about the study and the continued solicitation of views concerning perceptions of the problems, issues, concerns, and needs. The program continued to solicit the participation of the population directly affected by the study, persons who would not be directly affected but could be interested in the study, local elected officials and staffs who formulate policy.

The MWCOG, while assisting the Corps in designing and implementing a comprehensive public participation program, also provided staff support to the Citizens Task Force, coordinated a series of citizen and public official briefings, distributed information to the study in the various MWCOG publications, and prepared a media campaign on the study efforts.

WATER FORUM NOTES

In addition to the committee review, the Corps of Engineers kept the public informed through a series of workshops and briefings (refer to Annex C-IV). At these meetings, the water supply study progress was discussed and questions pertaining to the components and how they might be combined into plans were answered. In November and December, 1978, four Water Forum Notes were mailed to the public to help them prepare for a series of workshops which were held in January 1979 for the purpose of discussing the components. The Water Forum Notes covered the following topics:

#1 - A Sketch of the Metropolitan Washington Area Water Supply Study

#2 - Finished Water Interconnections and the Reregulation of Water Supplies in the Metropolitan Washington Area

#3 - Raw Water Interconnections and Local Storage

#4 - Water Conservation and Demand Reduction Measures: Their Effect on the MWA

As can be noted, these publications,in a general way, oriented the readers to the planning process of the Corps and particularly to the study. A sample Water Forum Note is included as Annex C-V.

PUBLIC WORKSHOPS

In January, 1979, three public workshops were held to discuss what had been presented in the first four Water Forum Notes. To attract the attention of these meetings, a mass media campaign was conducted. Major television and radio stations in the study area and throughout the Basin announced these meetings and two stations in particular, WAMU-FM in the District of Columbia and WGMS in Rockville, Maryland, interviewed the District Engineer and Deputy District Engineer, respectively, about the study. Following the plan evaluation and selection process, two additional Water Forum Notes were distributed to present the final early-action plans.

There were three workshops held in the MWA: the first in Falls Church, Virginia, at the George C. Marshall High School on 9 January 1979; the second in Washington, D.C. at the Department of Commerce on 16 January 1979; and the third at the Harmony Hills Elementary School in Wheaton, Maryland on 17 January 1979. On the average, the meetings were attended by approximately 20 people, with the largest number attending the Falls Church meeting. Presentations were made by the staff and were in mini-group format.

After a brief introduction on the study by a member of the staff, three mini-groups were formed. Each mini-group covered different components and the public could informally attend whichever session they wanted. After the small groups met and had a chance to hear brief presentations about the components and to ask questions, a full group closing summary and a question and answer period were provided. Summaries of these meetings are available in the files of the Baltimore District, Corps of Engineers.

CORPS OF ENGINEERS EFFORTS

To mark the beginning of the evaluation and refinement process for the early-action plans, a Water Forum Note was mailed in December 1978 presenting to the public, for the first time, a series of 18 plans addressing the water supply problem. A series of important meetings were then held. A public meeting was held on 25 January 1979 at the Department of Commerce Building in Washington, D.C., to discuss the plans. Approximately 25 people attended the meeting. The usual format was followed, with two presentations after the formal speech by the Deputy District Engineer. The two presentations were made by the Metropolitan Washington Board of Trade and the League of Women Voters. Both groups supported the Corps' efforts, but did not endorse any plans at that time.

During the months of February and March of 1979, the Corps made presentations to the water suppliers and other agencies to determine the manner in which the eighteen plans could be reduced to a more select number. The session with the water suppliers in January 1979 proved to be particularly useful because of the technical comments on the

work accomplished for the 18 preliminary plans. The suggestions and results of the meeting as well as the public meeting proved to be valuable in screening the plans. On the basis of the guidance received at the water suppliers meetings, the 18 plans were reformulated into nine plans for further evaluation. The contributions of the suppliers were:

1. The suppliers would use reregulation to manipulate storage in their reservoirs so that storage would be conserved on a long-term (more than 30 days) basis, and the reservoirs would be kept as full as possible.

2. The facilities should be designed to meet peak shortages in the Potomac service areas of 7 or 1 day durations, assuming there is sufficient water in the local reservoirs.

3. Cost savings attributable to size reductions in pipelines as a result of the conservation programs should be displayed.

4. The Fairfax County Water Authority would probably opt for a direct connection between the Occoquan Reservoir and the Potomac River rather than a Shenandoah/Broad Run or Potomac/Cub Run interconnection.

Another meeting of particular value was the February 1979 FISRAC meeting. At that meeting, Conservation Scenario #3 (about 10% reduction in demand) was considered to be within reason and was adopted for use in all of the plans. Also, at the meeting, the FISRAC agreed that facilities should be sized for a 7-day duration, once in 100 year low flow event. All members agreed that transfer of water through the interconnections should be from treatment plant to treatment plant rather than to reservoirs. Finally, it was suggested that the plans for consideration display: (1) a regional approach based on total cooperation; (2) a sub-regional approach based on both the Fairfax County Water Authority and the Washington Suburban Sanitary Commission solving their own shortages plus a share of the Washington Aqueduct's shortages; and (3) a local approach where each utility solves their own problems as best as they can. Through this process, the nine plans were reduced to the five early-action plans that were examined in the Corps' Progress Report published in August 1979. A series of three public workshops and a public meeting were conducted in October 1979 to discuss the findings of the August 1979 Progress Report. Lastly, in December 1979, another meeting of FISRAC was held that had a very significant bearing on water supply planning by local interests. It was at this meeting that the FISRAC members identified Conservation Scenario #3 and the Little Seneca Project as the most important elements of any early-action plan. It was further agreed that a task force should be formed to pursue the aforementioned measures. A more detailed discussion of the above events and their importance to the MWA study may be found in Appendix B - Plan Formulation, Assessment and Evaluation.

PUBLIC INVOLVEMENT DURING LONG-RANGE PLANNING

The public involvement and/or coordination activities conducted during the long-range planning and final phase of the study can best be characterized as a continuation of most of the activities conducted in the earlier portions of the study. The objective of providing effective two-way communication remained. Likewise, the three basic measures of providing (1) general information, (2) interaction-dialogue, and (3) review-reaction

continued to be exercised. The following paragraphs provide a more detailed discussion of the specific public involvement activities. Included as Annex C-VI is a chronological listing of the various activities held during the long-range planning portion of the study.

COMMITTEE ACTIVITIES

During the long-range planning effort MWCOG provided some support/input to the study; however, the majority of the study coordination effort was the result of the CTF which met approximately 40 times between July 1979 and April 1983. The areas of greatest interest of the CTF were the planning and implementation of an early-action plan, most particularly, the Little Seneca Project; the establishment of a minimum environmental flowby; water quality as it relates to the potability of MWA supply sources; and the scope and organization of the MWA Final Report. All of these subjects were the topic of lengthy discussion at the CTF meetings and the Corps was provided with very good feedback relative to these items. An indication of the level of interest the CTF expressed in water quality/potability matters are copies of several resolutions passed by the CTF and included as Annex C-VII.

During this same time period, the activities of the Washington Metropolitan Regional Water Supply Task Force (WMRWSTF) together with that committee's Technical Advisory Group (TAG) and Citizens Advisory Group (CAG) served as an excellent coordination vehicle among the local interests, the public and the Corps. Through the efforts of this committee, the many institutional arrangements that were required to implement the early-action components were developed and eventually consummated.

The CTF had an important "review-reaction" role in the coordination and review of the final report. The preliminary draft of the final report was provided to the CTF for review and they responded with a comprehensive review of the document. A listing of the primary areas of concern of the CTF relative to the study and the preliminary draft report is provided below and their complete report may be found in Annex C-VII.

1. All basic assumptions that were key to the decision process should be clearly stated in the report.

2. The basic assumptions made in the supply-demand analysis should be better documented together with an explanation of the PRISM/COE modelling.

3. The scope of the water quality analyses was too limited and adequate consideration was not given to the existing or future water quality of both raw and finished water sources. Further, the report should recognize the importance of water quality considerations in the future operation and planning of the MWA's water supply systems. Lastly, the report should make a strong statement relative to the need for a comprehensive water quality monitoring system.

4. The report should make a strong statement relative to the importance of watershed protection.

5. Until a more comprehensive assessment of the impacts on the Potomac Estuary of various levels of flowby can be made, the 100 mgd flowby value remains unsubstantiated. As the 100 mgd flowby serves as a basis for evaluating the capability of the

system, any conclusions relative to the ability of the system to meet future needs remains questionable.

6. The report's conclusions and recommendations should be conditioned on the continuance of the series of regional agreements and contracts consummated in July 1982. Moreover, periodic independent reviews of the water supply related institutional arrangements should be made.

7. The final recommendation should be revised to define "Federal action" and to explain that the recommendation is contingent upon the continued execution of the adopted regional agreements. A recommendation should be added that calls for the periodic review of the water supply and water quality situation in the MWA and any related agreements/contracts.

In addition, the CTF also reviewed the public draft report and provided a number of additional comments. These comments, and the Corps' responses, are contained in Annex C-X concerning the disposition of public comments regarding the draft report.

WATER FORUM NOTES

During the long-range planning stage, two additional Water Forum Notes were published that provided information on the status of the study. A notice of study initiation for the Bloomington Reformulation Study was published and distributed in January 1980. Concurrent with the review of the draft report, the final Water Forum Note was distributed which presented the tentative findings and conclusions of the study. This note served to reach the public at large with a comprehensive summary of the study findings and recommendations.

WORKSHOPS AND PUBLIC MEETINGS

A final series of workshops and public meetings had been planned. In light of the nature of the final recommendation, however, these meetings were considered not necessary. The final Water Forum Note, together with a broad distribution of the draft report, were considered to be adequate dissemination of the study's findings and recommendations.

OTHER COORDINATION AND REVIEW ACTIVITIES

The previously discussed activities focused in large part on the coordination/review and information efforts with the "citizen" publics. Not to be forgotten is the continued coordination with those local, State and Federal agencies that have an interest and responsibility relative to water resources planning. While some of the previously discussed committees included representatives from the various State and local agencies and input was received from those representatives, the final coordination and review process included a more formal review of this draft report by all interested local, State and Federal agencies. The comments received during this review process have incorporated in the final report and are contained in Annex C-X. This annex also provides a discussion of each comment, either through an appropriate response or through recognition of changes in the final report.

RESULTS OF PUBLIC INVOLVEMENT DURING LONG-RANGE PLANNING

During the long-range planning phase, there was a relatively high level of general information provided to the public on water supply related matters. This information was generated through both the Corps MWA study and the activities of others. The Corps efforts were through the Water Forum Notes, public presentations and media coverage of Corps-related activities. The studies and water supply related activities of others, most particularly those of MWCOG, ICPRB, WMRWSTF and the MWA water suppliers, also maintained a relatively high level of public interest in the water supply problems and their potential solutions. While this public interest was for the most part passive, there were numerous times where citizen interest resulted in formal and informal requests for additional information or a viewpoint was provided on a particular issue/proposal. It was apparent that the media interest in both water supply issues and the activities of the water suppliers was probably the most important factor in keeping all the on-going water supply studies/activities in the "public eye".

As expected, the greatest amount of interaction/feedback during this phase came from the committee activities, particularly the CTF. As noted above, the CTF's interests were primarily related to the implementation of several components of an early-action plan and the water quality/potability of existing and potential water supply sources.

The Corps responded to these interests and concerns by developing additional technical information on the cooperative management of the existing and proposed water supply components and also conducting a sensitivity analysis on the level of environmental flowby to be allowed to enter the Potomac Estuary. Further, in response to the water quality concerns, the Corps contracted with the Environmental Protection Agency to conduct an overview analysis of the potability aspects of the existing and potential water supply sources. The scope of work for the potability study was reviewed by both the CTF and the NAS-NAE Review Committee.

Lastly, both the CTF and the NAS-NAE Committee had an important role in reviewing the draft report. Starting with a detailed topical outline of this final report, the committees received copies of consultant reports for information and review and received copies of the draft report. This review process was helpful to the Corps because it provided an insight into the scope and content of the report from a public viewpoint.

AN EVALUATION OF THE PUBLIC INVOLVEMENT EFFORTS

A documentation of the public involvement activities relative to the MWA study would not be complete without an evaluation of the results and/or effectiveness of the public involvement program. While a fully comprehensive, objective assessment of the program is an extremely difficult undetaking, the following paragraphs hopefully provide at least a general assessment of the program.

As an initial point of fact, the public involvement program for the MWA study was probably the most comprehensive and expensive program of its type conducted by the Baltimore District, Corps of Engineers, to date. Literally thousands of hours of manpower and hundreds of thousands of dollars were expended in the pursuit of a meaningful exchange of information between the public and the Corps. In total, the

expenditure of the time and funding appears to have been worthwhile and the program should be judged as successful. The danger in the judgement is that it may lack objectivity and, further, that success or failure should be judged over a longer period of time following completion of the study. Perhaps the full measure of the success of any public involvement program should be the degree of acceptance or implementation of the results/recommendations of the study.

If the progress toward implementation of a plan is a measure of success, then the MWA Study efforts should be considered most successful as the local agencies and water suppliers have moved very purposefully toward implementing a number of the measures recommended in the early-action phase. While there was certainly not universal agreement on all the measures proposed, it is most gratifying to see local agencies working together to solve a water supply problem that has a high degree of both technical and institutional complexity. It is believed that the coordination and information atmosphere developed as part of the study process made a significant contribution to the positive actions taken by the local interests.

A second factor to be considered in evaluating the public involvement program is the effectiveness of the program in disseminating information to the general public. In this case the information to be conveyed could be generally classified as identification of the problem, the alternatives and the solution. The Water Forum Notes, public presentations, news releases and other broad-based public information documents have succeeded in educating an interested public. To say that all of the several million people impacted by the problem and study are fully attuned to the MWA study and findings is a gross overstatement; however, there is a strong indication that the general public does have an above average understanding of the problems and solutions. The level of understanding is attributable to recent drought experiences and the attendant media coverage; the studies and public information activities of others; and the Corps' MWA study efforts.

Lastly, what appears to be the most effective/beneficial aspect of the program was the interaction-dialogue element which was designed around workshop exercises and committee interaction. The documentation referenced earlier in this appendix is ample evidence that the various study committees met frequently throughout the course of the study to provide their viewpoints. The advice and/or input gained from both the MWA Study Committees and those committees such as the MWRWSTF was most valuable in gaining an insight into the desires of local interests.

ANNEX C-I

SUPPLEMENTAL INFORMATION,
WASHINGTON METROPOLITAN REGIONAL WATER SUPPLY TASK FORCE

MAR 31 1982

COMMISSIONERS
JESSE L. MAURY
Chairman
LAWRENCE L. BROOKS, SR.
Vice Chairman
JOHANNA S. MORRIS
DAVID B. SCOTTON
LEONARD H. TEITELBAUM
ANDREW M. VISLOSKY

ROBERT S. McGARRY
General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION

4017 HAMILTON STREET · HYATTSVILLE, MARYLAND 20781 · (301) 699-4000
Department of Engineering ARBITRON BLDG 311 MARSHALL AVE · LAUREL, MD 20707

March 29, 1982

Mr. Walter R. Lynn, Chairman
Committee to Review the Washington
Metropolitan Area Water Supply Study
632 Clark Hall
Cornell University
Ithaca, New York 14850

Dear Mr. Lynn:

I note that the Committee to review the Metropolitan Washington Area Water Supply Study will meet on April 6, 1982. I believe you would be interested to learn that the Washington Metropolitan Region has agreed to implement most of the Corps' recommendations. I am enclosing, for your information, the following:

a. WSSC's comments to the District Engineer, Baltimore District, dated November 21, 1979, suggesting that the water supply problem was a local decision that should be handled by local leadership. (As a result of that letter and subsequent meeting I was asked to form a Task Force).

b. My letter to the political leaders dated January 2, 1980, suggesting the formation of such a Task Force.

c. Letter of April 16, 1980, to the political leadership submitting a work plan and suggestions for a Citizens Advisory Committee.

d. My letter dated November 14, 1980, with memo same date, which defines Regional Water Demand and Existing Regional Water Capacity. (At this point it was determined that one small reservoir, plus regional cooperation, would resolve the problem).

e. A letter dated February 19, 1981, confirming approval by the Task Force of the November 14th recommendations with a revised work plan.

f. My memo of March 8, 1982, with recommendations completing the Task Force efforts.

As indicated in the memo dated March 8th, the Task Force met on March 19, 1982. The Task Force approved the recommendations regarding cost-sharing regional operation and modifications to the Potomac River Low Flow Agreement. The implementing contracts and agreements are in final draft and will be complete by the end of April. We expect to start construction of Little Seneca Reservoir this spring or summer and will have resolved the Washington Metropolitan Region's water supply problems through 2030.

Sincerely,

Robert S. McGarry
General Manager

RSMcG/H
Attachments

cc: Daniel A. Okun
School of Public Health

COMMISSIONERS
DAVID R. SCOTTON
Chairman
LAWRENCE L. BROOKS, SR.
Vice Chairman
SALLY KANCHUGER
JESSE MAURY
JOHANNA S. NORRIS
ANDREW M. VISLOSKY
ROBERT S. McGARRY
General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION
4017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (301) 500-4000
Department of Engineering: ARBITRON BLDG. • 312 MARSHALL AVE. • LAUREL, MD. 20810

MAR 31 1982

NOV 21 1979

Colonel James W. Peck
Baltimore District
Corps of Engineers
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

I wish to provide the following Washington Suburban Sanitary Commission comments, for the record, on the Metropolitan Washington Area Water Supply Study.

The report entitled Metropolitan Washington Area Water Supply Study of the Potomac River Users is an absolutely essential element in the eventual solution of this area's water supply problems. In my judgment the Corps has evaluated a wide-range of alternative strategies, has incorporated the public interests and opinions concerning water supply into the report and into the development of these strategies, and has laid out clearly the decisions that must be made. I believe the report reveals the following:

First, the water supply problem is not as critical as it has been viewed in the past. I can recall when we were predicting shortages of 100 million gallons per day by the year 2000 on a 30 day basis. The revised figures show that the shortage of that magnitude for that duration will not occur until considerably later than 2000 and that deficits of shorter duration (1 day and 7 day) will not be as severe nor will they occur as soon as we had previously predicted. A cause of this is, of course, a change in the rate of growth in the metropolitan region. In addition, the affects of the regional efforts to conserve water are recognized and they are indeed reducing our demand for water.

Perhaps the most important conclusion that can be drawn from the Corps of Engineers' report is that solutions for the mid-range period can be implemented locally. Through the use of high flow skimming techniques to conserve or replenish existing reservoirs in Virginia and Maryland or through the construction of a small reservoir (Little Seneca Lake) in Maryland a very adequate supply of water can be guaranteed the Washington Metropolitan Region. Thru 1995, it no longer appears necessary to consider reservoirs outside the Washington Metropolitan Region in order to insure an adequate supply of water. Thus, for the first time the solution to a very old problem is in the hands of local decision-makers. This is both encouraging and discouraging. It is encouraging because of the difficulties in the past in

JUN 2 1980

A-4 (j)

obtaining agreement and support for the construction of facilities outside the region. It is discouraging because the record of regional cooperation on water and sewer matters is far from outstanding.

While noting that the solutions for the water supply problem in the region can be solved locally, I believe it is equally important to note that the District of Columbia water supply problems cannot be solved within the District's jurisdiction. While Maryland and Virginia jurisdictions have land and existing reservoirs the District of Columbia does not. Thus, the District's problem can only be solved through cooperation on the part of Maryland and Virginia.

The necessity for local cooperation is recognized in the report except for Plan 2 - Local Plan. Plan 2 implies that the District of Columbia and Rockville have the option of purchasing the uncontracted water supply storage in Bloomington Reservoir without the concurrence of the other jurisdictions. This implication is in conflict with the Potomac River Low Flow Allocation Agreement (PRLFAA). Paragraph 5 of the PRLFAA allocates the maximum capacity practicable from all upstream reservoirs, including Bloomington. While the PRLFAA could be amended to recognize purchase of the uncontracted water supply storage as an augmentation under Paragraph 5, regional agreement and cooperation are necessary.

I wish to bring to your attention the status of the recently completed Bi-County Water Supply Study. The task force recommended the construction of a reservoir on Little Seneca Creek to meet the water supply needs of Montgomery and Prince George's Counties. The reservoir is today under design and land acquisition is progressing. There is virtually no opposition to this solution and I am confident it will be built - financed entirely by the residents of Prince George's and Montgomery Counties.

I do not believe that the ultimate solution to the Washington Metropolitan Region water supply problems lie in the hands of the Federal government and Federal decision-makers. I believe water supply has been traditionally a local matter, and that the costs will be less to the region if they are local solutions. An example of our costs and problems with a Federal solution is Bloomington Dam. Bloomington Dam was authorized in 1962 but it will not be on line until 1981. Under the Federal water supply policies the jurisdictions will have to reimburse the government for the costs of Bloomington Reservoir. If Bloomington had been constructed by WSSC or the State of Maryland it could have been completed 10 to 15 years earlier with the resultant savings in inflation costs. The authority for either the State or WSSC to build such a reservoir exists. In addition, had Bloomington been built by state or local agencies exclusively for water supply and perhaps flood control the current need to re-examine the project authorization with a view toward increasing the water supply potential would not be necessary. This, of course, is hindsight, but it is an example of the costs that jurisdictions bear in the area of water supply if they depend on a "Federal solution."

JUN 2 1980

A-4 (k)

Colonel James W. Peck
Page 3

We simply must face up to the problem that the water (and sewer) problems of this region will only be resolved through cooperation on the part of the local governments. I strongly believe that the time has come for the governments of Washingon, D.C., Fairfax County, Prince George's County and Montgomery County to form a Washington Metropolitan Region Water Supply Task Force similar to the Bi-County task force to solve the regional problem. The Corps of Engineers' study provides the technical data and the locally implementable solutions to the problem. All that remains is for local leadership to get together in the form of a task force to develop a total regional management strategy. It is not an impossible task. All that is lacking is the determination and leadership to get it done.

Sincerely,

Original Signed - David R. Scotton

David R. Scotton
Chairman

2Nil 15

ESMcG/H

bcc: General Manager's Office
Department of Engineering
Commission Office
Floater File
Assistant General Manager
Public Information Officer

JUN 2 1980

A - 4 (l)

(End)

COMMISSIONERS
DAVID R. SCOTTON
Chairman
FRENCE L. BROOKS, SR.
Vice Chairman
SALLY KANCHUGER
JESSE MAURY
JOHANNA S. NORRIS
ANDREW M. VISLOSKY
ROBERT E. McGARRY
General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION
4017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (202) 699-4000
Department of Engineering: ARBITRON BLDG. • 313 MARSHALL AVE. • LAUREL, MD. 20810

January 2, 1980

RECEIVED
JAN 1 1980
CHAIRMAN, BOARD OF SUPERVISORS

Mr. John F. Herrity, Chairman
Board of Supervisors
Fairfax County
Massey Building
4100 Chain Bridge Road
Fairfax, Virginia 22030

Dear ~~Mr.~~ Jack Herrity:

The Corps of Engineers has completed the Metropolitan Washington Area Water Supply Study of the Potomac River Users. I believe the MOST IMPORTANT CONCLUSION IS:

Mid-range (thru 2030) solutions to our regional water supply problem can be implemented locally.

Local decision-makers can solve the problem - if they wish - through regional cooperation.

In our comments on the Corps' study (copy attached) we recommended the governments of Washington, D. C., Fairfax County, Prince George's County and Montgomery County form a Washington Metropolitan Region Water Supply Task Force to develop a cost effective regional management strategy. At the third meeting of the Corps' Federal-Interstate-State-Regional Advisory Committee (FISRAC) this recommendation was unanimously endorsed. The members of the FISRAC also recommended that WSSC initiate action to form the task force.

A similar organization, the Bi-County (Prince George's and Montgomery) Water Supply Task Force successfully developed (and is implementing) solutions for WSSC's mid-range water supply needs. The Bi-County Task Force was co-chaired by the Presidents of the two County Councils and their leadership was essential. I believe a Metropolitan Task Force will also require such leadeship. The technical work has been completed - the remaining issues (economic, the degree of interjurisdictional cooperation, and supply strategies such as drought management) require the leadership of elected officials.

I am writing this same letter to Mr. Parris N. Glendening, Chairman, Prince George's County Council; Mr. Scott Fosler, President Montgomery County Council, and Mr. Arrington L. Dixon, Chairman of the City Council, District of Columbia, to suggest you four meet at 10:00 A.M., on January 18, 1980, to consider the formation of a Regional Task Force.

JUN 2 1980

A - 4 (h)

As requested by the FISBAC, we will host the meeting at WSSC headquarters in Hyattsville, Maryland. I will arrange a brief overview of the Corps' study, a summary of the remaining issues and the techniques used by the Bi-County Task Force.

Mr. James Corbalis is the Fairfax County Water Authority representative to the FISBAC. He can brief you on the FISBAC meeting, the issues, and why they endorsed the task force concept.

Sincerely yours,

Robert S. McGarry
General Manager

RSMcG/B
Attachment

cc: Mr. James Corbalis

JUN 2 1980

A-4(i)

April 16, 1980

The Honorable Parris N. Glendening
Chairman, Prince George's County Council
County Administration Building
Upper Marlboro, Maryland 20870

Dear Mr. Glendening:

In my letter of January 2, 1980, I suggested a meeting to explore the possibility of forming a Regional Water Supply Task Force. As a result of the meeting on January 18, 1980, representatives from each jurisdiction agreed to form a Task Force. It was further agreed that each jurisdiction would designate an elected official as a representative. To date, Fairfax County and Montgomery County have designated an official. While I have not received your designation, I have been in contact with Mr. Bigley who indicates that Prince George's County supports the concept and will participate in a task force.

Since the January 18 meeting, I have had two meetings with the representatives of the District of Columbia, Department of Environmental Services, and the Fairfax County Water Authority. At these two meetings we developed a proposed work plan for the task force and I am attaching a copy.

I believe it is necessary to have a meeting of the principals of the task force in the near future. I propose the following agenda:

1. Consideration and approval of the task force work plan

2. Consideration and establishment of a Citizens Advisory group

In order not to delay this project any further, I suggest that an initial task force meeting be held in early May. I have arranged a meeting at 10:00 a.m., May 12, 1980, in the Conference Room Blue Plains Sewage Treatment Plant. I would appreciate it if you could attend this first meeting as it will be important for the success of the task force.

Sincerely yours,

ORIGINAL SIGNED - ROBERT S. McGARRY
Robert S. McGarry
General Manager

cc: Dennis Bigley
Edward Chen

WASHINGTON METROPOLITAN WATER SUPPLY TASK FORCE RECOMMENDED WORK PLAN

It is recommended that the Task Force use the tasks outlined below to address and resolve our water needs. At the completion of the technical work on each task described below the Citizens Advisory Committee would be briefed and their opinions and recommendations solicited. After considering citizen opinions and recommendations plus the technical advisory group recommendations the task force would have adopted a set of planning elements that will form the basis for an action plan.

REGIONAL WATER DEMAND

The first project is an analysis of the regional needs (demand). The Corps' Metropolitan Water Supply Study, the Bi-County Water Supply Task Force Study, and other local analysis of water use provide a data base upon which to project the regional demand for water. However, there are issues to be resolved. For example, the Corps' Metropolitan Water Supply Study did not use COG's Round II population projections. Some comments on the Corps' study indicated that since these Round II population projections have changed in magnitude and distribution, the Corps' demand might need modification. Issues such as this would be combined with all the available data to form the recommendation to the Task Force of the regional needs for water (demand) that would be the basis of all further analysis. Recommend the District of Columbia, Department of Environmental Services as the lead technical agency responsible for this analysis. It is estimated that this work could be completed within 45 days and presented to the Task Force for their action shortly thereafter. The Citizens Advisory Committee will be informed and provided adequate information for their analysis and recommendations. Task Force adoption of the regional demand would resolve current uncertainties and establish this planning element.

EXISTING REGIONAL WATER CAPACITY

It is proposed that the regional water supply capacity available to meet the demand approved under the previous project be analyzed in two ways. First, existing regional capacity that is available, including Bloomington Reservoir as currently authorized, would be analyzed. Second, an analysis would also be made of the potential additional supply available through re-Authorization of Bloomington. The result of this project would be the existing water supply capability for the region. It is contemplated that the recommendations would be in two parts; (a) Bloomington as authorized and (b) Bloomington under potential re-authorization. Again, the Citizens Advisory Committee would be fully informed so they could formulate recommendations for the Task Force. The Task Force would be requested to adopt the capacity that the region could count upon to meet their needs. Recommend that the Fairfax County Water Authority be the lead agency for this task. The task can be accomplished concurrently with the regional water demand and can be completed within 60 days.

SUPPLY/DEMAND MANAGEMENT OPTIONS

Under this project management options to provide for the defects resulting from the Task Force approved demand and supply tasks will be developed. The options could range from construction through drought management and conservation. It is intended to develop all possible options for review by the Citizens Advisory Committee and the Task Force. The Task Force would review the options and citizen opinion rejecting those that are politically, socially, environmentally or otherwise unacceptable, leaving a series of regionally supportable options for further analysis. This project cannot be started until a significant amount of work has been done on the previous two projects. However, with the work that has been done by others, such as the Corps and the Bi-County Water Supply Task Force, excellent planning data is available and the analysis is not complex. It is expected that this project could be completed within 30 days of Task Force adoption of demand and supply planning guidance.

PUBLIC WORKSHOP

At this point it is recommended that a public workshop (or a series of workshops) be held to obtain input and understanding of the analysis and actions by the Task Force. Since the demand, regional water capacity, and management options are the three key elements in developing action plans, public understanding and input, and hopefully concensus, is very important. It is contemplated that the Citizens Advisory Committee would be the lead agency for this effort and it could be accomplished in 30 days.

ACTION PLANS

This project would develop an action plan to meet each of the management options endorsed by the Task Force. For each action plan one or more financial arrangements would also be developed and, if necessary, proposed amendments to the Low Flow Agreement and other regional agreements. (A recommendation for the lead technical agency is not proposed at this time. Until the first three projects are finished and the magnitude of effort involved in developing action plans is analyzed it was considered inappropriate to recommend a lead agency). Because of the wealth of data available and the many previous studies of these problems it is believed that this project could be accomplished in 60 days. The action plans and citizen opinion would be presented to the Task Force for their endorsement. It is important to note that it is not expected that the Task Force would select a plan at this point. Selection would be postponed until the conclusion of the public hearings described below.

PUBLIC HEARINGS

It is recommended that a series of public hearings throughout the jurisdictions be held by the Task Force and the Citizens Advisory Committee to solicit input opinion, and/or criticism of each of the action plans developed. It is expected that this endeavor would take about 45 days.

SELECT ACTION PLAN

The Task Force should be in a position to select a plan to resolve the regional water supply problem. Since each of the major jurisdictions involved in the implementation of any plan is represented on the Task Force it would be expected that the Task Force's approval would insure governmental approval and ease eventual implementation. This would complete the Task Force's mission. If the projects listed above are accomplished in the time frame indicated it is expected that this final action would be taken in the fall of 1980.

November 14, 1980

Mr. John F. Herrity, Chairman
Fairfax County Board of Supervisors
County of Fairfax
4100 Chain Bridge Road
Fairfax, Virginia 22030

Dear Mr. Herrity:

The technical group of the Washington Metropolitan Water Supply Task Force has completed our work on the first two tasks in the approved work plan:

Regional Water Demand
Existing Regional Water Capacity

Our recommendations for these tasks follow:

REGIONAL WATER DEMAND

We recommend that the regional water demand projections developed by the Corps of Engineers for the Interim Water Supply Study be accepted and used by the Task Force. Attached is a memorandum to the Task Force dated June 2, 1980, supporting this recommendation (Enclosure I).

EXISTING REGIONAL WATER CAPACITY

To analyze the regional capacity of existing water systems plus WSSC's proposed Little Seneca reservoir, we developed a model (CO-OP model) to control daily reservoir releases and optimize the water supply potential of the rivers and reservoirs. Using the model, we have analyzed the year 2000 and 2030 daily regional water demands against a repeat of the actual daily flows in the Potomac during the 1930 and 1966 droughts (the two worst droughts in the last 100 years of weather records).

We concluded the following:

a. That operating the regional water facilities as a system vastly increases our capability to meet regional demands.

b. That the addition of WSSC's Little Seneca reservoir to the regional supply system, provides the capability to meet projected regional demands beyond the year 2000 and provide a flow-by significantly greater than the 100 mgd now specified by the Potomac Low Flow Agreement. (While we limited our conclusions to the year 2000 demand projections because of concern for longer range demand forecast, a regionally operated system that includes Little Seneca reservoir also provides adequate supply through the year 2030 based on the Corps' demand projections).

c. That there will be severe shortages in Fairfax County and the District of Columbia at higher flow-bys if all the facilities are not operated as a system.

d. That Little Seneca Reservoir is adequate for the region beyond 2000 and additional supplementary facilities such as Potomac/Occoquan or Potomac/Patuxent pipelines are not required.

A memorandum supporting these conclusions is attached (Enclosure 2).

Based on the above conclusions, the technical advisory group recommends that a regionally operated water supply system with Little Seneca reservoir as a regional facility be accepted as meeting our water demands through the year 2000.

The Citizens Advisory Group has reviewed our work on demand and supply. Their concurrence and recommendations are attached (Enclosure 3).

If the preceding recommendations are approved, the remaining tasks in the approved work plan can be abbreviated. The Technical Advisory Group recommends the immediate development of a regional agreement for consideration by the CAG and Task Force incorporating the following:

a. Regional sharing of the costs and benefits from Bloomington and Little Seneca Reservoirs including appropriate revisions to the Low Flow Allocation Agreement.

b. Regional operating procedures governing releases and/or withdrawals from Bloomington, Little Seneca, Occoquan, Patuxent reservoirs and the Potomac River.

The Citizens Advisory Group also recommends this action (Enclosure 3).

The series of public hearings in the action plan could be held as scheduled but the public workshops are not appropriate if you approve proceeding with the regional agreements scheduled above.

I believe a meeting of the Task Force to consider TAG and CAG recommendations is appropriate. I will contact your office to arrange a time and place for a meeting.

I have sent the same letter to Mr. Fosler, Montgomery County; Mr. Amonett, Prince George's County; and Mr. Moore, District of Columbia.

Sincerely,

ORIGINAL SIGNED - ROBERT S. McGARRY

Robert S. McGarry
General Manager

RSMcG/ah

cc:

Fairfax
Mr. James Corbalis

Prince George's Co.
Mr. Edward Chen
Mr. Dennis Bigley

Montgomery Co.
Mr. Philip Bennett
Mr. Robert C. McDonell

District of Columbia
Mr. Harry Ways
Mr. Russell Thomas
Ms. Ann Snodgrass

Interstate Comm.
Mr. Dan Sheer

Colonel James W. Peck
Corps of Engineers
Mr. Thomas C. Andrews
Maryland State Dept. of Natural Resources
Mr. George Pence
U.S. Environmental Protection Agency
Mr. Louis Guy, Chairman
Citizens Advisory Group

bcc:
Mrs. Kanchuger
Mr. Profilet
Mr. Shagogue
Mr. Arthur Brigham

INTEROFFICE MEMORANDUM

TO: WASHINGTON METROPOLITAN WATER SUPPLY TASK FORCE

FILE NO.

FROM: ROBERT S. McGARRY
EXECUTIVE DIRECTOR

DATE: NOVEMBER 14, 1980

SUBJECT: EXISTING REGIONAL WATER CAPACITY

To analyze the existing regional capacity to include WSSC's Little Seneca reservoir a simulation model (CO-OP Model) was developed by the CO-OP Section of the Interstate Commission on the Potomac River Basin. The CO-OP Model is described in the attached paper dated November 9, 1980.

The Technical Advisory Group has made an extensive review of this model and finds it provides a superior analysis and decision mechanism of existing regional water capacity.

If the existing water supply facilities are operated as a system, the capabilities to meet regional demands in the year 2000 are far greater than previously predicted. If the drought of July 1 - December 30, 1930 (the most severe drought of 100 years of record) were to reoccur when the demand for water equals the year 2000 Corps' projections, our ability to meet regional needs depends upon the following:

a. The environmental flow-by to the estuary: The Potomac Low Flow Allocation Agreement requires the region to maintain a 100 mgd flow-by. However, there is a study of this quantity underway that may increase or decrease the flow-by quantity. Flow-bys greater than 100 mgd were analyzed to determine the capacity of the system. Flow-bys higher than 100 mgd can also be viewed as the margin of safety in the total system.

b. The application of restrictions on outside use of water: The Low Flow Agreement requires all users to impose restrictions when water demand is predicted to be 90% of Potomac flow. Since such restrictions are required by the agreement, the analysis with restrictions is very appropriate.

c. Availability of WSSC's Little Seneca reservoir as a regional supplement.

Examples of our findings are shown below:

EXAMPLE I. No restrictions on water use
Little Seneca not available

Flow-by	Shortages			
	# days	Total	Max. Daily	Comment on Shortage
125 mgd	1	2 mgd	2	Insignificant amount

This system cannot provide higher flow-bys because all reservoirs are drained.

EXAMPLE II. No restrictions on water use
Little Seneca available for region

Flow-by	Shortages			
	# days	Total	Max. Daily	Comment on Shortage
125 mgd	0	0	0	
325 mgd	0	0	0	

325 mgd flow-by (or safety margin) is the systems maximum capability.

EXAMPLE III. Restrictions on water use
Little Seneca not available

Flow-by	Shortages			
	# days	Total	Max. Daily	Comment on Shortage
125 mgd	0	0	0	
200 mgd	2	31 mgd	30	Easily managed by lowering flow-by to 170 mgd on just 1 day out of 25 weeks

Cannot provide flow-bys (or safety margin) much over 200 mgd.

EXAMPLE IV. Restrictions on water use
Little Seneca available

Flow-by	Shortages			
	# days	Total	Max. Daily	Comment on Shortage
125 mgd	0	0	0	
200 mgd	0	0	0	
325 mgd	0	0	0	

We have also analyzed the 1966 drought (a shorter drought but with the lowest flows of record and find the system could provide:

a. 125 mgd flow-by without Seneca and without restrictions
b. 325 mgd flow-by with Seneca and with restrictions

If the regional facilities are not operated as a system and Seneca is only a WSSC facility, the supply capability is significantly reduced. A repeat of the 1966 drought with year 2000 demands was analyzed. Even with restrictions for most of the 10 week drought, serious shortages occur at higher flow-by for Fairfax and D. C. as shown below. WSSC has shortages without Seneca but no shortages if Seneca is reserved for WSSC use.

Flow-by	Shortage (mgd)								
	WSSC			Fairfax			D. C.		
	# days	Max. day	Total	# days	Max. day	Total	# days	Max. day	Total
100 mgd No Seneca	1	16	16	0	0	0	1	8	8
125 mgd No Seneca	2	27	32	2	16	23	6	21	59
200 mgd Seneca(WSSC)	0	0	0	4	11	22	10	29	188
325 mgd Seneca(WSSC)	0	0	0	11	24	138	30	91	1271

For the year 2030, the regional demands and a 100 mgd flow-by can be met without the restrictions if Little Seneca is a regional reservoir. With restrictions on outside water use the regional system could provide the following:

Flow-by = 125
Regional Shortages

	# days	Total	Max. day
With Little Seneca	0	0	0
Without Little Seneca	8	244 mgd	113 mgd

Flow-by = 225

With Little Seneca	0	0	0
Without Little Seneca	System cannot meet this demand because reservoirs are drained		

These analysis clearly demonstrate the value of Little Seneca to a regional system. Because the flow time from Bloomington is seven days, releases from Bloomington must be made to meet estimated demands seven days in future. To insure unexpected demands are met a margin of safety release must be added to predicted Bloomington release. This often results in wasting water (water goes to estuary because it is not needed on the day it arrives). Since flow time from Little Seneca is less than 1 day, the margin of safety releases from Bloomington can be greatly reduced using Seneca as a regional facility.

It also concluded that the addition of Little Seneca to the regional system provides the capability to meet the regional demands well beyond 2000 AD — probably through 2030 AD and provide a reasonable flow-by to the estuary.

The flow-by quantities to the estuary can be viewed as an excellent margin of safety. If the system can provide a seven day average 325 mgd flow-by during a long drought such as 1930, then there certainly could be no objection to daily withdraws that lower the flow-by to 100 mgd or 200 mgd for a day or so to meet very unusual demands.

These analysis show that there is little need for WSSC to construct Little Seneca for their exclusive use. Even without regional cooperation, WSSC can manage through a severe drought (1966) without Little Seneca and a flow-by of 100 mgd.

The benefits of Little Seneca Reservoir are regional. This reservoir provide environmental improvement, flexibility, a significant margin of safety, and a regional water supply that will meet projected demands well beyond the year 2000.

Robert S. McGarry
Executive Director

RS:McG/H

November 9, 1980

The simulation model developed by the CO-OP Section of the ICPRB is an accounting procedure which represents the principal water supply and demand components of the Washington Metropolitan Area (WMA). The model is designed to portray the operation of water supply for the WMA at different points in time in the future under severe drought conditions.

The storage, treatment, and pumping facilities that are incorporated in this model are, with one exception, those structures that are currently in place or under construction. The exception is the Little Seneca reservoir. The sizing of Potomac water treatment plants is assumed sufficient for the withdrawals. The principal components of the model are described below:

1) WATER SUPPLY - The most severe droughts in the Potomac basin during this century occurred in the early 1930's and mid 1960's. Two periods from these droughts were chosen to represent water supply conditions during a severe drought. A 25 week period (July 1-December 30) in 1930 represents the most extended severe drought conditions faced in the Potomac basin. A 10 week period (July 1-September 9) in 1966 contains the lowest daily flows observed on the main stem of the Potomac. This period represents the most severe short term drought conditions faced in the Potomac basin.

2) WATER DEMAND - Daily demand data were developed for the Fairfax County Water Authority (FCWA), Washington Aqueduct Division (WAD), and Washington Suburban Sanitary Commission (WSSC). Base demands for the years 2000-2030 were obtained from Corps of Engineers projections. An important feature of daily demands is marked fluctuation about the average daily values. Estimates of daily fluctuations were obtained from 10 years of pumping records for each of the three jurisdictions. Two features of fluctuation in daily demands were noted and incorporated in the model. The features are a) during the Summer season daily fluctuations in demand largely reflect outdoor water use, and b) daily demands for the three water jurisdictions are correlated; days on which the demand is high (low) for one jurisdiction are commonly days of high (low) demands for the other jurisdictions.

Soil moisture deficit data were obtained to provide an indicator of outdoor water use (high soil moistute deficits would indicate high outdoor water use). Fluctuations in daily demands about the average values were obtained by using the soil moisture deficit data.

3) WATER USE RESTRICTIONS - Demand reduction can be obtained

in the model by imposing water use restrictions. The principal assumption made is that only outdoor water use can be restricted. This is accomplished by setting the soil moisture deficits to zero. Restrictions are implemented when total withdrawals from the Potomac exceed 80% of the flow in the Potomac (minus environmental flowby). Restrictions are removed when projected withdrawals from the Potomac drop below 50% of the average daily flow over the last 7 days.

4) RELEASE RULES - Daily releases from Bloomington are based on the predicted demands of the WMA one week ahead (it is assumed that the travel time for releases from Bloomington is seven days). The magnitude of the daily release from Bloomington is equal to the difference between the predicted total regional demand and the predicted natural flow in the Potomac (minus environmental flowby) plus an "adjustment factor" which balances streamflow and which determines the average water supply share borne by the downstream reservoirs, and insures that potentially high demands can be met even if streamflows fall. The constant release term is affected by the availability of Little Seneca. Since releases from Little Seneca can be made on the day they are needed, daily fluctuations in demand could be accomodated by Little Seneca. This would reduce the necessity of operating Bloomington to cover the uncertainties in stream flow and demand seven days in the future.

Releases from Occoquan reservoir and the Patuxent reservoirs are scheduled to meet the shortfall between withdrawals from the Potomac by the respective jurisdictions and their regional demands. If, for example, the WSSC withdrawals from the Potomac were 200 mg and the daily demand was 250 mg, 50 mg would be released from the Patuxent reservoirs. The maximum release for the Patuxent reservoirs is 75 mgd; the maximum release from Occoquan reservoir is 100 mgd. Releases from Seneca reservoir are made to cover any regional deficits. Minimum releases are maintained from Seneca (10 mgd) and the Patuxent reservoirs (30 mgd).

A water quality release of 130 mgd is maintained from the upstream reservoirs (Bloomington and Savage). Withdrawals from Bloomington are taken from the water quality storage and are in excess of any releases made from the water supply storage.

5) MISCELLANEOUS ASSUMPTIONS

a. The time of travel of releases from Bloomington is seven days.
b. Inflow into the reservoirs is not accounted for, it is assumed that inflows are greater than or equal to evaporation from the reservoirs.
c. All reservoirs are full at the onset of drought conditions.

COMMISSIONERS
LAWRENCE L. BROOKS, SR., Chairman
JESSE L. MAURY, Vice Chairman
SALLY P. KANCHUGER
JOHANNA S. MORRIS
DAVID B. SCOTTON
ANDREW M. VISLOCKY

ROBERT S. McGARRY, General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION
6017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (301) 699-4000
Department of Engineering: ARENTSON BLDG. • 313 MARSHALL AVE. • LAUREL, MD. 20810

February 19, 1981

Mr. John F. Herrity
Board of Supervisors
Massey Building
4100 Chain Bridge Road
Fairfax, Virginia 22030

Dear Mr. Herrity:

The purpose of this letter is to confirm for the record the results of Washington Metropolitan Regional Water Supply Task Force meeting of February 19, 1981. The Task Force approved the recommendations of the Citizens Advisory Group and Technical Group contained in my letter of December 14, 1980. The Task Force also approved the revision to our work plan dated February 17, 1980 (copy enclosed).

It was also mutually agreed that the Task Force members would confirm by appropriate letter to me their respective government's approval of the above actions.

I am sending this same letter to Mr. Amonett, Mr. Moore and Mr. Potter.

Sincerely yours,

Robert S. McGarry
General Manager

RSMcG/dsm

Enclosure

cc: Mr. William B. Rucker
Executive's Office

Revised February 17, 1981

WASHINGTON METROPOLITAN WATER SUPPLY TASK FORCE WORK PLAN

It is recommended that the Task Force use the tasks outlined below to address and resolve our water needs. At the completion of the technical work on each task described below the Citizens Advisory Committee would be briefed and their opinions and recommendations solicited. After considering citizen opinions and recommendations plus the technical advisory group recommendations the task force would have adopted a set of planning elements that will form the basis for an action plan.

REGIONAL WATER DEMAND

The first project is an analysis of the regional needs (demand). The Corps' Metropolitan Water Supply Study, the Bi-County Water Supply Task Force Study, and other local analysis of water use provide a data base upon which to project the regional demand for water. However, there are issues to be resolved. For example, the Corps' Metropolitan Water Supply Study did not use COG's Round II population projections. Some comments on the Corps' study indicated that since these Round II population projections have changed in magnitude and distribution, the Corps' demand might need modification. Issues such as this would be combined with all the available data to form the recommendation to the Task Force of the regional needs for water (demand) that would be the basis of all further analysis. Recommend the District of Columbia, Department of Environmental Services as the lead technical agency responsible for this analysis. It is estimated that this work could be completed within 45 days and presented to the Task Force for their action shortly thereafter. The Citizens Advisory Committee will be informed and provided adequate information for their analysis and recommendations. Task Force adoption of the regional demand would resolve current uncertainties and establish this planning element.

EXISTING REGIONAL WATER CAPACITY

It is proposed that the regional water supply capacity available to meet the demand approved under the previous project be analyzed in two ways. First, existing regional capacity that is available, including Bloomington Reservoir as currently authorized, would be analyzed. Second, an analysis would also be made of the potential additional supply available through re-authorization of Bloomington. The result of this project would be the existing water supply capability for the region. It is contemplated that the recommendations would be in two parts; (a) Bloomington as authorized and (b) Bloomington under potential re-authorization. Again, the Citizens Advisory Committee would be fully informed so they could formulate recommendations for the Task Force. The Task Force would be requested to adopt the capacity that the region could count upon to meet their needs. Recommend that the Fairfax County Water Authority be the lead agency for this task. The task can be accomplished concurrently with the regional water demand and can be completed within 60 days.

SUPPLY DEMAND MANAGEMENT OPTIONS

This project, the next task in the original work plan, is not necessary with the approval of the following recommendation that is the result of the examination of Regional Water Demand and Existing Regional Water Capacity:

> That a regionally operated water supply system with Little Seneca reservoir as a regional facility be accepted as meeting our demands through the year 2000.

RELATED REGIONAL WATER MANAGEMENT ISSUES

It is recognized and accepted that Fairfax County, Prince George's County, the District of Columbia, and where applicable and not in conflict with his regulatory responsibilities, the District Engineer, Baltimore District, U. S. Army Corps of Engineers will support the following related Water Management needs of Montgomery County:

1. The continued and active support for the Rock Run Wastewater Treatment Plant. This support includes support of necessary permits, including the NPDES permit, support of the project before the Water Resources Planning Board and 208 Plan actions, and support with federal agencies, not only in the permitting process but also in the seeking of rights-of-way where needed.

2. Engineering studies indicate that substantial benefit could possibly be obtained in the design and construction of Rock Run facility if the WSSC/Montgomery County employed the Upper Potomac Interceptor (UPI) as the effluent line for the plant. This will permit a discharge well below the Little Falls water intake. To do this, however, Montgomery County and the WSSC would need to divert flows from the UPI to the presently available capacity of the Dulles Interceptor, which is owned by the District of Columbia and of which a substantial capacity has been allocated to Fairfax County. Support of this concept, subject to technical feasibility and cost sharing arrangements, by the District of Columbia and Fairfax County is required.

3. There are substantial benefits to be achieved for WSSC through the interconnection of the Dalecarlia water filtration plant and the WSSC water supply system. There is presently 60 mgd of excess water filtration capacity available at the Dalecarlia facility for potential usage by the WSSC during peak water demands. Continuing support of the interconnection by the District of Columbia, the Washington Aqueduct Division is confirmed. While there would not be an immediate need for this capacity, it would provide long term advantage in terms of economy and reliability.

4. The availability of Little Seneca Lake (as well as interconnection with the WSSC/Dalecarlia system) would offer significant opportunities for not using the emergency water intake. It is agreed that the location of the emergency water intake will not serve as an obstacle to the permit processes related to the Rock Run Wastewater Treatment Plant.

DEVELOP REGIONAL AGREEMENT

The Technical Advisory Group, in coordination with the Citizens Advisory Group will develop an agreement incorporating the following:

1. Regional sharing of the costs and benefits from Bloomington and Little Seneca Reservoirs including appropriate revisions to the Low Flow Allocation Agreement.

2. Regional operating procedures governing releases and/or withdrawals from Bloomington, Little Seneca, Occoquan, Patuxent reservoirs and the Potomac River.

This agreement will be submitted to the CAO's Committee for comment on inter-related water quality matters, especially cost items, prior to reporting to the Task Force.

It is expected that the Task Force would approve the agreement for their governments in principle at this time. However, the next two tasks remain before a final decision on an agreement can be reached.

BLOOMINGTON COST REIMBURSEMENT

It is very likely that the cost sharing agreement will not be consistent with the existing reimbursement procedures of the Potomac Water Authority. The Technical Advisory Group will coordinate with the Maryland Water Resources Administration and the Potomac Water Authority to resolve any inconsistencies. This task must also resolve the purchase of the remainder of the Bloomington water supply storage. This task will be fully coordinated with the Citizens Advisory Group.

LOW FLOW AGREEMENT MODIFICATION

If it is determined that the Potomac River Low Flow Agreement must be revised to conform with the regional operating procedures, the Technical Advisory Group will coordinate necessary revisions with the signatories. The Citizens Advisory Group will be consulted and advise on this task.

DECISION ON REGIONAL AGREEMENT

The Task Force approves and signs, for their government, the Regional Agreement. This completes the project, and WSSC will build Little Seneca Reservoir.

Revised February 17, 1981

WASHINGTON METROPOLITAN WATER SUPPLY TASK FORCE WORK PLAN

It is recommended that the Task Force use the tasks outlined below to address and resolve our water needs. At the completion of the technical work on each task described below the Citizens Advisory Committee would be briefed and their opinions and recommendations solicited. After considering citizen opinions and recommendations plus the technical advisory group recommendations the task force would have adopted a set of planning elements that will form the basis for an action plan.

REGIONAL WATER DEMAND

The first project is an analysis of the regional needs (demand). The Corps' Metropolitan Water Supply Study, the Bi-County Water Supply Task Force Study, and other local analysis of water use provide a data base upon which to project the regional demand for water. However, there are issues to be resolved. For example, the Corps' Metropolitan Water Supply Study did not use COG's Round II population projections. Some comments on the Corps' study indicated that since these Round II population projections have changed in magnitude and distribution, the Corps' demand might need modification. Issues such as this would be combined with all the available data to form the recommendation to the Task Force of the regional needs for water (demand) that would be the basis of all further analysis. Recommend the District of Columbia, Department of Environmental Services as the lead technical agency responsible for this analysis. It is estimated that this work could be completed within 45 days and presented to the Task Force for their action shortly thereafter. The Citizens Advisory Committee will be informed and provided adequate information for their analysis and recommendations. Task Force adoption of the regional demand would resolve current uncertainties and establish this planning element.

EXISTING REGIONAL WATER CAPACITY

It is proposed that the regional water supply capacity available to meet the demand approved under the previous project be analyzed in two ways. First, existing regional capacity that is available, including Bloomington Reservoir as currently authorized, would be analyzed. Second, an analysis would also be made of the potential additional supply available through re-authorization of Bloomington. The result of this project would be the existing water supply capability for the region. It is contemplated that the recommendations would be in two parts; (a) Bloomington as authorized and (b) Bloomington under potential re-authorization. Again, the Citizens Advisory Committee would be fully informed so they could formulate recommendations for the Task Force. The Task Force would be requested to adopt the capacity that the region could count upon to meet their needs. Recommend that the Fairfax County Water Authority be the lead agency for this task. The task can be accomplished concurrently with the regional water demand and can be completed within 60 days.

SUPPLY DEMAND MANAGEMENT OPTIONS

This project, the next task in the original work plan, is not necessary with the approval of the following recommendation that is the result of the examination of Regional Water Demand and Existing Regional Water Capacity:

> That a regionally operated water supply system with Little Seneca reservoir as a regional facility be accepted as meeting our demands through the year 2000.

RELATED REGIONAL WATER MANAGEMENT ISSUES

It is recognized and accepted that Fairfax County, Prince George's County, the District of Columbia, and where applicable and not in conflict with his regulatory responsibilities, the District Engineer, Baltimore District, U. S. Army Corps of Engineers will support the following related Water Management needs of Montgomery County:

1. The continued and active support for the Rock Run Wastewater Treatment Plant. This support includes support of necessary permits, including the NPDES permit, support of the project before the Water Resources Planning Board and 208 Plan actions, and support with federal agencies, not only in the permitting process but also in the seeking of rights-of-way where needed.

2. Engineering studies indicate that substantial benefit could possibly be obtained in the design and construction of Rock Run facility if the WSSC/Montgomery County employed the Upper Potomac Interceptor (UPI) as the effluent line for the plant. This will permit a discharge well below the Little Falls water intake. To do this, however, Montgomery County and the WSSC would need to divert flows from the UPI to the presently available capacity of the Dulles Interceptor, which is owned by the District of Columbia and of which a substantial capacity has been allocated to Fairfax County. Support of this concept, subject to technical feasibility and cost sharing arrangements, by the District of Columbia and Fairfax County is required.

3. There are substantial benefits to be achieved for WSSC through the interconnection of the Dalecarlia water filtration plant and the WSSC water supply system. There is presently 60 mgd of excess water filtration capacity available at the Dalecarlia facility for potential usage by the WSSC during peak water demands. Continuing support of the interconnection by the District of Columbia, the Washington Aqueduct Division is confirmed. While there would not be an immediate need for this capacity, it would provide long term advantage in terms of economy and reliability.

4. The availability of Little Seneca Lake (as well as interconnection with the WSSC/Dalecarlia system) would offer significant opportunities for not using the emergency water intake. It is agreed that the location of the emergency water intake will not serve as an obstacle to the permit processes related to the Rock Run Wastewater Treatment Plant.

DEVELOP REGIONAL AGREEMENT

The Technical Advisory Group, in coordination with the Citizens Advisory Group will develop an agreement incorporating the following:

1. Regional sharing of the costs and benefits from Bloomington and Little Seneca Reservoirs including appropriate revisions to the Low Flow Allocation Agreement.

2. Regional operating procedures governing releases and/or withdrawals from Bloomington, Little Seneca, Occoquan, Patuxent reservoirs and the Potomac River.

This agreement will be submitted to the CAO's Committee for comment on inter-related water quality matters, especially cost items, prior to reporting to the Task Force.

It is expected that the Task Force would approve the agreement for their governments in principle at this time. However, the next two tasks remain before a final decision on an agreement can be reached.

BLOOMINGTON COST REIMBURSEMENT

It is very likely that the cost sharing agreement will not be consistent with the existing reimbursement procedures of the Potomac Water Authority. The Technical Advisory Group will coordinate with the Maryland Water Resources Administration and the Potomac Water Authority to resolve any inconsistencies. This task must also resolve the purchase of the remainder of the Bloomington water supply storage. This task will be fully coordinated with the Citizens Advisory Group.

LOW FLOW AGREEMENT MODIFICATION

If it is determined that the Potomac River Low Flow Agreement must be revised to conform with the regional operating procedures, the Technical Advisory Group will coordinate necessary revisions with the signatories. The Citizens Advisory Group will be consulted and advise on this task.

DECISION ON REGIONAL AGREEMENT

The Task Force approves and signs, for their government, the Regional Agreement. This completes the project, and WSSC will build Little Seneca Reservoir.

INTEROFFICE MEMORANDUM

TO: MR. JOHN F. HERRITY
REV. JERRY AL MOORE, JR.
MR. NEAL POTTER
MR. WILLIAM B. AMONETT

FILE NO.

FROM: ROBERT S. McGARRY

DATE: MARCH 8, 1982

SUBJECT: WASHINGTON METROPOLITAN REGIONAL WATER SUPPLY TASK FORCE MEETING

Confirming my arrangements with your office, the Task Force will meet at 10:00 a.m., March 19, 1982, at the Council of Governments, 1875 Eye Street, N. W., Washington, D. C. (Room 1).

The purpose of the meeting will be to act on the attached recommendations dated March 8, 1982 from the Technical Group and the Citizens Advisory Group.

Robert S. McGarry
General Manager

RSMcG/H
Attachment

cc:

District of Columbia
Ms. Ann Snodgrass
Mr. William B. Johnson
Mr. George Stryker
Mr. James McDermott

Prince George's Co.
Mr. Dennis Bigley
Mr. Edmond M. Piesen

Montgomery Co.
Mr. Robert C. McDonell
Mr. Philip Bennett

Fairfax Co.
Mr. James Corbalis
Mr. William B. Rucker

Va. State Water Control Bd.
Mr. Robert V. Davis
Mr. Thomas M. Schwarberg
Mr. Fred Morin

Colonel James W. Peck
Corps of Engineers

Mr. Thomas C. Andrews
Maryland State Dept. of Natural Resources

Mr. Charles Wheeler
Maryland State Dept. of Natural Resources

Mr. Harry Ways
Washington Aqueduct

Mr. Louis Guy, Chairman
Citizens Advisory Group

Ms. Renee Weissberger
Bd. of Trade

Mr. Austan Librach
COG

FINAL DRAFT

Memorandum For: Washington Metropolitan Water Supply Task Force

From: Robert S. McGarry, Executive Director

Date: March 8, 1982

Subject: Cost Sharing, Regional Operation Plan and Low Flow Allocation Agreement (LFAA) Modifications

---

You have approved and ratified the following recommendation for the Washington Metropolitan Area (WMA) water supply:

A regionally operated water supply system with Little Seneca reservoir as a regional facility be accepted as meeting our water demands through the year 2000.

To implement this recommendation you requested the TAG and CAG to develop:

a. A regional cost sharing plan for Bloomington and Little Seneca reservoirs

b. A regional operational agreement

c. Revisions to the Potomac River Low Flow Allocation Agreement (LFAA) - if necessary

The TAG and CAG have completed their analysis and recommend the following regarding cost sharing:

a. Bloomington Reservoir

1. That WSSC, WAD/DC and FCWA purchase from the Corps of Engineers all the water supply storage in the reservoir and relieve the Potomac Water Authority of any obligation for repayment.

2. That the yearly payment to the Corps for capital and O&M be shared as shown below:

WSSC	50%
FCWA	20%
WAD/DC	30%

The estimated yearly costs for this sharing are shown below:

	Capital	O&M (1981 Costs)
WSSC	$1,171,000	$ 30,000
FCWA	468,000	20,000
WAD/DC	703,000	30,000

b. Little Seneca Reservoir

1. That WSSC, WAD/DC, and FCWA share the capital and O&M costs of the reservoir only. The costs of land for the buffer zone and the costs of recreation are not to be shared.

2. That costs be shared as shown below:

WSSC	50%
FCWA	10%
WAD/DC	40%

The estimated annual capital and O&M costs are shown below. The total capital costs of Little Seneca is $30,530,000. The annual charges are estimated and cannot be finally determined at this time because costs will depend on bond interest rates, if financed by WSSC and repaid by the other jurisdictions. The other jurisdictions may also chose to make a one time payment for Little Seneca capital costs.

	Capital (9% for 35 years)	O&M (1982 estimate)
WSSC	$1,444,000	$26,000
FCWA	289,000	5,200
WAD/DC	1,157,000	20,800

c. Savage Reservoir

Because releases of water from Savage Reservoir are now essential to neutralize the acidic releases from Bloomington, we believe the D.C. region should share the $84,000 annual O&M costs now borne entirely by Allegeny County. A five way sharing by the five governments concerned (PG, MC, DC, Fairfax, Allegeny) is recommended with WSSC paying PG and MC's share.

Based on 1981 costs annual share will be

WSSC (40%)	$33,600
FCWA (16%)	13,440
WAD/DC (24%)	20,160
Allegeny County (20%)	16,800

The TAC and CAC recommended the following regarding regional operations. Using the Interstate Commission on the Potomac River Basin CO-OP Potomac water supply and WMA regional demand model (CO-OP model) schedule releases from the regional water supply reservoirs to meet the following objectives:

a. Maintain the risk of invoking the Low Flow Allocation Agreement (LFAA) at less than 5 percent during the repeat of any historical drought.

b. Maintain the risk of entering the Emergency Stage of the LFAA at less than 2 percent with full reservoirs on June 1.

c. Maintain the risk of not refilling any reservoir used for water supply at less than 5 percent.

d. Maintain the LFAA specified low flow over Little Falls dam at 100 mgd.

e. Minimize conflict between normal utility operations and drought operations.

f. Provide consistency with the requirements of the LFAA.

The TAC and CAC recommend the LFAA be revised to eliminate the provisions that freezes the computation of each jurisdictions's low flow share after 1988, and substitue provisions of cost sharing for any additional future facilities beyond Little Seneca reservoir. The effective date of this modificiation will be the date Little Seneca is operational and the regional operating agreement is in place.

Your approval of these recommendations will resolve the water supply needs for the WMA through 2030.

With your approval of these recommendations, the following agreements, contracts, and/or actions will be executed. It is assumed and understood that your approval of these recommendations is delegation of authority to proceed with the following:

a. A contract between WSSC, FCWA, WAD/DC and the Corps of Engineers to share the water supply costs of Bloomington reservoir will be executed.

b. The existing contract between the Corps of Engineers and the Potomac Water Authority will be terminated.

c. A contract between WSSC, FCWA, and WAD/DC to share the cost of Little Seneca Reservoir will be executed.

d. A contract between WSSC, FCWA, WAD/DC and Allegeny County to share the O&M costs will be executed.

e. An operational agreement between WSSC, FCWA, WAD/DC to achieve the regional operational water supply objectives will be executed.

f. The recommended revisions to the Potomac River LFAA will be approved by the parties in accordance with the provisions for modification in the LFAA, to be effective when Little Seneca is operational.

g. Upon execution of "a" through "f" above, WSSC will award the necessary contracts and build the regional Little Seneca Reservoir.

There is no reason that these contracts and agreements cannot be completed in time for a late spring, early summer 1982 contract award for Little Seneca Reservoir. The necessary state and federal permits have been issued, design is complete, and WSSC is prepared to finance the project.

Robert S. McGarry
Executive Director
Washington Metropolitan
Water Supply Task Force

ANNEX C-II

PUBLIC INVOLVEMENT ACTIVITIES
INITIAL STUDY PHASE

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
26 Feb 76	Speech - Washington, D.C.	Speech presented to the MWCOG WRPB by the Corps.	NEWS Study and its relationship to the MWAWSS.*
27 Feb 76	Briefing - Bethesda, MD	League of Women Voters	MWAWSS.
16-17 Mar 76	Briefing - MD, VA, D.C.	Briefing for MD, VA, and DC officials by the Corps	NEWS and its relationship to the MWAWSS.
23-24 Mar 76	Public Hearings - Silver Spring, MD Falls Church, VA	Corps, VA, MD, DC, other publics.	Publication of the NEWS Study and its relationship to the MWAWSS.
13 May 76	Speech - Fairfax, VA	Speech presented to the Federal City Council by the Corps.	Publication of the NEWS Study and its relationship to the MWAWSS.
2, 3, 16, 17, 23, 24 Jun 76	Hearings - DC	Congressman Harris' Hearings. Speech presented by the Corps.	MWAWSS
21 Jul 76	Speech - DC	Speech presented to the NAS-NAE by the Corps.	Water Supply in the Potomac River Basin.

*MWAWSS = Metropolitan Washington Area Water Supply Study

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
4-5 Nov 76	Conference - Arlington, VA	Speech presented to various publics (officials and other interests) by the Corps	Perspectives in water resources planning.
17-18 Feb 77	Briefings - Baltimore, MD	Corps briefing for reporters	MWAWSS
8 Apr 77	Briefing -	Corps briefing for reporters	Low Flow Allocation Agreement (LFAA)** and MWAWSS.
13 Apr 77	Conference - DC	Corps presentation to League of Women Voters (LWV), National Society of Professional Engineers (NSPE), Metropolitan Washington Board of Trade, Federal City Council, MWCOG, FCWA, WSSC, WAD	MWAWSS.
25 Apr 77	Meeting - DC	Corps work session with MWCOG.	To begin to coordinate public involvement program for MWAWSS for summer of 1977.
4-5 May 77	Meeting - DC	Corps presentation to NAS-NAE.	To review NEWS Study and assess applicability to MWAWSS.

**LFAA = Low Flow Allocation Agreement

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
11 May 77	Meeting - DC	Corps presentation in Senator Scott's (VA) office along with VA, Fairfax County, FCWA.	LFAA, water supply.
16 May 77	Meeting -	MD, VA, DC, WSSC, received status briefing from Corps.	LFAA, MWAWSS.
26 May 77	Workshop - DC	Briefing by the Corps to MWCOG-WRPB, DC Chamber of Commerce, National Society of Professional Engineers, Metropolitan Washington Board of Trade, Federal City Council.	LFAA, MWAWSS.
26 May 77	Workshop - DC	N. VA Builders Association received presentation by the Corps.	LFAA, MWAWSS.
31 May 77	Speech - Ft. Belvoir, VA	Presentation on MWAWSS to Planning Associates and BERH.	LFAA, MWAWSS.
31 May 77	Workshop - Chevy Chase, MD	Presentation by the Corps to: WSSC, Common Cause, MWCOG's CAC, Alexandria City Council, N. VA. Conservation Council, Center for Environmental Strategy, Environmental Defense Fund.	LFAA, MWAWSS.
2 Jun 77	Speech - Bethesda, MD	Presentation by the Corps to publics and ICPRB.	LFAA, MWAWSS.

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
3 Jun 77	Meeting - Springfield, VA	With Corps, Virginia State Water Control Board, FCWA, Fairfax County.	LFAA.
14 Jun 77	Briefing - DC	Corps presentation to Congressman Fauntroy (DC)	LFSS, MWAWSS.
15 Jun 77	Briefing - Baltimore, MD	Interview for the Washington Star.	MWAWSS.
20 Jun 77	Meeting - Baltimore, MD	DC and Corps	MWAWSS
20 Jun 77	Workshop - Arlington, VA	Presentations by Corps and WWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
21 Jun 77	Speech - Fairfax, VA	Presentation by the Corps to the Fairfax County Executive Board.	MWAWSS
22 Jun 77	Workshop - Alexandria, VA	Presentation by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
23 Jun 77	Workshop - Washington County, Hagerstown, MD	Presentations by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
28 Jun 77	Workshops - St. Mary's County, MD and DC	Presentations by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
29 Jun 77	Workshop - Montgomery County, MD	Presentation by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
30 Jun 77	Workshop - Prince William County, VA	Presentation by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
6 Jul 77	Workshop - Frederick County, MD	Presentations by Corps and ICBRP to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
7 Jul 77	Workshop - Prince Georges County, MD	Presentations by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
12 Jul 77	Workshop - Charles County, MD	Presentation by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
13 Jul 77	Workshop - Fairfax City, VA	Presentations by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
14 Jul 77	Workshop - Loudoun County, VA	Presentations by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
15 Jul 77	Meeting - Hyattsville, MD	WSSC and Corps.	Water supply situation.
18 Jul 77	Workshop - Montgomery County, MD	Presentations by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
20 Jul 77	Workshop - Falls Church, VA	Presentation by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
21 Jul 77	Workshop - DC	Presentations by Corps and MWCOG to attending publics along with distribution of a water supply opinion survey.	MWAWSS

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
25 Jul 77	Workshop - Northern Neck Area, VA	Presentation by Corps and ICPRB to attending publics along with distribution of a water supply opinion survey.	MWAWSS.
25 Jul 77	Meeting - Annapolis, MD	With Corps, MD, VA, WSSC, DC public, and press.	LFAA.
26 Jul 77	Meeting - DC	With the Corps and the Metroplitan Caucus (local Congressmen).	LFAA, MWAWSS.
27 Jul 77	Workshop - DC	Summary Workshop with presentations by Corps, MWCOG to those attending.	MWAWSS.
27 Jul 77	Meeting - DC	FISRAC Meeting.	MWAWSS.
17 Aug 77	Meeting - DC	Department of Environment Services and the District's Water Resources Management Section.	LFAA.
8 Sep 77	Public Meeting - DC	With Corps, DC, WSSC, other publics, and press.	LFAA, MWAWSS.
8 Sep 77	Seminar - DC	Presentation to attendees at George Washington University Seminar by the Corps.	MWAWSS.

(Continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENT	PARTICIPANTS	TOPICS COVERED
13 Sep 77	Public Meeting - Falls Church, VA	Presentations by Corps and VA to and for other publics and press.	LFAA, MWAWSS.
15 Sep 77	Public Meeting - Wheaton, MD	Presentations by Corps, WSSC, other publics, press.	LFAA, MWAWSS.
26 Sep 77	Meeting - DC	With Congressman Herbert Harris.	LFAA, MWAWSS.
30 Sep 77	Conference - DC	Attended by MWCOG, Corps, League of Women Voters, Metropolitan Board of Trade, Federal City Council, FCWA, WSSC, WAD. Presentation made by Corps.	MWAWSS.
12 Oct 77	Meeting - DC	Attended by Corps, Virginia SWCB, Virginia Attorney General's Office, Fairfax County, FCWA, Prince William County.	MWAWSS.
14 Oct 77	Speech - Bethesda, MD	Speech presented to ICPRB.	MWAWSS.
26, 27, 28 Oct 77	Meeting - DC	NAS-NAE, Corps.	MWAWSS demand and supply.
27-28 Oct 77	Public Meeting	Sponsored by ICPRB.	MWAWSS.
16-17 Nov 77	Meeting - DC	NAS-NAE Corps.	MWAWSS, Review Committee.

(Continued)

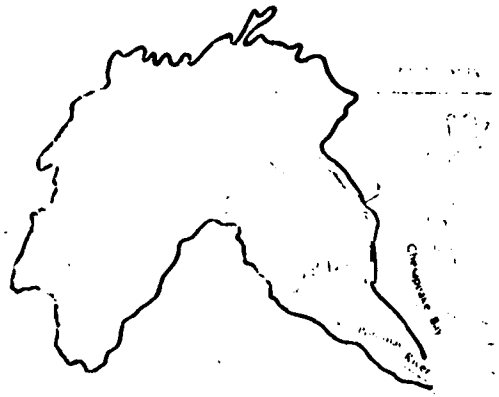
SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT
DURING STAGE I

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
29 Nov 77	Speech - Rockville, MD	Publics and Corps.	MWAWSS.
13 Dec 77	Briefing - DC	Presentation made by the Corps to MWCOG's WRPB, TAC, CAC.	MWAWSS.
5 Jan 78	Meeting - DC	MWCOG, Corps.	To discuss public involvement for Stage II of the MWAWSS.

ANNEX C-III

PUBLIC OPINION SURVEY

OUR WATER: How Clean And How Much?



The Potomac Drainage Basin

Metropolitan Washington

Council of Governments

Opinion Survey:
Metropolitan Washington Water Supply

THIS SURVEY IS DESIGNED TO LET YOU TELL US WHAT YOU THINK SHOULD BE INCLUDED FOR FURTHER STUDY OF THE WATER SUPPLY FOR THE METROPOLITAN WASHINGTON AREA. THE ANSWERS WILL BE HELPFUL TO THE U.S. ARMY CORPS OF ENGINEERS IN SHAPING A STUDY THEY ARE CURRENTLY DOING ABOUT WATER SUPPLY IN THE METROPOLITAN AREA. YOUR OPINION WILL ALSO HELP THE EFFORTS OF THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS AND THE INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN. WE HOPE YOU WILL SUPPLEMENT THE ANSWERS TO THE QUESTIONS BELOW BY WRITING ADDITIONAL COMMENTS IN THE SPACES PROVIDED. YOU MAY SIGN YOUR NAME TO THE SURVEY, BUT ONLY IF YOU WISH TO DO SO.

IF YOU WISH FURTHER INFORMATION, PLEASE CALL ELLEN FRIED AT THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS (COG) AT (202) 223-6800 X 238, ANNE BLACKBURN AT THE INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN (ICPRB) AT (202) 652-5758, OR DR. SARAH TAYLOR OF THE U.S. ARMY CORPS OF ENGINEERS (301) 962-2668.

Section One: YOUR BELIEFS

PLEASE READ THE CHOICES FOR EACH QUESTION. THEN, CHECK THE ANSWER THAT BEST REFLECTS YOUR BELIEFS.

1. I believe that:
   ____ the Metropolitan Washington area has enough water supply and will not have a water shortage over the next few years.
   ____ the Metropolitan Washington area may have a water shortage over the next few years.
   ____ I am not sure.

2. If you believe that there may be a water shortage in the Metropolitan Washington area, how did you first become aware of this? Through:

   __television __a neighbor __radio __community organization

   __other water supply studies __newspaper __other (please specify) _____

3. I believe that: (choose one)
   ____ the Metropolitan Washington area should try to meet all of its water supply needs through water conservation.
   ____ the Metropolitan Washington area should use water conservation measures as much as possible, but should also find acceptable ways to expand the present water supply.
   ____ the Metropolitan Washington area should develop as much additional supply as needed to meet our long-term water supply demands; citizens should not be called upon to conserve.

4. Should actions to solve water supply problems for the Metropolitan Washington area be undertaken solely within the geographic boundaries of the area?
   ____no ____yes ____ to the greatest extent possible

3. IN PLANNING FOR WATER SUPPLY, MANY IDEAS AND BELIEFS NEED TO BE CONSIDERED SO THAT THE BEST PLANS CAN BE DEVELOPED.

PLEASE CHECK THE COLUMN ON THE RIGHT WHICH BEST REFLECTS YOUR IDEA ABOUT EACH OF THESE BELIEFS.

YOUR PRIORITIES ON IMPACTS	Essential	Important	Worth Consideration	Unimportant	
a. Problems of inadequate water supply should be resolved with least disruption to the natural environment (trees, plants, animals, aquatic life).					6
b. Problems of inadequate water supply should be resolved with least disruption to existing communities (towns, farms, neighborhoods).					6
c. Problems of inadequate water supply should be resolved with least change to individual personal living habits (e.g. restricting water uses, etc).					7
d. The source of water supply should be of highest possible quality to reduce public health risks.					8
e. To protect fish and other aquatic life, planning should be directed to maintain a minimum flow of water in the Potomac River. Water withdrawals should not deplete this minimum flow.					9
YOUR PRIORITIES ON GROWTH					
f. For the present population, any water shortage should be avoided.					10
g. Future growth in the Metropolitan Washington area should be limited by presently available water supply.					11
h. Adequate water supplies should be developed so as not to restrict future population growth and economic development.					12
YOUR PRIORITIES ON TIMING					
i. Problems of inadequate water supply should be immediately resolved.					13
YOUR PRIORITIES ON COST					
j. Problems of water supply should be resolved with the least possible cost.					14

USING THE LETTERED ITEMS A-J IN QUESTION 3 ABOVE, PLEASE RANK THE FOUR STATEMENTS OF MOST IMPORTANCE TO YOU BY PLACING THE LETTER OF THE STATEMENT NEXT TO THE NUMBER INDICATING ITS IMPORTANCE.

(1)___ most important 15 (2)___ 16 (3)___ 17 (4)___ fourth in order of importance 18

Section Two: WATER CONSERVATION ACTIONS

THERE ARE WAYS IN WHICH YOU COULD PERSONALLY SAVE WATER IN YOUR HOUSE AND T WORK. ACTIONS YOU COULD TAKE ARE LISTED BELOW. FOR EACH LETTERED ATEMENT PLEASE CHECK THE ONE ANSWER FROM THE COLUMN ON THE RIGHT WHICH DESCRIBES YOUR WILLINGNESS TO TAKE SUCH AN ACTION.

WOULD YOU BE WILLING TO:

	ALWAYS Make It a Habit	DURING WATER SHORTAGE: Never	Yes, 1 Week	Yes, 1 Month	Does NOT APPL
BATHROOM					
19 a. flush toilet only when necessary, not after every use? (average flush uses 5 gallons)					
20 b. Use toilet tank inserts to reduce flush capacity? (water filled plastic jugs cost an average of 45¢)					
21 c. limit showers to 4 minutes? (Saves about 15 gallons per shower)					
22 d. install flow control insert in all shower heads? (average cost 38¢)					
23 e. fill tub only 1/4 full? (enough to cover kneecaps and float a rubber duck)					
24 f. turn off water while brushing teeth? (saves 1 - 3 gallons per day per person)					
25 g. close drains when running taps; use collected water to wash, shave?					
KITCHEN					
26 a. soak dishes in sink and rinse off at one time after soaping? (saves several gallons per washing when doing dishes for two persons)					
27 b. keep cold drinking water in refrigerator, rather than run tap until water is cold? (if drinking an average of 8 glasses a day, it will save several gallons per person)					
28 c. install water flow reducer such as aerator on all faucets? (average cost $1 - $5)					
29 d. run automatic dishwasher only when full? (17 - 25 gallons of water are used each run)					
30 e. when buying an automatic dishwasher, buy a water-saving model? (uses only 12 gallons for a full cycle; saves 4-5 gallons)					
31 f. repair faucet leaks promptly or replace with dripless (washerless) faucets and spray taps? (average cost for washerless is $5 - $30, for spray $1 - $5)					
LAUNDRY					
32 a. use washing machine only when you have a full load? (27 - 50 gallons of water are used with each washing)					
33 b. when buying a washing machine, buy a water-saving model? (uses 23 gallons per load)					
OUTSIDE					
34 a. reduce lawn watering or use recycled water from your bathtub?					
35 b. reduce garden watering or use recycled water?					
36 c. sweep sidewalks and drives rather than hosing them down? (this saves several hundred gallons each time)					
37 d. use pistol grip nozzels on hoses? (average cost $2)					
38 e. spend less time washing the car? (a 20 minute running water hose wash uses between 200-600 gallons)					
39 f. mulch plants to retain moisture?					
40 g. not use private swimming pool?					
CHECK FOR LEAKS at a time when there is no water use in the home, check the meter, wait 15 minutes, and read again. If reading changes, there is a leak. 41					

Section Three: WATER SUPPLY ALTERNATIVES

Many proposals to alleviate a water supply problem in our area have been advanced (e.g. use of groundwater, dams, local reservoirs, interconnections of water supply systems, the Potomac Estuary, recycling sewage effluent). These concepts are explained in the accompanying text. You may have other ideas.

We'd like to know your views. Are there any projects which you have heard discussed that you particularly wish the Corps' new Washington Area Water Supply Study to address? Are there alternatives which you could not support?

____ _____

____ _____

_____

_____

_____

Section Four: POLICY QUESTIONS

1. If necessary, would you be willing to pay increased water bills to reduce the chance of a water shortage?
   ____no ____yes ____if so, how much more each year?
2. If necessary, would you be willing to pay increased water bills to assure a water supply of high quality and reduce public health risks?
   ____no ____yes ____if so, how much more each year?
3. At present, most costs for the development of water supply projects are borne at local and state levels. Do you think future costs should be paid totally by:
   ____Federal level ____State level ____local level ____some combination
4. Should commercial and industrial high volume water users be given a price break as is the practice in several jurisdictions?
   ____no ____yes
5. During summer, when water is more scarce, should users of water be charged more for any amount they use above their previous winter water use?
   ____no ____yes
6. Should local laws be passed to require new buildings to be equipped with water conservation plumbing fixtures?
   ____no ____yes
7. Should local laws be passed to require that renovated buildings be equipped with water conservation plumbing fixtures?
   ____no ____yes
8. Should there be laws requiring that inexpensive water conservation plumbing fixtures be put in all existing homes, commercial, industrial and governmental establishments?
   ____no ____yes
9. Should governmental installations take the initiative to use more conservation plumbing fixtures than they do now, so that the effectiveness of these measures can be further determined?
   ____no ____yes
10. Should local governments or agencies have the power to enforce water conservation measures on the localities for which they have jurisdiction?
    ____no ____yes

Section Five: BASIC INFORMATION

1. Do you drink the public water supply in your jurisdiction?
   ____yes, drink public water ____drink well water ____drink bottled water
2. Are you satisfied with the quality of your drinking water?
   ____no ____yes
3. If no, why not?

   _____

   _____

   _____

   _____
4. IN WHICH OF THESE AREAS DO YOU LIVE

   MARYLAND COUNTIES AND CITIES
   - Alleghany__
   - Anne Arundel__
   - Carroll__
   - Charles__
   - College Park__
   - Frederick__
   - Gaithersburg__
   - Greenbelt__
   - Howard__
   - Montgomery__
   - Prince George's__
   - Rockville__
   - St. Mary's__
   - Takoma Park__
   - Washington__
   - Other Maryland County__

   VIRGINIA COUNTIES AND CITIES
   - Alexandria__
   - Arlington__
   - Fairfax County__
   - Fairfax City__
   - Falls Church__
   - Loudoun__
   - Prince William__
   - Other Virginia County__

   DISTRICT OF COLUMBIA__

   WEST VIRGINIA__

   PENNSYLVANIA__
5. HOW LONG HAVE YOU LIVED IN YOUR AREA?
   less than one year__ one to five years__ five to ten years__ over ten years__
6. IN WHAT TYPE OF HOUSING DO YOU LIVE?
   __apartment __townhouse or condominium __single family house __trailer
7. DO YOU OWN YOUR HOME OR ARE YOU RENTING IT?
   ____own ____rent
8. WHAT IS YOUR OCCUPATION? (If retired, please indicate your former occupation.)

   _____

THANK YOU VERY MUCH FOR THE TIME YOU HAVE SPENT IN FILLING OUT THIS SURVEY. If you wish to be kept up-to-date on the water supply situation in your area, please give us your name and address in the space below. If you do not wish to sign this questionnaire, you may write a note to COG WATER at the address below, and COG will arrange to put you on the desired mailing list.

PUBLIC OPINION SURVEY EVALUATION FOR THE
METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

INTRODUCTION

The purpose of this summary is to describe the results from the public opinion survey conducted during the public participation program by the Interstate Commission on the Potomac River Basin, the Metropolitan Washington Council of Governments, and the U.S. Army Corps of Engineers during May through August 1977.

To review briefly, the Metropolitan Washington Council of Governments (MWCOG) and the Interstate Commission on the Potomac River Basin (ICPRB), were contracted by the U.S. Army Corps of Engineers (Corps) to conduct a public information and participation program on water supply for metropolitan Washington, D.C. The goals of the program were: (1) to alert the public to the potential for water shortages in the area; (2) to inform the public of the possible methods which could be used to minimize water shortages; (3) to gain a general idea of which factors and considerations were deemed important by the public in selecting water supply alternatives; and (4) to obtain specific citizen comments on various alternatives which the Corps might study in its ongoing Metropolitan Washington Area Water Supply Study authorized by the Water Resources Development Act of 1974.

The program consisted of two elements: (1) the development, dissemination, and collection of a water supply opinion survey and background paper; and (2) the conduct of seventeen public workshops in various areas of the Potomac River Basin. The background paper (Appendix A) provided basic water supply information for the workshops and accompanied an opinion survey sent to the "publics" prior to the workshops. It was intended that the survey would yield a general inventory of public attitudes toward water supply planning in the metropolitan Washington Area. The seventeen public workshops provided the interactive, two-way communication channels between the agencies involved and the "publics" which the background paper and survey could not provide.

MATERIALS PREPARATION

The water supply survey (Appendix A) was the first document developed and was used a guide to write the complementing background paper entitled: Our Water: How Clean and How Much. By presenting information that followed the same general sequence as the survey, the paper provided information on water supply alternatives, alerted the public to the ongoing water supply workshops, and explained the purpose of the entire public participation and information program.

The survey and background paper were written by the Corps of Engineers, the Interstate Commission on the Potomac River Basin, and the Metropolitan Washington Council of Governments. Review was also obtained from the MWCOG's Water Resources Citizens Advisory Committee's Subcommittee on Water Supply, a MWCOG's public survey specialist, and a computer specialist from the Corps.

The survey and background paper were written to gain an understanding about general public attitudes toward water supply. Both documents contained major sections presenting information on:

a. General fundamental beliefs concerning water supply.

b. Water conservation actions.

c. Water supply alternatives.

d. Policy questions.

e. Basic demographic data.

Because target audiences were the non-technical, involved "publics," the questions were related to home rather than business water usage. Water conservation as a water supply alternative was treated in detail because it was felt to require few costs for implementation and could be quickly initiated by the homeowner.

Twenty-five thousand (25,000) surveys and background papers were printed for distribution. The surveys were sent to any person or organization which requested them, as well as to publics on several agency mailing lists. The distribution was as follows:

TABLE I: Distribution of Water Supply Survey
And Background Paper

Approximate Number Distributed	Survey/Background Receivers
2,700	Sierra Club, Metropolitan Washington Group - members lists

TABLE I: Distribution of Water Supply Survey And Background Paper (Continued)

Approximate Number Distributed	Survey/Background Receivers
2,050	Metropolitan Washington Board of Trade - members list. (Because the survey related to household rather than business water use, the Board developed and inclosed its own survey which questioned business usage. The Board mailed out both surveys simultaneously, inclosing a cover letter, which explained the difference between the two surveys and how the completed surveys would be compiled and analyzed).
70	District of Columbia Builders Association
143	Maryland Builders Association
450	Charles County Chamber of Commerce, Maryland
300	Fairfax City Civic Association, Virginia
100	U.S. Geological Survey - Planning Division, Reston, Virginia
100	League of Women Voters, library, and a local church group (private individual distribution) in Hagerstown, Maryland

C-111-5

TABLE I: Distribution Of Water Supply Survey And Background Paper (Continued)

Approximate Number Distributed	Survey/Background Receivers
1,850	Interstate Commission on the Potomac River Basin - Potomac Reporter mailing list: persons living outside of the metropolitan Washington area.
850	U.S. Army Corps of Engineers mailing list.
2,166	Metropolitan Washington Council of Governments - mailing list for the Water Monitor, as well as all of MWCOG's Citizens Advisory Committees.
1,300	Council of Governments mailing list of civic associations and their presidents.
500	Potomac Basin Federation of St. Mary's County, Maryland.
960	Soil Conservation Service, Hagerstown, Maryland.
2,400	ADW Mail Order Service, Beltsville, Maryland.
2,800	Public library branches in the metropolitan Washington area each received 200: Alexandria City, Arlington County, District of Columbia, Fairfax County, Montgomery County, Prince William County, Falls Church, Loudoun County, and Takoma Park public libraries. In addition the libraries of the Washington, D.C.

TABLE I: Distribution Of Water Supply Survey And Background Paper (Continued)

Approximate Number Distributed	Survey/Background Receivers
	University Consortium each received 200: Howard, George Washington, Georgetown and Gallaudet University libraries.
40	Congress Heights Civic Association, Washington, D.C.
2,500	General distribution made available to the public at all of the water supply workshops
1,000	Northern Virginia Builders Association
22,279	TOTAL DISTRIBUTED

Of the 22,279 surveys distributed, 2,738, or 12 percent were returned. While this return percentage rate was considered quite good for surveys, the completed surveys cannot be considered as representative of the entire population in those areas sampled in the Potomac Basin. This was because a statistically valid random sample was not the prime purpose of this initial survey. Neither time nor money permitted a full scale sampling, and it was decided by the MWCOG, the ICPRB, and the Corps that reaching as many of the currently and potentially involved people would be the central goal. In other words, the intent of the public involvement program (surveys and workshops) was information exchange and education for already functioning and newly interested individuals and groups. By reaching these groups and individuals, it was hoped that others not so involved, would become involved through contact with these groups. To aid in this effort, additional information about the workshops and the surveys was presented through radio, television and newspaper media, along with special bulletin coverage from several agencies.

SURVEY ANALYSIS

To promote a more site specific analysis, and to better conform to the Metropolitan Washington Council of Governments' organizational membership geographical areas were used as follows: a metropolitan Washington area an upstream area, and a downstream area.

TABLE II: Area Breakdown of Survey Returns

Metropolitan Washington Area	Charles County, Maryland College Park, Maryland Gaithersburg, Maryland Greenbelt, Maryland Montgomery County, Maryland Prince Georges County, Maryl Rockville, Maryland Takoma Park, Maryland Alexandria, Virginia Arlington, Virginia Fairfax County, Virginia Fairfax City, Virginia Falls Church, Virginia Loudoun County, Virginia Prince William County, Virgi District of Columbia
Upstream Area (areas upstream from metropolitan Washington area)	Allegany County, Maryland Carroll County, Maryland Fauquier County, Virginia Frederick County, Maryland Garrett County, Maryland Howard County, Maryland Washington County, Maryland West Virginia counties in the Potomac Basin upstream from the metropolitan area Pennsylvania counties in the Potomac Basin upstream from the metropolitan area
Downstream Area (areas downstream from metropolitan Washington area)	Anne Arundel County, Maryland King George County, Virginia Northumberland County, Virgin

TABLE II: Area Breakdown of Survey Returns
(Continued)

Stafford County, Virginia
St. Mary's County, Maryland
Westmoreland County, Virginia
Other Maryland counties in the Potomac Basin downstream from the metropolitan area
Other Virginia counties in the Potomac Basin downstream from the metropolitan area

he computer analysis of the survey followed the format of the survey, ith tabulations and percentages of the responses being the only mathe- atical calculations performed. For this summa..., the results of the sur- ey will be discussed in terms of these tabulations and percentages, tilizing the three major areas delineated in the survey as focal points or discussion.

VEY RESULTS

asic Information: Section Five Analysis of Returns

a total, from the metropolitan area, two-thousand three hundred and eleven esponses were received (2,311). Two hundred and seventy-one were received rom the upstream areas (271), and one hundred fifty-six (156) were received rom the downstream areas. To gain an understanding about the credibility r reliability in the answers to the surveys, length of time that a per- on lived in an area was asked and the results are shown in Table III. rom the number of replies received for each area, the majority of returns in all areas (metropolitan, upstream, and downstream) were from those ho had lived in their respective jurisdictions for ten years or more. he second greatest percentage lived in their respective areas from one o five years.

eliefs: Section One Analysis of Returns

n order to assist current and future planning efforts; specifically, the orps of Engineers' Metropolitan Washington Area Water Supply Study, several onceptual questions were asked as to how the publics perceived the water -ply problem. The first question was designed to see whether or not publics" perceived the possibility of a water shortage occurring.

TABLE III: Length of Time in an Area

(QUESTION: How long have you lived in your area?)

	Less Than 1 Year	1-5 Years	5-10 Years	Over 10 Years	No Comment
Metro Area	112 (5%)	603 (26%)	468 (20%)	1121 (49%)	7 (negl
Upstream	10 (4%)	48 (18%)	26 (9%)	185 (68%)	2 (1%)
Downstream	4 (3%)	36 (23%)	21 (13%)	95 (61%)	0 (0%)

TABLE IV: Perception of Water Shortage

(QUESTION: I believe that the MWA....)

	Will Have No Water Shortage	Will Have Water Shortage in Few Years	Not Sure	No Comment
Metro Area	115 (5%)	1929 (83%)	223 (10%)	44 (2)
Upstream	24 (9%)	190 (70%)	49 (18%)	8 (3)
Downstream	7 (4%)	118 (77%)	27 (17%)	4 (2)

As noted in Table IV, the majority, in all areas, believed that the metropolitan Washington area could have a water shortage in a few years. The second largest response was from people who were not sure.

Most people became aware of this problem not through newspaper coverage or through their respective organizations or previous studies, but through television coverage.

TABLE V: Awareness of the Problem

(QUESTION: How did you first become aware of a possible water shortage in the MWA?)

	T.V.	Friend	Radio	Organ.	Study	News	Other	No Reply
etro Area	727 (31%)	19 (1%)	151 (7%)	134 (6%)	240 (10%)	485 (21%)	272 (12%)	284 (12%)
pstream	72 (27%)	4 (1%)	11 (4%)	16 (6%)	51 (19%)	31 (11%)	40 (15%)	46 (17%)
nnstream	47 (30%)	1 (1%)	10 (6%)	7 (5%)	24 (15%)	17 (11%)	19 (12%)	31 (20%)

order to find out what people believed would be the best way to meet ter shortages, two questions were asked: the first one offering a selec- on between conservation and structural measures, the second question cussing upon the location for these measures. An overwhelming majority all areas favored conservation with some methods to be considered for ding supply.

TABLE VI: How MWA Needs Are to be Met

(QUESTION: I believe that...)

	Needs be Met Thru Conservation	Use Conservation But Expand Supply	No Conservation	No Comment
tro Area	353 (15%)	1699 (74%)	211 (9%)	48 (2%)
ptream	55 (20%)	201 (74%)	8 (3%)	7 (2%)
nstream	29 (19%)	115 (74%)	8 (5%)	4 (2%)

far as location, a majority in each area felt that actions taken to ve water supply problems for the metropolitan Washington area should taken solely within the geographic boundaries of that area.

TABLE VII: Where Action Should Be Taken To Solve Water Supply Problems

(QUESTION: Should action be taken to solve water supply problems solely within the geographical boundaries of the metropolitan Washington area?)

	No	Yes	To Greatest Extent	No Reply
Metro Area	832 (36%)	218 (9%)	1190 (52%)	71 (3%)
Upstream	47 (17%)	63 (23%)	151 (56%)	10 (4%)
Downstream	37 (24%)	25 (16%)	83 (53%)	11 (7%)

To further specify the concerns that should be taken into account in the planning process, the public was asked to prioritize planning issue statements that should be addressed in any water supply study for the metropolitan Washington area. The statements presented were:

(1) Problems of inadequate water supply should be resolved with least disruption to the natural environment.

(2) Problems of inadequate water supply should be resolved with least disruption of existing communities.

(3) Problems of inadequate water supply should be resolved with least change to individual personal living habits.

(4) The source of water supply should be of highest possible quality to reduce public health risks.

(5) To protect fish, planning should be directed to maintain a minimum flow in the Potomac River which water withdrawals should not deplete.

(6) For the present population, any water shortage should be avoided.

(7) Future growth in the metropolitan Washington area should be limited by presently available water supply.

(8) Adequate water supplies should be developed so as not to restrict future population growth and economic development.

(9) Problems of inadequate supply should be immediately resolved.

(10) Problems of water supply should be resolved with the least possible cost.

The following were the results in priority placement, which clearly show a varia 'on depending upon the location of the area in the Potomac River Basin. I' is noted that the percentages in Table VIII do not add up to 100. This is because there were other choices entering into each selection. The priority rating of this Table is solely for the essential concerns for each area. The priority ranking in the survey for this section could not be accomplished because the number of people who answered the first part did not answer the priority or second part.

TABLE VIII: Priority for Planning Issues

(QUESTION: What essential planning issues are there in order of importance to be considered in the planning process?)

ESSENTIAL CONCERNS FOR THE METRO AREA

PERCENT	CONCERN
69%	(1) The source of water supply should be of highest possible quality to reduce public health risks.
55%	(2) To protect fish, planning should be directed to maintain a minimum flow in the Potomac River which water withdrawals should not deplete.
54%	(3) Problems of inadequate water supply should be resolved with least disruption to the natural environment.
40%	(4) Problems of inadequate supply should be immediately resolved.

ESSENTAL CONCERNS FOR THE UPSTREAM AREA

60%	(1) The source of water supply should be of highest possible quality to reduce public health risks.

TABLE VIII: Priority for Planning Issues
(Continued)

ESSENTIAL CONCERNS FOR THE UPSTREAM AREA

PERCENT	CONCERN
50%	(2) To protect fish, planning should be directed to maintain a minimum flow in the Potomac River which water withdrawals should not deple
46%	(3) Problems of inadequate water supply should be resolved with least disruption to existing communities.
45%	(4) Problems of inadequate water supply should be resolved with least disruption to the natural environment.

ESSENTIAL CONCERNS FOR THE DOWNSTREAM AREA

72%	(1) To protect fish, planning should be directed to maintain a minimum flow in the Potomac River. Water withdrawals should not deplete this flow.
65%	(2) The source of water supply should be of highest possible quality to reduce public health risks.
56%	(3) Problems of inadequate water supply should be resolved with least disruption to the natural environment.
31%	(4) Problems of inadequate water supply should be resolved with least disruption to existing communities.

Water Conservation Actions: Section Two Analysis of Returns

To be able to ascertain what duration of deficits people would be willing to live with, a series of water conservation methods were proposed to give the public some understanding about what they might have to practice

uring times of water shortage. These actions were then related to time eriods, for example, would a person be willing to conserve water for only ne week, for a month, or not at all. An overwhelming majority in all s felt that the water conservation methods should be adopted continu-sly whether in times of drought or in times of plenty. The second most avorable response emphasized that a deficit period of one month would also e a reasonable time period in which to expect the "publics" to utilize hese measures. During a water shortage, the following were the responses o using water conservation methods.

TABLE IX: Conservation Measures

(QUESTION: During a water shortage, would you be willing to...)

	Make Conservation a Habit	Never Conserve	Use Them for 1 wk	Use Them for 1 mth	No Comment
etro Area	2035 (88%)	17 (1%)	40 (2%)	141 (6%)	78 (3%)
pstream	246 (91%)	2 (1%)	2 (1%)	12 (4%)	9 (3%)
ownstream	146 (94%)	0 (0%)	2 (1%)	1 (1%)	7 (4%)

ince the willingness to conserve did not differ from area to area (kit-outside, bathroom, etc.), a breakdown is not provided.

olicy Questions: Section Four Analysis of Returns

series of policy questions, most of them addressing issues that might eed to be considered at some future date, were asked in the survey in he hope that the "publics" would respond in such a way as to provide upport for these future changes. Each question and its answer follows:

TABLE X: Increased Water Rates

(QUESTION: If necessary, would you be willing to pay increased water bills to reduce a chance of a water shortage?)

	No	Yes	No Comment
tro Area	579 (25%)	1535 (66%)	197 (9%)
stream	82 (30%)	145 (54%)	44 (16%)
ream	35 (23%)	83 (53%)	38 (24%)

TABLE X: Increased Water Rates (Continued)

(QUESTION: If necessary, would you be willing to pay increased water bills to assure a water supply of high quality and reduce health risks?)

	No	Yes	No Comment
Metro Area	323 (14%)	1784 (77%)	204 (9%)
Upstream	51 (19%)	172 (63%)	48 (18%)
Downstream	17 (11%)	98 (63%)	41 (26%)

TABLE XI: Financing of Projects

(QUESTION: At present, most costs for the development of water supply projects are at local and state levels. Should future costs be paid by....)

	Federal Level	State Level	Local Level	Combination of Fed, State, Local	No Comment
Metro Area	91 (4%)	212 (9%)	318 (14%)	1583 (68%)	108 (5%)
Upstream	13 (5%)	22 (8%)	57 (21%)	165 (61%)	14 (5%)
Downstream	4 (3%)	11 (7%)	41 (26%)	89 (57%)	11 (7%)

TABLE XII: Water Supply Charges

(QUESTION: Should commercial and industrial high volume water users be given a price break on water supply, as is the practice in several jurisdictions?)

	No	Yes	No Comment
Metro Area	1888 (82%)	289 (12%)	136 (6%)
Upstream	188 (69%)	63 (23%)	20 (8%)
Downstream	120 (77%)	24 (15%)	12 (8%)

TABLE XII: Water Supply Charges
(Continued)

(QUESTION: During summer, when water is scarce, should water users be charged more for any amount they use above previous winter water use?)

	No	Yes	No Comment
Metro Area	769 (33%)	1390 (60%)	152 (7%)
Upstream	97 (36%)	158 (59%)	16 (6%)
Downstream	39 (25%)	99 (63%)	18 (12%)

TABLE XIII: Water Conservation Measures

(QUESTION: Should local laws be passed to require new buildings to be equipped with water conservation plumbing fixtures?)

	No	Yes	No Comment
Metro Area	110 (5%)	2124 (92%)	77 (4%)
Upstream	17 (6%)	241 (89%)	13 (5%)
Downstream	5 (3%)	144 (92%)	7 (5%)

(QUESTION: Should local laws be passed to require that renovated buildings be equipped with water conservation plumbing fixtures?)

	No	Yes	No Comment
Metro Area	207 (9%)	2007 (87%)	97 (4%)
Upstream	36 (13%)	221 (82%)	14 (5%)
Downstream	10 (6%)	137 (88%)	9 (6%)

TABLE XIII: Water Conservation Measures
(Continued)

(QUESTION: Should there be laws requiring that inexpensive conservation fixtures be put in all existing homes, commercial, and government buildings?)

	No	Yes	No Comment
Metro Area	916 (40%)	1240 (54%)	155 (6%)
Upstream	119 (44%)	131 (48%)	21 (8%)
Downstream	60 (38%)	81 (52%)	15 (10%)

(QUESTION: Should government installations take the initiative to use more conservation fixtures so that the effectiveness of the fixtures can be determined?)

	No	Yes	No Comment
Metro Area	79 (3%)	2138 (93%)	94 (4%)
Upstream	8 (3%)	247 (91%)	16 (6%)
Downstream	5 (3%)	141 (91%)	10 (6%)

Water Supply Alternatives: Section Three Analysis of Returns

From a total of 2,738 responses, a total of 2,458 or 90% replied to the qualitative analysis portion of the survey Section Three. The following results are based upon a hand tabulation and analysis of the responses.

Conservation Measures. Twenty-five percent (25%) of the returns (i.e., twenty-five percent of 2,458) favored conservation in various forms rangin from metering; pricing, rate structure changes, and plumbing code changes; to education program for the metropolitan area in the use of water. Industrial recycling of water as well as a dual system for domestic users

were ideas presented as part of this response. Three percent (3%) supported this development which was quite significant compared to the other suggestions.

Interconnections. Thirteen percent (13%) of the returns favored a system of interconnections for both raw and finished water. About half of these responses favored the interconnection system recommended by Dr. Daniel Sheer of the Interstate Commission on the Potomac River Basin. The remaining half was split between no specific recommendation to that of Dr. Norman Coles's proposal consisting of a pumpover of Shenandoah River water to the Occoquan River.

Local Impoundments. The third highest, or approximately eleven (11%) percent of the returns, favored local impoundments as being the next alternative. However, rather specific requirements for the impoundments were made; they were to be small multiple-use ones that would enable local areas to benefit from them through recreational and scenic use. Specific suggestions for locating the impoundments were also made, and these ranged from using existing sites to creating new ones:

(1) The Potomac River between Shephardstown and Harpers Ferry.

(2) The C & O Canal.

(3) Small ponds in agricultural areas.

(4) Seneca Creek.

(5) Little Bennett State Park Lakes.

(6) Kerrick and Pages Swamp in North Charles County.

(7) Cedar Run.

(8) Town Creek.

(9) Licking Creek.

(10) Tonoloway.

(11) Back Creek.

(12) Brooks Gap.

(13) Savage River.

(14) Great Falls.

(15) Frederick County, East of Rt. 75 on Woodville Branch of Linganore Creek.

(16) Antietam Creek.

(17) Monocacy River.

(18) Quarries.

(19) Lake Manassas.

Advanced Waste Treatment. Approximately ten (10) percent favored the use of Advanced Waste Treatment to supplement water supplies. However, even though this alternative was supported, over three-fourths of the people supporting this alternative stated that the water quality should not deteriorate as a result of using the alternative, and that if quality was not enhanced, they would not be able to support it.

Upstream Impoundments, Groundwater, High Flow Skimming, Land Application of Wastewater. Each of these four alternatives had a seven percent (7%) return.

Upstream Impoundments. Several suggestions were made as to where to locate the upstream impoundments. A majority of the responses equated the upstream impoundments to those of the New York City water supply system, and expressed a concern that these impoundments not be as large as the suggested Verona and Sixes Bridge alternatives from the Northeast Water Supply Study. Recommendations for location were:

(1) Back Creek Valley of West Virginia.

(2) Western Blue Ridge area of West Virginia, Pennsylvania, Virginia, and Maryland.

(3) Western slope of the Blue Ridges between Massanutten, North Mountain, and Shenandoah Mountain.

(4) South Fork of the Shenandoah River in Warren County.

(5) Panhandle Dam.

(6) Big River Bend Dam above Seneca.

(7) Canaan Valley of West Virginia.

Groundwater. The seven (7) percent return for groundwater totally favored development of groundwater for local use only. No one favored

the use of this source as a transported supplement to the metropolitan Washington area. There was also an astute awareness that this supply was dwindling and that a study would need to be performed to locate and identify new aquifers.

High Flow Skimming. This was basically favored because people equated the use of this alternative with that of using the existing reservoirs to retain water during high flows in the Potomac with a release of these waters during low flow.

Land Application. This alternative was favored because the respondents felt that it would be worthwhile as an experimental alternative. With the supportive policy of the Environmental Protection Agency, money could be applied and analyses performed to see whether or not it would be a viable future alternative for the Washington area.

Estuary Use. The least favored alternative, with a six percent (6%) return was that of the use of the Estuary. Water quality plus degradation of the lower reaches of the Potomac River were the major concerns expressed.

Other Suggestions. Other suggestions as to what could be done to help alleviate the water supply problem were to:

(1) Limit growth of people, industry, and building homes, etc. — 4% return

(2) Use of watershed management practices — 1% return

(3) Desalinate the Bay — 2% return

Thus, it appeared as if support for the alternatives took the following form:

(1) Conservation Measures — 25% return

(2) Interconnections, local impoundments, advanced waste treatment — 12% return

(3) Upstream impoundments, groundwater, high flow skimming, land application, estuary — 7% return

(4) Other suggestions — 2% return

The one return that was the most significant of all was that dealing with water quality which was also given space for comment in Section Three of the survey as well as in the space for additional comments. From a total of 2,738 responses, a total of 2,650 or ninety-seven percent (97%) stated that water quality was of major concern along with water supply, and that it should be considered as important if not more important than supply.

CONCLUSIONS AND COMMENTS

Several trends can be noted from the evaluation of the survey:

(1) There is a more definite desire for solving water supply problems locally, than in going to formerly identified upstream sites as sources for solving water supply problems. Only a few (3) replies favoring local impoundments mentioned areas outside of the SMA, and in those cases, supported those projects for use in that locality.

(2) There is an understanding that the water problem is a regional one. More emphasis is being placed on better quality of water for all, on emphasizing the least disruption to another community for a water supply alternative, and on the quality of life in the downstream reaches of the Potomac River Basin.

(3) The "publics" are well aware, and in many cases insist, that water supply and water quality be linked together to produce a workable plan for the area.

ANNEX C-IV

PUBLIC INVOLVEMENT ACTIVITIES
EARLY-ACTION PLANNING PHASE

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
16 Jan 78	Meeting to make arrangements for Stage II public involvement program.	MWCOG, Corps of Engineers	MWAWSS
23 Jan 78	Public meeting	Corps, water suppliers, general publics	EIS Water Intake permits.
26 Jan 78	WRPB meeting	MWCOG, Corps of Engineers	208 events, MWAWSS status.
27 Feb 78	Bi-County Water Supply Task Force Meeting	Corps, Task Force, others	Bi-County Study
3 Mar 78	Meeting - DC Subcommittee Water Suppliers	Water suppliers in MWA, Corps	MWASS
14 Mar 78	Meeting - Water Resources Water Supply Advisory Committee	MWCOG, Corps of Engineers	208 events, MWASS status.
13 Apr 78	Meeting - Technical Advisory Committee	MWCOG, Corps of Engineers	Passage of Stage II public involvement contract and MWASS
16-21 Apr 78	Thames/Potomac Seminars	ICPRB, Corps of Engineers, other governmental and public interests	To try to compare planning and management techniques between the two Basins and to apply portions of learning experience to MWAWSS.
26 Apr 78	Meeting - Citizens Advisory Committee	MWCOG, Corps of Engineers	Passage of Stage II public involvement contract and MWAWSS presentation.

(continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
27 Apr 78	Meeting - Water Resources Planning Board	MWCOG, Corps of Engineers	Passage of Stage II public involvement contract and MWAWSS presentation.
11 May 78	Meeting - Citizens Advisory Committee	MWCOG, Corps of Engineers	To establish membership for Citizens Tasks Force (CTF) from CAC for MWAWSS.
11 May 78	Meeting	ICPRB, Corps of Engineers	To establish membership for CTF from upstream & downstream Potomac
17 May 78	Meeting - Board of Directors MWCOG	MWCOG, Corps of Engineers	Approval of contract for Stage II public involvement.
22 May 78	Meeting - Water Supply Advisory Committee (WSAC)	MWCOG, Corps of Engineers	Introductory meeting for MWAWSS.
	Mailing of letters to upstream, downstream, and MWA publics to be on the Task Force.	Corps of Engineers	MWAWSS
24 May 78	Shenandoah Pumpover Meeting	SWCB, FCWA, Corps of Engineers	MWAWSS investigation on the pumpover.
14 Jun 78	Meeting - WRPB	MWCOG, Corps of Engineers	Introductory meeting for MWAWSS
11 Jul 78	Meeting	Governor of Virginia, Corps of Engineers	MWAWSS

(continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
17 Jul 78	Meeting - Water Supply Advisory Committee	MWCOG, Corps of Engineers	Work session - water conservation review portion of MWAWSS.
21 Jul 78	Meeting - CIF	Citizens Task Force, MWCOG, Corps of Engineers	Introductory meeting on status and water conservation work session.
8 Aug 78	Meeting - WRPB	MWCOG, Corps of Engineers	Work session - water conservation review portion of MWAWSS.
9 Aug 78	Meeting - Virginia State Water Control Board	SWCB, Corps of Engineers	MWAWSS
21 Aug 78	Meeting - WSAC	MWCOG, Corps of Engineers	Work session - raw water and finished water interconnections portions of MWAWSS.
25 Aug 78	Meeting - CTF	CTF, MWCOG, Corps of Engineers	Work session - raw water and finished water interconnections portion of MWAWSS.
6 Sep 78	Meeting	WSSC, Corps of Engineers others	SCS #3 status
11-12 Sep 78	Meeting	NAS/NAE	Review of what has been accomplished to date on MWAWSS.
12 Sep 78	Meeting	WRPB, MWCPG, Corps of Engineers	Work session - raw water and finished water interconnections portion of MWAWSS.

(continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
14 Sep 78	Meeting	MWA water suppliers	MWAWSS
19 Sep 78	Meeting	WSAC, MWCOG, Corps of Engineers	Plan Formulation process and position statements on MWAWSS on Stage II effort.
29 Sep 78	Meeting	CTF, Corps of Engineers	Basin perspectives, water quality and flow in the Potomac.
13 Oct 78	Meeting	CTF, Corps of Engineers	Basin perspectives, water quality and flow in the Potomac.
17 Oct 78	Briefing	WSSC, Corps of Engineers	MWAWSS
November 78	Mailing	Corps of Engineers	Water Forum Notes 1 and 2 on the MWAWSS.
8 Nov 78	Briefing	Act Systems, EPA, Corps of Engineers, others	Water supply by EPA
16-17 Nov 78	Meeting	NAS/NAE, Corps of Engineers	To review Potomac Estuary Pilot Water Treatment Plant
December 78	Mailing	Corps of Engineers	Water Forum Notes 3, 4, and 5 and public meeting notice
3 Jan 79	Meeting	MWCOG, Corps of Engineers	To make arrangements for public involvement for Stage III planning

(continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
9 Jan 79	Workshop Falls Church, Va.	Corps of Engineers	MWAWSS
16 Jan 79	Workshop Washington, D.C.	Corps of Engineers	MWAWSS
16 Jan 79	Radio Interview	Corps of Engineers	MWAWSS
17 Jan 79	Workshop Maryland	Corps of Engineers	MWAWSS
23 Jan 79	Meeting	Water suppliers, Corps of Engineers	MWAWSS plans
25 Jan 79	Public Meeting, D.C.	Corps of Engineers, public	MWAWSS plans
1 Feb 79	Briefing	National Capital Planning Commission, Corps of Engineers	MWAWSS plans
2 Feb 79	Briefing	MWCOG, Corps of Engineers	MWAWSS plans
2 Feb 79	Briefing	Department of the Interior Corps of Engineers	MWAWSS plans
7 Feb 79	Briefing	EPA, Corps of Engineers	MWAWSS plans
12 Feb 79	Briefing	Virginia State Water Control Board, Corps of Engineers	MWAWSS plans

(continued)

SEQUENCE OF EVENTS FOR PUBLIC INVOLVEMENT DURING EARLY ACTION PLANNING

DATE	EVENTS	PARTICIPANTS	TOPICS COVERED
16 Feb 79	Briefing	FISRAC	MWAWSS plans
26 Feb 79	Briefing	NASNAE, Corps of Engineers	MWAWSS plans
23 Mar 79	Briefing	League of Women Voters	MWAWSS plans
4 May 79	Briefing	Citizens Task Force, Corps of Engineers	MWAWSS plans
25 May 79	Briefing	Citizen Task Force Corps of Engineers	Supply and Demand for the MWAWSS
30 May 79	Conference	In-House Corps of Engineers Review and Coordination	MWAWSS
31 May 79	Briefing	WSAC, Corps of Engineers	MWAWSS
31 May 79	Briefing	ICPRB Commissioners, Corps	Stage III - MWAWSS
22 Jun 79	Briefing	CTF, Corps of Engineers	Bloomington as related to supply for the MWAWSS
Jul 79	Mailing	Corps of Engineers	Forum Note #6, MWAWSS
Aug 79	Mailing	Corps of Engineers	Early Action Plans
Oct 79	Workshops	Public, Corps of Engineers	Early Action Plans
Oct 79	Public Meeting	Public, Corps of Engineers	Early Action Plans
Dec 79	Meeting	FISRAC	Early Action Plans

ANNEX C-V

SAMPLE WATER FORUM NOTE

METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY / NO. 3 / DEC. 78



WATER FORUM NOTES

RAW WATER INTERCONNECTIONS AND LOCAL STORAGE

Introduction

This third in a series of five Water Forum Notes addresses two elements of the early-action alternatives being considered as part of the Metropolitan Washington Area (MWA) Water Supply Study. As explained in the previous two Water Forum Notes; it is anticipated that the MWA may expect an increase in the demand for water in the coming years as a result of a growing population and economy. Since the Potomac River provides the major source of water supply for MWA residents and because no large scale water storage facilities other than Bloomington Lake are planned for the MWA, the Nation's capital and environs face potentially severe water shortages in the future.

The objective of the MWA Water Supply Study is to develop regional water supply plans to meet these shortages. Early-action plans designed to meet the immediate MWA water supply needs are currently being formulated. Long-term plans to meet more distant needs will be formulated at a later stage.

The early-action plans for this study are comprised of the following water supply and demand reduction components: conservation; finished water interconnections; reregulation of the existing finished water systems; raw water interconnections; and local water supply storage. Water Forum Note No. 2 discussed the concepts and results of finished water and reregulation investigations.

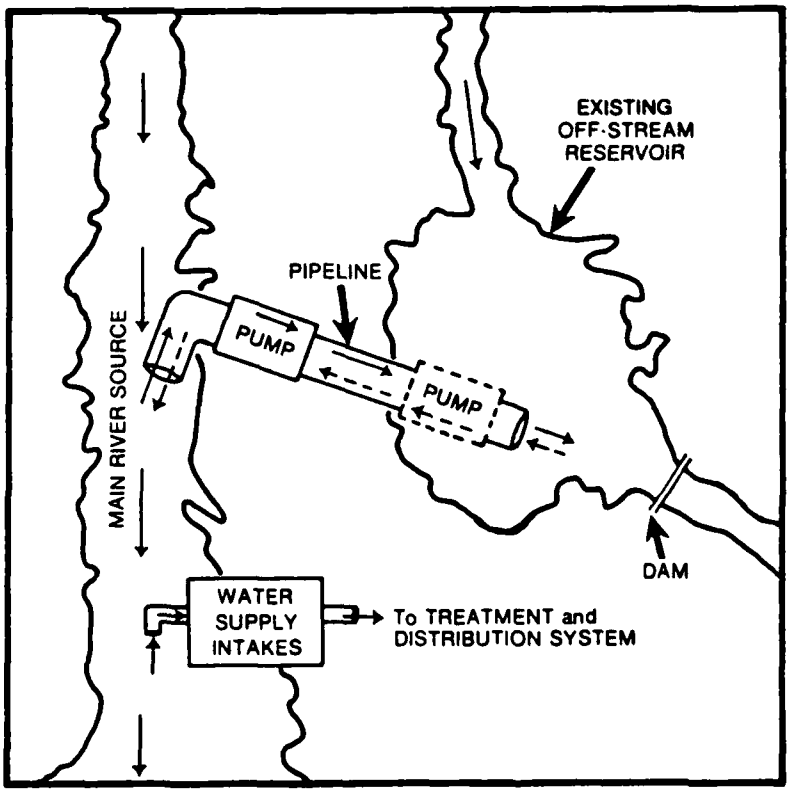
The purpose of this third Water Forum Note is to provide background information concerning raw water interconnections and local storage alternatives. These two alternatives attempt to solve the water supply problem not by reducing the demand for water, but rather by increasing the yield through more efficient use of available water.

Raw Water Interconnections

The Potomac River along with its major tributaries, and the Patuxent River, is the primary waterway which provides water supply to the residents of the MWA. Although the Potomac River *per se* has no structures to store water for consumption within the boundaries of the MWA, some of its tributaries do and these help supply different areas within the region.

From a regional perspective, one possible mechanism to make more efficient use of these storage areas and to maximize the water supply from fluctuating flows in the Potomac River is a system of raw water interconnections. The primary purpose of such a mechanism is to transfer surplus water during periods of high flow in the Poto-

Figure 1
REPRESENTATION OF RAW WATER INTERCONNECTION OPERATION



mac River via pipelines to off-stream existing storage areas. Figure 1 illustrates this concept. With this operation, existing reservoirs could be kept as full as possible with surplus river flows until the onset of a drought, at which time stored water could be made available where needed.

As a first step in applying this concept to the MWA, feasible connection points were identified within the MWA for raw water transfers. Existing reservoirs being considered included the Triadelphia and Rocky Gorge Reservoirs on the Patuxent River, the Occoquan Reservoir on the Occoquan Creek, and the Beaverdam Reservoir on Goose Creek. The Shenandoah River and the Potomac River were explored as potential water supply sources for the purpose of comparison in an Occoquan interconnection alternative. Figure 2 displays the location and arrangement of these potential interconnection points.

A mathematical model was developed to simulate and optimize the various combinations of interconnected reservoirs and streams for the purpose of minimizing projected water shortages. Two criteria guided the progress of this analysis. The first of these was that the analysis would consider from a regional water balance standpoint those points of connection that could meet the average rate at which water is demanded for a given period of analysis. The second criteria stipulated that these regional demands would be met at minimum capital cost.

MAJOR FINDINGS

Some interesting and important findings have been brought to light as a result of these investigations and are summarized in Table 1.

Table 2 summarizes the connection points, lengths, and preliminary costs of the pipelines remaining under investigation. These pipelines have been screened from 14 regional configurations on the basis of a range of economic, environmental, and social considerations. Those configurations which meet the water supply needs and minimize impacts as practically as possible, can then be incorporated into overall regional plans.

TABLE 1
RAW WATER INTERCONNECTIONS—MAJOR FINDINGS

- Enough water is available until the year 2000 to meet the regional water supply needs using 30-day duration supplies and demands.
- To make this water available, interconnections are needed on both the Maryland and Virginia sides of the Potomac River.
- The volume of an environmental "flow-by" will affect the timing, location, and the size of the interconnections.
- Peak demands of shorter duration (less than 30-days) require action at an earlier date.
- Raw water interconnections could be implemented to alleviate shortages in the FCWA service area by either connecting the Shenandoah or Potomac River with the Occoquan Reservoir system.

TABLE 2
POTENTIAL RAW WATER INTERCONNECTION

CONNECTION POINTS	RT NO.	REVERSIBILITY	PRELIMINARY LENGTH (MILES)	PRELIMINARY CAPITAL COST FOR 50 MGD PIPELINE ($ MILLIONS)
Potomac River-Rocky Gorge Resevoir	1	Reversible	22.0	36.7
Potomac River-Rocky Gorge Resevoir	2	Reversible	25.0	42.5
Potomac River-Occoquan Reservoir	1	Reversible	30.2	49.6
Potomac River-Occoquan Reservoir	2	Reversible	32.0	51.9
Potomac River-Beaverdam Creek Reservoir	1	One-Way	7.8	11.4
Shenandoah River-Occoquan Basin	1	One-Way	22.5	29.2

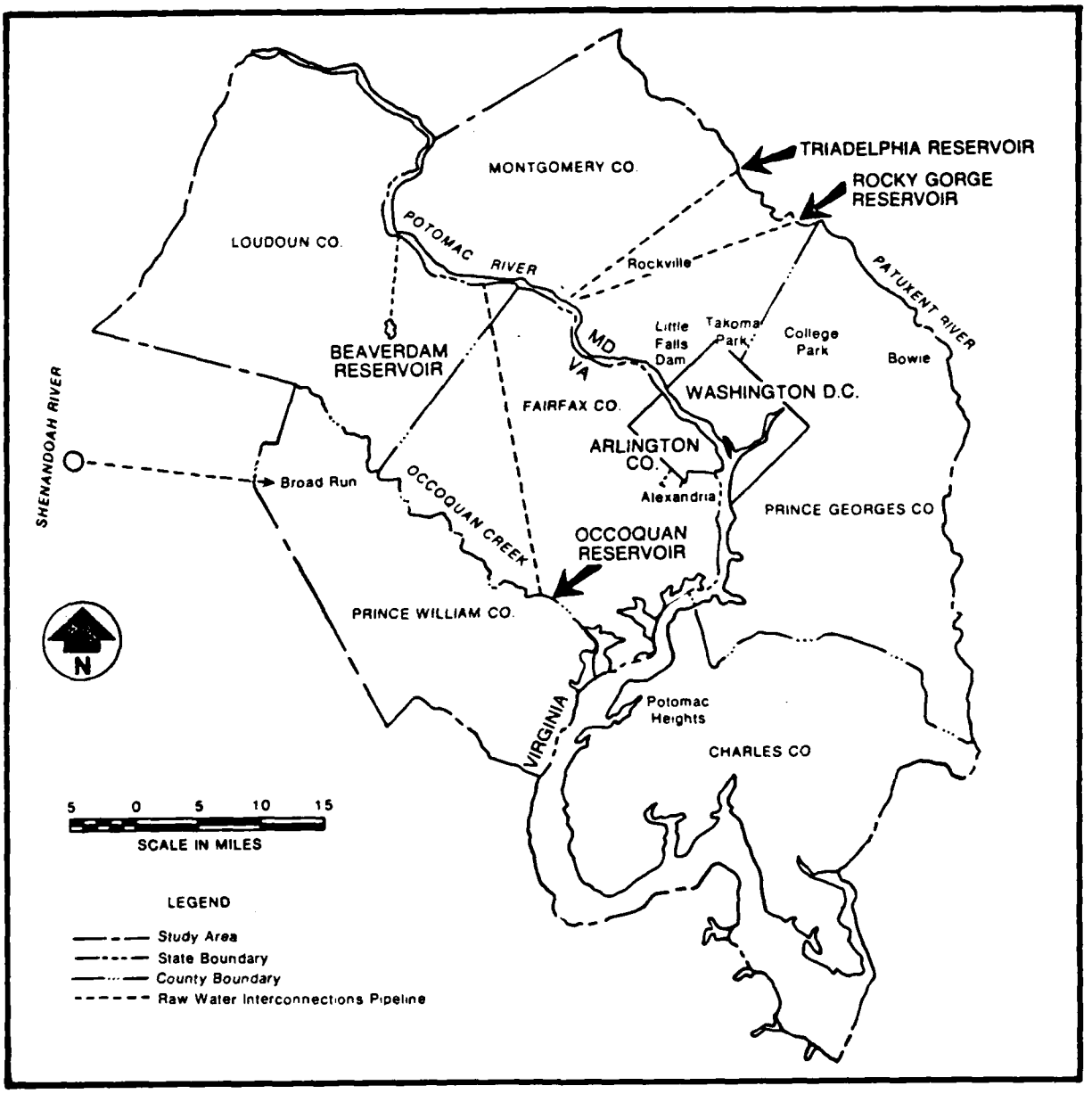
TABLE 3
LOCAL STORAGE AREAS

PROJECT	LOCATION	STORAGE (BG)	YIELD (MGD)	PRELIMINARY CAPITAL COST ($ MILLIONS)	
Soil Conservation Site Number 3	Montgomery County, Md.	2.8	8.2	23.9	(based on 1977 data)
Raise Occoquan Reservoir by 5 feet	Fairfax County, Virginia	3.3	9.1	1.92	(Dec 1977 data)
Cedar Run Reservoir	Prince William County, Virginia	2.5	12.0	9.2	(based on Jan 1980 data)

LOCAL STORAGE

Three local storage projects are under active investigation by local authorities as to their potential for augmenting local water supplies. These storage facilities are important to the MWA Water Supply Study because they can provide new supplies and increase regional storage. By using raw water interconnections, regional average monthly demands can be satisfied

Figure 2
POTENTIAL RAW WATER INTER-CONNECTIONS—MWA



without additional storage until the year 2000, however, it should be noted that additional storage could be used to reduce or defer the need for raw water pipelines. In addition, local storage will continue to provide needed water in the more distant future. Table 3 summarizes the characteristics of the local storage areas under active planning consideration in the MWA.

Summary

Raw water interconnections and new local storage facilities can help to solve the MWA's water supply problem. Current investigations indicate that these components along with finished water interconnections, reregulation of the existing finished water system and, conservation measures can provide ways to meet the monthly needs through the year 2000 and in some cases beyond. These components will be combined into viable plans recommended for implementation. Water Forum Note No. 4 will present the progress of the work on Conservation for the MWA Water Supply Study and Water Forum Note No. 5 will present preliminary plans for public evaluation.

ANNEX C-VI

PUBLIC INVOLVEMENT ACTIVITIES
LONG-RANGE PLANNING PHASE

PUBLIC INVOLVEMENT ACTIVITIES DURING LONG-RANGE PLANNING

DATE	EVENT	PARTICIPANTS	TOPIC
13 Jul 79	Meeting	MWA Citizens Task Force (CTF)	MWA Study - PRISM Modeling
17 Aug 79	Meeting	MWA CTF	MWA Study - Plan Formulation Activities
7 Sep 79	Meeting	MWA CTF	MWA Study - Water Quality Considerations
14 Sep 79	Meeting	MWA CTF	Discuss with District Engineer - Water Quality
27 Sep 79	Meeting	NAS-NAE Committee	NWA Study Progress
Sep 79	Publish and Distribute	Water Forum Note No. 7	Early Action Plans
16-18 Oct 79	Workshops (3)	Public and Corps	MWA Study - Early Action Plans
21 Dec 79	Meeting	MWA CTF	Final Comments - Early Action Plans
18 Jan 80	Meeting	Elected Officials MWA	Formation of Committee to implement Early Action
Jan 80	Publish and Distribute	Corps Newsletter - Bloomington	Study Initiation Notice
29 Feb 80	Meeting	MWA CTF	Long-Range Plans and Related Studies
Apr 80	Publish and Distribute	Water Forum Note No. 8	Status Report on Study Activities
12 May 80	Meeting	Wash. Metro Water Supply Task Force (WMWSTF)	1st Mtg - Dev. Scope of Work
26 Sep 80	Meeting	MWA CTF	April 1980 Corps Progress Report
14 Nov 80	Meeting	MWA CTF	Bloomington Reform Study and CO-OP
23 Jan 81	Meeting	MWA CTF	Activities of WMWSTF
17 Feb 81	Letters	Citizens Interested in Bloomington Reform Study	Invitation to join Bloomington CTF
19 Feb 81	Meeting	WMWSTF	Approve recommendations of CAG and TAG
Mar 81	Corps Action	Corps and Public	Establish Bloomington CTF
10 Mar 81	Meeting	CO-OP Members	Develop CO-OP Agreement
25-26 Mar 81	Meeting	NAS-NAE Review Committee	MWA Study Status
27 Mar 81	Meeting	MWA CTF	USGS Groundwater Study and Pricing Study

PUBLIC INVOLVEMENT ACTIVITIES DURING LONG-RANGE PLANNING
(Continued)

DATE	EVENT	PARTICIPANTS	TOPIC
20 Apr 81	Meeting	Signatories of LFAA	Potomac River Flow-by
23 Apr 81	Meeting	Bloomington CTF	Status of Bloomington Reform Study
24 Apr 81	Meeting	MWA-CTF	Little Seneca Lake Project
12 May 81	Meeting	CO-OP Members	Develop CO-OP Agreement
22 May 81	Meeting	MWA-CTF	MWA Study Schedule & CTF Activities
12 Jun 81	Meeting	Maryland Potomac Water Authority	Status of Bloomington Project
26 Jun 81	Meeting	MWA-CTF	Little Seneca Lake Project
29 Jun 81	Meeting	Signatories of LFAA	Potomac River Flow-by
13 Jul 81	Meeting	Signatories of LFAA	Simulated Drought Exercise
17 Jul 81	Meeting	MWA-CTF	State of Maryland Flow-by Study
22 Sep 81	Presentation	Chief of Engineers Env. Adv. Board	MWA Study
25 Sep 81	Meeting	MWA-CTF	Potmac River Flow-by and Litte Seneca Lake
6 Nov 81	Meeting	MWA-CTF	Bloomington Reform Study
12 Nov 81	Presentation	National Capital Section - AWRA	Bloomington Reform Study
4 Dec 81	Meeting	MWA-CTF	Scope of Work - EPA Water Potability Study
6 Jan 82	Meeting	NAS-NAE Subcommittee	Scope of Work - EPA Potability Study
8 Jan 82	Meeting	MWA-CTF	Scope of Work - EPA Potability Study
5 Feb 82	Meeting	MWA-CTF	Scope of Work - EPA Potability Study
5 Mar 82	Meeting	MWA-CTF	Outline of MWA Final Report
19 Mar 82	Meeting	WMWSTF	Addition of final recommendations for Early Action Plans

PUBLIC INVOLVEMENT ACTIVITIES DURING LONG-RANGE PLANNING
(Continued)

DATE	EVENT	PARTICIPANTS	TOPIC
22 Mar 82	Meeting	NAS-NAE Subcommittee	PRISM
26 Mar 82	Meeting	Potomac Instream Flow Committee	Potomac River Flow-by
2 Apr 82	Meeting	MWA-CTF	Outline of MWA Fnal Report
6 Apr 82	Meeting	NAS-NAE Committee	MWA Study Status
12 Apr 82	Meeting	Potomac Instream Flow Committee	Potomac River Fisheries Mgmt
15 Apr 82	Meeting	Signatories of LFAA	LFAA Modification
7 May 82	Meeting	MWA-CTF	Tour of Pilot Estuary Water Treatment Plant
13 May 82	Meeting	Maryland Potomac Water Authority	Modifications to water supply contracts
4 June 82	Meeting	MWA-CTF	Water quality and draft report
22 July 82	Meeting	MWA Water Supply Interests	Signing ceremony for series of regional agreements
5 Nov 82	Meeting	MWA-CTF	Draft report
1 Dec 82	Distribution	MWA-CTF	Received preliminary draft report
3 Dec 82	Meeting	MWA-CTF	Discuss preliminary draft report
7 Jan 83	Meeting	MWA-CTF	CTF comments preliminary draft report
21 Jan 83	Meeting	MWA-CTF	CTF comments preliminary draft report
3 Feb 83	Meeting	MWA-CTF	CTF comments preliminary draft report
4 Mar 83	Meeting	MWA-CTF	CTF comments preliminary draft report
18 Mar 83	Distribution	MWA Water Supply Interests	Draft report
7 Apr 83	Meeting	MWA-CTF	CTF comments draft report
15 Apr 83	Distribution	General Public	Final Water Forum Note
Sep 83	Distribution	General Public	Notice of Study Completion

ANNEX C-VII

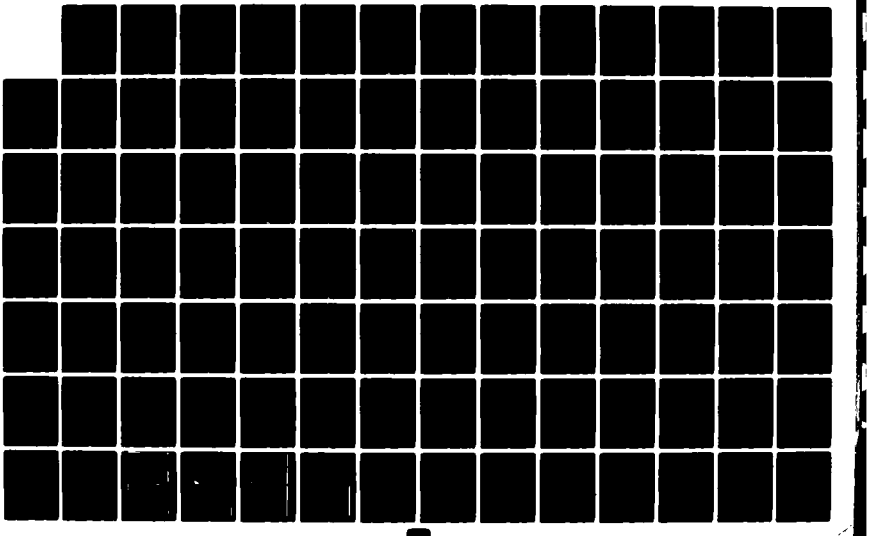
CITIZENS TASK FORCE RESOLUTIONS

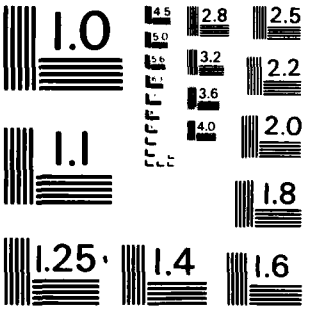
ANNEX C-VII - CITIZEN TASK FORCE RESOLUTIONS

DATE	ITEM	PAGE
29 September 1978	Resolution Concerning the Maryland Potomac Low Flow Study	C-VII-1
10 September 1979	CTF Position on the Conduct of the MWA Water Study	C-VII-1
23 December 1979	CTF Final Comments on the August 1979 Draft Report	C-VII-8
29 June 1981	CTF Questions and Concerns about the Little Senaca Lake Project	C-VII-12
20 July 1981	CTF Letter to District Engineer Regarding Comment Period on Potomac Low Flow Study	C-VII-15
9 August 1981	CTF Critique of the Maryland Potomac Flow-by Study	C-VII-16
28 January 1982	CTF Concerns about Draft Water Quality Scope of Work	C-VII-45
5 February 1982	CTF Comments on the Draft Water Quality Scope of Work	C-VII-48
4 June 1982	Resolution Concerning the Future Water Quality of the Potomac River	C-VII-52
17 February 1983	CTF Review Comments on the Preliminary Draft Report on the MWA Water Supply Study	C-VII-53
20 April 1983	Memo Concerning CTF Comments on Draft Report	C-VII-66

AD-A134 155 METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY 2/4
APPENDIX C PUBLIC INVOLVEMENT(U) CORPS OF ENGINEERS
BALTIMORE MD BALTIMORE DISTRICT SEP 83 MWA-83-P-APP-C

UNCLASSIFIED F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

9/29/79

TO: Colonel Withers
Baltimore District Corps of Engineers

FROM: Citizens' Task Force for the Metropolitan Washington Water Supply Study

SUBJECT: Resolution on the Technical Study on Low Flow by the State of Maryland

---

WHEREAS: the limitations placed on the low flow technical study as the basis for rendering a decision on a low flow allocation are completely inadequate,

WHEREAS: impacts on the treatment of Water Quality coming into the Washington Metropolitan Area must be considered as well as other substantive impacts on Water Quality of the Potomac Estuary on the mandated low flow-by,

WHEREAS: the study approach in this limited fashion is not a reasonable approach,

NOW, THEREFORE, BE IT RESOLVED that the Citizens' Task Force for the MWA-Water Supply Study:

1. Requests that members of the Citizen Advisory Committee be added to the group of agency people who are cooperating with the Maryland Technical Study in order to secure changes in the study approach.

2. Requests that the National Academy of Sciences Oversight Committee for the Washington Water Supply Study have liaison with the Maryland Technical Study Group.

3. Requests that an expert in toxicology and safety of drinking water supply be made a part of this study.

9/10/79

MEMO:

SUBJECT: participation in the meeting with Col. James Peck, September 14, 1979, 10:00.

TO: Col. Peck and all participants

FROM: consensus, September 7, 1979 meeting at Dalecarlia

The following members of the Citizen's Advisory Committee on the WMA Water Supply Study hope to be able to attend the September 14 meeting with Col. Peck at the Corps Baltimore office.

John W. Chesley, Jr.: Col. U.S. Army Corps of Engineers, Ret'd.; representing Prince Georges County, Maryland.

Frank J. Clark: Registered engineer, State of Maryland; Past President, Institute of American Engineers; engineer for the Naval Research Lab, 15 years, and Bureau of Standards, 18 years; representing Trout Unlimited.

Elizabeth Horvath: President, the Northern Virginia Conservation Council, 1977-1979; author, numerous articles on the Potomac River and the Washington water supply; Member, the COG Citizen's Advisory Committee on the 208 Plan; representing the Northern Virginia Conservation Council.

Louis A. Koffman: Registered engineer, State of Virginia; professional hydrologist, retired from the federal government after 34 years in the U.S. Geological Survey and the Corps of Engineers; Falls Church City representative.

David Russel: Vice President, auditor, District of Columbia National Bank; Certified internal auditor; Certified data processing auditor; formerly staff of the 1st Virginia Corporation. Board Member, the Fairfax County Water Authority.

Ed Weseley: Chairman, Citizen's Advisory Committee; Member, COG Citizen's Advisory Committee; Commissioner, C&O Canal Commission; President, C&O Canal Association; writer, raconteur and photographer, general historian on the Potomac River, the Occoquan and the Patuxent.

Martha M. Mohler: R.N., Master of Nursing; Director, Montgomery Environmental Coalition, 1972-1979, Water Supply Chairman; Montgomery County Civic Federation, Chairman Committee on Sanitation and Public Health, 1975-1979; Member, Citizen's Advisory Committee on the 208 plan; Member, Citizen's Advisory Committee to the Bi-County Water Supply Task Force, Montgomery and Prince George's County.

POSITION OF THE CITIZEN'S ADVISORY COMMITTEE ON THE WASHINGTON METROPOLITAN AREA WATER SUPPLY STUDY

In order to meet the requirements of Section 85 of the 1974 Water Resources Act,[1] The Citizen's Advisory Committee recommends that the U. S. Corps of Engineers amend the Study to include evaluation of water quality in the raw water sources it proposes as potential supply for the Washington Metropolitan Area (WMA). The promulgated Study does not include this information even though the legislation requires that "the Chief of Engineers shall ... make a full and complete investigation and study of the future resources needs of the Washington Metropolitan Area, including but not limited to, the adequacy of present water supply ... .". The Citizen's Advisory Committee specifically recommends that the WMA Water Supply Study include the following information:

(1) A detailed evaluation of year-around water quality, present and projected, in the Potomac River and Occoquan and Patuxent reservoirs. This evaluation should include whatever data is available for both raw and finished water at the plant and water in the distribution system.

(2) Present and projected costs to the users to treat existing supplies to meet EPA standards.

(3) A careful evaluation of the effect on the Potomac River supply if it must be used to replace the Occoquan Reservoir source. The Study must evaluate the very real possibility that the Occoquan will be discarded as a water source because it has become too contaminated to treat to meet EPA standards at reasonable cost to the homeowner.

In the alternative, the Committee recommends that the Corps Study state clearly in its opening section that:

(1) Raw water quality has not been included in the study

[1] "The Secretary of the Army acting through the Chief of Engineers shall (A) make a full and complete investigation and study of the future resources needs of the Washington Metropolitan Area, including, but not limited to, the adequacy of present water supply, nature of present and future uses, the effect water pricing policies and use restrictions may have on future demand, the feasibility of utilizing water from the Potomac Estuary, all possibly water impoundment sites, natural and recharged ground water supplies, waste water reclamation and the effect such projects will have on fish, wildlife and present beneficial uses, and shall provide recommendations based on such investigation and study for supplying such needs." The Water Resources Development Act of 1974, PL 93-251 § 85 (1974).

(2) The Study assumes that whatever water is available (no matter what contaminants it contains) can be treated to meet the EPA standards.

(3) The Corps has not evaluated whether the 100 ppb EPA TTHM standard will require changes in technology, increased cost, or abandonment of highly contaminated raw water sources.

Furthermore, in the event that the current plan facts and assumptions become invalid due to any cause, requiring changes in the presumptions defining the prefered alternative, a new plan must be prepared reflecting changed scope, character and costs.

As one example of unrecognized water quality problems, the Study presumes that impounded water in the Occoquan and Patuxent reservoirs and the Potomac at Great Falls and Little Falls as well as the free flowing river at the WSSC intake at Watkins Island can be treated to meet EPA promulgated standards for trihalomethanes (TTHMs). The Citizen's Advisory Committee suggests that this presumption cannot be sustained for the following reasons:

Since the Congress authorized the WMA Study, EPA has studied and evaluated cancer death risk from TTHMs in U. S. water supplies and concluded that:

> " Thus far, more than 300 specific organic chamicals have been identified in various drinking water supplies in the Unites States. These compounds result from such sources as industrial and municipal discharges, urban and rural runoff, natural decomposition of vegatative and animal matter, as well as water and sewage chlorination practices. Although compositions and concentrations vary from locality to locality and from time to time, the occurence of organic compounds in tap water is universally acknowledged. The human health effects of exposure to these compounds via drinking water are as yet unclea-. However, some of them have been shown to be carcinogenic in animal tests and a few are known to be human carcinogens... Chloroform, one of the trihalomethanes serves as one example of the organics problem... The National Organics Reconnaissance Study (NORS) in 1975 confirmed the widespread presence of several previously determined organics in drinking water and, further, served to attribute the presence of chloroform and related trihalomethanes to the chlorination disinfection process itself. These results were subsequently supported by a further survey of 83 utilities within EPA's Region V.
>
> ... The principal source of chloroform and other trihalomethanes in drinking water is the chemical interaction of the chlorine added for disinfection with the commonly present natural humic substances found in raw water.

... To help assess the health risk, EPA in 1975 sought the advice of its Science Advisory Board regarding potential carcinogenic or other adverse health effects resulting from exposure to organic compounds in drinking water... The Report concluded that some human health risk probably does exist from exposure through drinking water, although this risk is currently unquantifiable. The Report recommended that EPA seek ways to reduce exposure to these compounds...." EPA Proposed Rules, Organic Chemical Contaminants, 41 Fed. Reg. 28991, July 14 1976 (amending 40 C.F.R. Part 141)

As a result of its ongoing studies, EPA has proposed a TTHM standard of 100 ppb. Even though water quality analyses have been conducted by the three major suppliers of WMA water for more than a year, the data that has been collected on TTHM levels has not been incorporated into the Corps study. A cursory survey by the Citizen's Committee has shown that the Fairfax County Water Authority cannot meet the 100 ppb TTHM standard it its distribution system and that " The TTHM levels in the current warm weather period (June-July 1979) at certain locations throughout the distribution system are substantially in excess of the proposed EPA standards." (See Exhibit A., p.1.) Even though the Authority had investigated carbon filtration, correlations between chlorine demand, total organic carbon and algae with trihalomethane production, and even the use of ozone and chlorine dioxide "nothing significant to the control of TTHM production has evolved." (Id., p. 4.) The Authority is now experimenting with additions of ammonia to water at the Occoquan Treatment Plant.

The other two major suppliers, WSSC and Corps' Dalecarlia system have also tested their finished water. WSSC has modified its treatment process and eliminated pre-chlorination to reduce the amounts of organics exposed to chlorine. Nonetheless, its test results show that between May and July of 1979, TTHM levels varied from a low of 18 ppb to a high of 88 ppb.

On the other hand, the Dalecarlia Plant has not changed its treatment process and still uses pre-chlorination to disinfect water drawn from the Potomac River. In June of 1979, 5 of 7 stations tested exceeded the 100 ppb standard. InJuly all stations exceeded the standard and two reached levels of 141 (two samples) and 144(two samples). (See Exhibit B)

It is clear, therefore,that water quality in the raw water source has caused suppliers to change methods used to make their product potable and that these changes, costs for treatment, and the increasing contamination of the raw water sources will certainly affect the availability of the supply in the future. This information is, therefore, essential. It must be included in the WMA Study if the Study is to be the "full and complete investigation" required by the Congress.

Furthermore, it is probable that the broad range of infectious and toxic substances existing in the Metro Washington area's surface raw water sources are potential hazards to public health. The Corp's Study does not include identification of infectious and toxic agents or of projected additional concentrations from point sources, the effect of low dilution levels and first flush runoff. The study completely omits information required to provide consistently safe potable water, i.e. facilities, methods, and cost.

FAIRFAX COUNTY WATER AUTHORITY

8560 ARLINGTON BOULEVARD—P. O. BOX 1500
MERRIFIELD VIRGINIA 22116

MEMORANDUM No. 79-245

DATE: August 8, 1979

TO: Members of Board of Supervisors of Fairfax County

COPIES TO: J. Hamilton Lambert, Acting County Executive, and Authority Members

FROM: Fred C. Morin, Chairman

SUBJECT: Progress Report No. 4 on Halogenated Organics Control Program

Enclosed herewith for your information is a copy of the subject progress report.

We should also like to advise that the Virginia State Health Department has approved the use of chloramination as referred to in the subject report and such use has been incorporated as part of the treatment process.

enc.

FAIRFAX COUNTY WATER AUTHORITY
HALOGENATED ORGANICS CONTROL PROGRAM
PROGRESS REPORT NO. 4
JULY 20, 1979

In Progress Report No. 3, dated August 24, 1978, we reported that modifications of treatment processes to change the point of application of chlorine from prechlorination (application to the raw water prior to the beginning of treatment) to intermediate chlorination (application following chemical addition, coagulation and settling of water) had been completed at the several treatment facilities, as follows:

New Lorton Plant	December 1977
Occoquan Plant	July 1978
Old Lorton Plant	August 1978

We further reported that these modifications indicated a substantial reduction in the total trihalomethane (TTHM) levels in the finished water leaving the treatment plant, and that continued monitoring for another full year would be required to assess the effect of these modifications on TTHM levels, particularly during the warm weather season and throughout the distribution system.

Monitoring during the subsequent year (August 1978-July 1979) has shown an approximate 40% reduction in TTHM levels in the water leaving the plants throughout the year; a lesser reduction in TTHM levels throughout the distribution system in the cool and cold weather seasons; and substantially no reduction in TTHM levels throughout the distribution system in the warm weather season (June-July 1979). The TTHM levels in the current warm weather period at certain locations throughout the distribution system are substantially in excess of the proposed EPA standards. Consequently, other measures will have to be taken to reduce these levels to acceptable limits.

We noted also in Progress Report No. 3 that investigation of the use of chloramines (prechlorination or intermittent chlorination plus post treatment addition of ammonia) for disinfectant purposes was underway and the plant scale use of chloramination was being planned, subject to approval of the Virginia State Health Department. Chloramination reduces the amount of free chlorine which is available to react with various organic and inorganic substances which are present in treated water and thus, the formation of TTHM within the distribution system is drastically reduced. Although this method of disinfection has been successfully used in the water supply industry for many years, including the systems serving Richmond, Indianapolis, Philadelphia and Jefferson Parrish (New Orleans area), some health departments, including Virginia, are reluctant to approve an extension of its use primarily because of the resulting loss of the time-honored practice of relying upon the availability of a free chlorine residue within the distribution system to indicate the sanitary quality of the water delivered to consumers.

Our investigation of the use of chloramination during the past year, including observations at plants where it is used, conclusively indicates the TTHM levels are readily controlled at levels substantially below the proposed EPA standards and that there is no compromise of the sanitary quality of the water delivered to consumers. Dr. Morris, our consultant in the halogenated organic control program, concurs that a plant scale test of chloramination should be undertaken and we have requested approval thereof by the Virginia State Health Department. Initially, we propose to use chloramination at the Occoquan treatment facilities because the water delivered to consumers from this plant is not mixed with any other water.

such as from wells, Falls Church and Fairfax, as is the case with water produced from the Old and New Lorton treatment facilities. We can, therefore, obtain a direct comparison of the TTHM levels resulting from this change in treatment process with the TTHM levels resulting from the present treatment process. Additionally, the residence time of water in the distribution system of this part of our service area is equal to or greater than the residence time in the distribution system in other parts of our service area before mixing with other supplies occurs. We estimate that the cost required to make this change in treatment process will be approximately $2,500 for equipment and facilities and $100 per day for chemicals.

In order to assure the Virginia State Health Department of the efficacy of this change in treatment process, we propose to increase water quality monitoring activities, including bacteriological and TTHM levels. The Virginia State Health Department is now evaluating our request to make this change in treatment process and, we believe, approval thereof will be forthcoming. We hope to initiate the change and monitor the results during the current warm weather season.

We expect to develop convincing evidence from this plant scale operation that chloramination will reduce TTHM levels to acceptable limits without comprising the sanitary quality of water delivered to consumers and, as a result, to subsequently request approval of the Virginia State Health Department for the use of chloramination at the Old and New Lorton treatment facilities. It is also contemplated that the use of chloramination for TTHM control will only be required during warm weather seasons and that chlorination will be employed at other times.

In the interim since the last progress report we have continued investigations of:

(1) pilot granular activated carbon filters;

(2) possible correlations of chlorine demand, total organic carbon and chlorophyll-a with trihalomethane production; and

(3) use of ozone and chlorine dioxide for disinfection purposes.

Although a substantial body of data and information has been assembled from these efforts, nothing significant to the control of TTHM production has evolved.

The Authority is a participant with V.P.I.&S.U. in a program, primarily funded by the Virginia Environmental Endowment, to investigate the influence of stormwater runoff on trihalomethane concentration in a public drinking water supply. This recently commenced, year-long program will attempt to assess the role of algae in taking nutrients from runoff and becoming a precursor material for the production of TTHM.

9-11A-2

Thursday, August 23, 1979 THE WASHINGTON POST

Carcinogen in Water?

The Fairfax County Water Authority's attempt to reduce a suspected cancer-causing agent in its water supply to a safe level for humans has been a partial failure, the agency has reported.

The levels "are substantially in excess of the proposed federal standards" in parts of the distribution system during the warm months, the Water Authority said in a report sent last week to the Fairfax Board of Supervisors.

The suspected carcinogen—chloroform—is a member of the chemical family called trihalomethanes, which are formed when organic and inorganic material in the water mixes with chlorine, which is added as a disinfectant.

To reduce the concentration of the chemicals—which are measured in billionths of units—the agency, like other utilities around the country, has been chlorinating its water at a later stage of treatment. That worked during cool and cold weather, but not during June and July, when higher temperatures encouraged the buildup of chemicals.

The U.S. Environmental Protection Agency is expected to set a ceiling of 100 parts per billion. The Water Authority has been recording up to 150 parts per billion at distant points in the pipeline system during hot weather.

The agency has begun a pilot program of adding small amounts of ammonia to water at its Occoquan Treatment Plant to reduce the amount of free chlorine, the culprit in the formation of the suspected carcinogen and other trihalomethanes.

Water Authority Chairman Fred C. Morin said that if the new process proves successful, it will be used at the water authority's other two treatment facilities, both in the Lorton area.

Exhibit B.

WASHINGTON AQUEDUCT DIVISION FINISHED WATER
1979 TOTAL THM's (ppb)

SAMPLE POINT - (SEE NEXT PAGE)

Month*	1	2	3	4	5	6	7	AVG.
January	17(2)	69(2)	30	93	83	55	45	53
February	-	-	-	-	-	-	-	-
March	85(2)	85(2)	74	89	84	101	88	86
April	99(2)	81(2)	69	78	88	70	83	83
May	81(2)	76(2)	-	-	-	-	-	79
June	85	90	127	133	119	133	-	115
	1	2	8	9	10	11	12	AVG.
July	118(2)	121(2)	141(2)	99(2)	113(2)	129(2)	144(2)	124
August								
September								
October								
November								
December								

*One sample per sample point per month unless otherwise indicated.
(2) Two samples per month

C-111-D

SAMPLE POINTS

1. #18-Dalecarlia Finished Water to the city
2. J-McMillan Finished Water to the city
3. Firehouse, Engine Co. #22, 5760 Georgia Ave., N. W., Washington, D.C.
4. Firehouse, Engine Co. #21, 1763 Lanier Place, N. W., Washington, D. C.
5. Bowling Alley, Bolling Air Force Base, S. W., Washington, D. C.
6. Firehouse, #3, Cherrydale Station, 3900 Lee Highway, Arlington, Va.
7. Firehouse, Engine Co. #2, 12th St. N. W., between G & H Streets, Wash. D. C.
8. Gas Station, Alaska & Georgia Avenue, N. W. Washington, D. C.
9. Firehouse, 1227 Monroe Street, N. E. Washington, D. C.
10. Firehouse, 4201 Minnesota Avenue, Washington, D. C.
11. Commercial Firm, 1301 East Capital Street, N. E., Washington, D. C.
12. Firehouse, Connecticut Ave. & Fessenden St., N. W. Wash. D. C.

Exhibit B.

WASHINGTON AQUEDUCT DIVISION FINISHED WATER
1979 TOTAL THM's (ppb)

SAMPLE POINT - (SEE NEXT PAGE)

Month*	1	2	3	4	5	6	7	AVG.
January	17(2)	69(2)	30	93	83	55	45	53
February	-	-	-	-	-	-	-	-
March	85(2)	85(2)	74	83	84	101	88	86
April	99(2)	81(2)	69	78	88	70	83	83
May	81(2)	76(2)	-	-	-	-	-	79
June	85	90	127	133	119	133	-	115

	1	2	8	9	10	11	12	AVG.
July	118(2)	121(2)	141(2)	99(2)	113(2)	129(2)	144(2)	124
August								
September								
October								
November								
December								

*One sample per sample point per month unless otherwise indicated.
(2) Two samples per month

L-111-D

SAMPLE POINTS

1. #18-Dalecarlia Finished Water to the city
2. J-McMillan Finished Water to the city
3. Firehouse, Engine Co. #22, 5760 Georgia Ave., N. W., Washington, D.C.
4. Firehouse, Engine Co. #21, 1763 Lanier Place, N. W., Washington, D. C.
5. Bowling Alley, Bolling Air Force Base, S. W., Washington, D. C.
6. Firehouse, #3, Cherrydale Station, 3900 Lee Highway, Arlington, Va.
7. Firehouse, Engine Co. #2, 12th St. N. W., between G & H Streets, Wash. D. C.
8. Gas Station, Alaska & Georgia Avenue, N. W. Washington, D. C.
9. Firehouse, 1227 Monroe Street, N. E. Washington, D. C.
10. Firehouse, 4201 Minnesota Avenue, Washington, D. C.
11. Commercial Firm, 1301 East Capital Street, N. E., Washington, D. C.
12. Firehouse, Connecticut Ave. & Fessenden St., N. W. Wash. D. C.

December 23, 1979

Mr. Cliff Kidd
Washington Water Supply Study
Army Corps of Engineers
P.O. Box 1715
Baltimore, Md. 21203

Dear Mr. Kidd:

I have enclosed our final comments on the WMA Water Supply Study (ie, the Draft Report, published in August, 1979).

As you know, the Citizens Task Force met a number of times this fall; in October, we arrived at a consensus view about the Study which I wrote up and sent to you. I considered that a "draft" of our own - and asked you to send copies around to all of our task force members for further comment.

Unfortunately, I was sick during the public hearings and did not testify on behalf of the Task Force. In the meanwhile, I asked you to let our "draft" comments stand until I heard from other Task Force members.

In November and December, you also circulated to the Task Force comments written up by two members, Frank Clark and Louis Koffman.

Although your contract with the Metropolitan Council of Governments had run out, we had a final Task Force meeting - that I chaired - on December 21. We thought it imperative to pull together everyone's final comments, and submit our final consensus position to you.

The enclosed comments represent our final thoughts about the draft Water Supply Study, and we would like them made a part of the public record.

You will note that we make the same five points that we had agreed on when we submitted our "draft" comments; there has been substantial editing (this version is shorter), and we tried to tighten up the organization.

I speak for all of the participating members of the Task Force in saying that we have enjoyed working with you, and appreciate your help on all of the logistics and the many meetings.

Sincerely,
Ed Wesely
Ed Wesely
Chairman, Citizens Task Force

CITIZENS TASK FORCE

The following members participated in our meeting on 12/21:

Marion Agnew

John Chesley

Louise Chesnut

Frank Clark

Elizabeth Horvath

Louis Koffman

Jack Nolen

Edwin Wesely (Chairman)

Shirley Zenith

Other members who regularly attended our fall meetings and contributed to our draft comments were:

Bill Breichner

Sheila Keeney (and her alternate)

Martha Mohler

EFW

WASHINGTON METROPOLITAN AREA WATER SUPPLY STUDY - CORPS OF ENGINEERS

COMMENTS by the CITIZENS TASK FORCE

INTRODUCTION

The Citizens Task Force was established by the Corps of Engineers to review and evaluate their Metropolitan Washington Area Water Supply ... during various stages of the planning process. The comments that follow represent a consensus of all participating task force members about the final draft Report, published in August, 1979.

In general, we believe the Corps of Engineers has been too optimistic in accepting as givens five planning elements that we single out for discussion.

(1) The Study assumes that whatever water will be available during the next fifty years can be treated - at affordable costs - to meet Environmental Protection Agency drinking water standards, no matter what contaminants it may contain.

Neither health aspects nor costs to the consumer (which may increase dramatically) are considered in the draft Study.

(2) The Study assumes that all water supply sources now available to the Metropolitan Washington region will be available through the Year 2030.

But population growth and urbanization of the Metropolitan and upstream areas over the next fifty years is likely to diminish both the quantity of water available in our streams and reservoirs, and its quality.

(3) The Study assumes that 100 million gallons a day (MGD) of fresh water will be allowed to "flow-by" from the upper Potomac River into the Potomac Estuary below Chain Bridge.

If ongoing studies show that larger fresh water flows are needed to maintain a healthy Estuary, the Corps' calculation of potential water shortages on the upper Potomac will be in error.

(4) The Study assumes that after 50 years the region's existing water supply resevoirs will hold the same amount of water they do now.

This ignores the continuing (and increasing) siltation of these reservoirs.

(5) The Study assumes that local and regional political strategies needed to implement various plan elements can be accomplished.

These problems need much more analysis than the two and one half pages given to them in the draft Study.

Having outlined these points, we now address them in detail.

1. WATER QUALITY

The Problem: The Corps Study does not consider questions of water quality, assuming that whatever water is available during the next 50 years can be made potable.

But the present history of the Occoquan Reservoir proves that it may be difficult and expensive to protect some of our water supply sources. Protecting the Occoquan has already required construction of an $80,000,000 sewage treatment plant, and to halt contamination of the Occoquan by "non-point source" pollutants from urbanizing areas may require large additional expenditures.

We Recommend: The Water Supply Study should include the following information:

(1) A detailed evaluation of year round water quality, present and projected, in the Potomac River and in the Patuxent and Occoquan Reservoirs.

(2) Present and projected costs - to the consumer - of treating present and future water supplies to meet EPA drinking water standards.

(3) An evaluation of the effects on the Potomac River's water supply if it has to be used to replace any reservoir source.

In case these analyses are not added to the Study, it should be made clear in the opening pages that:

(1) the Study does not address problems of water quality;

(2) the study assumes present and future water supplies can be treated to meet EPA drinking water standards, no matter what pollutants they contain;

(3) the Study does not assess the effect of EPA's new standard for Trihalomethanes: will it require changes in water treatment technology? increased costs to the homeowner? or even abandonment of existing water supply sources?

2. EFFECTS OF POPULATION GROWTH AND URBANIZATION

The Problem: The draft Study covers the 50 years between 1980 and 2030 AD, but assumes the region's rivers and streams will maintain their present and historic flows for the entire period.

Historic data on streamflow in creeks like Rock Creek should enable the Corps to make estimates about what will happen if the population of the Potomac Basin grows at projected rates over the next 50 years. (a)

Impervious rooftops, parking lots, roads, and other structures that replace forests and meadows in urbanizing areas speed and swell runoff from the land during rainstorms. Much of this is water that soaked into the ground in bygone years, and fed our streams during the summer.

(a) During the last 50 years, according to THE CREEK AND THE CITY, published by the U.S. Department of Interior in 1963, "in Rock Creek's watershed just above the District line...64 miles of flowing natural streamcourses that showed on a reliable 1913 map have dwindled to 27 miles aboveground today....It was simpler to cover them over than to cope with the mess that our kind of urbanization made of them."

Given the example of Rock Creek, it's certain we can expect less surface and ground water to be available during dry periods over the next 50 years.

We can also anticipate increased "non-point source" pollutants such as silt, lead and petroleum products - which are ubiquitous and can, at best, be imperfectly controlled as they run off the land.

We Recommend: The Corps of Engineers should use area master plans and population projections to calculate the likely effects of urbanization on streamflows in the Potomac and Patuxent River Basins during the next 50 years.

3. ENVIRONMENTAL "FLOW-BY" INTO THE POTOMAC ESTUARY

The Problem: In calculating potential water supply shortages over the next 50 years, the draft Study assumes an environmental "flow-by" past Great and Little Falls of 100 million gallons of fresh water a day.

Even so, the amount of fresh water that water utilities should allow to "flow-by" into the Estuary is currently being studied by a "multi-agency task force."

Fresh water portions of the Potomac Estuary around and below Washington are vital spawning and nursery grounds for resident and migratory commercial fish species. These parts of the river have already been badly stressed by sewage discharges, and sediment flows from the upper Potomac - during dry periods, large water supply withdrawals above the falls will add still another threat.

The Corps of Engineers recognizes that much higher "flow-bys have been proposed to protect water quality and aquatic life in the Estuary, "ranging from 100 to 900 mgd with some values even higher." (draft Study, page 48)

We Recommend: Two sets of data should be developed and included in the Study:

(1) The Corps should calculate water supply deficits for ranges of "flow-bys" greater than 100 mgd.

(2) The final Study should tell us the probable effects on the Estuary for various time frames (one week, one month, etc.) during which the Estuary receives only the minimum water assigned in the "flow-by" - whether this be 100 mgd, 600 mgd, or some other figure.

4. SILTATION OF AREA STREAMS AND RESERVOIRS

The Problem: The Study assumes that the same volume of water presently available in the region's reservoirs will be available for the next 50 years.

But it's unreasonable in water resource planning to assume a 50 year life for any reservoir, and especially unrealistic in an urban region like ours, subject to rapid and massive land clearing and development. (a)

How much storage capacity has already been lost to area reservoirs through inadequate land-use and sediment controls?

What sediment flows can we reasonably expect in the next 50 years?

We Recommend: The Corps of Engineers should search out the best available data about current and projected sediment flows in the Potomac and Patuxent River Basins - and use it to calculate the future storage capacity of existing and proposed reservoirs.

5. PLAN IMPLEMENTATION

The Problem: The Study depends on local and regional strategies needed to implement various plan elements being accomplished. But history shows that Washington area governments have often refused to adopt strategies aimed at orderly use and conservation of water resources.

(a) Watts Branch is a small stream in Montgomery County, Md. that discharges into the Potomac just above the intake to a major WSSC water filtration plant. According to Mr. Robert McGarry, General Manager of WSSC, about 1,100 tons of sediment a year is filtered from raw water treated in the plant. With continued development along Watts Branch, he expects the problem to worsen - and that it will cost $200,000 a year to remove the sediment.

We hope, too that the Study will not lead to unforseen and unwelcome results: that area officials will not lose their sense of urgency about the region's water supply problems, and begin to encourage uncontrolled economic growth on the assumption that there will now be adequate water resources to meet their needs - postponing, in the meanwhile, the complex political decisions needed to develop essential regulatory and administrative structures.

To win political support, the various plans will have to make fiscal sense to local taxpayers. But we don't think the Study gives area residents enough meaningful cost data.

We Recommend: The Study can remedy these deficiencies in two ways:

(1) By a more thorough and specific analysis of problems that can hinder local, subregional, and regional cooperation.

One example: Unless Fairfax and Prince William Counties agree to adopt strict land-use and non-point source controls to halt further degradation of the Occoquan Reservoir, who will support a $58,000,000 interconnection between the Occoquan and the Potomac River?

(2) We need at least three sets of costs:

(a) The Corps should indicate how each project - if approved - will be funded, and especially how funding will effect ratepayers in each water utility district.

Residents should know the per capita costs for each project.

(b) The Corps should determine future operating costs for each project- this is a serious lack in the draft Study.

(c) Energy costs should be computed for each project - especially for those that will involve intensive pumping through raw water interconnections. If energy conservation alternatives are available for a given project, the Study should give us the operating costs with and without energy conservation.

IN CONCLUSION

Because the draft Water Supply Study rests on questionable assumptions about important water resource matters, it cannot be a reliable guide for solving the area's water problems.

As soon as possible, we suggest that the Corps of Engineers develop the data and analyses that we have requested - and incorporate them into the body of the present Study, or publish them as an appendix.

Without such data, the public - including area decision makers - won't be able to make informed decisions about options proposed in the Study.

If the draft Study is revised and printed *before* the necessary data about water quality, sediment loads, etc. is available, the Corps should detail, in a preface, exactly what assumtions have been made; and what important studies are still to be done.

*****

In the next round of planning - whenever that begins - we'd like the Corps to spell out the need to protect and conserve our water supply sources, and to outline ways in which this can be done in the Potomac Valley. Given the present history of the Occoquan Reservoir, we can't assume this will be done automatically or by "benign neglect" over the next 50 years.

June 29, 1981

Mr. Donald W. Roeseke
Baltimore District, C.O.E.
P.O. Box 1715
Baltimore, Md. 21203

Dear Mr. Roeseke:

As Chairman of the Citizens Task Force that has been working with the Corps of Engineers on their Washington Metropolitan Area Water Supply Study (since 1978), I've been asked to write you about the pending permit of the proposed "Little Seneca Lake Project" in Montgomery County, Maryland.

On Friday, the Citizens Task Force discussed the Little Seneca Lake Project at a meeting held at the Dalecarlia Filtration Plant in Washington. Cliff Kidd of the Corps of Engineeers was present, and when the Task Force requested to be heard by the Corps on this subject, Cliff suggested I write you. I understand that you are in charge of processing the permit.

After much discussion at this meeting (the subject has also been discussed at prior meetings this year) members of the Task Force decided that I should write you; and as the result of a motion, requested that I raise questions about six points that were discussed.

It was the sense of the Task Force that there are important unanswered questions about six aspects of Little Seneca Lake Project. In evaluating the project, we urge that the Corps of Engineeers give careful attention to all of them.

1) Urbanization of the watershed around Little Seneca Lake. We know from experience with the Loch Raven Reservoir in Baltimore and the Occoquan Reservoir in southern Fairfax County that urbanization can have severe impacts on water quality in area reservoirs.

Given the population projected for Churchill and other parts of the Germantown Master Plan area, can the watershed be managed in a way to protect the quality of water in Little Seneca Lake?

Indeed, once Little Seneca Lake is in being, will it not, of itself, be a magnet that attracts more growth and urbanization than the Master Plan bargains for?

Appendix #1 (attached to this letter) is a more extended discussion of this point.

2) Who is going to pay for the construction, operation, and maintenance of Little Seneca Dam?

We're told there will be some kind of regional agreement. But until this is worked out it would seem to be premature to issue a permit for the project. Area ratepayers have a right to know, specifically, what it is going to cost them.

3) Who will pay for the water? And how will it be allocated? This should also be resolved; again, area residents have a right to know how the costs of the water will be apportioned.

We recall the problems in setting up a system (and mechanism) to allocate water from Bloomington Dam. An important question such as this ought to be addressed before the project gets a go-ahead.

4) Local environmental impacts (associated with the Lake and its environs). Most of these are spelled out quite well in the report of Royce Hanson (then Chairman of MNCPPC) to the Montgomery County Council on November 25, 1980.

You are doubtless familiar with Mr. Hanson's report. But we call your attention to the "Adverse Environmental Impacts" outlined on page 10 of Mr. Hanson's report.

We hope that the Corps of Engineers will thoroughly assess the "Adverse Impacts" - including the "capital funds to implement the project" (estimated to be $32 million in 1980 dollars!).

5) Recreational impacts. What will be the impact on the Lake and its water quality if Seneca Lake and its environs become a major recreational area?

6) Will water quality in the Lake be such that it will enhance low flows in the Potomac and in the upper Potomac Estuary? If, because of extensive urbanization, Little Seneca Lake becomes eutrophic, what will be the impact of such water on aquatic life in the upper Potomac Estuary?

We hope this potential problem is being addressed. "More" water in the "flow-by" into the Estuary seems better than "less" - and this is claimed as an important benefit for Little Seneca Lake. But we'd better look hard at the quality of the water Little Seneca may add to the Estuary.

We also need to address problems of treating water that Little Seneca will add to the Potomac - ie, if water in the Lake is degraded by urbanization, what will be its impact on our water supply? At extreme low-flow on the Potomac water from Little Seneca may make up about 1/4 of the flow that is available for treatment by WSSC, for example.

These are the six points that the Citizens Task Force wanted me to raise. We think that the Corps of Engineers needs to look at

2-111-13

all of them in addressing the proposed permit.

Since I have been asked to report back to the Task Force at its next meeting in July, I'd appreciate it if you'd acknowledge receipt of this letter. I'd also like to be reassured that the Corps of Engineers has assessed (or will assess) the questions raised by the Task Force.

Sincerely,

Edwin F. Wesely Jr.

Edwin F. Wesely Jr.
Chariman, Citizens Task Force

Note:

Appendix 2 explains the decision of the Task Force to have me send this letter.

Appendix 3 lists material compiled by one of our members about the Little Seneca Project. Mr. Frank Clark, who supplied the references would be glad to furnish copies of this material to the Corps of Engineeers.

Appendix #1

Emerging Issues and Questions

If the Little Seneca Lake is to be used and funded as an important adjunct of future metropolitan water supply, the following questions arise:

1. Is urbanization of the watershed likely?
The trend in this direction is well underway and destined to accelerate. Situated on the metropolitan fringe and traversed by I-270 and Route 355, the ...stern slopes, especially are feeling the influence of the expanding German... Corridor City. The on-going 1,500 acre 5,000 unit Churchill Villages development is clear evidence of a trend which would be amplified by the amenities of a lake. Already farms are being abandoned and large tracts are for sale.

2. Is there a policy to limit the extent of urban growth?
The project documents do not advance any proposals for limiting urbanization of land which will become desirable for development. On the contrary, development is listed as one of the resulting benefits to the County. Also, a sewerage system is realistically being planned for an ultimate population of 77,000 of which 50,000 would be located in the Clarksburg area on the upper reaches of the watershed. Nor do any provisions of the sectional Master Plan suggest restrictions on urban growth.

3. With these respects, Is it practical to maintain a standard of water quality in the lake suitable for augmenting substantially low flows in the Potomac?
The odds seem to be unfavorable if the experience with Lake Barcroft and and the Occoquan Reservoir is considered. Best Management Practices and land treatment measures can reduce the odds, but silt, nutrients and other pollutants from urban runoff are bound to accumulate as land use intensifies. The relatively small watershed and consequent normally low stream inflow would accentuate this problem in the lake and thus lower the quality of water being released.

Conclusions

There may be answers or solutions to these questions but they are not evident in any of the project documents. The investment is substantial and there should be assurance that the quality of water that could be released in quantity in time of emergency would be acceptable. Otherwise, the project is invalid for its purpose.

81-11-2

I'll add on my own that a study done for the Occoquan Reservoir shows that the impacts of urbanization have most stressed the Reservoir — more than run-off from farmland, or indeed, more than point-source sewage discharges into the Reservoir. I have the Occoquan Report if you'd like to read it. TFW

Appendix #2

Eleven members of the Citizens Task Force attended the meeting of June ..., 1981.

When the motion was made that the Chairman write the Corps of Engineers about the six points in my letter, 3 members then present abstained from voting, and 8 members voted in favor.

Appendix #3

References about Little Seneca Lake supplied me by Mr. Frank Clark, a member of the Citizens Task Force.

1) Letter of March 21, 1981 from Amy Ramsay of WSSC to Frank Clark

2) Maryland Conservation Council Resolution about Little Seneca Lake, January 10, 1981

3) Letter from Mr. McGarry to Maryland Conservation Council, Jan. 26,1981

" " Maryland Conservation Council to Mr. McGarry, Feb. 21, 1981

5) Montgomery County Taxpayers League, 24 page report to the Montgomery County Council, January 27, 1981.

6) Letter of David B. Oltman to Montgomery County Council member Rose Crenca, Feb. 8 , 1981

7) Memo 81-36 of the Fairfax County Water Authority (May 24, 1981)

8) Letter of Mr. McGarry to Jack Herrity (Fairfax County Supervisor) of Feb. 19, 1981

9) EPA Report on the project, September 3, 1980

10) Department of Intedrior Report on the project, August 7, 1980

July 20, 1981

Colonel James Peck
Baltimore District, C O.E.
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

I've enclosed a copy of a letter I've just sent Mr. Thomas Andrews, Director of the Maryland Water Resources Administration.

As Chairman of the Citizens Task Force that has been working with the Baltimore District on their Washington Water Supply Study since 1978, I was asked to advise you what we had requested Mr. Andrews to do.

Briefly, we've asked him to extend the comment period on WRA's Potomac Flow-By Study from July 24 until July 31, so that we and other interested parties will have a chance to be heard on this important matter.

At our meeting to discuss the Flow By Study on July 17, we learned from a Maryland representative that the three week review period would end July 24 - until that time, no one had informed us that the document was even under official review.

Since the Corps of Engineeers will receive the final study and use it in making flow-by determinations, we're sure you want a document that has been well considered and reviewed, certainly by parties who deserve to be heard.

We'd appreciate it if the Baltimore District would back our request to Mr. Andrews - we understand that the Potomac Fisheries Commission would also like to make comments, and will need a similar extension.

I have one further comment: having attended a meeting of the Corps with the Committee to Review the Metropolitan Washington Area Water Supply Study, I learned how important Dr. Okun and others on the Committee consider water quality matters. Our Task Force urges that the Committee be asked to review the "Flow By" Study, just as they have the ongoing Water Supply Study- the more so since final flow-by determinations will effect water supply planning.

Sincerely,

Edwin F. Wesely Jr.

Edwin F. Wesely Jr.
Chairman, Citizens Task Force

July 20, 1981

Mr. Thomas Andrews
Director,
Maryland Water Resources Admin.
Tawes State Office Bldg.
Annapolis, Maryland 21401

Dear Mr. Andrews:

The Citizens Task Force for the Metropolitan Washington Area Water Supply Study was formed and directed to provide public comment to the Corps of Engineers on their Water Supply Study - which is still in progress. Our members represent local governments, and other public and citizen bodies: including the Potomac Fisheries Commission and the Interstate Commission on the Potomac.

We began meeting in the summer of 1978, and from that time have had an especially keen interest in potential effects of water withdrawals from the Potomac during low-flow conditions. So we've been long awaiting the "flow-by" study that Maryland WRA and other agencies have been developing - especially since it will be used by the Corps and the Washington Aqueduct in calculating water available to Potomac suppliers when Restriction and Emergency Stages of the Low Flow Allocation Agreement are in effect.

The Baltimore District COE sent us drafts of the Flow-By Study about a month ago, but until our next meeting (which was Friday, July 17) we did not know that Maryland had set a three week review period which is slated to end July 24.

We scheduled the July 17 meeting to discuss the Flow-By Study and to prepare comments about it - indeed, Mr. Robert Miller of Md. WRA was present to make a presentation and answer questions: which is how we found out about the three week deadline.

Because of the deadline, a Task Force subcommittee was empowered to meet with me, as Chairman, the very next evening, Saturday, July 18 - this despite a long drive for one member, and the general inconvenience for everyone. I am typing up the subcommittee comments, which now must be mailed to Task Force members for further comment; which means I cannot have the final comments to you by July 24.

We asked Mr. Miller for permission to get our comments to you by Friday, July 31 - as did members of the Potomac Fisheries Commission who were present, and who want to send in their own comments.

And that, in sum, is the purpose of this letter: to request that Maryland WRA receive our comments on or before July 31 instead of July 24. Since this is a vital matter, and the Task Force has substantial comments to make, we trust you will oblige us in this matter.

Sincerely,

Edwin F Wesely Jr.

Chairman

August 9, 1981

Colonel James Peck
Corps of Engineers
PO Box 1715
Baltimore, Maryland
21203

Dear Colonel Peck:

I have enclosed a copy of a review of Maryland's Draft Flow-By Study - it is the first draft of an extensive critique of the Flow By Study by the Citizens Task Force for the MWA Water Supply Study.

We hope to make further refinements to our position at our meeting in September.

I have sent this along because I'm leaving today for a two week canoe trip on the Delaware River, and want you to have our comments in the meanwhile. We understand the signatories to the Low Flow Allocation Agreement have already endorsed the Flow-By Study.

In our view, the Maryland Study has not fulfilled the requirement of defining a proper flow-by to protect water quality in the Potomac Estuary. It is a very incomplete document - I doubt very much that it could stand a legal challenge, for one thing.

When the Corps receives Maryland's final version of the Study we think it only proper (and fair) that you hold a public hearing on the Study - especially to give those downstream residents who care about the Potomac estuary a chance to be heard.

While I'm away, Jack Nolen and Louise Chesnut of the Citizens Task Force will be glad to discuss the matter with your office if you have any questions. Cliff Kidd of the Baltimore District will have their addresses and phone numbers.

Sincerely,

Ed Wesely

Ed Wesely, Chairman
Citizens Task Force

Postscript: I nearly forgot a second point the Task Force asked me cover in this letter.

Since the Flow-By will have an important bearing on the future health of the Potomac, and on determinations of future water supply strategies, we think the public at large should have an opportunity to comment on the Maryland Study.

The Citizens Task Force urges that WRA hold a public hearing on the Flow-By Study; and at a location that would be convenient for interested parties. Rockville, for example, would be a lot more convenient for people from the Washington Metropolitan area than Annapolis; or perhaps the Washington Aqueduct on MacArthur Blvd.

E7W

81-111-D

A REVIEW OF
THE DRAFT POTOMAC RIVER ENVIRONMENTAL FLOW-BY STUDY
MARYLAND WATER RESOURCES ADMINISTRATION
1981

C-VII-17

by the
Citizens Task Force
for the
Metropolitan Washington Area
Water Supply Study

August 1981

CONTENTS

1 The Citizens Task Force

1 INTRODUCTION
What should be the meaning of "flow-by"?

5 SHORTCOMINGS OF THE FLOW-BY STUDY - PART I
The State of Maryland has ignored the Potomac Estuary in the current study.

22 POINTS OF AGREEMENT WITH THE FLOW-BY STUDY - PART II
The free-flowing Potomac between Great Falls and Little Falls dam ought to be protected by a guaranteed flow of water.

31 RECOMMENDATIONS OF THE CITIZENS TASK FORCE - PART III
We want a thorough investigation of flow-bys needed to protect water quality and aquatic life in the Potomac Estuary.

33 References cited

35 Appendix

LIST OF MAPS AND FIGURES

3 The Potomac Estuary around Washington, D.C. (map)

13-a Dispersion of salinity in Potomac Estuary (graph)

15-a Potomac Estuary tests for dye concentration (graph)

17-a Potomac Estuary (map)

17-b Zones in the Upper Estuary (map)

30-a Computer Run #3 for dissolved oxygen in the estuary (description)

30-b Computer Run #3 (graph)

CONTENTS OF APPENDIX

A-1 Definitions of "flow-by" (A-1 to A-5)

A-6 Description of the Estuary Study at the Chesapeake Bay Model (A-6 to A-9)

A-10 Frederick Post article about the Low Flow Allocation Agreement (March 7, 1978)

C - VII - 15

ABBREVIATIONS

MWAWSS - Metropolitan Washington Area Water Supply Study (by the Baltimore District, Corps of Engineers)

WSS - Water Supply Study

MWA - Metropolitan Washington Area

LFAA - Low Flow Allocation Agreement

WRA - Water Resources Administration (Maryland)

C.O.E. - Corps of Engineers

DO - Dissolved Oxygen

FBS - Flow-By Study (ie, the Draft Study that is the subject of this report)

COG - Council of Governments (for Metropolitan Washington)

cfs - Cubic Feet per Second (rate of flow)

mgd - Million gallons per day "

USFWS - U.S. Fish and Wildlife Service (Dept. of Interior)

mg/l - millegrams per liter

DEM - Dynamic Estuary Model (at EPA's Annapolis Field Office)

EPA - U.S. Environmental Protection Agency

CTF - Citizens Task Force (authors of this study)

NEWS - Northeastern (United States) Water Supply Study (North Atlantic Division, Corps of Engineers)

THE CITIZENS TASK FORCE

The Citizens Task Force was formed by the Corps of Engineers, Baltimore District in July, 1978 to provide "public involvement" in their Metropolitan Washington Area Water Supply Study.

According to the Corps, our primary purpose is to provide a "direct channel for the participation of interested citizens in the planning process." (Public Involvement Appendix, MWAWSS, page 11)

Accordingly, we have reviewed and evaluated the MWA Water Supply Study during all stages of the planning process, and offered our advice to the Baltimore District.

From the beginning we have insisted that water quality issues need to be recognized in water supply planning, and have been pleased that this view has been strongly urged by the National Research Council.

The following comments are an edited version of a report we made to the State of Maryland (July 31, 1981) about the Flow-By Study. There is some new material, but nothing that alters the consensus views of the CTF in its earlier report.

C. VII. 19

INTRODUCTION

As explained on page 1 of the Flow-By Study (hereafter the "FBS"), Maryland will be submitting the FBS to the Corps of Engineers "in fulfillment of the requirements of Article 2 C. of the Potomac River Low Flow Allocation Agreement."

This Article requires that during times of low flow in the Potomac the Washington Aqueduct "determine...any amount (of water) needed for flow in the Potomac River downstream from the Little Falls dam for purposes of maintaining environmental conditions ("environmental flow-by")..The Aqueduct's determination...shall give substantial weight to conclusions for environmental flow-by submitted by the State." (Article 2.C., LFAA)

So the Maryland FBS may be a key element in the Corps Water Supply Study: "Because flow-by would have a direct bearing onthe timing and magnitude of (water) shortages, the selection of an appropriate level was of major importance for plan formulation activities." (MWAWSS, Formulation,Assessment,and Evaluation of Detailed Plans, page 95)

Since the Maryland Study will soon be forwarded to the Baltimore District, it is vital that it get a thorough review.

DOES THE MARYLAND FLOW-BY STUDY FULFILL THE REQUIRMENTS OF ARTICLE 2.C. OF THE LOW FLOW ALLOCATION AGREEMENT?

Having reviewed the history of the LFAA and subsequent interpretations of it, the CTF concludes that the Flow-By Study does not comply with the requirements of Article 2.C.

The key point is how the words "downstream from the Little Falls dam" are interpreted.

(1) Maryland's Position:

"The area of potential (low flow) impact extends approximately one mile from Little Falls dam to Little Falls....(FBS, page 3)

"it was determined that a minimum daily flow-by of 100 mgd is reasonable and will be sufficient to protect the integrity of the fishery below Little Falls dam." (FBS, page 4)

If we ask "what fishery", we learn that "the species of most concern in the fluvial area below the dam is the juvenile life stage of the small mouth bass...." (FBS, page 3)

In other words, Maryland has chosen to interpret "below the Little Falls dam" as a mile of free flowing river just above the Potomac estuary. And while there is a token discussion of the estuary late in the text, the 100 mgd flow-by is essentially to "protect the integrity" of the small mouth bass population in the free flowing river above the estuary (the head of the estuary is just above Chain Bridge - see our map on the next page).

(2) The Citizens Task Force Position:

From the hearings on the Low-Flow Allocation Agreement (early 1978) until now, virtually everyone has been concerned about the effect of large upstream water withdrawals on the Potomac Estuary and with how to maintain water quality in the estuary during times of lowflow in the Potomac River.

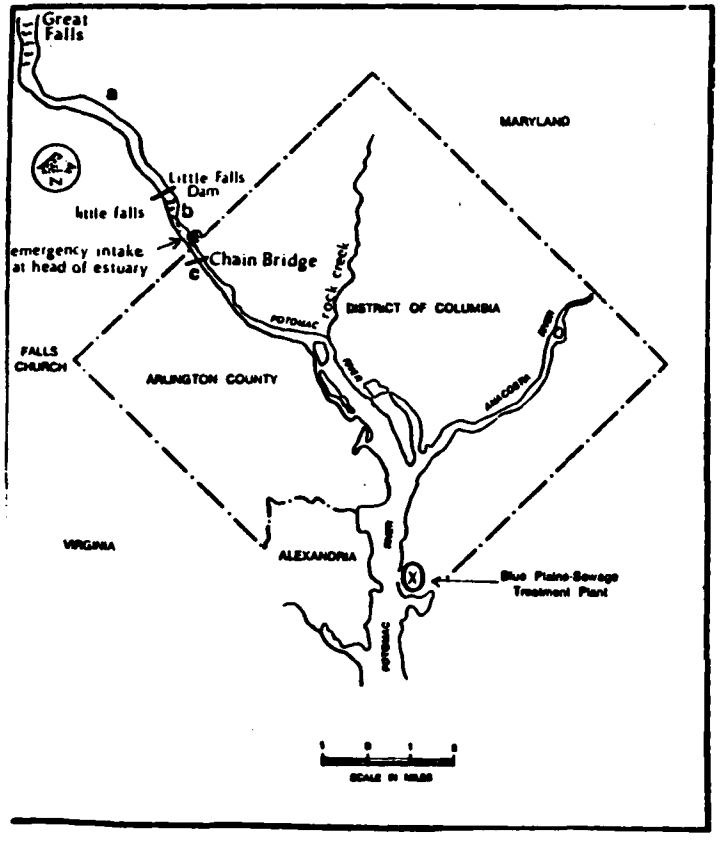
C-VII-20

The Maryland Flow-By Study examined:

a) the free flowing river between Great Falls and Little Falls Dam

b) the area from Little Falls Dam to the head of the estuary (which begins just above the "emergency intake")

c) the FBS also contains limited data about the estuary around Chain Bridge



The main failing of the Maryland FBS is its neglect of the Potomac estuary: since the estuary was not studied, the FBS is incomplete and does not fulfill the intent of Article 2.C. of the LFAA.

Later in the paper we have many citations about "flow-by" and the estuary, but for now we make our case by having the Corps of Engineers define what they understand by "Environmental Flow-By":

> "Environmental flow-by can be defined as the amount of water allowed to flow past the last water intake on the Potomac River, over Little Falls, and into the Potomac Estuary for environmental purposes." (1)
> (C.O.E., 1979)

> "Environmental flow-by represents the flow remaining in the river after all water supply diversions have been made. The term applies to the volume of fresh water flowing over Little Falls Dam into the Potomac Estuary near Washington, D.C. This flow is considered to be essential for maintaining fresh water flow for the estuary and other environmental purposes." (2)
>
> (Our underlining.) (C.O.E., 1980)

It's clear, from this interpretation of "environmental flow-by," that "downstream from Little Falls dam" means more than a mile of fast flowing river below the dam; and as we will show, virtually all precedent favors the Corps' interpretation - and relates "flow-by" to maintenance of water quality standards in the estuary.

THE CITIZENS TASK FORCE REVIEW OF THE FLOW-BY STUDY

We have divided our comments into three parts.

PART I addresses shortcomings of the FBS, especially its failure to investigate the effect of various flow-by regimes on the Potomac estuary.

In PART II we support five of Maryland's recommendations. We were especially pleased that the State proposed steps to protect water quality and aquatic life in the free-flowing Potomac River between Great Falls and Little Falls dam (see the map, page 3)

PART III contains our own recommendations to the Corps of Engineers.

PART I - SHORTCOMINGS OF THE FLOW-BY STUDY

(1) A main point of the Flow-By Study should have been to examine the effect of low river flows on the Potomac estuary - and to define a flow-by value that would protect the "integrity" of the estuary fishery.

That we had good reason to expect such an investigation is clear from past history, as a few examples show.

1) Both Draft Water Quality Management ("208") Plans of the Washington Council of Governments (March 1978) devote an entire section of planning options to: "Maintenance of Fresh Water Inflows Into Potomac Estuary." (3)

> "Currently there are no policies aimed at assuring a minimum of fresh water inflow into the Potomac estuary...." (page III-11)

> "The (COG) staff recommended that a policy be adopted to maintain a minimum flow of 560 cfs...into the estuary by emergency water restrictions." (page III-16)

2) When the Baltimore District, Corps of Engineers held a public hearing on its MWA Water Supply Study (October 25, 1979), it was clear from public testimony that witnesses thought the idea of "flow-by" referred to the estuary.

Ironically, one of the most telling statements came from the State of Maryland in a letter from the Tidewater Administration of the Department of Natural Resources. Asked to review environmental impacts of the Corps' Water Supply Study, Ms. Sarah Taylor of the Tidewater Administration submitted a memorandum that was entered into the hearing record by the Md. DNR :

> "Maintenance of an adequate supply of water to the downstream estuary is a major issue in regional water supply plans....The low-flow study being undertaken by the State

> of Maryland will provide technical data on water flow requirements of a downstream section of the Potomac Estuary." (4)

Since DNR's statement was submitted for the record, one can only conclude that in 1979 they, like everyone else, were concerned about low flow impacts on the estuary.

3) At the same hearing, Mr. Charles Vincent, then Chairman of the Water Supply Advisory Committee at the Washington Council of Governments - whose members included signatories of the Low Flow Allocation Agreement - was very clear about the meaning of "flow-by" (or "inflow," as he called it):

> "The Corps has recognized the need for a continuous flow into the Potomac Estuary for the protection of the estuary. A study managed by the State of Maryland is presently underway to ascertain the minimum inflow required for the protection of the estuary.
>
> "The Corps' concern for estuary water quality indicates they are aware of the need for integrated water supply and water quality planning." (5)

Since Mr. Vincent had participated in many meetings with COG members and staff, and spoke for the Council of Governments at this hearing, it's hard to believe he was expounding a merely personal and quixotic view of "flow-by!" Indeed, Mr. Vincent reported that his testimony had been approved by the COG Water Resources Planning Board "at its meeting of September 27, 1979."

4) "We are concerned about these effects and believe that sufficient flow-by should be assured into the estuary which will protect the physical and biological integrity of the Potomac except in circumstances of a life threatening nature."

Statement of Mrs. Pat Watt, President of the League of Women Voters of the National Capital Area at the Corps' October 25, 1979 hearing.

5) Finally, we give two citations from the "Main Report"

and one from a large Appendix to the Corps of Engineers "Metropolitan Washington Area Water Supply Study" (August 1979):

> "The State of Maryland indicated it would be the lead agency in a multi-agency study to determine a range of flows necessary for the maintenance of the environmental conditions in the lower portion of the free flowing Potomac River as well as the upper Estuary."
> (page 9, Main Report)

> "The impact of such an occurrence (no flow) on aquatic life in the affected portion of the Potomac River (downstream of Great Falls) as well as on water quality in the Upper Potomac Estuary could be severe...The State of Maryland...is presently conducting a study of the Potomac River to determine impacts of various levels of flow." (page 48, Main Report)

> "The prime issue (of the Md. Flow-By Study) involves balancing the water quality and aquatic needs of the Lower Potomac River and Upper Potomac Estuary against domestic and economic water requirements of the Washington MWA. Results of this study will then be incorporated into the Low Flow Allocation Agreement and future water management plans." (page 31, "Background Information and Problem Development Appendix)

When, in the summer of 1980 the Chairman of our Citizens Task Force wrote President Carter about a related matter, he received two letters from Mr. Edward Lee Rogers, Deputy Assistant Secretary of the Army (Civil Works). In the second letter Mr. Rogers referred to the Low Flow Allocation Agreement and flow-by:

> "Further, a Potomac River Low Flow Allocation Agreement has been approved by local authorities. In addition to allocating flows among the parties, it also provides for a minimum "flow-by" amount. This is the amount of water that cannot be withdrawn by any authority and will protect environmental values of the Potomac River below Washington." (copies of both letters are in the Appendix)

(2) The Maryland Flow-By Study examines the free flowing Potomac between Great Falls, Maryland and the Little Falls dam; and the mile or so of free-flowing river below the Little Falls dam. Low flow impacts on the estuary's fishery were not studied.

There is some limited data about the estuary in the FBS, but most of it is a rehash of computer model runs made for the Corps of Engineers in 1972-73.

As we've said, the FBS limited its research to the Potomac above Little Falls dam and to the mile of free flowing river below the dam.

Yet as the Draft FBS takes pains to show, "of all areas of the Potomac analyzed, the section from Little Falls dam to Little Falls (ie, the mile of river "downstream of the Little Falls dam") was found to contain the poorest fishery habitat."

Well, it need not have taken a "study team" and an "Interagency Task Force" (and three years) to learn that there is less than a flourishing fishery in that stretch of the Potomac. A simple survey of fishermen would have shown that virtually all of thosewho fish the Chain Bridge area do so below the area studied - that most of them gather at Fletchers Boat House in the upper estuary, about a mile or so below Chain Bridge.

We cannot believe that it was anyone's intention that Maryland spend three years and all the man hours to define a flow-by figure for a mile of the Potomac River that is hardly fished!

(3) Will the flow-by of 100 mgd (recommended in the FBS to "protect" the mile of river below the Little Falls dam) also protect water quality in the Potomac Estuary?

The figure of a "100 mgd flow-by" has a long history - but until now it was always applied to the estuary. In the 1975 NEWS Study of the Corps of Engineers we learn that a flow-by of 100 mgd was suggested in a 1973 report of the Washington Area Interstate Water Resources Council.

The NEWS Study had this to say:

> A flow of 100 mgd to the estuary "would reduce the

liklihood of wholly unacceptable environmental losses in the estuary. While a safer amount, to minimize environmental losses, would be around 400 mgd...." (6)

When the Corps accepted a 100 mgd flow-by to the estuary in making calculations for the 1979 Water Supply Study, they did so with the caveat that "an appropriate flow-by value" was yet to be determined.

> "For the purposes of this Study then, the Corps of Engineers did not develop flow-by values. Rather, a 100 mgd flow value (per the NEWS Study) was used as the base environmental flow for all plans.
>
> "The State of Maryland in coordination with the U.S. Fish and Wildlife Service has initiated a study to determine an appropriate flow-by value." (7) (C.O.E., 1979)

A Corps' "Final Environmental Impact Statement" for various Fairfax County and WSSC projects above Great Falls (June 1978) reports on computer modeling for various flows into the upper estuary at Chain Bridge:

> "The importance of river inflow and adequate flushing on water quality in the extreme upper estuary is evident from the results. With no river inflow, a strong oxygen sag occurred in both the upper five miles of the estuary and in the vicinity of the discharge of the Blue Plains sewage treatment plant. With a relatively small input of 500 cfs (about 320 mgd) the oxygen sag in the upper 5 miles was eliminated, but not the sag near Blue Plains." (8)

The U.S. Fish and Wildlife Service has been especially hard on the idea that a 100 mgd flow-by will maintain water quality in the Potomac estuary, as the following citations show:

> "This figure (100 mgd) is unrealistically low and the flow-by figure jointly being developed by the Fish and Wildlife Service and the State of Maryland will likely be much higher." (9) (USFWS, 1980)

> "Preliminary results of a low flow study being conducted by the State of Maryland and this Department's Fish and Wildlife Service indicate this flow (ie, flow-by) figure will likely be in the 800-1200 mgd range. Unfortunately, the figure used by the MWA Study (the Corps Water Supply Study) was set at 100 mgd, a figure that has no biological significance.
>
> "Allowing water suppliers to withdraw water in amounts that would reduce flow to the potential level of 100 mgd does not provide for the required degree of environmental quality.
>
> The importance of maintaining adequate flows in the Potomac cannot be overemphasized. The Potomac historically has been one of the premier small mouth bass, shad, and striped bass streams in the country and, although presently not as productive as it should or could be, the Potomac River's aquatic resources cannot afford to be further stressed....
>
> "Using a 100 mgd flow-by for planning purposes provides unrealistic study results which will become glaringly apparent when a higher, more realistic figure is used." (10) (U.S. FWS, 1979)

We note, too, that in the Washington "208 Plan," the Washington Council of Governments staff (who are technical and not political personnel) recommended a "fresh water inflow into the Potomac estuary" of 560 cfs (about 360 mgd). That their figure was not adopted by area decision makers does not invalidate their finding.

We see that in every case a paramount concern is to find a "fresh water inflow" that will maintain a viable environment in the Potomac estuary.

None of these "authorities" suggest that 100 mgd would be an appropriate figure; and none limit their analysis of flow-by to the mile of river below Little Falls dam.

(4) Chapter VI of the Flow-By Study devotes 10 pages to the question of "Effects of Various Low Flows on the Upper Potomac Estuary." How valid is the data used in those pages?

The FBS introduces the subject of the estuary by commenting that "the upper 30 miles of the Potomac Estuary is essentially a dynamic fresh water lake. From Indian Head to the Chesapeake Bay, the water becomes increasingly salty." (FBS, page 128)

We learn, too, that although the upper 30 miles is "essentially a dynamic fresh water lake....the portion of the estuary of principal concern in this report extendsfrom Little Falls to Rock Creek." (FBS, p.128)

Since it's about a mile from Little Falls to Chain Bridge, and another four miles from there to the mouth of Rock Creek in Georgetown, this means that the other 25 miles of the fresh water estuary (down to Indian Head) are not of concern - even though they include some of the most important spawning grounds for Rock Fish in the entire Chesapeake Bay system!

Evidently we can draw a curtain on the estuary at Rock Creek and ignore the impact of low flows below that point!

Water quality in the upper (fresh water) estuary, says the FBS, "depends on the interaction of nitrogen, phosphorous, dissolved oxygen, and phytoplankton. Concentrations are a function of waste water loading, temperature, fresh water inflow, tidal flow, and biologic activity." (FBS, page 132)

The 1975 Corps of Engineers NEWS Study had the following to say about evaporation in the upper estuary:

> "Apparently the average daily summer evaporation from the Upper Potomac River Estuary is approximately 100 mgd so that allowing 100 mgd to flow over Little Falls would just about balance evaporation." (11)

If the Corps is right it's obvious that evaporation in hot summer months is another factor to account for in calculating a proper flow-by.

Even though all of these factors are important, the FBS gives us data for just three parameters: dissolved oxygen, salinity, and chlorophyll "a" (FBS, pages 132-138)

1) Dissolved Oxygen: the FBS cites computer modeling done by the

Corps of Engineers, but tells us nothing about the assumptions that went into the model, or how it was programmed.

The citation (Stakhiv 1976) is somewhat misleading because we've checked the FBS data and find it was first published in 1973 in a Draft Environmental Statement for the Corps of Engineers Emergency Estuary Pumping Station (since built just above Chain Bridge, at the head of the estuary).

The Corps model runs were made on the "Dynamic Estuary Model" (DEM) at EPA's Annapolis Field Office, and the model was calibrated for water quality data available to the Field Office in 1972 or 1973.

In discussions with EPA (July 1981) we were told that the DEM has been recalibrated by using water quality data they collected from the estuary in 1977, 1978, and 1979. So the model now reflects current conditions in the estuary a lot more closely than it did in 1973.

Even the Corps had reservations about the 1973 model runs cited in the FBS, as we learn in their Draft Environmental Statement of that year:

> "It should also be noted that simulations (ie, model simulations) in the upper reach of the Estuary (Chain Bridge) have not been fully verified." (12)

In the Corps Final Environmental Statement (1975), which uses the same model runs, there is an even stronger disclaimer about the results for dissolved oxygen:

> "A principal weakness of the model is that it is two-dimensional: it does not take depth into account. Thus it reflects only surface conditions which, in the case of the Potomac Estuary, are markedly affected by euthrophication. Thus, dissolved oxygen simulations may be misleading in that they are not vertically integrated." (page 35)

It would be enlightening to see a model run for the same part of the Potomac that assumed night time conditions (when no oxygen was being generated by photosynthesis) at various depths below the surface (where fish live!).

But not a word of this is discussed in the FBS. The three paragraphs

on dissoved oxygen (page 132, FBS) and the graph which follows never even tell us what part of the upper estuary is being measured for DO! If for example, we check the seven model runs reported by the Corps in 1973, we can find significant dissolved oxygen sags that begin about a mile below Chain Bridge - and continue to Rock Creek, which, according to the FBS marks the limit of the study area.

But more of this a little later.

2) Salinity: We're given little to go on. Although we're told about eight tests run by the Corps of Engineers with the Chesapeake Bay Model, the salinity data in the table (FBS,p 136) is for just one station - the one nearest Chain Bridge and Little Falls.(#PO 16)

How "near" is never said.

And the results of this test run are stated without comment: are they "good" or "bad" for the estuary? We'd like some discussion.

Since Rock Creek is four river miles below Chain Bridge, what salinities build up there, at the limit of the FBS zone of "concern"?

And, most importantly, what salinity regimes occur at various low flow conditions as we move down the fresh water estuary to Indian Head?

In April, 1980, the Corps of Engineers reported that their Chesapeake Bay Model was being used "to assess the impacts of various levels of freshwater inflow on wastewater and salinity patterns in the Potomac Estuary." (13)

Eight of sixteen tests had been completed, but according to the Corps "because of the incomplete data set, no conclusive statements regarding these patterns can be made at this time." (14)

Even so, some interesting results are shown for salinity: using drought conditions similar to August-October 1964, and assuming a 100 mgd "inflow" to the estuary, the model turned up salinities in the neighborhood of 2 parts/thousand at Station #PO 15, which appears to be near Rock Creek. Salinity concentrations down to Indian Head seem to be twice as high (or more) at 100 mgd flow-by than they are at 500 mgd flow-by. (15)

This work appears to be the source of the salinity data cited in the FBS, but we'd like to know for sure.

Corps of Engineers, 1980. MWAWSS, Stage II Draft Report. (13)

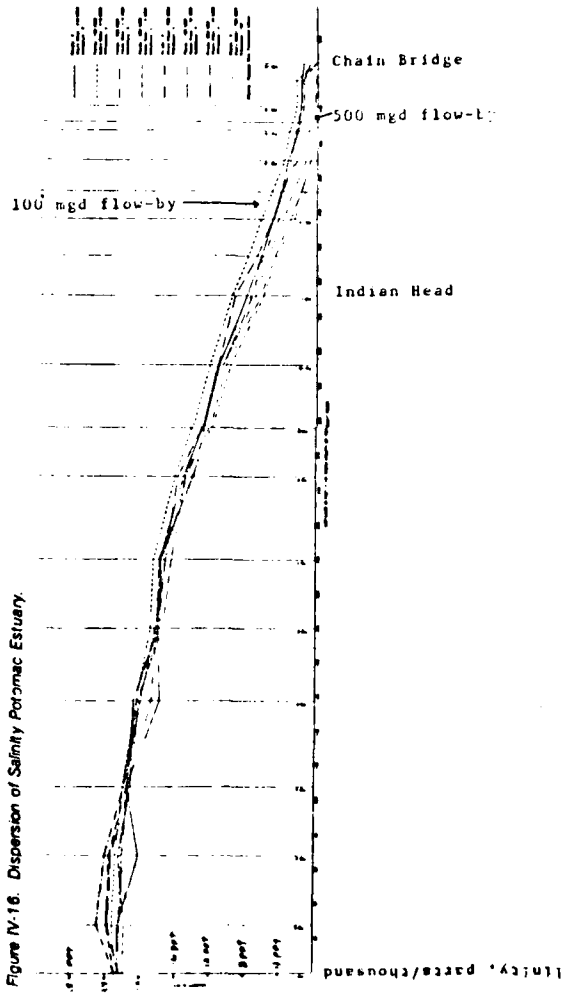


Figure IV-16. Dispersion of Salinity Potomac Estuary.

salinity than
And certainly we need to know more about / the page or two of incomplete results of studies being made with the Chesapeake Bay Model!

And we need some discussion: what about other parts of the estuary below "station PO 16"? What kinds of salinities will show up at Key Bridge? at Wilson Bridge, etc., at various flow-by increments?

In dealing with salinity (as elsewhere) the FBS refuses to look at the Potomac as an integrated system - unlike the FBS, the real river and its denizens do not disappear at Chain Bridge, and we have a responsibility to play fair in dealing with them.

3) Chlorophyll "a": FBS data (including the graph) comes from the 1973 Corps of Engineers model runs that produced the data on dissolved oxygen discussed earlier. So the same reservations hold for the FBS discussion of Chlorophyll "a".

Eutrophication has been a major topic of debate among those who deal with the Potomac estuary - surely it is a complex enough issue to have gotten more than five paragraphs in the FBS!

4) How accurate are the modeling results cited by the FBS (above)?

The results of the 1973 model runs used by the authors of the FBS were published intact in the Corps' Final Environmental Statement for the Emergency Estuary Pumping Station (July 1975) - along with comments by reviewing agencies. Points raised about the modeling by the Maryland Department of State Planning and the U.S. Department of Comerce deserve citation:

> "A second shortcoming of this Statement is that in order to adequately interpret results of the seven computer simulation runs...one has to be familiar with and understand the workings of the model. We were asked to accept (a) the assumptions of the model and (b) the model's operation - without being provided any basis for doing so." (Maryland Department of State Planning) (16)

> "The validity of the model is questionable. The simulated model fails to take into account any increase in temperature or salinity due to the reduced flow. Increased temperature and salinity are, of course, two factors which decrease the ability of the water to hold oxygen. Nor does the model consider biological variables...which can considerably lower, if not completely deplete, dissolved oxygen during the night.
>
> "Any significant increase in water temperature will result in increasing the metabolic rate of fish and other poikilothermic animals in the Estuary. An increase in metabolic rate increases oxygen demand....lower dissolved oxygen, increased temperature, and higher salinity could significantly increase physiological stress on some aquatic biota, thus making them more susceptible to disease, predation, and poisoning by toxic substances present in the estuarine waters." (17)

These comments were by Sidney R. Galler, then Deputy Assistant Secretary for Environmental Affairs at the Department of Commerce.

One point of Mr. Galler's need emphasis: the possibility that increased "physiological stress" on aquatic biota would make them susceptible to poisoning by "toxic substances present in the estuarine waters." Maryland, for example, has recognized the "toxicity" of chlorine compounds in sewage effluent and banned them from natural trout streams.

A few miles below Rock Creek (where the FBS refuses to look) we have a daily "slug" of 300-400 mgd of chlorinated water discharged into the Potomac estuary by the Blue Plains Sewage Treatment Plant. What will be its effect under stressed, low flow conditions?

Dye studies done by the Chesapeake Bay Model "to measure the impact of waste-water dispersion and Potomac River fresh water inflows" seem to show very high concentrations of dye (ie, waste water) almost up to Chain Bridge when there is 100 mgd of fresh water "flow-by" into the estuary. Nearly 300 parts/billion of the dye show up in the estuary near Rock Creek at a 100 mgd flow-by; and about half as much at a 500 mgd flow-by.

That area residents may find themselves drinking estuary water one day (if the Emergency Pumping Station near Chain Bridge is ever used) gives

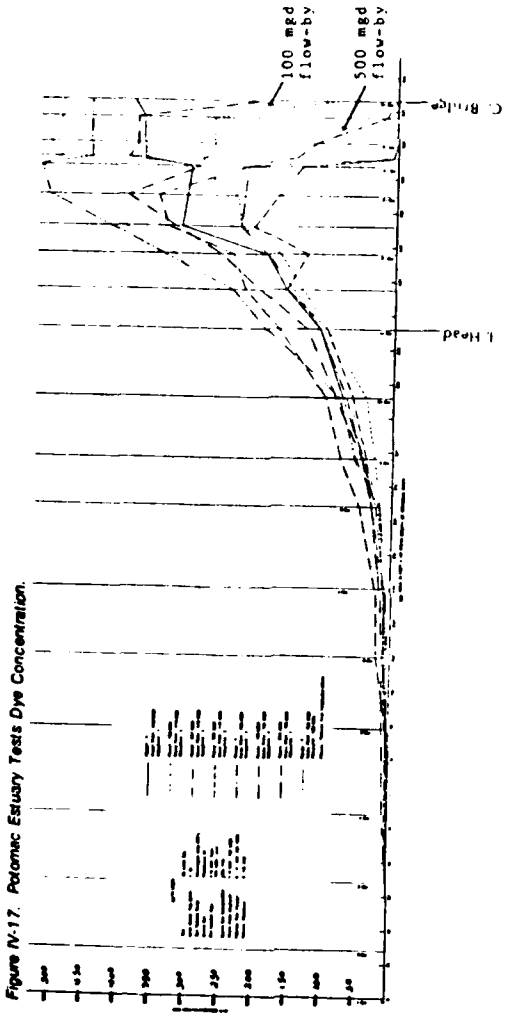


Figure IV-17. Potomac Estuary Tests Dye Concentration.

Corps of Engineers, 1980. MWAWSS, Stage II Draft Report. (13)

IV-27

these studies particular importance.

We must know what fresh water inflows are needed to protect water quality for customers of the Washington Aqueduct - who may have estuary water piped into their homes one day.

(5) Discharges from the Blue Plains Sewage Treatment Plant contain metals, various salts, chlorine compounds, etc. Since they are a very different "brew" than the water flowing over Little Falls dam, the impact of the Blue Plains discharges should be evaluated in arriving at a flow-by that will protect the fresh water estuary.

People say: "Well, it makes no difference whether the water goes over Little Falls Dam or is discharged at Blue Plains. It all serves to keep the salt wedge out of the upper Potomac estuary."

Ignoring that in summer a third to a half of this water may be lost to the system (to car washing, lawn watering, etc.), we know that the Blue Plains "water" is loaded with chlorine, nitrogen compounds, etc; and that it's hardly the same as the water that flows by Little Falls. That Blue Plains "water" has a baleful impact on the estuary can be seen by the large oxygen "sags" below its point of discharge. Drag the bottom, for example, and you will find "sludge worms" and little else.

So we cannot beg the question by saying "it all comes out at Blue Plains."

Indeed, at very low flow-bys, we need to know how the estuary above and below the treatment plant will be affected by various constituents of the Blue Plains effluent.

Given evaporative losses from the estuary, what will be the proportion of sewage effluent to fresh water after seven days, one month, etc?

At low flows and high evaporation rates, what kind of salt and nutrient concentrations will develop from the effluent? How will they circulate in the upper estuary?

And for what time periods and flow-bys will these materials appear in estuary waters at the Emergency Estuary Water Intake?

(6) In developing an "appropriate" flow-by figure, how much of the estuary needs to be studied?

Students have long divided the Potomac estuary into fresh, brackish, and salt water "zones," at the same time acknowledging that these are all part of a dynamic system. Too much, or too little fresh water "inflow" can have a measurable impact on all three "zones," as we learned during the June, 1972 "Agnes" flood; and earlier, during the 1966 "drought."

Since the Potomac estuary is an integrated system, it cannot be ignored below a line drawn arbitrarily at Chain Bridge, the Wilson Bridge, or anywhere else.

On the other hand, much of the "literature" about flow-by refers to maintaining water quality in the "upper Potomac estuary," so we can properly ask what the term "upper" has meant and ought to mean.

1) Chapter Six of the FBS is titled "Effects of Various Low Flows on the Upper Potomac Estuary;" and, as we saw, "the principal concern in this report (the FBS) extends from Little Falls to Rock Creek."

In other words, in the FBS "upper estuary" means the first five miles of the fresh water estuary.

The FBS also comments that "the upper 30 miles of the Potomac Estuary is essentially a dynamic fresh water lake." (FBS, page 128)

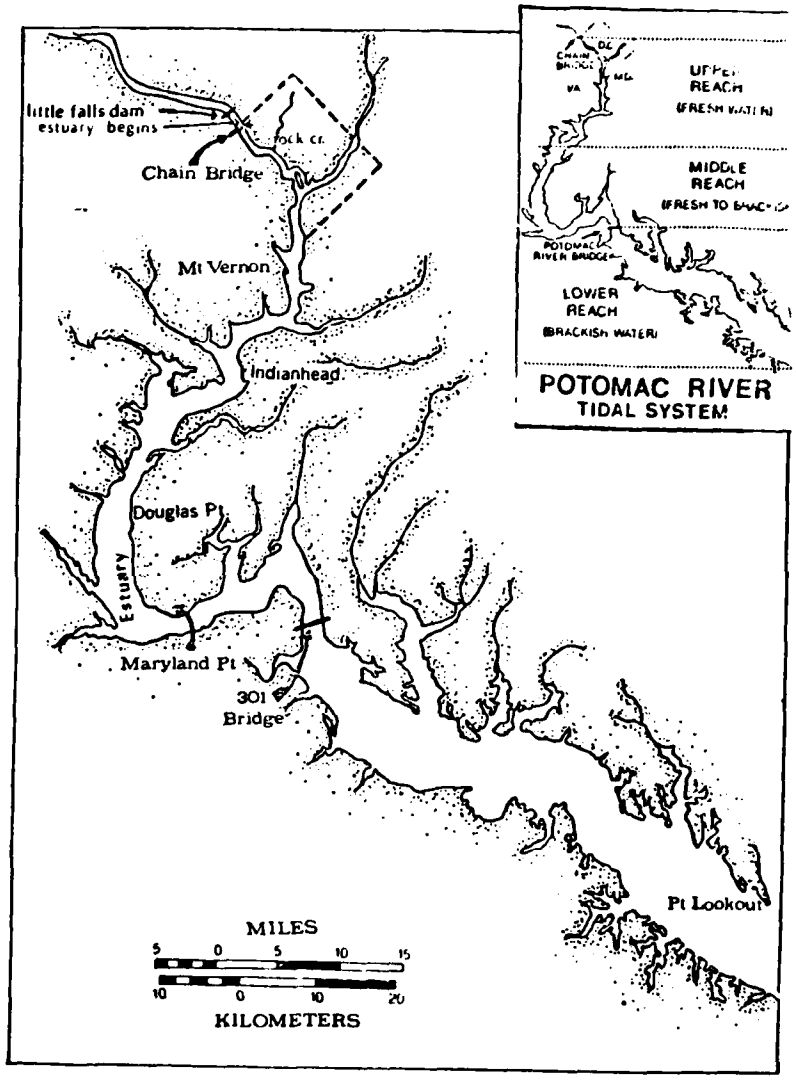
2) EPA Technical Report 35 and other publications of the EPA Annapolis Field Office divide what they call the "upper" estuary into three sub-zones - and in this scheme, the "upper" estuary extends to a point 45 miles below Chain Bridge, roughly to Douglas or Liverpool Point.

3) Since the Potomac estuary down to Douglas Point is vital to the life cycles of anadromous fish (a major spawning area for the Rock Fish is now around Douglas Point), the CTF feels that this reach of the Potomac deserves our best research efforts.

We'd like to see a thorough analysis of the influence of various flow-by regimes on this portion of the estuary - ie, from Chain Bridge down to Douglas Point.

(7) In recommending 100 mgd as the flow-by "downstream of the Little Falls dam," the FBS has given too much weight to what it calls "practical water management realities."

C-VII-25



Potomac Estuary

Metropolitan Washinton Water Resources Planning Board. 1978.
Draft Water Quality Management Plan (3)

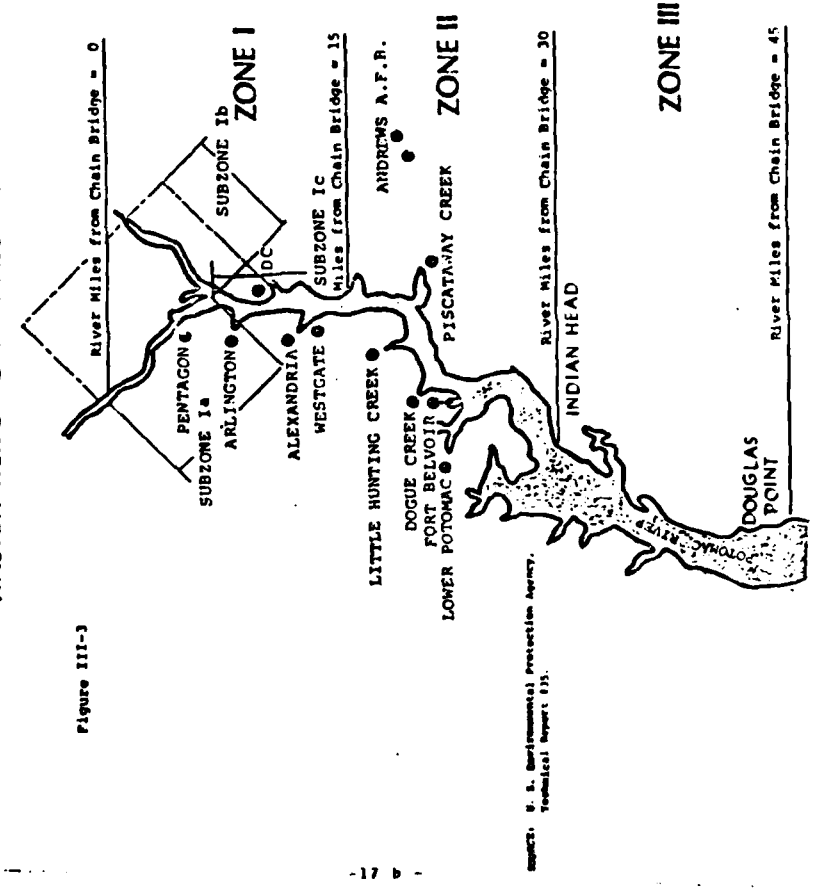


Figure III-3

SOURCE: U. S. Environmental Protection Agency. Technical Report 113.

-17 b -

In setting its 100 mgd "flow-by," the FBS discusses some of the factors that were "taken into consideration." The first one gives us a lot of problems.

> "Practical water management realities including historical flow frequency, water supply demand, and water use restriction capabilities, presently limit the amount of water available for a minimum flow-by. A daily average flow below Little Falls dam of 100 mgd is nearly the limit of what the current system can provide during extreme drought conconditions." (FBS, page 3)

This reminds us of Machiavelli's reasoning in his famous work "The Prince": in an ideal world, maybe the Prince could do what he ought to do as an ethical man, but in the real world he'd be a fool to follow the prescriptions of "morality" and "religion."

Where flow-by is concerned, no matter what the "practical water management realities" are, we need to know how much fresh water inflow is needed to keep the Potomac estuary healthy.

And we need the best thinking and research of the Maryland Water Resources Administration, EPA, the Corps of Engineers, the U.S. Fish and Wildlife Administration, etc. applied to this problem.

It is simply wrong to throw up our hands in the face of "practical water mangement realities." These "realities", we suspect, will turn out to be the structures built upstream of the Great Falls in recent years: the WSSC "weir" at Watkins Island, and huge new water intakes for the WSSC and Fairfax County - which may well strain the Potomac to the limit.

Since these facilitieswere given permits on the presumption there would be a 100 mgd flow-by to the estuary, now that they are in place no one is willing to go back and examine that figure!

But surely the Washington Metropolitan area can do a lot during times of low flow to limit "water supply demand," and to improve its "water use restriction capabilities."

During the recent California drought, for example, the City of San Francisco and neighboring communities cut back on water use by 30% to 40%; to think that Washington area residents could (or would) do

-18-

less is to ignore the results of a questionnaire distributed by the Corps of Engineers during the first phase of their WMA Water Supply Study.

The Interstate Commission on the Potomac, the Washington Council of Governments, and the Corps jointly sponsered the questionnaire and survey - of which, 22,297 were distruibuted to "upstream," "downstream," and Washington area residents, with a return of 2,738 (or 12%, a very good return for such a survey).

One question asked whether, during a water shortage, residents would be willing to perform a number of water saving "actions"(21 in all) that ranged from flushing the toilet only-when-necessary to reducing their lawn watering.

The results showed that 90% of all respondents would be "willing to make conservation a habit" during a water shortage. Since, according to the Corps, "willingness to conserve did not differ from area to area (kitchens, outside, bathroom, etc.)" they did not provide a breakdown on the 21"actions." (18)

We think the Washington area will support emergency conservation measures - the more so if they know what needs to be done to protect the health of the Potomac River.

A final note on conservation: the Chairman of the Citizens Task Force has written what has become a very popular booklet about household water conservation. In preparing the book he outfitted his own home with efficient low-flow water saving devices, principally a low-flow shower head, toilet dams, and spray-tap/aerators for the faucets.

Before the devices were installed in January, 1980, the house had been averaging about 42,000 gallons of water a year; during the last year and a half, with the low-flow devices in place, the house has been using about 24,000 gallons a year - and these figures are for indoor water use alone.

Given the infrequent times that emergency restrictions will be called for in the Washington area, we think that "practical water management realities" demand that we do everything in our power to save a great and still productive river and estuarine system.

On this score, we remind the Corps and the Maryland Water Resources Admin.

C-VII-130

that the future of Chesapeake Bay itself is tied to the health of its major tributaries. Programs aimed at the waters of the Bay will probably bear less fruit over the next fifty years than programs undertaken to maintain and enhance the productivity of its major tributaries.

(8) Since the question of flow-by to maintain ESTUARY water quality was not addressed in the Draft Flow-By Study, the Executive Summary (Chapter 1) should clearly indicate that to the reader.

As it now stands, many people will assume that the Maryland WRA made an exhaustive study of flow-bys needed to protect estuarine biota, etc.; and that 100 mgd will do the job. Given the history of the Low Flow Allocation Agreement and other recent permits, the reader has every reason to make such an assumption.

Many readers may not open the FBS beyond the Executive Summary; or if they skim through the rest of the text and find a chapter on the estuary (Chapter 6), most will not have the background to judge the State's findings in Chapter 6.

So when they read on the title page that the FBS has been submitted to fulfill "the Requirements of Article 2.C. of the Potomac River Low Flow Allocation Agreement," the public will doubtless be reassured.

What really needs to be said in the Executive Summary is that the FBS partially fulfills the requirements of Article 2.C.; but that a lot of study and research needs to be done on the question of a flow-by needed to maintain the Potomac estuary below Chain Bridge.

We hope, too, that when various revisions are made to the Draft FBS, either the Maryland WRA or the Corps of Engineers will hold a public hearing in the Washington Metropolitan area, and especially downstream where watermen and other residents have a vital economic interest in the health of the estuary.

(9) The Flow-By Study has shortchanged downstream area residents.

A Public Opinion Appendix to the Corps Water Supply Study summarizes the same Public Opinion Survey we have cited on page 19. In a section on Planning Priorities, 10 issues were listed and the public was asked to rank their top four priorities. (19)

One priority was: "To protect fish, planning should be directed to maintain a minimum flow in the Potomac River which water withdrawals should not deplete."

Washington area residents and those upstream ranked this subject second among the ten priorities: 55% of Washington area residents favored it, and 50% of those upstream.

Downstream residents ranked it first - 72% of those polled selected it.

For downstream residents the question involves a lot more than kyaking or recreational fishing - for many of those polled, it is a question of their livlihood and way of life. Which is why, in early 1978, so many southern Maryland residents made the long trip to Annapolis to testify at hearings on the Low Flow Allocation Agreement.

Indeed, it was partly their testimony and concern that led the Maryland General Assembly to pass a resolution about the question of "flow-by."

Three years later, the FDS gives these people the back of the State's hand; which is what the Washington area with its big water and sewer projects has been doing for years.

(10) If, as we hope, the Little Falls Fishway is opened again for the passage of anadromous fish, it will be even more important to maintain a healthy fresh water estuary. But only the needs of fresh water fish are addressed in the FBS.

This point needs little comment. But the data on small mouth bass and other fresh water species ought to be supplemented with data for anadromous species known to use (or have used) the fresh water estuary.

PART II- POINTS OF AGREEMENT WITH THE FLOW-BY STUDY

(1) Maintain water quality between Great Falls and Little Falls Dam

A 1978 article by Dietemann and Sanderson, often cited in the FBS, has the following information about the Potomac River between Great Falls and Little Falls dam:

> "The spawning potential for anadromous fish in the Potomac River below Great Falls is tremendous.
>
> "The three mile scenic canyon of the Potomac River below Great Falls...is characterized by roaring white water and long deep pools....Because of the high average velocity and deep gorge stream bed, the area forms a unique fish habitat uncharacteristic of the majority of the Potomac River.
>
> In the 1950's, large walleye were collected in the area....Prior to the construction of the Army Corps of Engineers dam at Little Falls, striped bass used the area for spawning. Large striped bass were caught by fishermen in the area near Anglers Inn, just downstream from Great Falls.
>
> "Since the river above Little Falls has water quality parameters especially suited to egg and larval development of anadromous fish species, the restoration of this river stretch by reconstruction of the (Little Falls) fishway should be a high priority.
>
> One of the factors responsible for the decline of the Potomac River anadromous fishery (striped bass, American and hickory shad, sturgeon...etc.) is the obstruction of the fish passageway at the Little Falls dam." (20)

This analysis, by trained Maryland Water Resources Administration biologists, coupled with a finding of the FBS that "a very productive and highly used (freshwater) fishery exists between Great Falls and Little Falls dam" (p.4), makes an unimpeachable case for maintaining a flow of water that will maintain the "integrity of the fishery".

recommended in the FBS
Is a flow of 300 million gallons a day enough fresh water to maintain the "integrity" of this reach of the Potomac River?

Given the limitations of the IGF model (see pages 10 and 11 of the FBS) we can't say for sure; it may well be that more water is needed. The important principle advanced by the FBS is to "maintain the integrity of the fishery" - we should retain the flexibility to substitute a new figure if later evidence (and more experience with the IGF model on eastern rivers) indicates that 300 mgd is not enough water.

(2) To maintain adequate river flow between Great Falls and Little Falls dam, shift Washington Aqueduct withdrawals to the Little Falls intake.

This strategy has been frequently suggested by the Interstate Commission on the Potomac River Basin, and we're glad to see it endorsed in the FBS.

We were told by Mr. Robert Miller of the Maryland WRA that it will cost the Washington Aqueduct about $8,000 a day to pump 200 million gallons of water at the Little Falls intake. And since it's hard to quantify the value of a living river system, we should anticipate the loud objections of a few parsimonious citizens and agencies - who will argue that "a few fish aren't worth $8,000 a day"!

Also, it seems unfair to put the whole cost burden on the shoulders of the Washington Aqueduct.

An equitable way to deal with emergency pumping from the Little Falls intake might be as follows: begin now to set aside a contingency fund to draw from when the flow of the Potomac is low enough to signal a shift to the Little Falls intake.

Since the entire fishery would benefit, and not just one or two local jurisdictions, water suppliers subject to the Low Flow Allocation Agreement should all be asked to contribute. Suppose, for example, that a 1¢ "environmental surcharge" were added to the water bills of area customers each billing period. Assume just 600,000 customers in the entire Metropolitan area (who are billed quarterly), and we'd gain $24,000 a year for the contingency fund.

(For quite some time area residents in the PEPCO service area have been paying a Maryland "environmental surcharge" for electricity- which generally comes to 5¢ or 10¢ a month for even modest consumers.)

(3) Establish the flow-by as a daily minimum, rather than as a weekly average.

The FBS makes this recommendation for the Potomac below Little Falls dam, but it should also apply to flows in the very productive stretch of river between Great Falls and Little Falls. (see p. 3, #2)

It's hard to know how a "weekly average" could be computed in advance, anyhow. A brief local shower that raised the river level significantly on Sunday and Monday should not mean no flow-by for the rest of the week.

(4) Establish a monthly flow schedule for Bloomington Dam that will optimize in-stream values while meeting water supply needs.

This is well stated in the FBS (p. 5): "Since there is flexibility in releases from the Bloomington Reservoir, a monthly flow schedule could be maintained in an effort to manage and optimize the fishery environment."

But this kind of planning shouldn't be done just for Bloomington Dam - plans are being made to operate Bloomington in conjunction with the Savage and Stony River Reservoirs, and this point should be factored into the FBS.

According to the Corps of Engineers Water Supply Study, because of expected low pH values at Bloomington "releases at Bloomington should be no larger than twice those from Savage and never more than three times as large." (Supply,Demand,and Deficit Specialty Appendix, C.O.E, page 42).

The Bloomington Lake Reformulation Study and the CO-OP program (being developed by the Interstate Commission for managing Wash-

ington area reservoirs) should be done with an eye to helping us maximize flows above and below Little Falls dam.

(5) Restoration of Little Falls Dam Fishway (see FBS, pages 72; 148-50)

This was strongly urged by Dietemann and Sanderson of Maryland WRA, whose work we have cited; and we're glad to see their points reiterated in the FBS.

Almost monthly we read alarming reports about the demise of the shad and rock fish populations in the Potomac and the larger Chesapeake Bay system. If, as Dietemann and Sanderson report, "one of the factors responsible for the decline of the Potomac River anadromous fishery...is the obstruction of the fish passageway at Little Falls dam," we should spare no effort to make this passageway passable. It is the one thing we can do right away to help the shad and rock fish.

"Further research (into this problem) is presently being contemplated although no study has been initiated" (FBS, page 149).

Money should be found to "initiate" research at once; and then the necessary steps taken to make the dam "passable".

Dietemann and Sanderson read their paper at a meeting of the Interstate Commission on the Potomac in January 1977 - to find in July, 1981 that "further research is...being contemplated although no study has been initiated" is both pathetic (full of pathos) and maddening.

COMMENTS ABOUT PORTIONS OF THE FBS TEXT

(a) Page 14: Paragraph #1 says the "free flowing" Potomac runs for 186 miles from its headwaters to the Little Falls.

Surely the writer is mistaken.

It's over 186 miles from Georgetown to Cumberland, Maryland. And it's still a good haul from there to the Fairfax Stone on Backbone Mountain.

(b) Page 16: the map should show the Rockville City water intake (at Bealls Island, just above Great Falls); and certainly point out the Emergency Estuary Water Intake.

(c) Page 21: If, when the "water table becomes low enough (in dry summers)water may seep out of the channel into the ground, further reducing river flow", one wonders how much water might seep out of the upper estuary.

And if there were significant seepage, how it would effect the required flow-by.

(d)Page 21: "The Potomac River is the only major surface source of potential, additional, non-saline water supply available (without resorting to massive inter-basin transfer), for the Washington Metropolitan Area."

This is misleading. Both the Occoquan Reservoir and the Patuxent Reservoirs supply drinking water to the Metropolitan area. Indeed, the dam was recently raised on the Occoquan to expand the capacity of the Reservoir.

(e)Page 31: "Wildlife". Are there endangered species that will be effected by low-flow below Little Falls Dam? What about reptiles and amphibians ?

Certainly the shad and rock fish are threatened species in the Potomac estuary and ought to be mentioned. Also the sturgeon, a few of whom may survive in the estuary. How will various flow-by regimes affect these fish?

(f) Page 45: It ought to be said that among the problem areas of the Potomac consistently listed by the Interstate Commission is the "Potomac Estuary, Washington D.C. and Maryland". See, for example, Critical Areas in the Potomac River Basin published by ICPRB.

(g) Page 58: Those who use the C&O Canal to fish do a lot of

fishing from Park Service property along the upper estuary. Fletchers Boathouse is a mecca for fishermen, many from the inner city.

Probably more people bank fish (and boat fish) along the estuary from Chain Bridge to Rock Creek than any other place.

(h) Page 107: "At flows below 500 mgd, the macroinvertebrate population would be increasingly stressed from a habitat in which the volume, depth and area are progressively reduced. Siltation effects would also increase."

This discussion needs amplification. What would happen to the macroinvertebrates from Great Falls to Little Falls dam at flows of 300 mgd of various durations? (1 week, 1 month, etc.)?

Since 300 mgd is the recommended flow (and not 500 mgd) we need to know what is going to happen with that flow in the river.

Too, we ought to predict what would happen at flows under 300 mgd - otherwise it might be difficult to convince the Washington Aqueduct to shift withdrawals to the Little Falls Pumping Station.

(i) Page 107: "At a flow of 100 mgd, the population as a whole would be severly stressed....However, flows of such duration are historically unprecedented."

While 100 mgd flows from Great Falls to Little Falls Dam may be "historically unprecedented", the last three years have seen completion of a 200 mgd Fairfax County water intake at Seneca Pool (which is "historically unprecedented"); and construction of a low dam ("weir") and 400 mgd water intake by the WSSC at Watkins Island (also "historically unprecedented").

If the Low Flow Allocation Agreement is renegotiated after 1988; or winter water use increases as the area population grows, the new supply facilities could easily cause "historically unprecedented" flows

above Little Falls dam.

(j) Page 111: "The bald eagle and osprey, while formerly common to the study area are now uncommon."

This may be true if the "study area" ignores the fresh water estuary; but these birds are a lot more common downriver.

Last year (1980) there was an active osprey nest at Riverbend Park, just above Great Falls, Virginia.

(k)Page 119: It is not just the C&O canal's "structures" that can deteriorate if exposed to air. The clay liner in the canal bed also suffers with too much exposure.

(l) Page 141: The section on Waste Water Management ought to describe Montgomery County's plan to discharge treated effluent from the proposed Rock Run Sewage Treatment Plant into Little Falls Branch - not far upstream from its confluence with the Potomac River; and just above the Emergency Estuary Intake.

Certainly, discharges from this plant ought to be curtailed under low-flow conditions, and this is what Maryland Water Resources Administration appears to be proposing.

It would be good to have a discussion of this project in the FBS.

(m) Page 148: We read that it would take about 4 years to re-establish a "fishable population" for the mile or so of river below Little Falls Dam if the 1966 low-flow (185 cfs) recurred.

Only the recovery of fresh water species is described. What would be the effect on andromous fish, assuming we can reestablish the fishery above Little Falls dam? Would the increased siltation effects of low flows (mentioned on page 107) affect spawning grounds during the next spawning season? We'd like to see this discussed.

C. XII - 34

(n) The large end-paper "matrix": The matrix indicates that a 362 mgd (7 day, 10 year low flow) flow-by is recommended by the Metropolitan Council of Governments to provide a "margin of safety for water quality in the upper estuary" - for both dissolved oxygen and eutrophication.

We'd like to know why such an important finding is tacked onto the end of the report in the "matrix" and not discussed in the text.

What is the basis for the Council of Governments' recommendation? If there is a solid basis for it, why isn't this figure adopted in the FBS rather than 100 mgd?

These things need exposition.

(o) The "matrix": We're told that "flows of 185 cfs...will result in dissolved oxygen levels that are acceptable for most aquatic life for approximately 30 days." (from Chain Bridge to Rock Creek)

The source for this conclusion is given as "Stakhiv 1976; Alternatives for water supply and their biological impacts"; and the publication is presumably the ICPRB symposium on the Potomac Estuary (proceedings were published in April, 1976).

The only article we could find by Stakhiv in this publication was entitled: "Management of Water Supply and Its Impact on Biological Resources", so either there is another report or the title in the matrix needs revision.

The computer model Stakhiv refers to appears to be the same one used by the Corps of Engineers in preparing their Environmental Statement for the Emergency Estuary Intake; and if so our discusson of this model (pages 12-15of this report) still applies.

The FBS is very fuzzy about the 185 cfs flow: we're not told what the dissolved oxygen levels will be (only that they are "acceptable") or what species constitute the "aquatic life" the DO levels are "acceptable" for.

In fact, one of the 1973 Corps computer runs (described on page 12 of this report) was "Run #3", which found that during low flows like those of 1966 (and with 1972 sewage loadings) the following results obtained with a 120 mgd flow-by to the estuary (185 cfs):

(1) High dissolved oxygen was maintained at Chain Bridge for both 7 day and 30 day simulations.

(2) After seven days DO dropped to "about 4 mg/l in the first few miles downstream"(of Chain Bridge).

(3) After 30 days, "extremely low levels of dissolved oxygen (0.5 mg/l) are predicted downstream of Chain Bridge."

(4) The whole system sags to less than 5 mg/l at one mile below Chain Bridge (above the Georgetown Reservoir);and only recovers to reach 5 mg/l beyond mile 4 (the mouth of Rock Creek).

It then stays up for a couple of miles; but according to the Corps, the peaking reflects the effects of eutrophication (which raises the DO level during the day);and also reflects the "model's lack of vertical integration."

Vertical integration, the Corps explains, is not programmed into the DEM: which means that the DEM "reflects only surface conditions, which, in the case of the Potomac estuary, are markedly affected by eutrophication. Thus, dissolved oxygen simulations may be misleading in that they are not vertically integrated."(page 39, Corps Environmental Statement for Estuary Pumping Station, July 1975).

Given these problems with the model, the analysis of computer run #3 concludes that average DO values would "be considerably less" than peak values.

Run #3. Dissolved Oxygen Simulation

Assumptions: a. fresh water flow over Little Falls of 185 cfs (1966 low-flow conditions)

b. present (1972) sewage loadings

c. no Estuary withdrawal

Rationale: To simulate the 1966 drought conditions for 7 and 30 day periods and determine dissolved oxygen concentrations throughout the upper Estuary after those periods. Run #3 will also be used to delineate the impact caused by increased sewage loadings when compared with Run #4.

Results: After a 7-day simulated drought condition, dissolved oxygen levels remian high (6.0 mg/l) in the vicinity of Chain Bridge, but drop to about 4 mg/l in the first few miles downstream.

High dissolved oxygen levels are also maintained at Chain Bridge after a 30-day simulation. According to Mackenthun (1965), a level of 4.0 mg/l dissolved oxygen is needed to sustain most biota in estruarine systems. Extremely low levels of dissolved oxygen (.5 mg/l) are predicted downstream from Chain Bridge after 30 days (Figure 9). The rapid drop in dissolved oxygen occurring between mile 6 - 10 is apparently due to the extremely low levels of dissolved oxygen in Blue Plains effluents.

C. VII-36

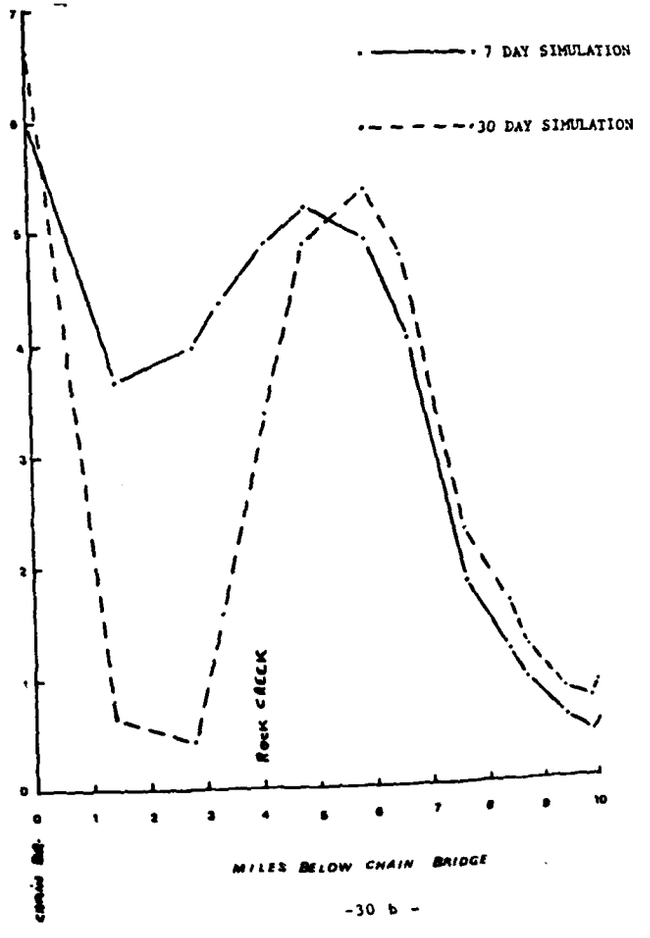
from: Draft Environmental Statement (1973), Corps of Engineers (12)

FIGURE 9

DISSOLVED OXYGEN vs. MILES BELOW CHAIN BRIDGE

(Run #3; Corps of Engineers)

120 mgd "flow-by" to estuary (12)



A final note about this section of the matrix: we're told it describes conditions from Chain Bridge to Rock Creek. Yet the DEM model cited by Stakhiv has several runs (#3 and #4) which show big oxygen sags below Chain Bridge at flow-bys of 120 mgd. In both cases DO levels for all but the immediate Chain Bridge area have oxygen levels that are below current Maryland standards for Class I waters.

Run #4, for projected 1980 sewage loadings, shows that DO levels will drop to 3 mg/l near Fletcher's boat house, about 1.5 miles below Chain Bridge.

At night it's fair to assume DO levels will drop still lower.

And yet as the matrix interprets these 1973 model runs, there will be "acceptable" DO levels all the way to Rock Creek, four miles below Chain Bridge!!

Clearly it will be wrong and misleading to let the DO section stand as written. The 1973 model run turned up problems with a 120 mgd flow-by and the FBS ought to say so!

(p) Charts and tables in the FBS: many of these are virtually indecipherable in the draft study. We trust they will be legible in the final printed version.

C. VII-37

PART III - RECOMMENDATIONS OF THE CITIZENS TASK FORCE

1. A healthy Potomac estuary is vital to the future of Chesapeake Bay. This means we need a thorough study of the effect of various flow-by regimes on the estuary. The Flow-By Study will be incomplete until this work is accomplished.

2. Until we have a Flow-By Study for the Potomac estuary, no final figure should be set for the "environmental flow-by" described in Article 2.C. of the Low Flow Allocation Agreement.

3. We back the State of Maryland's recommendation that water quality be protected in the free-flowing Potomac River between Great Falls and the Little Falls dam (about 9 miles of river). Whenever it is necessary to assure a flow of 300 mgd past the Great Falls, the Washington Aqueduct should shift its water withdrawals from Great Falls to the Little Falls Pumping Station.

4. Work (studies if necessary) should be started immediately to make the Little Falls dam "fishway" passable to anadromous fish.

5. The Corps of Engineers should hold public hearings on the Maryland Flow-By Study when they receive the final version. Citizens from downstream communities especially need to be heard.

   The Corps should not make a final determination of how to "weigh" the Flow-By Study until they have received comments from all "interested" parties.

   In determining flow-by during times of water shortages, the Corps must give a high value to protecting the health of the Potomac Estuary.

REFERENCES

(1) Baltimore District, Corps of Engineers. 1979. Formulation, Assessment, and Evaluation of Detailed Plans. MWAWSS. (page 95)

(2) Baltimore District, Corps of Engineers. 1980. Bloomington Lake Reformulation Study - Progress Report. (page 26)

(3) Metropolitan Washington Water Resources Planning Board. 1978. Draft Metropolitan Washington Water Quality Management Plan (pages III-11 and III-16)

(4) Baltimore District, Corps of Engineers. 1979. Workshops and Public Meetings. MWAWSS.(page 23)

(5) ibid. (page 34)

(6) North Atlantic Division, Corps of Engineers. 1975. Northeastern United States Water Supply Study. MWAWSS. (pages 31-32)

(7) Baltimore District, Corps of Engineers. 1979. Metropolitan Washington Area Water Supply Study - Draft Progress Report: Formulation, Assessment, and Evaluation of Detailed Plans. (page 95)

(8) Baltimore District, Corps of Engineers. 1978. Final Environmental Impact Statement Concerning Proposed Potomac River Water Supply Structures. (page 8-17)

(9) U.S. Department of Interior, Fish and Wildlife Service, Delmarva Area Office. 1980. Review of Public Notice NABOP-FR 80-0186. (page 2)

(10) Baltimore District, Corps of Engineers. 1979. Workshops and Public Meetings. MWAWSS. (page 52)

(11) North Atlantic Division, Corps of Engineers. 1975. Northeastern United States Water Supply Study. MWAWSS. (page 32)

(12) Baltimore District, Corps of Engineers. 1973. Draft Environmental Statement, Emergency Water Pumping Statio.. (page 54)
1980.

(13) Baltimore District, Corps of Engineers./MWAWSS, Stage II Draft Report. (page III-7)

C-VII-35

REFERENCES (cont.)

(14) ibid. (page III-8)

(15) ibid. (page B-IV-62)

(16) Baltimore District, Corps of Engineers. 1975. Final Environmental Statement, Emergency Water Pumping Station. (page E-26)

(17) ibid. (page E-71)

(18) Baltimore District, Corps of Engineers. 1979. Public Involvement Appendix. MWAWSS. (pages 70-71)

(19) ibid. (pages 69-70)

(20) Interstate Commission on the Potomac River Basin. 1978. The Freshwater Potomac. (pages 70-74)

APPENDIX

"Background Information and Problem Development Appendix", Corps of Engineers; (1979)

clause which allows any signatory to "freeze" the allocation ratios after 1998 pending the negotiation of a revised formula.

MAINTENANCE OF ENVIRONMENTAL FLOW

Directly involved with the permit actions and the Potomac Low Flow Allocation Agreement is the issue of the value of maintaining an environmental instream flow. This concept is defined as the amount of water allowed to flow past the last water intake on the Potomac (WAD), over Little Falls, and into the Potomac Estuary. Conceivably, full operation of all existing and future water supply intakes, coupled with a drought condition, could withdraw all water from the Potomac, leaving the river downstream of Little Falls with virtually no flow. The impact of such an occurrence on aquatic life in the affected portion of the Potomac as well as on water quality in the Upper Potomac Estuary could be severe.

Various values have been proposed for an appropriate level of environmental mental flow, ranging from 0 to 600 mgd with some values even higher. Water supply intakes upstream would be operated to maintain this predetermined downstream level of flow at all times. Obviously, higher levels of flow will force restrictions on water users much earlier in a drought situation.

Both the Department of Interior and the Environmental Protection Agency suggested that a detailed study of Potomac River conditions be performed to determine an appropriate environmental flow value. As previously indicated, the State of Maryland, acting as lead agency, is presently conducting a study of the Potomac to determine impacts of various levels of flow. The primary issue involves balancing the water quality and aquatic needs of the Lower Potomac River and Upper Potomac Estuary against the domestic and economic water requirements of the MWA. Results of this study will then be incorporated into the Low Flow Allocation Agreement and future water management plans.

GROWTH

There is a desire on the part of many local groups in the MWA to control the development of their areas and not accept continued growth as given or even necessary. The rapid expansion of the MWA has brought many problems, both social and fiscal, and managing growth is seen as the ultimate solution to the situation.

The debates have ranged from no-growth advocacy to more moderate positions of controlling the distribution of population. Presently, many local groups fear that growth will be attracted by certain water supply projects. However, no group has ignored the potential which water and wastewater management offer for

"Formulation, Assessment, and Evaluation of Detailed Plans," Corps of Engineers (1979)

Authority. Its purpose is to provide a fair and equitable means of allocating the regions water supply during periods of low flow so that no one area suffers disproportionate shortages. Although the Agreement insures that the water resource is fairly distributed, it does not eliminate shortages.

A principal feature of the Agreement is a formula which limits the amount of water that may be withdrawn by each of the Potomac users during periods when flows in the Potomac are insufficient to meet the total demands. A clause exists which allows any of the signatories to "freeze" the allocation ratios after 1988 pending the negotiation of a revised formula.

Because this Agreement would have a direct, although variable, effect on future shortage conditions within the MWA, it was of prime importance and a basic element applied in plan formulation activities, as will be pointed out later in this chapter. Futher details regarding the Agreement and the allocation formula can be found in the Supply and Demand Appendix.

ENVIRONMENTAL FLOW-BY

Environmental flow-by can be defined as the amount of water allowed to flow past the last water intake on the Potomac River (WAD), over Little Falls, and into the Potomac Estuary for environmental purposes. The issue of flow-by is a direct outgrowth of the negotiations leading to the signing of the Low Flow Allocation Agreement (LFAA) in January 1978. This agreement stipulates that in calculating the water available for allocation that the WAD shall, based upon the data submitted by the State of Maryland regarding a flow-by value, determine any amount needed for flow in the Potomac River for the purpose of maintaining environmental flow-by and shall balance such needs against essential human, industrial, and domestic requirements for water.

As part of their responsibility under the LFAA, the State of Maryland in coordination with the U.S. Fish and Wildlife Service has initiated a study to determine an appropriate flow-by value. This study is not likely to be completed before the fall of 1979. Various values have been proposed for an appropriate level of environmental flow-by, ranging from 0 to 600 mgd with some values even higher. Because flow-by would have a direct bearing on the timing and magnitude of shortages, the selection of an appropriate level was of major importance for plan formulation activities.

For the purposes of this Study then, the Corps of Engineers did not develop flow-by values. Rather, a 100 mgd flow value (per the NEWS Study [illegible]) was used as the base environmental flow for all plans. In addition, the MWA Study investigated a range of flow-by levels in calculating water supply deficits. This sensitivity analysis permitted an assessment of the effects of various flow-by values on both the timing and magnitude of drought shortages.

Potomac River (after deduction for environmental flow-by) and all other sources as specified in Paragraph 5 below (calculated at maximum capacity practicable). The resulting amount, less the amount then available to said user by use of the maximum capacity practicable from all such other sources, will be such user's allocated fair share of the flow of the Potomac River."

In other words, each service area gets the same proportionate share of water supply during low flow conditions as it used, on the average, during the preceding five winter periods.

The Agreement further provides that the allocation formula described in Article 2.C.2 can be "frozen" anytime after 1988 if so desired by one of the principal signatories. The allocation ratio in effect at that time continues until a subsequent agreement is reached.

Because this Agreement would have a direct, although variable, effect on future shortage conditions within the MWA and one of the purposes of the Bloomington Lake Reformulation Study is to investigate means to alleviate MWA shortages through project operation and storage reallocation, this Agreement was incorporated into the modified PRISM model.

ENVIRONMENTAL FLOW-BY

Environmental flow-by represents the flow remaining in the river after all water supply diversions have been made. The term applies to the volume of fresh water flowing over Little Falls Dam into the Potomac Estuary near Washington, D.C. This flow is considered to be essential for maintaining fresh water flow for the estuary and other environmental purposes.

Because of the physical possibility of being able to withdraw essentially all of the water from the Potomac River during low flow conditions, the establishment of a minimum flow-by is receiving increasing attention. The flow-by would maintain a continuous discharge downstream of Little Falls for fish and wildlife purposes, and could also serve to enhance the water quality of the Upper Potomac estuary. The issue of flow-by is a direct outgrowth of the negotiations leading to the signing of the Low Flow Allocation Agreement (LFAA) in January 1978. This agreement requires that in calculating the water available for allocation, based on the data submitted by the State of Maryland regarding a flow-by value, flow needed in the Potomac River for purposes of maintaining environmental flow-by shall be determined and shall balance such needs against essential human, industrial, and domestic requirements for water.

As part of their responsibility under the LFAA, the State of Maryland in coordination with the U.S. Fish and Wildlife Service, the Corps of Engineers and others has initiated a study to determine appropriate flow-by values and the biological impacts of these various flow-by values. Values have been proposed from 0 to 1,200 mgd (1,860 cfs). Because flow-by would have a direct bearing on the timing and magnitude of water supply shortages in the MWA, the selection of an appropriate level will be important for project operation and storage reallocation of the Bloomington Lake Project.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

REPLY TO ATTENTION OF

9 JUL 1980

Mr. Edwin F. Wesely, Jr.
Chairman
Citizens Task Force - Metropolitan
Washington Area Water Supply Study
104 Valley Road
Brookmont, MD 20016

Dear Mr. Wesely:

On behalf of President Carter, I am acknowledging your recent letter dated 19 June 1980.

I have asked the U.S. Army Corps of Engineers to provide me with a report and will get back with you after I have received their response.

Sincerely,

Edward Lee Rogers
Deputy Assistant Secretary of the Army
(Civil Wroks)

14 JUL 80

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

REPLY TO ATTENTION OF

8 AUG 1980

Mr. Edwin W. Wesely, Jr.
Chairman, Citizens Task Force
Metropolitan Washington Area Water
Supply Study
104 Valley Road
Brookmont, Maryland 20016

Dear Mr. Wesely:

Thank you for your letter of June 19, 1980, to President Carter concerning your request to veto Bill H.R. 5259.

President Carter signed this bil. into law on June 28, 1980. However, I would like to clarify a few points. The Washington Suburban Sanitary Commission (WSSC) plans to build a weir from the north shore of the Potomac River to Watkins Island. The Potomac River would continue to flow unimpeded between Watkins Island and the south shore of the Potomac River. Further, a Potomac River Low Flow Allocation Agreement has been approved by local authorities. In addition to allocating flows among the parties, it also provides for a minimum "flow-by" amount. This is an amount of water that cannot be withdrawn by any authority and will protect environmental values of the Potomac River below Washington. The weir will not increase the amount of water that WSSC is permitted to withdraw under the Agreement.

The Corps of Engineers is continuing with the Washington water study. It believes the weir will not impact on the outcome of the water supply study.

Sincerely,

Edward Lee Rogers
Acting Assistant Secretary of the Army
(Civil Works)

(underlined by CTF)

PILOT ESTUARY WATER TREATMENT PLANT AND TESTING PROGRAM

The Potomac Pilot Estuary Water Treatment Plant (PEWTP) was authorized for construction, operation, and evaluation by the Water Resources Development Act of 1976. The plant is located on the grounds of the District of Columbia Blue Plains sewage treatment plant (Figure IV-14, Appendix B). The one mgd experimental plant is in the final stages of construction with two years of testing scheduled to determine the plant's reliability and potential for operation at a larger scale.

There are two main elements to the testing program: (1) development of an optimum water treatment process to produce a consistent and reliable potable water that meets Safe Water Drinking Standards set by the Environmental Protection Agency; and (2) water quality analysis to evaluate the raw, processed, and finished waters to provide data on the operating efficiency of the treatment processes and the potability of the product water.

A report on the project results will be submitted to Congress within three years after commencement of plant operations. As part of the evaluation process, the NAS-NAE will review the report and will comment on the scientific basis of any conclusions.

POTOMAC ESTUARY STUDY

The Chesapeake Bay Model, located in Matapeake, Maryland, is being used to assess the impacts of various levels of freshwater inflow on wastewater and salinity patterns in the Potomac Estuary under a variety of base and future conditions. An evaluation of this testing data will provide useful information on potential locations for an intake of a full-scale Estuary water treatment plant if it is determined possible for the future as well as provide some baseline information on the impacts of changing conditions on the physical and biological conditions within the estuary at different levels of drought.

A two-part testing program is now underway utilizing 16 tests which are summarized in Table IV-13, Appendix B. Eight of the 16 tests have been completed including four baseline tests which are designed to determine 1980 salinity and wastewater dispersion patterns under a range (0-900 mgd) of Potomac River freshwater inflows and existing wastewater discharges into the Estuary.

Four additional "futures" tests have been completed with eight more scheduled for completion this summer. These tests will project the year 2020 condition under the same range of freshwater inflows with varying levels of Estuary withdrawals at the site of the Emergency Estuary Pumping Station and under projected wastewater discharges.

The testing will include measurements of salinity, dye (for wastewater concentrations), and tides at 20 sampling stations along an approximate 100 mile length of Estuary from Washington, D.C. Dye concentrations measured in water samples taken from the model will reflect the presence of relative concentrations and distances over time of conservative constituents of waste discharges. The concentration of non-

conservative constituents such as B.O.D., nutrients, etc., over time involve complex interactions which are beyond the capabilities of the physical model. These concentrations will be determined by analytical treatment of collected model data using mathematical modelling after the remaining test data are collected.

Preliminary data available from the initial baseline tests completed indicate generally expected decreasing salinity conditions nearest to the freshwater supply source which are illustrated in Figures IV-16 of Appendix B. Regarding wastewater dispersion, Figure IV-17 of Appendix B illustrates the declining concentrations of dyes with distance towards the mouth of the Estuary (near District of Columbia). As expected, the lowest dye concentrations would occur with highest freshwater inflows and low level wastewater discharge and no Emergency Pumping Station (EPS) withdrawals.

Because of the incomplete data set, no conclusive statements regarding these patterns can be made at this time. More detailed analysis using the remaining test data and mathematical model will be presented in the Draft Final Report.

WATER PRICING

The use of alternative pricing mechanisms, that is, adjustments in the price of water charged to the consumer, can be an effective way of reducing the overall demand for water. Congress recognized this possibility and stipulated that this mechanism be investigated as part of the MWA Water Supply Study in its authorizing legislation. In accordance with this directive, the Baltimore District will be initiating a pricing study of the MWA water supply systems in the late summer or early fall of 1980 through outside contractual arrangements to determine the impacts of various pricing strategies on future water use.

There are a number of reasons why a pricing study is desirable as part of the MWA Water Supply Study at this time:

1. The President's Water Policy Message of June 1978 indicated that conservation of water resources be given a national priority. A pricing study will compliment conservation work already accomplished for this study (See Conservation and Demand Reduction Appendix of the Draft Progress Report for the Potomac River Users, August 1979) and provide a more complete appraisal of conservation impacts on MWA water use.

2. Increasing treatment costs for potable water are probable in the near future as costs for treatment and distribution steadily increase. As these costs are passed on to the consumer, alternative pricing strategies may become quite effective and have a positive net effect on consumer water use.

3. Recent changes in water and wastewater rates by utilities (most notably, in California) have indicated that the price of water does impact on water use even beyond the shortage period.

4. Pricing strategies can have a positive effect on growth by reducing water use and thus relieving heavy loads on existing wastewater treatment facilities.

5. Pricing is a non-structural approach to demand reduction and may be more publicly acceptable to large structural projects.

CHESAPEAKE BAY HYDRAULIC MODEL

The Chesapeake Bay Hydraulic Model, located at Matapeake, Maryland, on a 65-acre tract of land donated by the State of Maryland, is the largest estuarine model in the world. It is a fixed bed, geometrically distorted scale model, hand molded in concrete; it is 9 acres in area; and encompasses the Bay proper, all of its tributaries up to the contour elevation of 20 feet above mean sea level. The model is enclosed in a 14 acre prefabricated steel truss building in order to protect it from such elements as wind, rain, and debris.

The Chesapeake Bay conforms to the typical form of coastal plain estuaries, which are generally broad, shallow water bodies. The average depth lies between 25 and 28 feet; and if the model were to be constructed to a reasonable natural scale, water depths would be generally extremely shallow. Because of this, the water would be too shallow to made meaningful measurements, and the effects of water surface tension would disturb model results.

To overcome these problems, the Chesapeake Bay Model, like almost all estuary models, is geometrically distorted. This means that it is constructed disproportionately by using larger scales for vertical dimensions than for horizontal dimensions. The degree of distortion, as well as the actual scales selected, is dependent on many factors including the size of the area that must be reproduced and the problems to be investigated. The Chesapeake Bay Model is, therefore, constructed with scales of 1 to 1,000 horizontally and 1 to 100 vertically. This combination of scales is referred to as a distortion ratio of 10. This particular scale ratio has been found, over many years of experience, to provide the most economically sized model that will accurately reproduce the vertical and lateral distributions of current velocity, salinity, and tidal elevation.

The model's geometric scales also determine the time, volumetric, and velocity scales. The time scale is 1 to 100 which permits a semi-diurnal tidal cycle of 12 hours and 25 minutes to be reproduced in 7.45 minutes and a year of record in nature to be simulated in 3.65 days. The velocity scale is 1 to 10, the discharge scale 1 to 1,000,000, and the salinity scale is 1 to 1.

There are six basic measurements that are made on estuarine hydraulic models. These include water surface elevation, salinity, current velocity, dye concentration from dye dispersion tests, temperature, and sediment distribution. These measurements can effectively describe the physical impact on an estuarine resource of many of the works of man. Often, biological stress can be predicted from the knowledge of changing physical parameters.

RATIONALE FOR BAY MODEL ESTUARY TESTS

As mentioned before, the quality of water in the Potomac Estuary is a complex combination of various factors and is vulnerable to the impacts of different parameters such as Potomac River inflow, wastewater discharge from the area sewage treatment plants and withdrawals at the Emergency Pumping Station. The Chesapeake Bay Model has the capability to run tests at a variety of freshwater inflows and other variables to evaluate the effects of floods and/or droughts.

C - VII - 43

The Potomac Estuary Model testing program should provide answers to two questions: (1) If the Pilot Estuary Water Treatment Program indicates it is feasible to treat the estuary water for long-term supplemental use, then where is the optimum location of an intake for a full-scale Estuary water treatment plant?; (2) What are the impacts of various freshwater inflows to the Potomac Estuary on the physical biological condition of the Estuary?

MODEL TESTS

Sixteen tests were proposed for this study to provide indications of impacts of various parameters on the physical conditions of the estuary. For the impacts on biological conditions, mathematical models developed by EPA for nutrient transport and dissolved oxygen budget studies in the Potomac Estuary will be used. The results of Bay Model testing and EPA mathematical models would provide information regarding an optimum intake location.

The proposed tests would cover most of the possible combinations of different parameters to provide an indication of the severity and limits of physical impacts. The results of these tests would provide direction which could be expected from mathematical models testing. These tests are shown in Table IV-13.

Based on the personnel required and availability of the model facilities, the proposed tests were to be conducted in two phases, as shown in Table IV-13. Eight of the sixteen tests have been completed. These tests were conducted on Chesapeake Bay Hydraulic Model, and include four tests of Phase I and tests number 5, 6, 8, and 9 of Phase II.

The first four tests were based on existing conditions (1980) and tests 5, 6, 8, and 9 used projected 2020 wastewater discharges and consumptive withdrawal. The 100 MGD withdrawal in test 9 would be at the Emergency Estuary Water Pumping Station. The completed tests are comprised of salinity, dye, velocity, and tide measurements in the Potomac Estuary. Different dyes were used to assess the effects of wastewater and Potomac inflow (flow-by).

Test Procedures and Assumptions

For the tests in Phase I, a 28 lunar day variable tide with 12 lunar constituents was used to simulate the Chesapeake Bay Tides and these tides were referenced by lunar month/tidal cycle (LM/T) with the start of each test occurring in lunar month 1, tide cycle 92 (LM/T - 1/92). Also for the purposes of these tests, the C and D Canal was assumed not operating.

The model was stabilized at a freshwater discharge of 100,000 cfs using a drought conditions, similar to August-October 1964, were simulated after a stepped through period of 4-3/4 months. The Potomac inflow was varied from 0 to 900 MGD during the drought period.

The wastewater discharge from all of the area sewage treatment plants (STP) (Figure IV-11) was simulated by constant discharges of a conservative dye, Rhodamine WT. The dye was released at LM/T 0/36 after the wastewater was simulated using

Potomac River pact may cause low-flow

By The Associated Press

Two federal agencies have predicted that a recently signed agreement on sharing the Potomac River's water during droughts could cause portions of the river to dry up

Fish and plants in the Potomac estuary could be starved for food and oxygen by low fresh water flows, according to the criticism

After long and bitter negotiations, the governors of Maryland and Virginia, the mayor of the District of Columbia and the secretary of the Army signed the agreement, which allows Fairfax County, Va., to tap the river for drinking water.

Maryland's suburban Montgomery and Prince Georges counties would be allowed to increase their use of river water and the projects covered by the pact could draw up to 660,000 gallons of water a day from the Potomac

"To accept a long-term management policy for the Potomac River, a natural resource of national significance, which will cause no-flow conditions to occur at a significant frequency is poor stewardship of that resource," Interior Department officials said in a letter to the Army

Officials of the Environmental Protection Agency said such river conditions are intolerable for most aquatic and riverbank plants and animals and might also harm the estuary

The Interior Department said there's "a high probability of chronic ecological degradation."

The Army Corps of Engineers, which is responsible for supplying water to Washington, is conducting an environmental analysis of the agreement, which appears to be in some danger because of the severity of the complaints by the two agencies and some citizen groups

The Washington Suburban Sanitary Commission wants to build a large intake and diversion dam near Watkins Island in Montgomery County. The Fairfax County Water Authority wants to build a intake at Lowes Island in Loudon County, Va

The agreement and extra water from the two projects are supposed to guarantee continued growth and development in the Washington area.

But a draft environmental impact study prepared by the corps warned that increased reliance on the river for drinking water carries a risk of critical shortages if no other sources are developed.

The report said the three projects will increase the risk of critical low water levels in the river and more pollution It said aquatic life might be eliminated and riverbank plants and animals endangered

The EPA is more pessimistic It said a break in the fresh water flow into the estuary would be disasterous The agency said a break in the fresh water flow would deplete the tidal estuary's oxygen supply, prompting large algae blooms

The changes could seriously interfere with spawning migrations of fish and the life of their offspring, the Interior Department said

The EPA recommended that the projects be abandoned until "adequate safeguards to protect the biological ecosystem and water quality of the Potomac River can be established and implemented."

Both agencies recommended that the agreement be amended to guarantee a fresh water flow into the estuary. They also asked to be included in any future low-flow studies and negotiations

Note by CTF: this article is typical of the way local papers reported the Low Flow Allocation Agreement.

Notice that in the last paragraph both EPA and the Dept. of Interior are concerned about a fresh water flow-by into the estuary - there is no mention of the one mile of river below Little Falls dam that is the center of Maryland's "flow-by" study.

NABPL-U 28 January 1982

MEMORANDUM TO THE FILE

SUBJECT: Meeting of the Citizens Task Force for the Metropolitan Washington Area Water Supply Study

1. On 8 January 1982, a Citizens Task Force (CTF) meeting convened at the Washington Aqueduct at approximately 1015 hours. The purpose of this meeting was to discuss the draft Water Quality Scope of Work and other items of concern to the CTF members. An attendance list is attached along with a copy of the agenda.

2. Kidd opened the meeting by reviewing the format of the agenda and asked if other items of business should be added to the agenda. Several items were mentioned: (1) the involvement of the Fairfax County Water Authority (FCWA) in the Little Seneca Lake (LSL) project (Horvath); (2) a recent meeting of McGarry's Regional Water Supply Task Force (Clark); (3) the possible confusion in names between McGarry's task force and the Citizens Task Force to Review the MWA Water Supply Study (Nolen, Clark); and (4) an inquiry into the PRISM model used to analyze Bloomington (Horvath).

3. After those persons present introduced themselves, Beegle began a discussion of the draft Water Quality Scope of Work (SOW) and the work agreement with EPA dated 22 December 1981. Beegle emphasized that this is not a final SOW and the way the Corps operates, a final SOW will not be developed; that is, the flexibility exists to make adjustments in the scope and cost of the work. Both Kidd and Beegle extended thanks to the CTF for reviewing and commenting on the 8 December SOW and encouraged the CTF to continue these efforts because they are beneficial to the water supply study.

4. Beegle mentioned that the National Academy of Sciences Review Committee also reviewed this Scope; Beegle met with them on 6 January 1982 to discuss their comments (Chesnut requested a copy of those comments. The Corps will send a copy of the minutes of that meeting to the CTF as Inclosure 3). The NAS-NAE comments were summarized as follows:

a. From a technical standpoint as to what is included in the Water Quality Scope of Work, NAS had no comments. If EPA delivers what the Corps has requested, the NAS people feel that this will be more than sufficient to provide decision makers with necessary information to evaluate water quality in the context of the study.

Revised: 12 Feb. '82

b. The NAS-NAE Review Committee emphasized that the water quality work being done by the Corps and the EPA should not just be included as a section of the final report on the MWA Water Supply Study. Rather, the water quality work must be included as an element in the program formulation and in the evaluation of the final plans.

c. In terms of having EPA do this water quality work, the NAS-NAE Committee expressed concerns similar to those of the CTF: Who will do the work, where will it be done, etc? Those CTF Committee members voicing concerns appeared to be split 50/50 on having EPA do the work. The people who will be doing the work are as follows:

Mr. Jon Longtin
Mr. Ed Waleszka
Municipal Environmental Research Lab
Technical Support Division
Cincinnatti, Ohio

5. Another important consideration is the time and money that will be going into this effort. The Corps will be paying between $25-$30,000 for this work and EPA will be using some of their own funds; consequently, a work effort costing between $50-$60,000 will result. In response to a concern raised by Clark, Beegle admitted that it's going to be a tight schedule given a $50,000 work agreement and five months in which to do the work. Horvath mentioned that the Goose Creek Reservoir was not on the list of reservoirs to be examined. Even though Goose Creek is used by Fairfax City, this system does interconnect with Potomac systems. Expansion of sewage treatment plants in the Goose Creek watershed is also a reason to examine the Goose Creek Reservoir. Foster raised the point that reuse may be a problem.

6. Hawvermale questioned the inclusion of several reservoirs such as North Mountain, Little Cacapon, and Mount Storm. Hawvermale indicated that the people in the Eastern Panhandle Region of West Virginia are distressed to see that these reservoir sites are again being examined. He made a motion that North Mountain, Little Cacapon, and Mount Storm be deleted from the locations being examined in the water quality investigation. Discussion followed this motion. Beegle indicated that many alternatives exist and in the broad planning effort, one of the considerations has to be upstream storage. From the standpoint of being responsible planners and addressing all considerations in examining potential water supply alternatives, you must consider potential upstream storage as you must consider estuary reuse and southern Maryland groundwater. Clark expressed his desire to delete Sixes Bridge from the water quality study. Wesely stated that Sixes Bridge was just deauthorized by Congress. Foster stated he would vote against the motion for tactical reasons; it's better to have the projects dismissed then not have the projects examined at all. Nolen proposed a substitute motion: it is the sense of this committee that the study on water potability not be restricted by any prejudgements as to what matters do or do not relate to water quality. Chesnut seconded the substitute motion stating that (if these things aren't included at the beginning) hindsight will say this work didn't make any sense because these things weren't included. A vote was taken on the substitute motion: 8 in favor, 2 opposed, 1 abstention.

7. Foster then offered the suggestion that two sources of water - the emergency intake source and the aquifer source - be specifically identified in the water quality effort even if they are not dealt with. The reason for this statement is the conceptual existence of the Rock Run Advanced Waste Treatment Plant. No decision has been made yet on where the effluent from Rock Run will enter the rivers; if the effluent goes in above the emergency intake, you're getting back into the reuse problem. There should a specific identifiable paragraph that deals with this. The second source identification that Foster suggested be included in the water quality work is that of groundwater aquifers and the associated water quality. Horvath urged that the Corps go back and read the emergency intake impact statement to get a feel for the water quality studies done in that report. Mohler emphasized that the Corps be sure EPA has an expert in sanitary survey on its team because each water source is affected by things such as sewage plants. She also felt that there should be some citizen input as to the parameters to be studied (as yet not selected, e.g., what is obtained when diesel fuel is chlorinated?). In addition to talking with state and local officials about water quality, there are knowledgeable citizens that should also be contacted.

8. Cohen then discussed coordination regarding the water quality work and asked to what extent the CTF Committee would be involved in the activities. Cohen felt that the paragraphs discussing coordination in the Scope of Work should be more specific and that the CTF should be involved in the information exchange between the Corps and the EPA. Cohen then offered a motion. MOTION: that the CTF designate a representative to go to the formal COE/EPA meetings; to have EPA meet with the CTF Committee after such meetings and other appropriate times; to have regular progress reports issued to the Committee and that these reports include the data; data includes not only documented figures but also well structured interviews with people (state, local officials, citizen input) in the area. Motion was seconded by Flynn and the vote was as follows: eleven (11) in favor of motion, zero (0) opposed, zero (0) abstentions.

9. Mr. Hawvermale asked if future agendas for upcoming meetings could be sent out earlier. He also expressed the fact that he reads the minutes assiduously and that press coverage in his area will occur because he has to report back to his government body. Mahler asked Hawvermale if the Corps were able to offer more than fair market value for the land, would there be more acceptability on the part of the West Virginians to setting aside an area for a reservoir to serve the Washington area. Hawvermale's response was that probably an overall economic benefit to the region as a whole would have to be demonstrated. Fair market value doesn't mean anything to an owner not willing to sell. Even recreational benefits don't create a lot of interest in the area. Beegle asked that if Hawvermale is going to be the purveyor of what occurs at the CTF meeting, that the objective view of what the Corps and the CTF are saying be given to the West Virginians.

10. In discussing the water quality effort being undertaken by the Corps, Wessely stated that one of the most useful things this study could accomplish

would be to locate potential water quality problems. Beegle responded that NAS-NAE had the same concern - that one of the utilities of the study could be to focus on things that need to be done. The real question is what is EPA going to have to work with that addresses the concerns of the CTF - the things we don't even know are there or have never even looked for. Probably, the only thing they will be able to do is to say that the state of the art is such that we recognize this is an emerging or future problem and we had better start doing something and here is someway we ought to start to deal with it. This may be all they could really effectively accomplish. Nolen then made a motion: that tasks 4 and 5 (of the Water Quality SOW) be revised to include study of raw water supplies in the MWA and the upstream areas and their health and other implications. This motion was seconded by Mohler and the vote on this motion was as follows: nine (9) in favor; zero (0) opposed; zero (0) abstentions (Hawvermale and Foster left the meeting prior to this vote).

11. Mohler then suggested that the Center for Disease Control (CDC), Oak Ridge Laboratory, and the Environmental Health Administration review and comment on the study as "recognized" experts. Flynn countered with the statement that these agencies would not be able to comment on the study because, for one reason, the Center for Disease Control would not be able to take EPA's data and evaluate it. CDC has their own stringent standards and specific criteria; they'll be very conciliatory toward the study and the scientific community.

12. Nolen then raised the concern over the possible confusion that may be evidenced between McGarry's committee and the CTF committee. This should be resolved before the situation gets out of hand. Chesley then addressed the results of the most recent Citizens Advisory meeting to McGarry's task force. The group dealt with the proposed plan for cost-sharing for Bloomington, Little Seneca, and Savage reservoirs, an operational plan, and the fact that the Low Flow Allocation Agreement should be modified based on the progress that has been made with the above reservoirs. Chesley said that it was finally agreed that both D.C. and FCHA would go with the cost-sharing agreement as long as the Low Flow Allocation Agreement was not changed until both Little Seneca and Bloomington were operational. This all relates to the inclusion of the "1988 freeze" in the LFAA. This meeting was to be the last meeting of McGarry's group unless something occurred in the future. For this reason, Chesley did not feel a conflict would exist. Chesnut asked for a copy of Chesley's handout (Kidd mailed these to the CTF on 11 January 1982). Clark stated that the names of the two committees are recognizeably close enough to make it difficult for some people to separate the two groups. The differences between the groups must be clearly understood to the general public. At this point, Nolen suggested since Clark is fully cognizant of the relationships, that he be a committee of one (to be joined by additional persons if so desired) and come back to the CTF Committee with a recommendation as to how this conflict of names can be resolved. Clark accepted this task and then pointed out that one of the unresolved concerns of McGarry's task force is the status of the Low Flow Allocation Agreement's "1988 freeze" clause. Beegle then stated, in response to a question, that the Corps has not yet developed a position with regard to the "freeze" and other issues raised by McGarry but that the Corps is well aware of and is considering the implications. Chesley made the distinction that McGarry's group is an operating committee while the CTF is a long range planning committee to look at all the problems and alternatives.

13. The last item of business discussed was the Potomac River Interactive Simulation Model (PRISM) being used in the Corps study of Bloomington Lake. Horvath asked if PRISM was a water quality model. Beegle explained that PRISM is being used by the Corps as a basis for making planning decisions on reallocation and how the entire system of reservoirs is involved (Savage, Bloomington, Occoquan, Patuxent). This program is a quantity model. By simulating drought conditions, this program can determine which alternative may be useful. When an individual computer run is completed, PRISM gives an indication of how that system may have performed under a certain set of drought conditions given certain assumptions. PRISM's basically a planning model. The meeting was adjourned at approximately 1315 hours.

Kidd
KIDD

3 Attachments
1. Attendance List
2. Agenda
3. Minutes (w/d)

CF-111-47

CTF MEETING ATTENDANCE

8 January 1982

Name	Affiliation
Cliff Kidd	Baltimore District, Corps of Engineers
Ed Wesely	Potomac River and Trails Council
Louise Chesnut	Arlington County - Citizen
Martha M. Mohler	Montgomery County - Citizen
J. Nolen, Jr.	Committee of 100
Elizabeth Horvath	Northern Virginia Conservation Council
J. R. Hawvermale	Region 9 Council, West Virginia
Dennis Flynn	Southern Maryland RC&D
Art Cohen	Charles County Public Works
Frank J. Clark	Montgomery County - Citizen
John W. Chesley, Jr.	Prince George's County
Rockwood H. Foster	ICPRB
Noel Beegle	Baltimore District, Corps of Engineers

AGENDA

MEETING OF THE CITIZENS TASK FORCE
TO REVIEW THE MWA WATER SUPPLY STUDY

8 January 1982

I. Call to Order -- 10:00 a.m.

Review of Agenda
Introductions

II. Items for Action or Comment -- 10:15 a.m.

Water Quality Draft Scope of Work

III. Presentations -- 10:45 a.m.

Questions
Discussion
Actions Taken or Deferred on Presentations

IV. Other Items of Business -- 11:30 a.m.

V. Adjournment -- 11:45 a.m.

Attachment 2

C-VII-45

2/5/82

NABPL-U

MEMORANDUM TO THE FILE

SUBJECT: Meeting of the Citizens Task Force for the Corps of Engineers' Metropolitan Washington Area Water Supply Study

1. On 5 February 1982, a Citizens Task Force (CTF) meeting convened at the Washington Aqueduct at approximately 1018 hours. The purpose of this meeting was to continue discussion on the Corps' Water Quality Scope of Work and other items of concern to the Committee. An attendance list is included as is a copy of the meeting agenda (Incls 1 and 2).

2. Kidd opened the meeting with a review of the agenda and asked if other items of business should be added to the agenda. One item was mentioned: a status report on water utilities' reaction to the FWCA proposal to eliminate the Low Flow Allocation Agreement as a condition for participating in the Little Seneca Lake project (Horvath).

3. After those persons present introduced themselves, Kidd discussed an item of concern that would influence the conduct of the present meeting as well as future meetings. Kidd mentioned that subsequent to the 8 January 1982 meeting, Clark sent a letter which expressed concern over the fact that the 8 January meeting was conducted by Kidd. A portion of Clark's letter was read to articulate the expressed concern that a Corps representative, heretofore uninvolved in CTF meetings, now becomes involved to the extent of "chairing" a meeting. It is important that the Committee themselves decide what is to be done in this regard. Kidd did state that the only reason he functioned in an administrative role at the 8 January meeting was simply because no one else wanted to operate in that capacity. Kidd further added that Clark offered to operate as Chairman of future meetings rather than have a Corps representative assume the role. Nolen restated a previous concern that what is really needed is to change the concept of the chairman from that of a working chairman such as Wesely was to one that is "chairman of the meeting" rather than a "chairman of the committee." Nolen then suggested, because Clark was not present, that Chesley serve as chairman of this meeting, then consider a permanent arrangement for the next meeting. Mohler extended thanks to Kidd for "chairing" the previous meeting and also observed that Clark probably was not aware that Wesley had resigned. Mohler then seconded Nolen's nomination of Chesley as chairman of the present meeting. Cohen also extended appreciation to Kidd for dealing with this "emergency" of sorts. He did feel that a rotating chairman may be good because it gives everyone an idea of the styles involved. Breichner suggested that Kidd should have some sort of official status - secretary, executive secretary.

4. Chairman Chesley than addressed the topic of the similarity of names between McGarry's citizens group and the Citizens Task Force. Nolen stated that because the two groups have different purposes, opposite viewpoints, and background, the actions of each should be identified by names not confusing to the public. Technically, McGarry's citizen group is referred to as the Citizens Advisory Group to the Washington Metropolitan Water Supply Task Force. Chesnut suggested that our group be referred to in the context of the

Corps of Engineers. Cohen suggested calling our group the Water Advisory Group (WAG). Wesley suggested keeping the CTF name as it is because it's been in use for 3 1/2 years and because papers have been submitted under that name. A substitute motion was put forth by Nolen and seconded (Mohler) that the group be referred to as the "Citizens Task Force to Review the Corps of Engineers MWA Water Supply Study." There was unaminous vocal approval of this motion.

5. With regard to the Water Quality Scope of Work, Nolen as a representative to the committee of 100 submitted a two page statement. This paper had to do with principles of the conservation/preservation of raw water supplies coming into the Washington region. The paper calls for some modification to the scope of work regarding Tasks 4 and 5. This statement is included as inclosure 3. Nolen then read this statement. In response to a question from the Chairman, Beegle indicated that it's more important for this issue to be addressed not just in the EPA Water Quality work but in the overall Corps of Engineers Report where the broader issues should be presented. How definitive this will be is difficult to say. Horvath then made a motion, seconded by Mohler, to accept Nolen's statement and recommend to the Corps that this issue be considered. This motion was approved unanimously by a voice vote.

6. Still regarding the EPA - Corps Scope of Work, Mohler expressed her concern that the current drinking water standards are nebulous in that they don't address a large range of harmful substances. Therefore, when the question of raw water quality parameters arises, there should be a large amount of input from "experts." Perhaps even ask the NAS-NAE people to suggest parameters to be examined, Beegle responded by stating that Task 5 attempts to open the door on these areas of "inadequacy." Mohler stated that a concern of hers (which interfaces with Nolen's concern) is whether the Corps will assume "you can take any old junk and turn it into drinking water". Another question is how do all the possible raw water sources really stack up. Cohen then stated that if the EPA people don't address their concerns, they should so state it in the report. The Chairman summed up the consensus of the group by saying that the CTF generally feels that Corps should put emphasis on Task 5 - Water Potability Issues. Mohler then put forth the following motion: that the Corps request the NAS-NAE advisory committee to the MWA Study to make recommendations on the parameters to be studied now before it's fully developed. Horvath seconded this motion. A voice vote was taken and there was unanimous approval of this motion. Horvath pointed out that Lake Manassass was not included in the scope of work and it should be because of existing and potential interconnections.

7. Cohen raised a question about the January 1982 distribution of the preliminary report format for the MWA Water Supply Study. He pointed out that in some instances it's quite different than earlier reports and outlines. Beegle agreed and stated that one thing to be done is to make water quality a more visible item in the report. Cohen asked how open to modification this report outline is. Beegle responded that it's very open, Beegle indicated that the Corps has certain general requirements that must be met but the Corps does have a relatively fair amount of flexibility. Cohen asked for a copy of the Corps guidelines. The Chairman asked Cohen to put his thoughts on paper for the next meeting. Cohen wants to get away from the "listing" approach. The outlines should reflect the thinking behind the planning process. It was agreed that a fuller discussion of the report format would be scheduled for the 5 March 1982 meeting.

NABPL-U
SUBJECT: Meeting of the Citizens Task Force for the Corps of Engineers Metropolitan Washington Area Water Supply Study

8. Chairman Chesley went on to discuss other items of business. Horvath asked about the status of the Low Flow Allocation Agreement/Little Seneca Lake project and the intent of the utililties involved. Chesley addressed this by re-iterating what he heard at the last meeting of McGarry's Citizen Advisory Group: that the FWCA price for agreeing to participate in the Little Seneca project was to change the LFAA. However, McGarry was going to offer a proposal whereby the FCWA and the WAD would agree that the LFAA would not be revised until after Little Seneca comes on line. Beegle indicated that the Baltimore District and Colonel Peck are being very sensitive and thorough in their investigation into the implications of this matter. Sharpe made the point that, in Virginia, local governmental jurisdictions have very little control over their planning. The Virginia courts don't allow local governments to prevent people from managing lands. Another point she addressed was the rationale of the FCWA regarding the Little Seneca Lake. Initially, the FCWA didn't want to participate in this regional approach because they had nothing to gain financially or politically. It probably will be cheaper to use Potomac water therefore, the FCWA could use the cheaper water and during low flow periods still have a full Occoquan reservoir to draw upon. The FCWA feeling is that if they pay for part of Little Seneca they are, in effect, asking their customers to pay for something which is not going to do them any good. Therefore, the FCWA has asked for a re-examination of the LFAA. Before this meeting concluded, Mrs. Mohler was designated to act as chairperson of the 5 March 1982 meeting. This meeting concluded at approximately 1215 hours.

Kidd

K1DD

ATTENDANCE 5 Feb '82

NAME	ASSOCIATION
Cliff Kidd	Corps of Engineers
Louise Chesnut	Agri. Co. Citizens
Martha Mohler	Montg. Co. Citizen
John Nolen, Jr.	Comm. of 100
Lois Sharpe	ICPRB
Elizabeth Horvath	NVCC
A. C. Carpenter	P.R.F.C.
William M. Breichner	Hagerstown, MD
John W. Chesley, Jr. (Chairman)	Prince Georges County
Noel Beegle	Corps of Engineers
Art Cohen	Charles County, DPW
Ed Wesely	Potomac River & Trails Council

05-111-2

Incl 1

AGENDA

MEETING OF THE CITIZENS TASK FORCE
TO REVIEW THE MWA WATER SUPPLY STUDY

5 February 1982

I. Call to Order - 10:00 a.m.

   a. Review of Agenda
   b. Introductions

II. Items for Action or Comment - 10:15 a.m.

   a. Decision as to Chairperson of CTF Committee
   b. Report or Recommendations to CTF Committee for Resolving Name Conflict Between McGarry's Task Force and the CTF (CLARK)
   c. Water Quality Draft Scope of Work (Continued from 8 January 1982 Meeting)

III. Presentations - 11:30 a.m.

   a. Questions
   b. Discussions
   c. Actions Taken or Deferred on Presentations

IV. Other Items of Business - 11:45 a.m.

V. Adjournment - 12 Noon

Incl 2

Citizens Task Force to Review
The Metropolitan Area Water Supply Study

Comment on Scope of Work Program
for Examination of Water Potability.

Task 4 on Future Water Quality and Potability is to evaluate the desirability of continuing to use each existing or potential source for potable water supply, irrespective of the treatment process to be used. After ranking these sources, the study will evaluate the treatment required for each source to comply with drinking water standards. So far, so good.

The real issue, so it would seem, is the projected quality of the potential future sources to be used and the measures needed, and alternatively possible, to protect and even enhance this quality. It is the quality of the raw water sources that will determine the treatment required and the all important cost, to provide a safe and acceptable finished water product. The study does not clearly face up to this issue as a factor which might properly be subject to recommended measures of control.

The pollution load on the Potomac River where it enters the Washington Metropolitan Area is already substantial, some calculations indicating it about equal to that which originates within the area. Directly above water supply intakes there is a growing problem from non-point sources due to urbanisation and an ever present hazard from overloaded point sources. However, these local threats are subject to control by local authorities which are presumed to be ultimately mindful of protecting their own water supply sources. Still, there is the possibility that the rapid extension of the urban area may in the long run overtake any control measures that may be practical. The phenominal population explosion on the Seneca Creek watershed is a case in point. Contemporary research by the Council of Governments on Seneca urban runoff will undoubtedly be utilized in evaluating this local impact on water quality immediately above intakes.

15-111-51

Incl 3

It is in the evaluation of future quality of the Potomac above the metropolitan area that the study does not seem to be overly concerned. The Potomac and Shenandoah valleys are ripe for continuing urbanization and industrial development involving the recycling of water to an increasing degree. Less and less Federal aid for treatment of wastes is in prospect and pollution from many non-point sources is increasing also. The question is what do all these trends, both within and above the metropolitan area, portend for the quality of water that must be treated to comply with drinking water standards decades hence. Tasks 4 and 5 should be expanded or clarified to meet this issue.

The role of Bloomington Lake in this regard is another case in point. It was conceived as a multi-purpose project with the improvement of upriver water quality as one of its objectives. While its quantitative value will be substantial for the Washington area, the qualitative benefits several hundred miles downstream have yet to be established. Even if so, will they continue to prevail as adverse development takes place?

Given the probable tendency toward a deteriorating Potomac River quality source, the study should make constructive proposals for counteracting such trends. The basic authority to exercise control of water quality and land uses related to it, rests with the States of Maryland and Virginia and West Virginia. They can establish policies on conservation of tributary watersheds and take other measures to assure the preservation of water quality for the future needs of their citizens in the Washington area. The study should focus on this responsibility.

Prepared by John Nolen, Jr.,
Representative of the Committee of 100 on the Federal City.
January 7, 1982.

Resolution
On the Problem of Protecting & Controlling the Future
Quality of Potomac River Water as a
Continuing Source of Water Supply

June 4, 1982

Whereas, all the plans being proposed by the Corps of Engineers in its Metropolitan Washington Water Supply Study are based on the assumption that Potomac River water at local intakes can be treated economically, safely and acceptably for the next 50 years as the main source of water supply for the District of Columbia and the growing metropolitan suburbs in Maryland and Virginia.

Whereas, the quality of Potomac River water entering the area's intakes will be greatly influenced by the measure of control, which the State and Federal agencies having jurisdiction, can and will exercise, by regulation and permit, over the treatment of domestic and industrial wastes and the runoff from urban and agricultural land.

Whereas, the watershed of the Potomac Basin above the MWA is already undergoing increasing urbanization and industrialization in cities, towns, suburbs and country side, thus exacerbating the problems and cost of controlling pollution loading from present point and non-point sources.

Now, therefore, be it resolved that the Citizens Task Force on the MWA Water Supply Study recommends that the State and Federal agencies having responsibility for establishing standards for water quality and waste treatment and for the issuance of permits for the discharge of effluents into the Potomac River and its tributaries, be requested by the Corps of Engineers,

(1) to comment on the validity, from their agency's standpoint, of the Corps' basic assumption that the Potomac River within the MWA can be used as a safe and acceptable raw water source of domestic water supply, at reasonable cost for treatment, during the next fifty years, and

(2) more specifically, to state whether or not their agency foresees any substantial difficulty in maintaining quality control to prevent pollution of MWA raw water sources from chlorinated hydrocarbons, toxic, natural or synthetic organics, heavy metals and infectious agents.

C-11-53

February 17, 1983

Colonel Gerald C. Brown
District Engineer
U.S. Army Engineer District, Baltimore
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Brown:

The members of the Citizens Task Force on the Metropolitan Washington Area Water Supply Study have prepared the enclosed results of our review of the Preliminary Draft Main Report made available to us for this purpose early last December. Enclosure 1 is a Summary Statement and Enclosure 2, the Supporting Working Papers.

Our most important conclusion is that the Tentative Recommendations on page 108 should be amplified to avoid the widespread impression that recent progress toward resolving water supply problems, has provided unqualified assurance that present sources will be adequate and acceptable for the next fifty years. We believe that "No Federal Action" even "at this time", is too broad and unconditioned a disassociation from latent upcoming issues. Consequently, we have proposed conditioning the recommendation on "No Action" explicitly on the assumption on which it is based and also adding a new recommendation providing for periodic review and report on developing needs and changing conditions, particularly as to water quality.

We want to take this occasion to express our appreciation of having had the opportunity to make this timely review. We are also appreciative of the cordial working relationship with Corps' staff during the 5 years the Citizens Task Force has been in existence. The 26 pages of our resolutions and documentary material to be published in Appendix C, Public Involvement, is our testimonial to the sincerity with which we have undertaken our role.

Sincerely,

Members of the CTF Participating in this Review.

Marian Agnew	William M. Breichner	A. C. Carpenter
John W. Chesley, Jr.	Louise Chesnut	Art Cohen
Dennis Flynn	Adam Foster	Elizabeth Horvath
Martha Mohler	John Nolen, Jr.	Ed Wesely

Enclosures

C.W. 53

SUMMARY

CTF COMMENTS

PRELIMINARY DRAFT FINAL REPORT
MWA WATER SUPPLY STUDY

During the first week of December 1982, the Citizens Task Force (CTF) received copies of the Preliminary Draft of the Final Report of the MWA Water Supply Study. The Corps of Engineers provided the Draft so that we would be able to review it and provide comments to be included in the public draft of the report to be circulated in March 1983. The members of the CTF have individually and collectively reviewed and discussed the draft and have developed the attached working papers. CTF review and comments are generally limited to the Main Report, although segments of the appendices were reviewed or examined.

Generally speaking, we found the report to be a comprehensive treatment of the water supply needs in the MWA. Even so, we believe there are significant shortcomings in the Study and final report. These relate both to the scope of the study and to the documentation in the draft report. The following paragraphs provide a summary of the primary concerns raised by the CTF.

The CTF is concerned about several of the basic assumptions made in the supply and demand analysis. One is the relationship between releases from the Savage and Bloomington Reservoirs relating to water quality and the assumptions that were made for the PRISM/COE simulation runs. Another is the adequacy during drought conditions of the existing sources plus the proposed Little Seneca Reservoir. It is suggested that documentation be provided in the Main Report to explain better the above items. Further, all basic assumptions that were key to the decision process should be clearly stated at the beginning of the Main Report.

Another major concern is the limited scope of the water quality analyses in the study. While it is recognized that efforts were made in the later stages of the study to address water quality in at least summary fashion, we feel that a more comprehensive treatment is necessary. We have grave concerns that the study did not adequately consider the existing or future water quality of both raw and finished water supply sources. Since the present study will not include more detailed water quality analyses, we recommend that the Main Report clearly note the water quality assumptions made for the supply-demand analyses.

Further, the report should recognize the vital importance of water quality considerations in the future operation and planning of the MWA's water supply systems.

Finally, the report should make a strong statement about the need for a more comprehensive water quality monitoring system to develop the data base necessary to develop and control water supply resources. To assure a safe, reliable source of potable water both now and in the future, the relationship between water quality and water quantity must be clearly understood.

We also feel the report should make a strong statement about the importance of watershed protection. Necessary steps must be taken to conserve the quality of the water contributed by the upstream watersheds to the Potomac River. Within the Metropolitan Area where there are water supply impoundments, such as the Occoquan and Little Seneca Reservoirs, land use within the watersheds must be rigidly controlled to avoid degradation by urban runoff.

As we have pointed out many times, we do not feel there is adequate evidence for adopting a flow-by value of 100 million gallons per day (mgd). The Potomac River Environmental Flow-by Study, which recommended a 100 mgd flow-by, considered just the impacts of various flow levels on the Potomac River between Little Falls and Great Falls and did not consider their impacts on the Potomac Estuary. Until there is an adequate evaluation of the estuarine impacts of various flow levels, the 100 mgd flow-by remains unsubstantiated. Because the 100 mgd flow-by serves as the basis for evaluating the capability of the MWA water supply systems, the results of the simulations based on the 100 mgd assumption are also questionable.

The Corps has assumed that the series of regional agreements and contracts consummated in July 1982 will be in effect through the year 2030. In our view, the likelihood of those agreements continuing over that period seems questionable. The report should stress that the study's recommendations depend on these agreements and contracts. Substantive changes in the agreements could impair the water suppliers ability to meet future needs. Moreover, periodic independent reviews of the water supply related institutional arrangements should be made.

Finally, recommendation one on page 108 of the Main Report should be revised to define "Federal action"; and to explain that the recommendation is contingent upon the continued execution of the adopted regional agreements. A third recommendation should be added that calls for the periodic review of the water supply and water quality situation in the MWA and any related agreements/contracts. Detailed information on our comments may be found in the attached assessment.

C-XII-54

CITIZEN TASK FORCE COMMENTS ON THE

PRELIMINARY DRAFT MAIN REPORT

METROPOLITAN WASHINGTON AREA

WATER SUPPLY STUDY

As members of the Citizen's Task Force (CTF), our responsibility has been to review the Preliminary Draft Main Report on the MWA Water Supply Study. During the first week of December, 1982, CTF members received copies of the Draft Main Report, MWA Study and were asked to comment on it prior to a projected February 1983 publication date. The draft CTF comments were presented to the Task Force January 7, 1983. Return comments from the Corps were received on or about January 14. A subcommittee, Nolen, Mohler, Chesley, Chesnut and Agnew, met and discussed the Corps response on January 19, 1983. Subsequently the full committee met on January 21 and February 3 to discuss and develop the following comments.

In general, the CTF finds that in spite of extensive documentation in the appendices, the Report is still based on two underlying assumptions which need further verification or qualification to be supported.

The first assumption we continue to question is that the flow of the Potomac River within the Metropolitan area will be adequate and acceptable as the basic source of raw water supply for the next 50 years. Further in question is that both the River and water stored in local reservoirs will without qualification be treatable to meet projected demands for that period.

Second, in view of past history, we find it difficult to believe that we can rely on the assumption that, in order to carry out even the limited plan proposed, institutional arrangements can be made between local governments (without some form of Federal assistance and oversight) for financing and administration of a regional system of supply and distribution in a complex interstate area.

Furthermore, we submit specific findings within the following issue areas. They supplement and include by reference the comments submitted in our December 23, 1979 letter pertaining to the August 1979 Progress Report. See App. C., C-VIII 67-81 (attachment 1).

1. Supply and Demand
2. Water Quality
3. Watershed Protection
4. The 100 mgd flow-by
5. Institutional arrangements
6. Summary and conclusions

We also found the Report difficult to review and evaluate because it does not reference its facts, conclusions and recommendations adequately to the volumes and pages of the appendices.

Separately we have adopted a resolution (attachment 2) proposing changes in the "tentative recommendations" at the end of the Main Report to be responsive to the two main questions stated above.

C-VIII-55

1. Supply and demand, comments 8-10.

(8) The CTF said that the Report seemed to rely on solutions for supply which were not rationally related to information in the appendices. The Corps replied that the statement was not supported. (9) the CTF added that, as an example, the "recent developments" were not defined and that the Report did not show how previous projections of severe deficiencies are changed. The Corps referred to pp 57-58 of the Report as well as page 146 of App. A. These references say that the early-action plan depended upon the rate of supply (Potomac flow + reservoir withdrawals) vs. demand. The short term flow problem was evidently solved by Little Seneca Lake, Bloomington Reservoir and regional cooperation. The remaining constraint, volume of storage, required a simulation, ergo: PRISM/COE. APP. A.

Pp. 57-58 say that certain input values were taken from the early-action phase: population forecasts, conservation measures, monthly demand. Others were added: weekly variations, and the expanded supply base including Little Seneca and Bloomington and Savage Reservoirs. P. 58 says that water quality was to be controlled by alkaline Savage releases to offset the acidic Bloomington release - and that the flow at Luke, Maryland was to be 78 mgd.

(10) The CTF said that deficit and supply projections in the Report are also based on questionable computer simulations, the PRISM/COE model. The Corps replied that there were obviously serious misunderstandings of the system's function.

The CTF agrees. For example, if alkaline Savage releases are to buffer Bloomington, how much water will have to be used? The table on p. 59, gives no input parameters for maximum releases for either Savage or Bloomington. It seems reasonable to question from the information given above, therefore, whether the amount of water available to the WMA will ultimately depend on the amount that can be discharged from Savage, not from Bloomington. Neither figure is given - and until we know what is available in Savage, the flow and storage quantities must be questioned.

The most disconcerting aspect of this analysis is that PRISM/COE is strictly a water quantity model. See p. 57. Therefore, it may not show how much Savage water would be needed to buffer Bloomington because the acidity of Bloomington releases will vary. (Remembering that pH levels are exponential (pH 6 is 10x more acidic than pH 7, pH 5, 100x, pH 4, 1000x), how alkaline is Savage? These are the kinds of questions that the CTF means must be answered before confidence in the computer simulation as the answer to the MWA supply problem is justified.

C-VIII-69

2. Water quality, comments 11, 12, 13

(11) The CTF has taken the position from the outset of the Study that Water Quality analyses were essential. The Corps has taken the view that quantity was paramount. The Corps does recognize, however that there is a need for additional effort in this area. This should be stated in the front of the Main Report - with references to studies done by EPA. The CTF did not know that NAS/NAE had contributed water quality information to the study. Where is it shown? (12) The comments above apply to the quality of acidic water in Bloomington. The CTF could find no "extensive analyses of the water quality in the lake itself." If available please cite.

The Report's Conclusion 8 says that "Although water potability studies were performed which indicated that the current drinking water standards could be met now and in the forseeable future, these studies were admittedly of a limited nature." Report at 107. The Task Force agrees and adds that the studies in the Appendices are of such limited nature that they do not meet the requirements of the Act to "make a full and complete investigation and study." In fact, the studies done by EPA in Appendix G III do not even include data on the organic compounds already restricted by EPA standards. They also do not include information readily available from the WAD, WSSC and FCWA as to levels of total trihalomethanes present in finished water distributed to the WMA. To preclude this information skews Conclusion 8 into pure conjecture.

Conclusion 8 then adds, "Any future study of water supply needs in the WMA should consider a more thorough examination of the quality and/or potability of different water sources." The Task Force questions why this information has not been prepared for this study prior to its conclusions. In 1979, CTF members commented that the Study must contain this kind of information. Appendix C-VIII-69 (attachment 1). They also said that if the Study did not address water quality problems, assumed that present and future supplies can be treated to meet EPA standards regardless of the pollutant content, or did not address the EPA trihalomethane standard, a disclosure should be made in the opening pages of the Report. None was found by the Task Force.

Moreover, in its 1980 comments on the Study, the NAS/NAE Committee to Review the Metropolitan Washington Area Water Supply Study ("the Committee") repeatedly raised the issue and asked three questions, pressing the need to address the issue of drinking water quality. Committee Report at 22:

1. It is likely that releases of acid water from the Bloomington Reservoir could contain or release immobilized compounds or otherwise affect the quality of raw water provided to treatment plants and subsequently distributed to customers?

2. Is the quality of all the water supplied to users of the Potomac River the same, or is it likely that... reregulation of finished water might result in water being distributed that has a different quality than certain users are accustomed to receiving?

3. Is water quality in the Potomac River adequate for a safe supply and will it be so during the coming half century?"

The Committee Report concluded: "In planning water supplies to serve millions of people during the next 50 years, a careful assessment of quality appears to be required. The Potomac River, especially in the vicinity of metropolitan Washington, has a questionable reputation for its quality, (citing reports), and questions such as these need to be addressed in view of the public's growing awareness of and insistence on the safest possible drinking water. Accordingly, the public needs to be informed about the quality of water it will receive under the different plans presented in the Draft Progress Report." Id. at 22.

The Task Force subscribes to these comments, adding only that the Study is now nearly complete and the same questions have not been answered. In fact, the Corps decided to discontinue long-range aspects of the Study after the "revised assumptions of

C-III-57

supply and demand used as the "without condition" were embodied in agreements between jurisdictions signed 22 July 1982. The "without condition is noticeably without reference to water quality.

The "without condition" does pose several disconcerting problems, however, because when "redefined" the assumed 135 mgd maximum safe release from Bloomington Reservoir was evidently set aside. Report at 56. The PRISM/COE computer model had indicated that a higher yield was possible. The model did not consider water quality, however. Id. at 57. For example, what heavy metals, e.g. mercury and lead, are dissolved in Bloomington's acidic waters. Can these acidic waters dissolve heavy metals or other pollutants in their traverse toward the MWA. Task Force members have not been able to find water quality concerns addressed in "related but separate examinations" because they are not cited. Report at 57.

The Water Quality Finding, Report at 101, also side-steps present and long-range water quality problems. It contains references to the inadequate EPA Study contained in Appendix G III and an admission that there will be "forseeable changes in raw water quality". Id. We suggest that if the Finding means that water sources will be "forseeably" degraded, it should say so.

The Finding also says that, "Based on available data, the EPA Study (to determine the potability of existing sources) demonstrated that existing water treatment plants are capable of producing water from their respective sources which satisfies drinking water standards. (EPA has finalized standards for organic compounds such as pesticides.) The

EPA study reported no data from any treatment plant for organic compounds. Moreover, the routine tests made by all major facilities for trihalomethanes was not reported. See Attachment 2. No information is given about test procedures or protocols either in treatment plants or in conveyance systems, though this information is routinely reported to EPA every month. One can only assume that with forseeable degredation in raw water quality, these organic pollutant levels will rise.

The most disturbing part of the Findings is the assumption that higher levels of treatment eventually will become necessary. "(T) he existing water treatment plants contain sufficient process flexibility to be able to respond adequately to forseeable changes in raw water source quality." Does this vague and ambiguous reference mean that if the reservoirs and River become so polluted that the existing sand filters cannot treat raw water to drinkable levels, they will use more expensive methods, i.e. granular activated carbon (CAC), chloramination, ozonation? If so, why not say so in the Report. And, to be completely fair, attach projected costs to treat with these "flexible processes." The Study is incomplete, in the opinion of Task Force members, without this information.

The Task Force concludes that the Report has failed to address water quality concerns raised both by its members at the outset of the Study and by the NAS/NAE Committee in its reports. Unless and until a full and complete investigation of the water quality in the reservoirs, behind Bloomington Dam and in the free flowing River, is completed, any projection of available water supply is, in our opinion, questionable.

C-III-52

3. Watershed Protection

We have seen, supra that the Little Seneca Creek Reservoir is a key feature of the water supply plan laid out in the Corps' Report. All parties involved in formulating the plan and those commenting on it agree that watershed protection and preservation is clearly essential. Task Force members have not found any recommendation in the Report about the need for watershed protection by land use controls or other means either for Little Seneca or for other watersheds surrounding other reservoirs, e.g. the Occoquan.

A perennial problem reservoir still in use in the area studied is the Occoquan. It was recently rated by the VA Water Control Board as having the second highest need for restoration funding among 161 lakes in the State. Attachment 2 contains information about the trihalomethane levels in it and the necessity to change treatment methods to try to avoid them.

Fairfax County has recently decided to double the capacity of its regional sewage treatment plant which discharges into the Occoquan, thereby doubling (at least) the effluent loading. Increasing non-point source runoff from urbanizing land is also contributing to pollution. Unless land use controls can be effectively applied there is the prospect that within the forseeable future, the Occoquan will have to be abandoned as a water supply reservoir. This same scenario has been re-played many times in Virginia when other reservoirs (Lake Barcroft, Lake Accotink, Lake Burke) had to be abandoned because their watersheds were not able to be protected from non-point source runoff.

What then happens to the Low Flow Plan? Shouldn't this possibility be anticipated and candidly discussed? As for a similar potential degradation of the Little Seneca Reservoir, the CTF has adopted the attached resolution to safe guard the quality of its waters. Shouldn't the Report indicate that this problem requires forth right action by local authorities as recommended in the resolution.

Moreover, degredation in the Seneca watershed contributes to degredation of the Potomac River directly upstream from the metropolitan water intakes. The Damascus, Poolesville and Seneca sewage treatment plants already discharge into Great Seneca Creek above its confluence with the Potomac River. The combined flow enters the River just above the new WSSC impoundment on the Maryland side of Watkins Island. As the recipient of sewage effluent undiluted by the clean water impounded behind the new Little Seneca Reservoir dam, WSSC's new Potomac reservoir may well develop problems similar to those in the Occoquan during times of drought. The Task Force suggests that these possibilities have not been investigated thoroughly and that they should be studied in order to support complete confidence in the Seneca reservoir as the ultimate solution to WMA water supply problems.

C-III-54

4. The 100 mgd Flow-by

We have said, <u>supra</u>, that one of the FISRAC recommendations was a 100 mgd flow-by into the Estuary below Little Falls (Evidently to ensure that the fish, shellfish and a balanced indigenous population of wildlife would not be adversely affected by upstream withdrawals). The Task Force finds, however, that there seems to be no substantiation

for the 100 number in studies of the effects on the biota in the Estuary. As a practical matter one purpose of the flow-by would be to provide for digestion of pollutants entering the Estuary, from sewage treatment plants at Arlington and Alexandria as well as Blue Plains. For example during low-flow periods, an effluent of 500 mgd from these plants would exceed many times the 100 mgd flow-by of the River. Thus, it evidently remains to be studied, what effect different dilution factors (100, 300 and 500 mgd) will have on the ability of the ecosystems in the Estuary to recover after prolonged drought and a scarcity of fresh water to flush out pollutants from point and non-point sources.

The Findings say that allowing a 300 mgd flow-by would exhaust the system's storage reservoirs, during a 1930-31 drought of 2 years. A 500 mgd flow-by would create large shortages. Since the termination of a drought period is not known, will those who have to make decisions as to management of the reservoirs and the flow-by opt to keep the reservoirs full and the Estuary empty?

From what members have read in the Report and the appendices, the 100 mgd flow-by was simply derived from the Maryland Flow-by Study which did not consider effects in the Estuary. The PRISM/COE model included the 100 mgd flow-by as an input. The figures shown on page 5, (taken as cited show that the 551-626 mgd supply from all sources, including Seneca and Bloomington, is not adequate in the year 2030 (with conservation) if the 100 mgd flow-by is allowed. To us, it seems probable that Little Seneca Reservoir, providing emergency slug-source supply, and the 100 mgd flow-by, retaining water in the reservoirs to the detriment of the Estuary, are the <u>deus ex machinae</u> which make the FISRAC proposals even remotely plausable.

Since there is no data to support the flow-bys at any of the numbers tested in the computer that relates to their real purpose, protection of the ecosystems in the Estuary, we find that they are unsubstantiated in fact and must be challenged.

5. Institutional Arrangments

Institutional arrangements must be addressed for they determine who has the responsibility and/or authority to take whatever action is needed during emergency periods. Citizens are observed, however, individually and collectively, that, at best, regional cooperation in the MWA has been a series of stormy events. The worst crises within the institutions seem to occur when there are shortages in sewage treatment capacity, land fill capacity, water supply or excesses of sewage treatment plant sludge. Regional cooperation has been, as far as anyone can remember, simply a series of trade-offs of vested interests in each jurisdiction and the public be damned! WSSC's proposal to build a 20 mgd Rock Run sewage treatment plant discharging just above the D.C. emergency drinking water intake is just such an example. That proposal was caused by a sewage treatment plant capacity "crisis." The proposal to build Seneca as a regional facility is almost equally as preposterous for it is simply a commitment to a solution that will not work in a real crisis to the advantage of any jurisdiction.

C-III-60

The Task Force respectfully submits that the Corps is the only agency that has, or should have, the best interests of the Public as a whole as its motivating force. Therefore it is the Corps which should evaluate carefully the roles played by each jurisdiction and ensure that when the crises come, as they inevitably will, that its own interests at the WAD, as well as public interests are protected.

6. Summary and Conclusions

Reword the paragraph on Upstream Reservoirs on P. 104 to read as follows:

Upstream Reservoirs and Tributary Streams As a component group, the 7 upstream reservoir sites examined would provide the greatest water supply potential for the MWA at the lowest unit cost. Reservoirs ranged in storage capacity from 8.8 bg to 33.9 bg and in yield potential from 32 mgd to 110 mgd. All could be developed as multi-purpose sites to include, as a minimum, recreation and flood control. Any significant adverse environmental or social impacts they might likely create would depend on the degree of development within specific areas. With proper planning such impacts might be imitigated, or even offset, by creating new values.

Tributary watersheds, without reservoirs, could contribute significantly to the quality of water in the main river if they were protected by beneficial conservation policies. Thus, by encouraging land uses favorable to maintaining good water quality and flow, and discouraging through proper regulation (or easements), the location and density of uses that degrade it, the tributaries can in the aggregate improve or maintain main stream quality at standards suitable as a continuing source for water supply. Such policies have been applied elsewhere with success, generally as a function of the State in cooperation with local governments.

CITIZENS TASK FORCE

The following members participated in our meeting on 12/21:

Marion Agnew
John Chesley
Louise Chesnut
Frank Clark
Elizabeth Horvath
Louis Koffman
Jack Holen
Edwin Wesely (Chairman)
Shirley Zenith

Other members who regularly attended our fall meetings and contributed to our draft comments were:

Bill Breichner
Sheila Keeney (and her alternate)
Martha Mohler

E7W

C-VIII-61

COMMENTS by the CITIZENS TASK FORCE

INTRODUCTION

The Citizens Task Force was established by the Corps of Engineer to review and evaluate their Metropolitan Washington Area Water Suppl Study during various stages of the planning process. The comments tha follow represent a consensus of all participating task force members about the final draft Report, published in August, 1979.

In general, we believe the Corps of Engineers has been too optim tic in accepting as givens five planning elements that we single out for discussion.

(1) The Study assumes that whatever water will be available duri the next fifty years can be treated - at affordable costs - to Environmental Protection Agency drinking water standards, no ma what contaminants it may contain.

Neither health aspects nor costs to the consumer (which may increase dramatically) are considered in the draft Study.

(2) The Study assumes that all water supply sources now availabl to the Metropolitan Washington region will be available through the Year 2030.

But population growth and urbanization of the Metropolitan an upstream areas over the next fifty years is likely to diminish both the quantity of water available in our streams and reservoi and its quality.

(3) The Study assumes that 100 million gallons a day (MGD) of fre water will be allowed to "flow-by" from the upper Potomac River

Attachment 1.

... Chain Bridge.

(2) Present and projected costs to the consumer of treating present and future water supplies to meet EPA drinking water

into the Potomac Estuary below Chain Bridge.

If ongoing studies show that larger fresh water flows are needed to maintain a healthy Estuary, the Corps' calculation of potential water shortages on the upper Potomac will be in error.

(4) The Study assumes that after 50 years the region's existing water supply reservoirs will hold the same amount of water they do now.

This ignores the continuing (and increasing) siltation of these reservoirs.

(5) The Study assumes that local and regional political strategies needed to implement various plan elements can be accomplished.

These problems need much more analysis than the two and one half pages given to them in the draft Study.

Having outlined these points, we now address them in detail.

C-VII-27

1. <u>WATER QUALITY</u>

<u>The Problem:</u> The Corps Study does not consider questions of water quality, assuming that whatever water is available during the next 50 years can be made potable.

But the present history of the Occoquan Reservoir proves that it may be difficult and expensive to protect some of our water supply sources. Protecting the Occoquan has already required construction of an $80,000,000 sewage treatment plant, and to halt contamination of the Occoquan by "non-point source" pollutants from urbanizing areas may require large additional expenditures.

<u>We Recommend</u>: The Water Supply Study should include the following information:

(1) A detailed evaluation of year round water quality, present and projected, in the Potomac River and in the Patuxent and Occoquan Reservoirs.

(2) Present and projected costs - to the consumer - of treating present and future water supplies to meet EPA drinking water standards.

(3) An evaluation of the effects on the Potomac River's water supply if it has to be used to replace any reservoir source.

In case these analyses are not added to the Study, it should be made clear in the opening pages that:

(1) the Study does not address problems of water quality;

(2) the study assumes present and future water supplies can be treated to meet EPA drinking water standards, no matter what pollutants they contain;

(3) the Study does not assess the effect of EPA's new standard for Trihalomethanes: will it require changes in water treatment technology? increased costs to the homeowner? or even abandonment of existing water supply sources?

2. <u>EFFECTS OF POPULATION GROWTH AND URBANIZATION</u>

<u>The Problem</u>: The draft Study covers the 50 years between 1980 and 2030 AD, but assumes the region's rivers and streams will maintain their present and historic flows for the entire period.

Historic data on streamflow in creeks like Rock Creek should enable the Corps to make estimates about what will happen if the population of the Potomac Basin grows at projected rates over the next 50 years.

Impervious rooftops, parking lots, roads, and other structures that replace forests and meadows in urbanizing areas speed and swell runoff from the land during rainstorms. Much of this is water that soaked in the ground in bygone years, and fed our streams during the summer.

(a) During the <u>last</u> 50 years, according to THE CREEK AND THE CITY, published by the U.S. Department of Interior in 1963, "in Rock Creek watershed just above the District line...64 miles of flowing natural streamcourses that showed on a reliable 1913 map have dwindled to 27 miles aboveground today....It was simpler to cover them over than to cope with the mess that our kind of urbanization made of them."

Given the example of Rock Creek, it's certain we can expect less surface and ground water to be available during dry periods over the next 50 years.

We can also anticipate increased "non-point source" pollutants such as silt, lead and petroleum products - which are ubiquitous and can, at best, be imperfectly controlled as they run off the land.

We Recommend: The Corps of Engineers should use area master plans and population projections to calculate the likely effects of urbanization on streamflows in the Potomac and Patuxent River Basins during the next 50 years.

3. ENVIRONMENTAL "FLOW-BY" INTO THE POTOMAC ESTUARY

The Problem: In calculating potential water supply shortages over the next 50 years, the draft Study assumes an environmental "flow-by" past Great and Little Falls of 100 million gallons of fresh water a day.

Even so, the amount of fresh water that water utilities should allow to "flow-by" into the Estuary is currently being studied by a "multi-agency task force."

Fresh water portions of the Potomac Estuary around and below Washington are vital spawning and nursery grounds for resident and migratory commercial fish species. These parts of the river have already been badly stressed by sewage discharges, and sediment flows from the upper Potomac - during dry periods, large water supply withdrawals above the falls will add still another threat.

The Corps of Engineers recognizes that much higher "flow-bys" have been proposed to protect water quality and aquatic life in the Estuary, "ranging from 100 to 900 mgd with some values even higher." (draft Study, page 48)

We Recommend: Two sets of data should be developed and included in the Study:

(1) The Corps should calculate water supply deficits for ranges of "flow-bys" greater than 100 mgd.

(2) The final Study should tell us the probable effects on the Estuary for various time frames (one week, one month, etc.) during which the Estuary receives only the minimum water assigned in the "flow-by" - whether this be 100 mgd, 600 mgd, or some other figure.

4. SILTATION OF AREA STREAMS AND RESERVOIRS

The Problem: The Study assumes that the same volume of water presently available in the region's reservoirs will be available for the next 50 years.

But it's unreasonable in water resource planning to assume a 50 year life for any reservoir, and especially unrealistic in an urban region like ours, subject to rapid and massive land clearing and development. (a)

How much storage capacity has already been lost to area reservoirs through inadequate land-use and sediment controls?

What sediment flows can we reasonably expect in the next 50 years?

We Recommend: The Corps of Engineers should search out the best available data about current and projected sediment flows in the Potomac and Patuxent River Basins - and use it to calculate the future storage capacity of existing and proposed reservoirs.

5. PLAN IMPLEMENTATION

The Problem: The Study depends on local and regional strategies needed to implement various plan elements being accomplished. But history shows that Washington area governments have often refused to adopt strategies aimed at orderly use and conservation of water resources.

(a) Watts Branch is a small stream in Montgomery County, Md. that discharges into the Potomac just above the intake to a major WSSC water filtration plant. According to Mr. Robert McGarry, General Manager of WSSC, about 1,100 tons of sediment a year is filtered from raw water treated in the plant. With continued development along Watts Branch, he expects the problem to worsen - and that it will cost $200,000 a year to remove the sediment.

C-III-63

We hope, too that the Study will not lead to unforseen and unwelcome results: that area officials will not lose their sense of urgency about the region's water supply problems, and begin to encourage uncontrolled economic growth on the assumption that there will now be adequate water resources to meet their needs - postponing, in the meanwhile, the complex political decisions needed to develop essential regulatory and administrative structures.

To win political support, the various plans will have to make fiscal sense to local taxpayers. But we don't think the Study gives area residents enough meaningful cost data.

We Recommend: The Study can remedy these deficiencies in two ways:

(1) By a more thorough and specific analysis of problems that can hinder local, subregional, and regional cooperation.

One example: Unless Fairfax and Prince William Counties agree to adopt strict land-use and non-point source controls to halt further degradation of the Occoquan Reservoir, who will support a $58,000,000 interconnection between the Occoquan and the Potomac River?

(2) We need at least three sets of costs:

(a) The Corps should indicate how each project - if approved - will be funded, and especially how funding will effect ratepayers in each water utility district.

Residents should know the per capita costs for each project.

(b) The Corps should determine future operating costs for each project- this is a serious lack in the draft Study.

(c) Energy costs should be computed for each project - especially for those that will involve intensive pumping through raw water interconnections. If energy conservation alternatives are available for a given project, the Study should give us the operating costs with and without energy conservation.

C-VII-64

IN CONCLUSION

Because the draft Water Supply Study rests on questionable assumptions about important water resource matters, it cannot be reliable guide for solving the area's water problems.

As soon as possible, we suggest that the Corps of Engineers develop the data and analyses that we have requested - and incor them into the body of the present Study, or publish them as an appendix.

Without such data, the public - including area decision mak won't be able to make informed decisions about options proposed i the Study.

If the draft Study is revised and printed before the neces: data about water quality, sediment loads, etc. is available, the should detail, in a preface, exactly what assumptions have been m. and what important studies are still to be done.

*****

In the next round of planning - whenever that begins - we'd the Corps to spell out the need to protect and conserve our water supply sources, and to outline ways in which this can be done in the Potomac Valley. Given the present history of the Occoquan Res we can't assume this will be done automatically or by "benign neg over the next 50 years.

CHAPTER VIII
TENTATIVE RECOMMENDATIONS

Proposed changes to Recommendations on Page 108

I. Add to recommendation (1), after the words "water supply needs," the following:

based on the expectation that non-Federal agencies will implement, through regional commitments, adequate programs to meet the needs forecasted by the Corps study.

II. Add a new recommendation (2), (after renumbering the present (2) to (3)), as follows: That provisions be made for the periodic review of any interstate agreements for implementing long range water supply plans, including those for funding and system management, and to report on the adequacy of those plans to met developing needs and changing conditions, particularly those affecting water quality. No further amendment or extension of the Low Flow Allocation Agreement should be agreed to without the benefit of such review and report with the results of said review to be made public.

C-III-65

Attachment 2

NABPL-U 20 April 1983

SUBJECT: Meeting of the Citizens Task Force (CTF) for the Corps of Engineers' Metropolitan Washington Water Supply Study

MEMORANDUM TO THE FILE

1. On Thursday, 7 April 1983, a meeting of the CTF Committee was held at the Washington Aqueduct. The purpose of this meeting was to discuss the March 1983 public draft of the MWA Water Supply Study final report. A list of attendees is included as Inclosure 1.

2. Chairman Cohen called the meeting to order at 1020 hours by asking for "general" comments or statements on the report. Chesnut stated her concerns that the CTF hadn't progressed very far over the past 5 years. Koffman stated he would like to see the paragraph about assumptions, which is in the March 18th transmittal letter, included in the final section of conclusions. Nolen suggested that a short section (on the order of 1-1½ pages) be put in the final main report that synthesizes what the CTF has recommended over the past few years. Nolen also stated that the report should be given an "E" for excellence - it's a good standard presentation of the technical water supply problem. Chesnut felt the report is quite readable. Cohen suggested putting the Main Report on different color paper to set it off from the rest of the appendices.

3. Cohen perceived the Corps to be saying that there won't be a water supply problem in the foreseeable future in the MWA if (assumption - a very important one) indeed there is regional cooperation in the management of the region's water supplies. Chesnut said it also should be conditioned on whether the water to be depended upon is going to be available and usable in the case of Little Seneca and the Occoquan. Chesnut emphasized that the last chapter doesn't state the problems - and the problems are there! Cohen thinks the Corps would be wise to restate the conclusion to emphasize the imperative to properly manage the water system and the water resource. It's important to emphasize the management aspect because it's too easy to let everyone go off on their own.

4. Nolen felt that the proposed recommendation contained on page C-VII-65 of the Public Involvement Appendix concerning agency coordination and monitoring of the regional situation should become a third recommendation of the final report; not recommend an agency but rather the type of agency. Concerning the first recommendation for no Corps' involvement, the consensus of the CTF was that the assumption immediately preceding this recommendation should be part of the recommendation itself. The words are there; just put the words directly in the recommendation. Kidd suggested that perhaps each of the paragraphs could be numbered; that way the reader wouldn't avoid the preamble and jump to the recommendations. Cohen suggested that the Corps take under advisement what has been said about the manner of presentation. Chesnut expressed her opinion that perhaps one reason the recommendations are so stated is because of the shift in political thinking from Federal control to state control back to Federal control.

5. With regard to specific comments, Chesnut felt that the summary and conclusions section pointed out a lot of useful things and a lot of the weaknesses; however, perhaps the questions raised by these things should be listed or made more explicit than they are. Following a discussion of the substance of the water forum note, Cohen recommended that the release of the final water forum note wait until the changes be made to the draft final report. Koffman stated his desire that a paragraph discussing "potential problems" be added in the summary and conclusions section (page 113 of the Main Report). There was some discussion about the idea of regional management, its potential success or failure, and the appropriate agency to coordinate regional activities (such as MWCOG, ICPRB, States, etc.). There was disagreement with the idea that regional management would solve all the long-range problems because local politicians prevent regional solutions because they guard their own interests. Kidd then indicated that comments on the March 1983 public draft are to be in to the Corps by 2 May 1983, if the comments are to be addressed in the final report. The draft for public review is in the libraries designated as regional repositories Nolen state that, if possible, he would like to develop an annotated table of contents to be inserted in front of the section in the Public Involvement Appendix dealing with the CTF resolutions (C-VII). This would be developed so that the reader would know generally what each resolution contains.

6. The CTF observed that Chapter 7 of the Main Report - Public Involvement - contains no substantive information or material at all. Their activity over the past 5 years and the fact that they came back to several fundamental recommendations at several periods in time are reasons why something ought to be said about CTF views on water quality, low flow, and ideas on prospects for the future. The essence of the CTF recommendations over the past 5 years should be addressed. Koffman then repeated his desire to see a section in the report which discusses potential problems.

7. Chairman Cohen then restated the main points discussed during the course of the meeting. These points are presented below.

a. Reorganize the statement of recommendations so that the CTF suggested modifications relating to the operable assumptions get the attention that an individual recommendation would get; don't put the assumptions in a general, qualifying paragraph ahead of the recommendation;

b. The main body of the report should reflect the principal recommendations and conclusions reached by the Citizens Task Force;

c. The Public Involvement Appendix, at the point where it refers to the CTF resolutions (C-VII), be preceded by an annotated Table of Contents that will make it easier to cull from the voluminous material the essence of what the CTF has recommended and decided;

d. Whatever needs to be done (to the recommendation concerning the future water supply needs in the MWA in the next 50 years) to make the recommendation

NABPL-U 20 April 1983
SUBJECT: Meeting of the Citizens Task Force (CTF) for the Corps of Engineers' Metropolitan Washington Water Supply Study

a little less "pollyannish" should be done. Don't leave sitting the impression that everything is "hunky-dory". If there are assumptions and other parts of the recommendations that accompany the general conclusion that the water situation is better than previously thought then those things should be explicitly stated on a par with the "No-Action" statement - specifically, the emphasis on regional management;

e. There are differences of opinion among CTF members about the feasibility of regional water management. Some members feel it is a do-able thing with representatives of local and state governments; other feel a more centralized "Federal-hand" should be in the process such as the Corps of Engineers or the ICPRB;

f. There should be a substantive summation of the CTF recommendations in the Public Involvement section of the Main Report, as well as a discussion on potential problems.

g. Rather then leave the issues implicit in the Main Report, the issues and problems might be stated more forcefully in the form of questions throughout the body of the Main Report.

8. The members present agreed that the points mentioned in paragraph 7 should somehow appear in the Final Report. If the Corps doesn't want to do something with the comments, then the CTF should be informed so they (the CTF) can do something. There was some discussion regarding future CTF meetings. Cohen stated it would make sense to meet again as the Final Report is being issued (sometime in the July-September 1983 period). Another suggestion was to meet between 2 May 1983 and July 1983, but the citizens present did not know what purpose they could serve at the next meeting. This point was not resolved; however, the CTF did agree to remain in contact with each other over the next several months. The meeting concluded on this item at 1225 hours.

Kidd

1 Incl
as

CLIFFORD KIDD
Urban Studies Branch

ATTENDANCE REGISTER

SUBJECT Metropolitan Washington Water Supply Study

DATE 7 April 1983

LOCATION Washington Aqueduct

Name	Office and Location	Telephone Number
Cliff Kidd	Corps of Engineers, Baltimore District	
Louise Chesnut	Arlington County	
Louis A. Koffman	Falls Church	
John Nolen, Jr.	Committee of 100	
Art Cohen	Charles County, Department of Public Works	

C-VII-C7

ANNEX C-VIII

BACKGROUND CORRESPONDENCE

ANNEX C-VIII - BACKGROUND CORRESPONDENCE

DATE	ITEM	PAGE
15 July 1976	Corps to League of Women Voters Concerning Public Involvement Program	C-VIII-1
16 July 1976	Corps to ICPRB Concerning Public Involvement Program	C-VIII-2
6 August 1976	Corps to MWCOG Concerning Coordination Committees	C-VIII-3
14 September 1976	MWCOG to Corps Responding to 6 August 1976 Letter	C-VIII-5
27 June 1977	Corps to FISRAC Setting Up First Meeting	C-VIII-6
2 August 1977	Corps to FISRAC, Minutes of First Meeting (27 July 1977, Memo)	C-VIII-7
14 February 1978	US Department of the Interior Submitting Comments on the 1978 LFAA	C-VIII-11
5 April 1978	Congressional Requesting the Restudy of the Formulation of the Bloomington Lake Project	C-VIII-14
28 June 1978	Corps to EPA and DOI Requesting FISRAC Participation	C-VIII-15
28 July 1978	Commonwealth of Virginia Submitting Comments on the MWA Study	C-VIII-16
18 September 1978	US Department of the Interior Submitting Comments on the MWA Study	C-VIII-17
25 October 1978	Commonwealth of Virginia Requesting Detailed Investigation for Pumpover From the Shenandoah River	C-VIII-19
9 February 1979	Corps to FISRAC Setting Up Second Meeting	C-VIII-20
15 February 1979	Virginia SWCB Submitting Comments on Study Progress	C-VIII-21
8 March 1979	Corps to FISRAC, Minutes of Second Meeting (26 February 1979)	C-VIII-23
22 March 1979	Maryland WRA Submitting Comments on Study Progress	C-VIII-26

ANNEX C-VIII - BACKGROUND CORRESPONDENCE (CONT'D)

DATE	ITEM	PAGE
30 April and 4 May 1979	Corps to FISRAC, MWCOG, and NAS/NAE for Review of Preliminary Technical Report for MWA	C-VIII-27
21 May 1979	Commonwealth of Virginia Commenting on Shenandoah Pumpover Project	C-VIII-28
18 June 1979	Prince George's County Government Submitting Comments on Technical Report for MWA	C-VIII-29
23 August 1979	Corps to ICPRB Concerning Regional Coordination of Water Supply Management	C-VIII-31
15 October 1979	MWCOG Submitting Comments on MWA Water Supply Study	C-VIII-31
22 October 1979	NPS Submitting Comments on Progress Report	C-VIII-34
25 October 1979	Virginia SWCB Submitting Comments on MWA Study Progress Report	C-VIII-34
25 October 1979	Statement on MWA Water Progress Report From Water Supply Advisory Committee to MWCOG Water Resources Planning Board	C-VIII-36
25 October 1979	Dillard's Comments on Proposed Cost Allocation	C-VIII-39
28 October 1979	Corps' Water Supply Citizens Task Force Submitting Concerns for MWA Water Supply Study	C-VIII-40
7 November 1979	NCPC Submitting Comments on MWA Study Progress Report	C-VIII-45
13 November 1979	US Department of the Interior Submitting Comments on the MWA Study Progress Report	C-VIII-51
15 November 1979	ICPRB Resolution on CO-OP	C-VIII-54
19 November 1979	Corps to FISRAC Setting Up Third Meeting	C-VIII-57
20 November 1979	Prince William County Submitting Comments on MWA Study Progress Report	C-VIII-58
21 November 1979	WSSC Submitting Comments on MWA Study Progress Report	C-VIII-58

ANNEX C-VIII - BACKGROUND INFORMATION (CONT'D)

DATE	ITEM	PAGE
21 November 1979	Plummer Submitting Comments on MWA Study Progress Report	C-VIII-60
23 November 1979	Maryland WRA Submitting Comments on the MWA Study Progress Report	C-VIII-62
24 November 1979	Potomac River Association of St. Mary's County Submitting Comments on the MWA Study Progress Report	C-VIII-66
26 November 1979	Fairfax County Board of Supervisors Submitting Comments on MWA Study Progress Report	C-VIII-66
23 December 1979	Citizens Task Force Submitting Comments on MWA Study Progress Report	C-VIII-67
29 December 1979	Fairfax County Federation of Citizens Associations, Inc., Submitting Comments on MWA Study Progress Report	C-VIII-72
4 January 1980	Maryland WRA Submitting Comments on 13 Dec 1979 Meeting With FISRAC	C-VIII-73
4 January 1980	MWCOG Submitting Comments on MWA Study Progress Report	C-VIII-74
9 January 1980	Maryland WRA Letter Concerning Statement Made at 13 Dec 1979 FISRAC Meeting	C-VIII-75
10 January 1980	Fairfax County Chamber of Commerce Submitting Comments on MWA Study Progress Report	C-VIII-75
22 January 1980	McGarry's Letter Forming Regional Task Force	C-VIII-76
29 January 1980	USFWS Submitting Comments on the MWA Study Progress Report	C-VIII-78
22 February 1980	FCWA Submitting Comments on the MWA Study Progress Report	C-VIII-79
22 February 1980	Additional FCWA Comments on the MWA Study Progress Report	C-VIII-81
28 February 1980	Corps to FISRAC, Minutes of Third Meeting (13 December 1979)	C-VIII-82

ANNEX C-VIII - BACKGROUND CORRESPONDENCE (CONT'D)

DATE	ITEM	PAGE
7 August 1980	Corps to Cold Water Coalition Concerning Study Delay	C-VIII-93
4 February 1981	Corps to Citizens Task Force to Review the Bloomington Lake Reformulation Study	C-VIII-94
5 February 1981	Corps to FISRAC and NAS/NAE to Review the Bloomington Lake Reformulation Study	C-VIII-95
10 February 1981	Corps to Public Water Utilities, Interested Agencies, and Individuals to Review the Bloomington Lake Reformulation Study	C-VIII-95
12 March 1981	Allegany County Commissioners Requesting Assistance in Repaying Operating Cost for Savage River Reservoir	C-VIII-96
20 July 1981	Corps to CO-OP Advisory Committee	C-VIII-97
8 January 1972	USFWS Submitting Comments on Environmental Flowby	C-VIII-97
9 February 1982	Corps to USFWS Concerning LFAA and Flowby	C-VIII-99
7 December 1982	FCWA to Corps Concerning Preliminary Draft Report	C-VIII-100
13 December 1982	WSSC to Corps Concerning Preliminary Draft Report	C-VIII-101
24 January 1983	Corps to Va. SWCB Concerning Verona	C-VIII-101
1 February 1983	FWL to Corps, Coordination Act Report	C-VIII-102
7 March 1983	Va. SWCB to Corps Concerning Verona	C-VIII-103
18 March 1983	Corps to Congressmen Forwarding Draft Main Report	C-VIII-104
18 March 1983	Corps to FISRAC, CTF & Interested Parties Forwarding Full Draft Report	C-VIII-106
18 March 1983	Corps to NAS-NAE Forwarding Full Draft Report	C-VIII-106

ANNEX C-VIII - BACKGROUND CORRESPONDENCE (CONT'D)

DATE	ITEM	PAGE
18 March 1983	Corps to Clearinghouses Forwarding Full Draft Report	C-VIII-107
18 March 1983	Corps to Report Repositories Forwarding Full Draft Report	C-VIII-107
18 March 1983	Corps to MWCOG - WRPB Forwarding Draft Main Report	C-VIII-108
18 March 1983	Corps to Other Interested Parties Forwarding Draft Main Report	C-VIII-108

NABPL-U 15 July 1976

Mrs. Jessie W. Rudnick
Chairman
Potomac Basin Inter-League
Committee
League of Women Voters
9407 Wellington Street
Seabrook, Maryland 20801

Dear Mrs. Rudnick:

The Baltimore District is currently developing a Plan of Study for the Metropolitan Washington Area Water Supply Study as authorized by Section 85, Public Law 93-251, Water Resources Development Act of 1974. One of the critical elements of the Plan of Study is the formulation of a viable public involvement program.

As we feel that such a program needs as much input as possible from those concerned and involved in the water supply issues of the Metropolitan Washington Area, we would like to have an informal workshop with you and anyone else whom you feel would be able to help us in developing a viable public involvement program.

There are certain areas of concern in which we need assistance:

a. How can the "public" best be reached within the District boundaries to inform them about the Study?

b. What types of meetings would best serve the purpose of informing the public about the Study?

c. What groups are essential ones to include and keep informed about the Study?

d. What techniques, in your opinion, would help us maintain the "visibility" of the Study over a period of five years?

NABPL-U 15 July 1976
Mrs. Jessie W. Rudnick

There will undoubtedly be other areas that will emerge as the workshop continues. To assist in the workshop discussion we would be able to present an overview program for public involvement for your review and comment at the meeting, should you so desire.

We would appreciate your making the necessary arrangements for such a meeting including: (1) the date, (2) the place, and (3) the time for the workshop that can best meet your schedule.

Please call either me (301) 962-4710 or Mr. James E. Crews, Chief, Urban Studies Branch (301) 962-2668 if you have any questions or problems.

We look forward to hearing from you.

Sincerely yours,

HCD
for WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

7-15-1345
7-15-
TAYLOR/NABPL-U/kmc/22668
CREWS/NABPL-U
NELSON/NABPL
TRIESCHMAN/NABPL

NABPL-U 16 July 1976

Mr. Paul Eastman
Executive Director
Interstate Commission on the
Potomac River Basin
Suite 814, East West Towers
4350 East West Highway
Bethesda, Maryland 20014

Dear Mr. Eastman:

The Baltimore District is currently formulating a Plan of Study for the Metropolitan Washington Area Water Supply Study as authorized by Section 85 of the Water Resources Development Act of 1974 (Public Law 93-251). One of the essential elements of the Plan of Study is the development of a viable and informative public involvement program.

There are many ways in which to maintain an informative participatory relationship with the public, and the Interstate Commission on the Potomac River Basin has been cited and respected for its ability to not only garner public support through education programs but also through the use of films and the provision of a reference library. One of the most notable means to foster public participation has been through the Commission's Potomac Reporter with its wide distribution throughout the Metropolitan Washington Area and the Potomac Basin.

We recognize that in order to maintain the Metropolitan Washington Area Water Supply Study's significance over a period of five years, many techniques will have to be used; one of them being the publication of articles in a significant and widely respected publication. The Potomac Reporter is one of these publications which we felt might accomplish this goal and maintain the level of visibility for the Study.

NABPL-U 16 July 1976
Mr. Paul Eastman

Consequently, I would like your opinion on the possibility of having Mr. Kevin C. Flynn, Editor of the Potomac Reporter, taking on the added responsibility of including, at least quarterly, an indepth article on the progress or relevent news items on the water supply study. This effort would be aided by the Urban Studies staff, but would be the primary responsibility of Mr. Flynn. We would also appreciate your ideas on other measures that could be taken by us that would enhance our Study efforts.

Thank you for your cooperation on this matter Both James E. Crews, Chief, Urban Studies Branch (301) 962-2668 and I (301) 962-4710 would be pleased to discuss this further with you.

Sincerely yours,

HCN
WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

JGT/7-15/1500 TAYLOR/NABPL-U/kmc/22668
7-15-76 CREWS/NABPL-U
HCN NELSON/NABPL
TRIESCHMAN/NABPL

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

NABPL-U

6 AUG 1976

Mr. Charles E. Beatley, Jr.
Mayor, City of Alexandria
City Hall
P. O. Box 178
125 North Royal Street
Alexandria, Virginia 22313

Dear Mr. Beatley:

As you are probably aware, the Baltimore District Corps of Engineers has been authorized by the Congress to conduct a future water supply needs study of the Metropolitan Washington Area (MWA) as outlined in Section 85 of the Water Resources Development Act of 1974 (P.L. 93-251). In addition, the section also authorized: (1) the Phase I Advanced Engineering and Design activities for the Verona Lake and Sixes Bridge Lake projects; (2) an investigation and study of the use of the Potomac estuary as a potable source of water by constructing a 1 million gallon per day (mgd) pilot estuary treatment plant; and (3) National Academy of Sciences and National Academy of Engineering review and comment on the technical aspects of the MWA Study as well as the results of the pilot estuary treatment plant before any further authorization of Sixes Bridge (beyond Phase I Advanced Engineering and Design).

For the successful accomplishment of the MWA Study and subsequent implementation of any water supply projects for the MWA, a well coordinated and fully developed public involvement program must be planned and executed. In this regard, the Baltimore District made a presentation to the Metropolitan Washington Council of Governments (COG) Water Resources Planning Board (WRPB) in February of this year. At that time, it was agreed to use the coordination mechanisms that now exist; namely, the Technical Advisory Committee (TAC) and the Citizens Advisory Committee (CAC) to the WRPB. These two committees would be the focal

point for maintaining local governmental coordination and citizen involvement throughout our Study. This point also has been emphasized many times in public statements by members of the COG and WRPB.

As the TAC and CAC were established to serve in a 208 Areawide Wastewater Management Advisory capacity, I need your evaluation of the following questions: (1) should the present committees be expanded to include water supply planning expertise from your county; (2) what role do you foresee, if any, as to the WRPB's activity in this MWA Study; (3) do you concur in the decision to use the existing COG committee for dissemination of information concerning the MWA Study; and (4) if not, do you have any suggestions regarding other mechanisms for involving local governments in the Study process?

It is my intention to have a Plan of Study for the Corps' MWA Water Supply Study available for Federal, state, and local agency review by the late summer before submitting it for approval to higher authorities. Consequently, your timely written reply to my concerns would be most appreciated.

If you have any questions concerning these matters, please call either Mr. William E. Trieschman, Jr., Chief, Planning Division, (301) 962-4710, or Mr. James E. Crews, Chief, Urban Studies Branch, (301) 962-3666.

Sincerely yours,

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

CREWS/NABPL-U/kmc/22668
NELSON/NABPL
TRIESCHMAN/NABPL
JONES/NABEX
McMANUS/NABDD-CM
WITHERS/NABDE

Identical letter sent to:

Mr. Charles E. Beatley, Jr.
Mayor, City of Alexandria
City Hall
P.O. Box 178
125 North Royal Street
Alexandria, Virginia 22313

Ms. Ellen M. Bozman
Chairman, County Board of
Arlington County
County Courthouse
Arlington, Virginia 22201

Mr. William W. Wildman
Mayor, City of Bowie
City Building
12305 Tulip Grove Drive
Bowie, Maryland 20715

Mr. St. Clair Reeves
Mayor, City of College Park
Administration Building
4500 Knox Road
College Park, Maryland 20740

Mr. Walter E. Washington
Mayor, District of Columbia
District Building
14th and East Streets, N.W.
Washington, D.C. 20004

Mr. Nathaniel F. Young
Mayor, City of Fairfax
City Hall
101 Armstrong Street
Fairfax, Virginia 22030

Mr. John F. Herrity
Chairman, Fairfax County Board
of Supervisors
Massey Building
4100 Chain Bridge Road
Fairfax, Virginia 22030

Mr. Harold L. Miller
Mayor, City of Falls Church
City Hall
300 Park Avenue
Falls Church, Virginia 22046

Mr. Milton M. Walker
Mayor, City of Gaithersburg
31 South Summit Avenue
Gaithersburg, Maryland 20760

Mr. Gil Weidenfeld
Mayor, City of Greenbelt
25 Crescent Road
Greenbelt, Maryland 20770

Mr. William C. Crossman, Jr.
Chairman, Loudoun County Board
of Supervisors
18 East Market Street
Leesburg, Virginia 22075

Mr. James P. Gleason
County Executive Montgomery County
County Office Building
Rockville, Maryland 20850

Mr. Winfield M. Kelly, Jr.
County Executive Prince Georges County
County Courthouse
Upper Marlboro, Maryland 20870

Mr. Andrew J. Donnelly
Chairman, Prince William County
Board of Supervisors
9250 Lee Avenue, Courthouse
Manassas, Virginia 22110

Mr. William E. Hanna, Jr.
Mayor, City of Rockville
City Hall
Maryland at Vinson Streets
Rockville, Maryland 20850

Mr. John D. Roth
Mayor, City of Takoma Park
Municipal Building
7500 Maple Avenue
Takoma Park, Maryland 20012

Mr. Leonard L. Whorton
County Executive, Fairfax County
Massey Building
4100 Chain Bridge Road
Fairfax, Virginia 22030

Mr. Norman L. Christaller
President, Montgomery County Council
County Office Building
Rockville, Maryland 20850

Mr. David G. Hartlove, Jr.
Chairman, Prince Georges County Council
County Courthouse
Upper Marlboro, Maryland 20870

Mr. Clinton B. Mullen
County Executive, Prince William County
9250 Lee Avenue, Courthouse
Manassas, Virginia 22110

Mr. Raymond Filghman
President, County Board of Commissioners
of Charles County
P.O. Box B
La Plata, Maryland 20646

Engineering

metropolitan washington
COUNCIL OF GOVERNMENTS
1225 Connecticut Avenue, N.W., Washington, D.C. 20036 223-6800

file in POS

September 14, 1976

Colonel G. K. Withers
District Engineer
Baltimore District
U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

Your Planning Division has sent me a copy of your August 6, 1976 letter to local jurisdictions in the Washington Metropolitan Area asking for their comments on using the Water Resources Planning Board and its committees to perform local coordination and citizen involvement activities during the execution of your Washington Water Supply Study.

Although the WRPB was not requested to respond to the letter, I feel that I must emphasize that the Board is the most logical organizational structure within the Metropolitan Area to perform the appropriate local coordination and citizen involvement activities. Statements made by your predecessor , General McGarry, before the Board and at NEWS study public hearings indicate his desire that the Board act in that capacity.

Board involvement would not preclude reaction from individuals, jurisdictions, operating agencies or the general public. Rather, the Board would provide the forum for consolidating such reaction and at the same time provide the regional overview that is essential to the receipt of local acceptance of the planning process and eventual recommendations for new water supply activities.

I believe you will find the Board and its committees are greatly concerned with proposals to alleviate the increasingly important issue of assuring adequate short - and long - range water supplies.

At the same time, we are sensitive to the concerns of local jurisdictions and agencies and the private sector regarding size, location, cost and other factors involved in arriving at the proper water supply decisions.

I wish to set the record straight regarding a statement made on page 2 of your August 6 letter. The first sentence of the first full paragraph implies that the committees of the Water Resources Planning Board were established solely to provide advice for the 208 Areawide Waste Treatment Management Planning activity undertaken by the Board. This is not correct. Although the 208 planning process is an important function of the Board and its committees, the mechanism was created by the Council of Governments to also address regional water supply matters such as your Washington Water Supply Study. A copy of the Board's Charter and functions and operating procedures for each committee are enclosed for your information. I am sending a copy of this letter to each of the jurisdictions receiving your August 6 letter as a means of calling to their attention the correct charge to the Board and its committees.

If you have any questions regarding this letter, please do not hesitate to call me or Mr. Frank T. Lamm, Director of Water Resources on the COG staff.

Very truly yours,

Francis B. Francois

Francis B. Francois
Acting Chairman
Water Resources Planning Board

cc: C. of E. Aug. 6, 1976 letter mailing list
William E. Trieschman
James E. Crews

NABPL-U

27 JUN 1977

Mr. Paul Eastman
Executive Director
Interstate Commission on the Potomac River Basin
4350 East-West Highway
Suite 814
Bethesda, Maryland 20014

Dear Mr. Eastman:

The Corps of Engineers is involved in water supply planning for the Metropolitan Washington Area (MWA). In November 1975, the Corps of Engineers completed a special report for the entire Northeastern United States. This Northeastern United States Water Supply (NEWS) Study identified the MWA as an area with potentially severe water supply problems, and proposed broad alternatives for meeting the projected water deficits.

In Section 88 of the Water Resources Development Act of 1974, the Corps of Engineers was directed to perform detailed analysis of these alternatives through the Metropolitan Washington Area Water Supply Study. The purpose of this most recent study is to complete the investigations started by the NEWS Study, and to gain a consensus or recommendation of a plan to solve the MWA's water supply problems. Presently, the Baltimore District is preparing a Plan of Study for public review and comment concerning the MWA Water Supply Study. The inclosed document provides a brief summary of the Corps' involvement in water supply planning for the MWA, and the relationship of the NEWS Study and MWA Water Supply Study.

As we start the MWA Water Supply Study, it is necessary that there be an initial screening of alternatives in the NEWS Study to identify the most acceptable projects for further investigation. Alternatives not likely to be implemented will be dropped from further consideration. To assist us in this initial screening, I am arranging a meeting on 27 July 1977 to include the representatives of the Governor of Maryland, the Governor of Virginia, and the Mayor of Washington, D.C., as well as the Executive Director of the Metropolitan Washington Council

NABPL-U
Mr. Paul Eastman

27 JUN 1977

of Governments, and the managers of the major water supply utilities. A tentative list of participants and a preliminary agenda are provided as inclosures 2 and 3, respectively.

It is important that your official position regarding the NEWS alternatives be presented at the meeting. Positive guidance on water supply alternatives which you are willing to support will help us expend our efforts efficiently on only those projects having the greatest chance for implementation. This meeting will be the first of several periodic meetings throughout the MWA Water Supply Study when you will be invited to review study progress and make suggestions for study direction.

The meeting on 27 July 1977 will begin at 10:00 a.m. at the Washington Aqueduct, 5900 MacArthur Boulevard, N.W. in Washington, D.C. (a map is included as inclosure 4). Please complete the inclosed form and return to the address listed on the form.

I am looking forward to meeting you on 27 July 1977 to discuss the future direction of the MWA Water Supply Study. This meeting will afford an excellent opportunity to make suggestions for the study at the very beginning of work.

A copy of the NEWS Report was mailed previously. If you have not received a copy or have questions, please call Mr. William E. Trieschman, Jr. at (301) 962-4710 or Mr. James E. Crews at (301) 828-2668.

Sincerely yours,

5 Incls
1. Summary of Relationship of NEWS & MWA Studies
2. List of Participants
3. Agenda
4. Map
5. Return Form

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

JWH
HAINES/NABPL-U/kmc/22668
CREWS/NABPL-U
NELSON/NABPL
TRIESCHMAN/NABPL
RHEN/NABDD-CW
WITHERS/NABDE

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

NABPL-U

2 AUG 1977

TO: Attendees, Federal-Interstate-State-Regional Advisory Committee Meeting

Inclosed is a copy of the minutes for the first Federal-Interstate-State-Regional Advisory Committee meeting held on 27 July 1977 at the Washington Aqueduct. Your comments and guidance will assist the Corps of Engineers in preparing an acceptable work plan for its Metropolitan Washington Area Water Supply Study.

Please submit any revisions or corrections to the minutes in writing.

Sincerely yours,

1 Incl
As stated

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

NABDE

27 July 1977

MEMORANDUM FOR: MG JAMES L. KELLY

SUBJECT: Metropolitan Area Water Supply Study, 27 July Meeting of the Federal-Interstate-State-Regional Advisory Committee

1. This constitutes an informal report; a complete report will be prepared by the staff and forwarded at a later date.

2. The committee met on 27 July for the purpose of stating to the Corps which NEWS alternatives are supportable. Present at the meeting were representatives of Maryland (Herb Sachs), Virginia (Dale Jones, District of Columbia (Mr. Levesque), Metropolitan Washington Council of Governments (Mr. Menke), Interstate Commission on the Potomac River Basin, Fairfax County Water Authority, and the Washington Suburban Sanitary Commission.

3. Mr. Sachs said that, for the short-range, Maryland would recommend: (1) Modifying the Bloomington and Savage release schedule. He stated that a study is underway. (2) Moving along action on the intake and weir. (3) Evaluating area-wide conservation. For the long-range Maryland would recommend: (1) Upstream reservoirs is a feasible alternative, despite opposition. Maryland recommends that the Corps reevaluate those projects which are non-controversial. In this connection, Mr. Sachs mentioned Town Creek, Licking Creek, Sideling Hill, and Tonnoway. Mr. Sachs also said that there had been proposals for SCS projects; some of these may deserve a further look. Maryland would consider helping to pay for outside-of-Maryland projects, assuming they are locally supported. (2) Interconnections. These are supported by Maryland. (3) Coastal Plain Groundwater. More study is needed. The policy is that nothing goes out of Southern Maryland unless local needs are met. With regard to Hagerstown Valley, Maryland recommends that the Corps projects be dropped.

4. Speaking for Virginia, Mr. Dale Jones mentioned that the nine member Virginia State Water Study Commission is charged with producing water supply alternatives, for Southeast Virginia and Northern Virginia, by 1 December. There will be a draft report prior to that date. Because of this, Virginia has no official statement. Mr. Jones said, however, that he had the following comments: (1) The Commission is looking at regional solutions, but is unable to get resolution on what part of the Potomac River Virginia can count on.

AMERICAN REVOLUTION BICENTENNIAL 1776 1976

Mr. Jones said he knows that the Corps disagrees on this point, and that the Corps believes that the Low Flow Allocation Agreement and water supply solutions are tied together. (2) Regarding the NEWS decision-tree alternatives, the State Water Control Board, which has authority to speak for the State on water supply matters, has in the past supported Verona. But local opinion has now reversed, and the local representative is opposed, and, said Mr. Jones, "I think the official Virginia position will change." Mr. Jones stated that the State Legislature has made Catoctin and Goose Creeks scenic rivers; therefore, it would be imprudent to pursue those branches of the NEWS decision-tree. So at this time, Virginia cannot offer any positive alternatives for storage. Mr. Jones stated that Virginia recognizes that additional storage is necessary, but until Virginia knows how much of the Potomac it can count on, it can support none of the alternatives.

5. Mr. Levesque, speaking for the District of Columbia, said that the basic problem is storage. He recommended smaller impoundments, possibly closer to D.C. Second, he recommended interconnections. He pointed out, however, that these may not be very cost-effective, and that funding may be a question. He mentioned use of estuary water, and wanted to know the effect of the estuary pumping station at Blue Plains (it appeared that Mr. Levesque was thinking of possible future plans for installation of an estuary treatment plant). Lastly, Mr. Levesque mentioned the use of wastewater, saying that this could be used in some industrial areas.

6. Mr. Menke, speaking for the Metropolitan Washington Council of Governments, said that COG has not taken an official position on the details of all projects addressed in the NEWS Study. He did, however, provide a listing of the specific projects which COG or its Water Resources Planning Board has taken action on (Inclosure 1). He also provided a list of general recommendations (Inclosure 2).

7. Mr. Paul Eastman, speaking for the Interstate Commission on the Potomac River Basin, mentioned Dan Cheer's proposal for interconnections, the Johns Hopkins Study, and Article 3 of the ICPRV Compact (if two or more States desire to do so, they may effect a binding agreement). He stated the one possibility is being "gingerly explored": the Washington, D.C. water supply situation.

8. Mr. J. Corbalis, speaking for the Fairfax County Water Authority, offered two suggestions: (1) Local impoundments, with high flow skimming, in or near the metropolitan area, and (2) Raw water interconnections, using existing reservoirs.

9. Mrs. Burkman, Chairman, WSSC, stated support for the weir and expeditious execution of the Low Flow Allocation Agreement. She further stated that WSSC awaits the outcome of the Water Supply Task Force deliberations (this is a bi-county study, being performed by Montgomery and Prince Georges counties). General McGarry added that, if drought management is not an alternative, it should be.

10. The following issues were discussed:

a. Mr. Menke mentioned the Bi-County Water Supply Task Force Study, and said that a number of alternatives had been eliminated. What is left is interconnections, local impoundments, and groundwater (in Prince Georges County). Menke said that he is looking for decisions on these by Spring 1978 (these are decisions for local action, within the bi-county area.)

b. Mr. Sachs raised the subject of "flow-by". He asked whether the 130 million gallons per day, at one time estimated as required by the estuary, is still a good figure. I mentioned that I had recently heard the figure 300 million gallons per day, from both METREK and from a citizen. I also pointed out that certain members of the Citizens Advisory Committee had been suggesting addition to the Low Flow Allocation Agreement of a 300 million gallons a day flow-by requirement, and general consideration of water quality. Mr. Lamb stated that small flows in the Upper Potomac have no major impact on the estuary quality. He said he had not analyzed the segment between the Little Falls intake and the estuary.

c. I stated that someone had recently asked whether new institutions are needed, and asked for comments on the possibility of establishing a Metropolitan Water Authority which would include WSSC, FCWA, and WAD. I stated that such an authority would, it seemed, solve most of the problems we were discussing. General reaction was that this is not politically feasible.

d. General McGarry asked about Federal funding for interconnections; Mr. Crews stated that the 1965 Act mentions the possibility of Federal funding for interconnections. Mr. Corbalis stated that the locals should pay for water and not wait for the Federal government. Mr. Dale Jones observed that the Verona project died because the primary users, in the Metropolitan Washington Area, did not come forward with some compensatory arrangements for the locals.

e. There was some discussion over whether the Federal Water Supply Study would hold up any local projects. I stated that the Corps would support any local projects which would augment the water supply.

f. Mr. Eastman stated his belief that interconnections and drought management and consideration of new (lower) population figures may carry us considerably beyond the 25 years stated in the Dan Sheer report. General McGarry cautioned that one should not underestimate the difficulty of building pipelines through populated areas.

11. I summarized the meeting by stating that the message I received, was that interconnections are supportable by all present at this meeting. I did add that there are some who oppose interconnections.

2 Incls
as

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

CF:
DAEN-CWZ-B
LTC Rhen
PAO
Chief, Planning Div
Counsel
Chief, WAD
Chief, Operations Div
Chief, Engineering Div

Enclosure A
7, 6/77

NEWS WATER SUPPLY ALTERNATIVES

PREVIOUS POSITIONS OF COG BOARD OF DIRECTORS(COG) AND

COG's WATER RESOURCES PLANNING BOARD (WRPB)

The following is a summary of COG/WRPB positions taken on various water supply proposals. Neither COG nor the Board has performed a detailed analysis of all potential water supply alternatives. The lack of a Pro or Con does not indicate a COG/WRPB position unfavorable to the project, but only that they have not taken an official position on the projects.

COG	WRPB	
		PROJECTS ANALYZED BY NEWS
Pro		Upstream Reservoirs
Pro		Local Impoundments
Pro		Raw Water Interconnections
		Groundwater Withdrawal
		Indirect Reuse of AWT Effluent
Pro	Pro	Estuarine Water Supply
		Land Application of Secondary Treated Effluent
Pro	Pro	Emergency Water Use Restrictions
		PROJECTS ELIMINATED BY NEWS
		Two-Pipe Systems
		Self-Contained Recycling
		Weather Forecasting and/or Modification
		Small Storage Tanks or Reservoirs
		Underground Reservoirs
		Desalting
		Collection of Urban Runoff
		Montgomery County and Occoquan Quarry Pits
Pro		Finished Water Interconnections
		Interbasin Transfers from the Susquehanna and Rappahannock Basins
	Con	Seneca Dam
		Air-Conditioning Recirculation
		Industrial Reuse of Water
Further Evalua.	Further Evalua.	Pricing
		ADDITIONAL NON-NEWS ALTERNATIVES
		Local Impoundments-Enlargement of Existing Local Reservoirs
Pro	Pro	Water Conservation Measures

Enclosure B
7/22/77

GENERAL RECOMMENDATIONS FOR MWA
WATER SUPPLY STUDY

1) Consider non-Potomac River supply and demand more thoroughly than was performed in the NEWS study.

2) Address all potential water supply deficits greater than one day.

3) Use most current metropolitan Washington population forecasts produced through the Cooperative Forecast process underway between COG and the local jurisdictions, including high and low forecasts approved for use by that process.

4) Allocate flows from water supply alternatives studied by the Corps to specific water supply systems should be considered.

5) Involve COG's Water Resources Planning Board and advisory committees for local political, technical, and citizen recommendations.

6) Final study recommendations should be developed in addition to presentation of study findings.

7) Allocation of costs to water users should be considered for particular projects.

8) Sources of funding (or lack thereof) should be considered for specific projects.

9) Consider project impact upon water quality more thoroughly than in NEWS study with particular regard to relationship of minimum river and stream flows to water quality.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER-77/1131

FEB 14 1978

Colonel G. K. Withers
District Engineer
Department of the Army
Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

This is in response to your December 15, 1977, letter transmitting for review and comment your draft environmental statement on the Potomac River Low Flow Allocation Agreement and the draft Agreement (LFAA). We have comments on both documents.

The Draft Agreement

This Department has learned that a revised draft of the LFAA was signed by all parties on January 11, 1978. We regret that no opportunity was afforded the Department to comment on this action which is inextricably bound to the issues discussed in the draft statement and issues which will be subsequently considered in our evaluation of the three permit applications. Our comments are therefore based on the December 15th draft.

In theory, we support the concept of a LFAA. It gives form to regional planning for water supplies and it provides a means to control flow and allocation at times when water is scarce. It treats the water withdrawal demands on the Potomac as a consolidated management issue, not as a series of discrete and separate actions.

However, the Department's Fish and Wildlife Service (FWS) believes that a very serious omission has been made in the LFAA. To accept long-term management policy for the Potomac River, a natural resource of national significance, which will cause no flow conditions to occur at a significant frequency is poor stewardship of that resource. Low flows occur naturally and are an integral part of the river's natural history. However, increased frequency and

severity of low flows and the occurrence of no flow conditions could permanently alter the biological character of the free flowing river and the upper estuary.

Due to the long planning period available between the present and the probable onset of critical ecological problems in the next century, the FWS feels that responsible action by present and future water users can be taken to insure the integrity of the Potomac ecosystem and also satisfy water demands. It is clear that additional supplies will have to be developed to provide a long-term solution to the metropolitan Washington area water supply problem if population and industrial demands continue to increase. This action will be stimulated by incorporation of a minimum river flow into the LFAA.

The December 15, 1977, draft of the LFAA states in part:

> "In calculating the amount of water available for allocation, the Aqueduct will determine, in consultation with the parties and based upon then current conditions and information, any amount needed for flow in the Potomac River downstream from the Little Falls dam for the purpose of maintaining environmental conditions ("environmental flow-by"), and shall balance such need against essential human, industrial and domestic requirements for water. The Aqueduct's determinations shall be based upon the data and shall give substantial weight to conclusions for the environmental flowby submitted by the State."

This is a vague statement of responsibility for determining a minimum instream flow and provides no guarantee of protection for the ecosystem.

We recommend that a clear provision for maintenance of a minimum instream flow be incorporated in the LFAA. As indicated in the draft statement, further study should be made to determine the minimum flow value required to maintain the ecology of the river. We believe that this value is probably well in excess of 500 cfs, perhaps in excess of Tennant's 10% of the average flow (900 cfs). Until further study provides an accurate estimate of the required instream flow, we view Tennant's estimate as a minimum flow below which water should not be withdrawn from the Potomac River.

The C&O Canal is not listed as a Potomac River water user. We believe the canal, by its historical use, may have acquired rights

to a Potomac River withdrawal. In fact this is implied by the language of the definition of "Restriction Stage" on page 11 of the December 15th draft. We recommend that this concept be considered in any future amendments of the LFAA with the understanding that such rights may have to be reduced or waived during emergency situations.

With the previous comments on a low flow provision in mind, we further recommend consideration of the following proposal for meeting two objectives with the same action. The canal is fed by two intakes: one north of Watkin's Island and one south of the Little Falls Pumping Station. The canal is watered for about 22 miles downstream to Georgetown where it discharges to the Potomac Estuary.

Maintenance of this diversion during low flow periods would not only assist the flow in the estuary but would also maintain a stable level in the canal. This would provide the structural protection needed for locks and other historic resources. It is strongly urged that language of this nature be considered for future amendment of the LFAA.

Environmental Statement

General

The statement is generally adequate in outlining potential impacts on fish and wildlife resources except as noted in the following comments. One particular area of oversight is the lack of discussion of reproductive biology including migrations of fish in the free flowing Potomac. The flow regime changes resulting from the proposed projects could have a significant adverse affect on this important aspect of the river's fish resources. Of further concern is the high probability of chronic ecological degradation of portions of the free flowing Potomac River and the upper estuary should the three projects be approved.

We find the proposal for the construction of an enlarged filtration plant at Watkins Island, which will involve the permanent use of a portion of the C&O Canal National Historical Park consistent with our prior discussions and agreements with the Washington Suburban Sanitary Commission. The impacts of this proposal in particular have been previously mitigated to minimize the adverse impacts to parkland under our jurisdiction.

Due to the fact that the canal park is on the Register of Historic Places, we are also coordinating this project with the State

Historic Preservation Officer and the Advisory Council on Historic Preservation. They have agreed that the adverse effects can be satisfactorily mitigated and we are now working toward the implementation of a memorandum of agreement on the project.

We have also previously reviewed the proposed Fairfax County water intake structure to determine if it would impact the C&O Canal National Historical Park across the river at Seneca, Maryland. We have determined that the design presented in the draft will not adversely impact on the park.

The statement fails to address the study report on the proposed Potomac Heritage National Scenic Trail conducted under the mandate of the National Trails System Act of 1968 (P.L. 90-543). The Chesapeake and Ohio Canal Towpath, now within the Chesapeake and Ohio Canal National Historical Park, would be the focal point of this proposed National Scenic Trail, most especially since it is at this time in Federal ownership. The presence of a proposed National Scenic Trail intensifies the potential impact significantly and should be addressed in the statement.

In addition to the two Maryland sites, which impact a route already in existence and proposed for Congressional designation, the Virginia site crosses the corridor proposed for the trail route. At some future date, the Commonwealth of Virginia and/or Loudoun County may seek designation for this link in the proposed Potomac Heritage National Scenic Trail.

We suggest that the time factor for Congressional action is an insufficient basis for neglecting to consider the proposals of the Congressionally mandated study. We will be happy to make available copies of the Secretary of the Interior's Report on the Potomac Heritage Trail Study as submitted to the President and the Congress.

Specific

Page 3-42, Section 3.3.2, Aquatic Ecology of the Potomac - The discussion of the fishery in the free flowing Potomac is limited to production, harvest, and standing crop. It is deficient in discussing some of the more critical biological aspects of the river fishery, specifically reproductive behavior, including spawning migrations through this part of the river. Possible low flow changes in the river may seriously interfere with these functions.

Page 6-13 and 6-14 - We suggest the inclusion of consideration of ground water initially for emergency augmentation of pressure and flow, and later to aid in meeting the anticipated water shortages as demand begins to approach the available limit of Potomac River flow.

Page 8-35, Section 8.1.2.2, Aquatic Ecosystems - Paragraphs one and six of this section indicate the need for field sampling at the existing WSSC intake facility to determine what degree of entrainment and fish loss is occurring at the existing intake due to its location, operation and mesh size of the traveling screens. Location of the traveling screens 400 feet down the intake tunnel appears to doom organisms lacking sufficient swimming ability to escape once inside the tunnel.

This situation may be somewhat aggravated by the existence of a maximum approach velocity of 1.2 feet per second. This exceeds recommended approach velocities as indicated in paragraph four of this section. As the proposed intake is similar in these respects to the existing intake, field sampling at the existing intake appears to be warranted and results of this sampling should be included in the final statement.

Page 8-36, Paragraph 4, and Page 8-37, Paragraph 1 - Tennant's conclusion that 10 percent of the average flow is the minimum instantaneous flow recommended to sustain short-term survival habitat for most aquatic forms deserves further examination. This postulation assumes that under natural conditions, low flows of less than 10 percent will occur occasionally. As indicated in the statement this has actually occurred in 17 of the 81 years of record.

One critical factor in the natural occurrence of low flows is their frequency. It is probably safe to assume that the system's biota are able to survive infrequent natural low flow conditions of short duration. However, substantial changes in frequency and duration of low flow, as would occur with the proposed projects, would probably change the low flow regime and disrupt the ecological equilibrium of the river.

Therefore, while low flow periods may already be a critical factor in the present quality of the aquatic habitat in the Potomac River, substantial changes in low flow periods can be expected to result in changes in the quality of this habitat. Tennant's 10 percent flow level is recommended only for short-term situations and not for more frequent, sustained periods which may occur as low flow dynamics are impacted by the proposed projects and the LFAA.

Page 8-55, Paragraph 1, and Page 11-7, Last Paragraph (11.3) - These two paragraphs state that there are no significant adverse impacts associated solely with the LFAA. We do not agree that the LFAA and the proposed projects to extract additional water from the Potomac can be considered independently. By whatever pattern of events which has led to the present, the LFAA and the three permit applications are now inextricably bound together.

Consumation of the LFAA had to precede issuance of any of the permits. Therefore, adoption of the LFAA carries with it the potential for approval of additional water withdrawals, with their related environmental impacts. Only through inclusion of adequate provisions in the LFAA can the natural resources of the Potomac be protected. In this sense, the impact of the LFAA upon the river is significant. Because the LFAA at present does almost nothing to protect the river's aquatic resources, water quality and recreational values, its impact must be considered adverse.

Page 10-4 - The statement should stipulate that if the project is implemented, ground water impacts that might result from landfill disposal of treatment sludges will be assessed in site-specific supplements or in additional statements.

Page 11-3, Paragraph 1 - We believe that most of the adverse impacts on the aquatic and terrestrial environment resulting from these projects could be prevented provided that a minimum flow is maintained. This paragraph states that while the actual value of this minimum flow is not known, it appears to be in excess of 500 cfs. We believe it imperative that the minimum flow be ascertained since it could involve a factor several times 500 cfs. As indicated in this paragraph and in paragraph 4 on page iv of the summary, estimation of this value is possible. This information should be included in the final statement, making it possible to determine the point where water extractions are curtailed, emergency conservation measures are implemented, and auxiliary water supplies are utilized.

Summary

We recommend that the LFAA be amended to provide for an appropriate minimum instream flow or environmental flow-by. Further study should be undertaken to determine this value. Until such studies are accomplished, an interim value, of not less than 900 cfs, should be used.

Further study regarding how the location, operation, and construction of intakes and traveling screens affect entrainment of aquatic organisms is required. The degree of mortality could be greatly magnified during withdrawal under low-flow conditions as organisms will presumably concentrate in the reduced water volume.

We are concerned with the WSSC proposal to construct a weir across what may be the deeper of the two Watkins Island channels. Provision for flow-by in the southern Watkin's Island channel during low flow conditions should be made. The southern channel should not be allowed to run dry due to withdrawal demands.

We believe that it will be necessary to develop additional water supplies whether or not the present applications are approved. Development should be designed to avoid no flow and protracted low flow conditions.

We are concerned that during low flow and no flow conditions, water quality in the upper estuary will be degraded. A decreased flushing rate in the estuary will compound the problem of an increased discharge of waste water resulting in reduced dilution capability of the estuary.

At this time, the Department cannot support the Agreement or recommend approval of the three permit applications until adequate provisions are made to guarantee the establishment and maintenance of a minimum flow in the Potomac River during low flow periods.

Sincerely,

Assistant SECRETARY

C-VIII-14

HERBERT C. HARRIS II
[illegible] Virginia

[illegible] Washington, D.C. 20515
Telephone (202) 225-[illegible]

Congress of the United States
House of Representatives
Washington, D.C. 20515

April 5, 1978

RECEIVED
APR 6 1978
PUBLIC WORKS AND TRANSPORTATION COMMITTEE

Hon. Harold T. Johnson
Chairman
Public Works and Transportation Committee
2165 Rayburn House Office Building
Washington, D. C. 20515

Dear Mr. Chairman:

Bloomington Lake on the north branch of the Potomac River was authorized by the Flood Control Act of 1962 (PL 87-874). That project is expected to be operational in the fall of 1980. The specifications for that lake include capacity for 11.8 billion gallons for flood control and 30.9 billion gallons for water supply. During [illegible] this lake could add 135 million gallons per day (mgd) to the Potomac which would help alleviate water shortages in the National Capital region.

During recent testimony before the District of Columbia Subcommittee on Economic Development and Regional Affairs, Major General James A. Johnson, Division Engineer, North Atlantic, of the Corps of Engineers, testified that it would be possible to utilize the space allocated to flood control in Bloomington Lake for storage for water supply.

For the following reasons, therefore, we respectfully request that the Public Works and Transportation Committee approve a resolution to restudy the formulation of the Bloomington Lake project to determine whether it would be possible to utilize all or a greater portion of that space currently allocated to flood control for water shortage purposes during historic drought periods:

a. The original formulation was conducted in the 1950's and the comparative demands for flood control, storage and recreation have greatly changed in that period.

b. There is little likelihood of finding a publicly acceptable construction site for another storage facility on the Potomac River despite the critical situation of only one day water supply back-up for the Nation's Capital.

c. A restudy could result in one-third more water being available to the citizens of the capital region during periods of drought.

d. Utilization of the entire capacity for water storage could potentially increase the Potomac River flow from 135 mgd to 180 mgd during periods of drought.

e. There is typically five to six months time between drought season and flood season, so the risk of flood dangers as a result of this proposal appears remote.

f. Increased interest in recreation at Bloomington Lake appears consistent with having more water to draw upon for supply purposes with far less impact on recreation.

g. Due to the increasingly critical nature of water supply for the Washington Metropolitan Region, every opportunity must be explored to minimize a future water crisis.

Please have your staff contact Hugh Calkin (5-1616) for any additional information you may require.

Sincerely yours,

HERBERT E. HARRIS II

JOSEPH L. FISHER

GLADYS NOON SPELLMAN

NEWTON I. STEERS

WALTER E. FAUNTROY

NABPL-U

JUN 28 1978

Mr. Jack Schramm
Administrator, Region III
Environmental Protection Agency
Curtis Building
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramm:

The Baltimore District, Corps of Engineers, is conducting a water supply study for the Metropolitan Washington Area (MWA). The purpose of the study is to formulate and evaluate plans for solving the critical water supply problems of the MWA - both in the near term and the long term. A Plan of Study was recently released to the public which outlines the study methodology and schedule. A copy of this document is inclosed for your information.

As described in Chapter VII and X of the Plan of Study, the Baltimore District has formed a Federal-Interstate-State-Regional Advisory Committee (FISRAC). The function of this committee is to provide me with advice on matters of water resource policy, recommendations for overall guidance of the study, and comments on various reports and conclusions produced during the study. Membership on the FISRAC currently includes representatives from the State of Maryland, Commonwealth of Virginia, District of Columbia, Interstate Commission on the Potomac River Basin, Metropolitan Washington Council of Governments, Fairfax County Water Authority, and Washington Suburban Sanitary Commission.

It would be desirable to have a representative of the Environmental Protection Agency participate on the FISRAC, because of your agency's recent interest in the Potomac Low Flow Allocation Agreement and the Potomac River water supply intakes. The purpose of this letter is to inquire as to your interest in serving on such a committee. A similar letter of inquiry has been sent to the Department of Interior.

Please advise me of your decision. If your answer is affirmative and you cannot serve personally on the FISRAC, please provide the name of your representative.

Sincerely yours,

HAINES/NABPL-U/kmc/2668
CREWS/NABPL-U
NELSON/NABPL-U
TRIESCHMAN/NAD
RHEM/NABDD-CW

G.K. WITHERS
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

COMMONWEALTH of VIRGINIA

Commission of Outdoor Recreation
Eighth Street Office Building
803 East Broad Street
Richmond, Virginia 23219

July 28, 1978

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District
Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

Following are our comments on the three documents circulated at the beginning of the Metropolitan Washington Area Water Supply Study.

The first and second paragraphs on page 53 in the Plan of Study and the second and third paragraphs on page 202 in the Background Information Appendix refer to Goose Creek and Catoctin Creek and their status as Virginia Scenic Rivers. Corrections are needed in both places. Goose Creek, between the Loudoun/Pauquier County line and the Creek's junction with the Potomac River, has been designated by the Virginia General Assembly a component of the State Scenic Rivers System. This action was taken in 1976 and was not contingent upon reenactment by the 1978 legislature.

Catoctin Creek, from the Town of Waterford to the Creek's junction with the Potomac River, was designated by the 1977 Session of the General Assembly as a component of the Virginia Scenic Rivers System.

Inclusion of a river or stream in the Virginia Scenic Rivers System is a formal declaration of the Commonwealth's intent to conserve that stream in a natural, free-flowing condition as a beneficial purpose of water resource policy. However, such designation does not permanently preclude the impoundment of a river. Section 10-174 of the Scenic Rivers Act (copy enclosed) prohibits impoundment of a Scenic River without the specific authorization of the General Assembly.

In other words, the legislature may authorize the impoundment of a component stream if it is deemed absolutely necessary for the public welfare. Such an action would require a determination that no other feasible alternative exists.

We appreciate the opportunity to comment and look forward to receiving additional material as the study progresses.

Sincerely,

Rob R. Blackmore
Director

Enclosure

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

SEP 18 1978

PLF ER-78/691

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

This is in response to your recent letters concerning the Plan of Study, for the Metropolitan Washington Area Water Supply Study. The Department of the Interior has reviewed the Plan of Study and we have the following comments.

General

The stated purpose of the MWA Supply Study is to develop short-range as well as long-range plans to satisfy MWA's immediate and future water supply needs. In the Northeastern United States Water Supply (NEWS) Study a similar set of objectives was pursued and the MWA study is apparently picking up where NEWS left off. There is, however, one very disturbing pattern which has persisted through the development of both studies. It is the assumption that the water supply for this area must be designed to cope with population rather than the reverse. When you are dealing with a finite resource, as in this case, you must set limits upon your resource demands. Therefore it becomes essential that growth limitations must be set within the existing framework of resource limitations. This concept must be pursued as a possible project alternative along with the other alternatives that increase supply.

Along with planned growth limitations or guidelines is the need for resource conservation. Specific plans that will reduce the per capita consumption must be developed. Also more specific allocation plans during low flow and high demand periods must be pursued.

There are several proposals that are designed to increase supply. Included among these are new or increased impound-ments and alterations to existing system interconnections. This type of project could potentially impact fish and wildlife resources in varying degrees. It is still too early to make

SCENIC RIVERS ACT
Approved April 4, 1970

An Act to amend the Code of Virginia by adding in Title 10 a chapter numbered 15, containing sections numbered 10-167 through 10-175, to provide for a Virginia scenic and recreational rivers system; additional duties of the Commission of Outdoor Recreation [H 27]

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia be amended by adding in Title 10 a chapter numbered 15, containing sections numbered 10-167 through 10-175, as follows:

CHAPTER 15
Scenic Rivers Act

Sec. 10-167.

a. This chapter shall be known and may be cited as the "Scenic Rivers Act".

b. It is hereby declared to be the policy of the Commonwealth that certain rivers possessing high scenic, recreational, geologic, botanic, historic and cultural values, or which possess unique natural or scenic attributes, should be preserved in their free-flowing condition, and that their shorelines and immediate environments should be protected for the benefit and enjoyment of present and future generations. It is further declared that preservation of certain rivers or portions of rivers for their scenic values is only a beneficial purpose of water resources policy.

c. The purpose of this chapter is to provide for the administration, preservation and protection of certain rivers or portions of rivers which possess outstanding scenic, recreational, geologic, botanic, historic and cultural values, or which possess unique natural or scenic attributes, and which should be preserved in a Virginia Scenic Rivers System to assure their use and enjoyment for their scenic, recreational, geologic, fish and wildlife, historic, cultural or other values.

d. It is the primary purpose of this chapter to provide for the use and development of water and related land resources, including the conservation of soil, wildlife, scenic, historic, cultural, geologic, fish and recreational values, and the prevention of floods, erosion, sedimentation, impairment of water quality, pollution and other unwise development of water and land resources, which may be detrimental to the enjoyment of the rivers in a free-flowing state, and which may be the characteristic of a portion or watercourse or adjacent land area proposed for consideration and preservation of the rivers in a free-flowing state. Water resource projects which are not consistent with the purposes of this chapter shall not be approved or assisted by the Commonwealth or any of its political subdivisions.

Sec. 10-168.

As used in this chapter, the following words and terms shall have the following meanings:

a. "River" shall mean a flowing body of water, or a portion or portions thereof.

b. "Scenic Rivers System" shall mean and include those rivers or portions of rivers designated as a Scenic River by an Act of the General Assembly.

c. "Commission" shall mean the Commission of Outdoor Recreation.

Sec. 10-169.

In addition to other duties performed by Chapter 11 of this title, the Commission shall have the following duties:

a. To make studies of rivers or portions of rivers to be considered for designation by the General Assembly as scenic rivers.

b. To recommend to the Governor and to the General Assembly rivers or portions of rivers to be considered for designation as scenic rivers.

Sec. 10-170.

a. Rivers in the Commonwealth to be considered for designation as a scenic river or rivers shall be considered by the Commission and the Commission shall prepare and submit a report to the Governor and the General Assembly. Such report shall include, but not be limited to, the following:

1. A recommendation as to the suitability of the river or portion thereof for designation as a scenic river;

2. The views and recommendations of the Division of Water Resources of the Department of Conservation and Economic Development, the Water Control Board and other affected agencies; and

3. A map showing the proposed area and a concise description of those characteristics which qualify the river or portion of river for designation. The map shall be on file in the office of the Commission and a duplicate copy shall be filed with the Clerk of the Senate.

b. When the General Assembly acts to include a river or portion of river in the Scenic Rivers System, the Commission shall prepare an Advisory Committee of residents residing or active in the area landowners, representatives of user groups of the river or river segment, and other affected persons. The Advisory Committee shall elect a chairman from among its members. Members of the Advisory Committee shall serve at the pleasure of the Commission. The duties of the Advisory Committee shall be advisory and shall be to the Commission concerning the preparation of the plan required of each river. Members of the Advisory Committee shall receive no compensation.

Sec. 10-171.

A recommendation to the Governor and General Assembly that a river or portion thereof be designated a scenic river shall be submitted only if:

a. The views and recommendations of the Division of Water Resources of the Department of Conservation and Economic Development, the Water Control Board and other affected agencies; and

b. A map showing the proposed area and a concise description of those characteristics which qualify the river or portion of river for designation. The map shall be on file in the office of the Commission and a duplicate copy shall be filed with the Clerk of the Senate.

Sec. 10-172.

[illegible]

Sec. 10-173.

[illegible]

Sec. 10-174.

[illegible]

Sec. 10-175.

[illegible]

specific impact analysis concerning most of these alternatives as site plans in many cases have not been formalized.

The MWA Water Supply Study also fails to account for any areas of particular concern to the Department's Fish and Wildlife Service, instream versus out-of-stream flow needs. Throughout the document, demand is equated with withdrawal which is then balanced against the supply which is equated with river flow. This concept accounts only for out-of-flow needs (withdrawal) and ignores the considerable instream flow needs such as maintenance of the fishery, recreation, aquatic vegetation and invertebrates, water dependent wildlife and water quality maintenance. The importance of these instream flow needs is recognized in the Low Flow Allocation Agreement and the Memorandum of Intent which governs interpretation of the Agreement.

These instream flows values are more difficult to quantify than out-of-stream values and have been largely ignored in past demand and supply studies. Indeed, the viability of the Emergency Estuary Pumping Station depends on the maintenance of adequate water quality and quantity of river flow.

The FWS recommends that the MWA Water Supply Study include evaluation of instream flow needs in the affected free flowing streams and that supply/demand calculations allow for consideration of these instream flows. We feel that we cannot over emphasize the importance of incorporation of these values in the study at this time. The comprehensive nature of the study requires inclusion of instream flow needs in the analysis of both supply/demand prediction and impact assessment. It appears that determination of instream flow needs as a supply/demand component would be appropriate in sub-element II-4 of the Plan of Study. Consideration of these values could then be incorporated in subsequent work elements.

Specific

Page 16, Aquatic Resources. In addition,to water pollution, the construction of Little Falls Dam has limited the extent of the formerly plentiful anadromous fish runs.

Page 24, Federal and Regional Institutions. The FWS may comment on any permit application submitted to the Corps of Engineers, not just those concerning landfills.

Page 38, Conclusion of the NEWS Study. Conclusion 3 concerns the efficient use of water in the MWA. An area worthy of close examination is the efficiency of the water distribution system in the District of Columbia. High losses of finished water have been attributed to the existing distribution system.

Page 48, Low Flow Allocation Agreement. The discussion of the Low Flow Agreement is incomplete without consideration of the Memorandum of Intent between the Corps of Engineers and Department of the Interior. Important implications regarding available supply are outlined in these two documents.

Page 55, Quantity of Water. The discussion of demand is completely oblivious to instream flow needs such as maintenance of the fishery and recreation.

Page 71, Study Objectives. The second primary study objective is to "... formulate plans to provide additional water supplies over the long-term." This will "... help achieve the study purpose of solving the overall problems of water supply deficit in the MWA." It should be recognized that there is a finite limit to water supply which we cannot transgress. Additional water supplies may not be the long term solution to the water deficit problem.

Supply, Demand and Deficit Appendix

We have the following technical comments concerning this volume of the document.

1. The flow frequency analysis has been based on a log Pearson III distribution using the moments of the logs to fit the distribution. On this basis, they arrive at the conclusion that the 1930 annual flow of the Potomac (lowest in 81 years) and a recurrence interval of greater than 1,000 years (page 129). That is a very extreme claim, and it is not supported with any real evidence.

2. There are some internal inconsistencies in the low flow frequency analysis. For example, Table III-8 says the 7-day, 100-year low flow at Point of Rocks for September is 376 mgd while the 7-day, 100-year annual low flow is 365 cfd. This is absolutely not possible. It should be noted that is is indicated that the source of this information is "USGS, Reston, VA."

3. It is implicitly assumed that the flows at all of the gages considered have a correlation coefficient of 1.0. That is: it is assumed the 60-day, 100-year low flow will occur at all sites simultaneously. This results in an understatement of the water availability.

4. It appears that the coordination of management of water from the various sources has been ignored. It is assumed that since the Occoquan Reservoir has a "safe yield" of 50 mgd that it simply adds 50 mgd to the available water of the area. This need not be the case. By making heavy use of the Potomac during the high flow months, the Occoquan and other local reservoirs can yield much greater amounts for the months they are needed.

Background Information Appendix

We also recommend that the final Background Information Appendix briefly reference the great wealth of cultural resources found throughout the study area.

We hope these comments will be of assistance to the study.

Sincerely,

[redacted]

Deputy Assistant SECRETARY

COMMONWEALTH of VIRGINIA

Office of the Governor

Richmond 23219

October 25, 1978

Colonel G. E. Withers
District Engineer
Baltimore District Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

Pursuant to our meeting of October 16, I am asking that the Baltimore District Corps of Engineers include a detailed investigation of certain projects in Northern Virginia in their Metropolitan Washington Area Water Supply Study. Specifically, I would like you to include the project known as the Pumpover from the Shenandoah River to the headwaters of the Occoquan Watershed and the Pumpover from the Potomac River to the Occoquan Water Treatment Plant, with reversible capacity. We are enclosing a copy of the 1977 Report of the State Water Study Commission as forwarded to the General Assembly and trust you will include in any of your analyses the ancillary projects noted in this particular report.

I understand that you are aware of the efforts being conducted by the U. S. Geological Survey, Fairfax County Water Authority, Interstate Commission on the Potomac River Basin, and the Virginia State Water Study Commission. I would also request that you maintain liaison and coordination with Mr. R. V. Davis of the State Water Control Board and Mr. James H. Dillard, II, Chairman of the Northern Virginia Subcommittee, of the State Water Study Commission, in their deliberations and efforts to determine the most effective solution to the water resource requirements in Northern Virginia.

I also wish to thank you for your effort in briefing me on the Shenandoah Pumpover project, as analyzed to date by the Corps of Engineers, when you were here on the 16th.

If there are any ways in which we can assist the Corps in expediting the study, please do not hesitate to call on Mr. Davis for his assistance.

With all good wishes, I am

Very truly yours,

John N. Dalton

JND/jyw

Enclosure

cc: The Honorable Lewis Rawls, Jr.
James H. Dillard, II
Maurice B. Rowe
P. V. Davis
U.S. Geological Survey
Fairfax County Water Authority
Interstate Commission on the Potomac River Basin

9 FEB 79

NABPL-U

Mr. Robert S. McGarry
General Manager
Washington Suburban Sanitary
Commission
Hyattsville, Maryland 20781

Dear Mr. McGarry:

The purpose of this letter is to confirm the date and time of the second Federal-Interstate-State-Regional Advisory Committee (FISRAC) meeting for the Corps' Metropolitan Washington Area Water Supply Study. The meeting will begin at 9:30 a.m. on 16 February 1979, in the Operations Branch conference room, at the Washington Aqueduct on MacArthur Boulevard, Washington, D.C.

The objective of the meeting is to obtain your views on the work accomplished to date and your guidance on plans and decisions to be included in the preliminary draft report for the early action program. Summaries of work activities and issues for discussion are inclosed for your review prior to the FISRAC meeting.

Similar to the last meeting, each agency will be furnished an opportunity to make formal statements. These statements will then be followed by general discussion of a question and answer nature. An agenda is inclosed. I look forward to your comments on the proposed early action programs.

Sincerely yours,

2 Incl
As stated

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

HAINES/NABPL-U/jmt/2668
CREWS/NABPL-U
NELSON/NABPL
TRIESCHMAN/NABPL
RHEN/NABDD-CW
WITHERS/NABDE

Identical letter sent to:

Mr. Dale Jones, Director
Bureau of Water Control Management
Virginia State Water Control Board
P.O. Box 11143
Richmond, Virginia 23039

Mr. Paul Eastman
Interstate Commission on the
Potomac River Basin
1055 1st Street
Rockville, Maryland 20850

Mr. Austan Librach, Director
Department of Water Resources
Metropolitan Washington Council
of Governments
1225 Connecticut Avenue, NW
Washington, DC 20036

Mr. Thomas C. Andrews
Director, Maryland Water Resources
Administration
Tawes State Office Building
Annapolis, Maryland 21401

Mr. John Egan
U.S. Environmental Protection Agency
Regional II
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Mr. Bruce Blanchard, Director
Office of Environmental Project Review
Department of the Interior
Washington, DC 20240

Mr. James I. Corbalis, Jr.
Engineer - Director
Fairfax County Water Authority
Box 1500
Merrifield, Virginia 22116

Mr. Jean Levesque
Administrator
Water Resources Management Administration
Department of Environmental Services
5000 Overlook Avenue, SW
Washington, DC 20032

Mr. Robert S. McGarry
General Manager
Washington Suburban Sanitary Commission
Hyattsville, MD 20781

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD
2111 Hamilton Street

H. V. Davis
Executive Secretary

Post Office Box 11143
Richmond, Virginia 23230
(804) 257-0056

BOARD MEMBERS
Millard B. Rice, Jr.
Chairman
George M. Cornell
Vice Chairman
Col. J. Leo Bourassa
Warren L. Brown
Kenneth B. Robins
William L. Tate
H. Alton Wright

February 15, 1979

Colonel G. K. Withers
District Engineer
Baltimore District Corps of Engineers
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

This is in response to your letter dated February 9, 1979 (NABPL-U) with which were provided summaries of your work activities to date relative to the Metropolitan Washington Area Water Supply Study together with suggested issues for discussion during the second Federal-Interstate-State-Regional Advisory Committee meeting scheduled to begin at 9:30 a.m. on February 16, 1979 in the offices of the Washington Aqueduct on MacArthur Boulevard in Washington, D. C.

We have no objection to your proceeding with the Metropolitan Washington Area Regional Water Supply Study; however, you must understand clearly that this is a staff observation only, in view of the fact that sufficient time has not been available to members of the State Water Control Board and to members of the State Water Study Commission for their review of the subject. Additional review time is needed by these two bodies prior to the provision of a more definitive response.

With the foregoing caveat, the following comments are made relative to the subjects found in the "Issues for Discussion" section of the enclosures provided with your letter of February 9, 1979.

A. Flow-by

While the subject of flow-by has raised some real as well as emotional concern, it is felt that the probable occurrence of need to consider the subject would be so infrequent that we would suggest utilization of the 100 MGD value for design while not ruling out the use of a different value based on conditions which may obtain at any particular time during future operations subsequent to implementation of a plan.

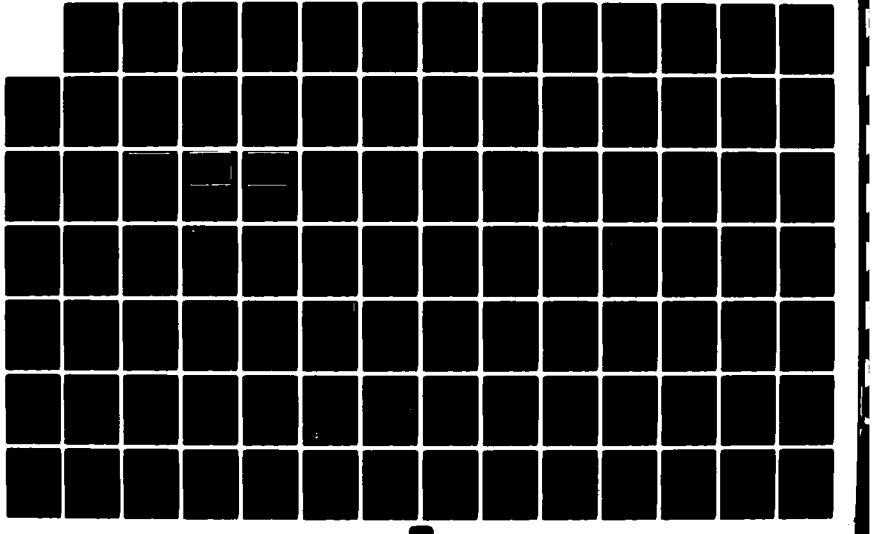
Colonel G. E. Withers
Page
February 15, 1979

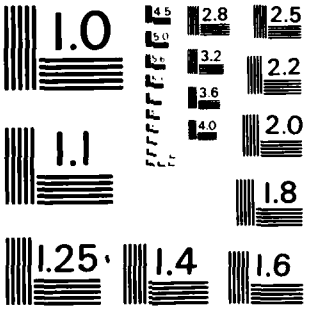
[illegible]

C. Duration

In view of the fact that the State water Control [illegible] water [illegible] water [illegible] [illegible] [illegible]

AD-A134 155 METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY 3/4
APPENDIX C PUBLIC INVOLVEMENT(U) CORPS OF ENGINEERS
BALTIMORE MD BALTIMORE DISTRICT SEP 83 MWA-83-P-APP-C
UNCLASSIFIED F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

NABPL-U

8 MAR 1979

TO: Attendees, Federal-Interstate-State-Regional Advisory Committee Meeting, Metropolitan Washington Area Water Supply Study

Inclosed is a copy of the minutes for the second Federal-Interstate-State-Regional Advisory Committee meeting held on 16 February 1979 at the Washington Aqueduct. Based on your comments and suggestions, the Corps of Engineers is now preparing a preliminary draft report for early-action plans.

Please submit any revisions or corrections to the minutes in writing.

Sincerely yours,

G. E. WITHERS
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

MINUTES

FEDERAL-INTERSTATE-STATE-REGIONAL ADVISORY COMMITTEE

16 FEBRUARY 1979

1. The second meeting of the Federal-Interstate-State-Regional Advisory Committee (FISRAC) for the Metropolitan Washington Area (MWA) Water Supply Study was held on 16 February 1979 at the Washington Aqueduct beginning at 0930 hours. An attendance list is attached as Inclosure I.

2. Colonel Rhen began the meeting by reviewing the five components which the Corps was investigating: raw water interconnections, finished water interconnections, reregulation, water conservation (demand reduction), and local storage. With these five components, early-action plans are being formulated which combine the desirable features of each component. Colonel Rhen stated the purpose of the present meeting as a means to gain consensus on a number of critical issues before completing a preliminary draft report in March 1979.

3. Mr. Griffith, FCWA, provided a brief summary of FCWA activities since the last FISRAC meeting. The FCWA has adopted a plan to raise the Occoquan Dam by 2 feet. This action is designed to serve FCWA's water needs in the short-term (1979 to 1983) while the Potomac River intake and water treatment plant (50 mgd - first stage) are under construction. With completion of the Potomac River facilities, FCWA's supplies will be adequate to at least 1990. The Potomac River facilities will also provide FCWA with some flexibility as to the operation of the Occoquan, by allowing FCWA to withdraw less water from the reservoir during sufficient Potomac flows (reregulation concept). Beyond 1990, the FCWA is looking for some plan of augmentation. Mr. Griffith also mentioned that the growth rate of per capita water use is beginning to slow down.

4. Mr. McGarry, WSSC, summarized the activities of his agency since the last FISRAC meeting. The Bicounty Water Supply Study has been completed and contained two recommendations: (1) construction of SCS Site #3, and (2) construction of a 2-way (reversible) pipe between the Potomac River and Rocky Gorge water treatment plants. WSSC is proceeding with the design of SCS Site #3, and is prepared to begin route studies for the pipeline. WSSC has received a permit for the construction of a 400 mgd intake on the Potomac.

and is also planning to construct the water when Congressional approval is secured. With completion of SCS Site #3, Mr. McGarry stated that WSSC should have no water supply problems before 1995.

5. Mr. Coates, WAD, mentioned that the Potomac Estuary Emergency Water Pumping Station would be completed and available for use, if necessary, in the summer of 1979.

6. Having completed these summaries, Colonel Rhen then directed the meeting to "Issues for Discussion," which was provided to all members prior to the FISRAC meeting. The following paragraphs address each issue.

7. Flow-by. Mr. Andrews, WRA, stated that 100 mgd could be used for planning purposes. Mr. Reback, WRA, said that only physical measurements have been made so far in the Maryland flow-by study, and no analysis of the data has been made yet. More low flow portions in the Potomac are desirable to gather additional data. Mr. Labrach, MWCOG, would like the Corps to look at flow-by higher than 100 mgd, say 600 or 500 mgd. He also questioned WRA as to whether the flow-by study would be analyzing the effect of the duration of low-flow as well as the magnitude. Mr. McGarry pointed out the benefits of using a series of curves showing a range of flow-by values for different conditions, similar to the Hunter's Water procedures. The general consensus of the FISRAC was that a 100 mgd flow-by value was acceptable for planning purposes in the early-action program. Long-range efforts in the next portion of the study should look at measures such as reservoirs to provide supplemental flows for flow-by. In the meantime, sensitivity to assess flow-by values other than 100 mgd showing effects on timing and cost of projects would be adequate for the early-action report.

8. Water Conservation. Mr. Griffith would like to see two water conservation scenarios studied further - the Baseline and Scenario 3 (about 11% reduction in demand). However, the Baseline should show an increase in "unaccounted for" water to account for deterioration of water distribution systems. Mr. McGarry observed that anything beyond Scenario 3 was very optimistic and should not be relied on to reduce demand. Mr. Jones, SWCB, noted that the Virginia Legislature had passed a resolution supporting water conservation. From the SCS's viewpoint, he recommended that Scenario 2 be implemented through the year 2000 with Scenario 3 or 4 being implemented after 2000. Mr. McGarry stated that a fare pricing policy penalizing excessive water use would spur voluntary retro-fitting of individual homes and apartments. The consensus of the FISRAC was that an 11 percent reduction in demand was within reason, and therefore Scenario 3 could be used for planning purposes. The suggestion was made to change the word "retro-fitting to "remodeling." It was also pointed out that Scenario 3 and short-term emergency restrictions may not be additive (in other words, some of the same demand reduction measures may be applied in both cases so the overall effect of Scenario 3 and emergency restrictions acting together are not the sum of the two sets of restrictions acting separately).

9. Duration and Frequency of Occurrence. Mr. Griffith suggested that the maximum 30-day demands be compared against the minimum 1 day supply in the Potomac. This shortage would then be the design conditions for facility sizing. Mr. McGarry stated that the Bicounty Water Supply Study had combined duration and frequency into a single risk analysis. Mr. Jones indicated that the Virginia Water Study Commission had used a once in 50 year drought for their design condition. After much discussion, the FISRAC agreed that facilities should be sized for a 7-day duration, once in 100 year drought event. It was suggested that the trade-offs in terms of costs and quantities of shortages be shown for a drought such as a once in 50 year event. Based on comments received during the Bicounty Water Supply Study, Mr. McGarry observed that the region would probably be willing to live with shortages more frequent than once in 100 years, or even once in 50 years. Mr. Shagogue pointed out that droughts of duration longer than 30 days may be important for storage projects such as SCS Site #3. Mr. Sheer, ICPRB, also mentioned that his studies of Bloomington Reservoir indicated there is potential for more flow than 135 mgd from Bloomington if storage were reallocated within the existing project, or if it were operated differently than presently proposed.

10. Occoquan Interconnections. Mr. Griffith stated that from FCWA's viewpoint on an individual service area basis, there is no advantage to putting water into the Occoquan Reservoir. When the Potomac facilities are complete, reservoir levels in the Occoquan could be manipulated through reregulation. However, a pipeline from the Occoquan Reservoir to the Potomac water treatment plant would be desirable for times when FCWA is allocated very little water from the Potomac under the Low Flow Allocation Agreement. Mr. McGarry stated that a Shenandoah raw water interconnection implemented by Virginia would violate the intent of the Low Flow Allocation Agreement and WSSC would probably take legal action to prevent such construction. Mr. Jones felt that the information which had been presented on

the various Occoquan interconnections would assist the Virginia SWCB and State Water Study Commission in making a recommendation. Mr. Jones was unable to furnish such a recommendation until the information is discussed with Governor Dalton.

11. Discharge Points. Mr. McGarry related WSSC's experience during the Biocounty Water Supply Study. Potomac water to be discharged to the Patuxent reservoirs would most likely require an NPDES permit and some type of treatment prior to discharge. This whole problem could be avoided by transferring water directly to the treatment plant and saving storage in the reservoir. The net effect on volume of storage would be the same. Other FERAC members generally agreed that transfer directly to the water treatment plants was preferable to discharge to the reservoirs.

12. Regional Coordination and Approach to the Problem. These two items were discussed concurrently, as the approach to the problem will dictate how much regional coordination is required. The basic question is whether WSSC would be willing to share 50% Site 3 for the benefit of the region. Mr. McGarry stated WSSC's intention to build 50% Site #3, financed entirely by WSSC if at all possible. At this point, WSSC would be reluctant to share either the costs or benefits with Virginia as most potential storage sites in Virginia have been designated as "Wild and Scenic Rivers." Mr. McGarry suggested that the Corps should consider more strongly the "sub-regional" solutions because of the many potential implementation problems with a "regional" approach. Mr. Jones also stated Virginia's preference for Plan 4, a sub-regional approach. Both agreed that the benefits (cost savings) of a regional plan over a sub-regional plan should still be displayed. It was pointed out that even with a sub-regional approach, a portion of the WAD's unmet water demands were being satisfied by sharing in both Virginia and Maryland projects because the WAD's demands must be met from the Potomac. Mr. Eastman, ICPRB, suggested that the Potomac Estuary Emergency Pumping Station be used for the WAD. Mr. Costas, WAD, pointed out the uncertain quality of estuary water and the problems with long-term use. Another possibility for the WAD would be to purchase a portion of storage in Bloomington which has not yet been contracted. Mr. Jones suggested a three-tiered approach for the display of alternative plans: (1) a "regional" approach based on total cooperation, (2) a "sub-regional" approach based on both FCWA and WSSC solving their own shortages plus a share of the WAD's shortage, and (3) a "local" approach where each utility solves their own problems as best they can. This three-tiered approach was generally accepted by the FERAC members.

13. As a last item, Mr. McGarry observed that what is really needed is an operational rule model to be applied region-wide. This model would develop and evaluate different operating rule curves considering factors such as Potomac flow, required flow-by, reservoir storage, pumping costs, treatment costs, etc. In a drought, the pre-determined operating rules could then be used to make the most efficient use of storage and Potomac flow with the least cost to the region. The development and implementation of the operating rules could be a joint effort between the water utilities without requiring major commitments of monetary resources by the state legislatures.

14. The meeting concluded at 1230 hours.

FISRAC MEETING

MWA WATER SUPPLY STUDY

16 FEB 79

NAME	AGENCY
J. William Haines	Corps of Engineers
Paul White	Council of Governments
Austan Librach	Council of Governments
Harold Nelson	Corps of Engineers
C. R. Malone	National Resources Council
Fred P. Griffith	FCWA
Perry Costas	Washington Aqueduct
Harold Stearn	D.C. Dept. of Env. Serv.
Richard R. Shagogue	WSSC
Johanna S. Norris	Chairman, WSSC
Robert S. McGarry	Gen. Manager, WSSC
Thomas C. Andrews	Director, Maryland Water Resources Administration
Ernest C. Rebuck	Maryland Water Resources Administration
Terry Martin	U.S. Dept. of Interior
Jim Crews	Corps of Engineers
Colonel Rhen	Corps of Engineers
Paul Lastman	ICPRB
David Schultz	Maryland Water Resources Administration
John R. McClain	Virginia State Water Control Board
Dale F. Jones	Virginia State Water Control Board
Don Sheer	ICPRB
Phillip G. Retallick	US EPA, Region III

Thomas C. Andrews

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
(301) 269-3675

March 22, 1979

Colonel G. K. Withers
District Engineer
Baltimore Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203

Dear Colonel Withers:

The State of Maryland has reviewed the summary of Metropolitan Washington Area Water Supply Study work activities, the issues for discussion regarding early action planning (February 9, 1979) and the minutes of the February 16th meeting of the Federal-Interstate-State-Regional Advisory Committee (FISRAC). The following notes our concurrence with the decisions made at the FISRAC meeting and offers suggestions for the regional coordination portion of the study.

1. Flow-by - We concur with a minimum flowby of 100 mgd for early action planning along with sensitivity tests for flow-by values other than 100 mgd. Recommendations from the joint Maryland-Federal study of this issue should be available for use in the long-range planning effort.

2. Conservation - We concur that water conservation scenario #3 should be applied in early action planning. As noted at the meeting, the major utilities in the Washington Metropolitan Area have indicated that they are already conducting the appropriate educational campaigns. We favor some consideration in either the early action plan or later portions of the study of a regular program of pipeline inspection for identification of leaks. An item which should be addressed is a comparison of the cost of an inspection and correction program to the cost of implementing additional supply facilities.

file
Public
involvem

Colonel G.F. Withers
March [illegible], 1979
Page No. [illegible]

3. Duration and Frequency of Occurrence - Early action planning should apply the 7-day shortage at a 100-year recurrence interval. These criteria are somewhat cautious, but appear to be attainable and would allow for some flexibility in implementation.

4. Occoquan Interconnection - Of the alternatives considered by the Corps in the "Comparison of Occoquan Interconnection Alternatives", the reversible interconnection between the Potomac River and Occoquan Reservoir is the least cost alternative and is consistent with the intent of the Potomac River Low Flow Allocation Agreement. The alternatives that involve pumping from the Shenandoah River would have an adverse impact on downstream users and would limit the ability to manage low flow situations in the main stem of the Potomac River.

5. Discharge Points - As discussed at the meeting, an NPDES permit would be required for any raw water interconnection discharging directly into the Patuxent Reservoirs, but it would not be required for a proposed interconnection to the Patuxent Treatment plant.

6. Regional Coordination and Approach to Problem - Maryland encourages regional cooperation in developing additional water supply in the Potomac River Basin. The early action plan should address cooperation regarding both the allocation of Potomac flows and the sharing of the cost of supply measures. The approaches of extending the provisions of the Low Flow Allocation Agreement and establishing a set of rule curves deal only with flow allocation. The early action plan should evaluate these approaches, however, consideration should be given to the option of using Maryland's water appropriation permit program to allocate the withdrawals. Our program is already a component of the Low Flow Allocation Agreement.

The early action plan should evaluate cost sharing arrangements which range from (a) a cost sharing agreement between the utilities the [illegible] (b) a regional authority with the responsibility for repaying the cost of water supply projects. As you know, such an authority, the Maryland Potomac Water Authority, is responsible for repayment of the non-federal costs of Bloomington Reservoir.

Sincerely yours,

[signature]
Thomas [illegible] Andrews
Director

TCAjmes

NABPL-R

30 April 1979

SUBJECT: Metropolitan Washington Area Water Supply Study: Review of Preliminary Draft Technical Report Appendixes

TO: Metropolitan Washington Council of Governments and its Review Committees; Federal-Interstate-State-Regional Advisory Committee; and National Academy of Sciences/National Academy of Engineering

1. Inclosed for your review and comments are four of the eight technical appendixes concerning the Metropolitan Washington Area Water Supply Study which includes the technical information developed to date. These appendixes are preliminary drafts and are subject to revisions. They are not for public release. These documents are being sent to you at this time for technical review prior to finalizing and publishing the draft report for public comment in August 1979. These four appendixes are inclosed:

a. Water Conservation

b. Supply and Demand

c. Raw Water Interconnections

d. Finish Water Interconnections and Reregulation

2. The additional appendixes will be forwarded under separate cover within a week. Comments on the technical appendixes are due by 1 July 1979.

3. Should you have any questions, please call Mr. James Crews, Chief, Urban Studies Branch, at (301) 962-2668.

Sincerely,

4 Incl
as

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

NAPEN-R

4 May 1979

SUBJECT: Metropolitan Washington Area Water Supply Study: Review of Preliminary Draft Technical Report Appendices

TO: Metropolitan Washington Council of Governments and its Review Committee; Federal-Interstate-State-Regional Advisory Committee; and National Academy of Sciences-National Academy of Engineering

As was indicated in my letter of 30 April 1979, the remaining four volumes of the technical appendices concerning the Metropolitan Washington Area Water Supply Study are enclosed for your review and comment. The four appendices are:

a. Plan formulation

b. Local storage

c. Public involvement

d. Problem identification

These appendices are also preliminary drafts that are subject to revision and are not for public release. Your comments on the technical appendices are due in this office by 1 July 1979. The final draft report will be published for public comment in August 1979.

Any questions pertaining to the study should be directed to Mr. James Crews, Chief, Urban Studies Branch, at (301) 962-2668.

Sincerely yours,

4 Incls
As stated

WILLIAM E. FRIESCHMAN, Jr.
Chief, Planning Division

DFSC/pk/2421/NAPEN-R
CF(NAP/ANPE-F
NAPEN-R
FRIESCHMAN/NAPEN

CF: Urban Studies Branch

COMMONWEALTH of VIRGINIA

Office of the Governor
Richmond 23219

May 21, 1979

Colonel G. K. Withers
District Engineer
Baltimore District Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

I have reviewed your letter of April 23 indicating the results of your recent investigations relative to water supply alternatives for northern Virginia.

It is my understanding that you investigated three means of providing water to the Occoquan Reservoir; those being, (1) a one-way Shenandoah Pumpover Project, (2) a one-way Potomac to Cub Run interconnection, and (3) a two-way Potomac to Occoquan interconnection. I note your final analysis concludes that the reversible Potomac to Occoquan interconnection has decided advantages over the other alternatives in terms of cost, flexibility, and ease of implementation. Obviously, this conclusion incorporates significantly different emphasis from your preliminary staff report last fall which pointed towards the Shenandoah Pumpover proposal as the most cost effective, particularly in view of the six reservoirs which could be fed by that system--a unique feature among the three alternatives studied.

As I told you last fall, my prime concern has been that a viable solution be found to prevent the water supply shortages that occurred during the summer of 1977. Should there be a reason to discuss this concern with you in light of the analysis provided, I will advise. Please accept my thanks for providing an expeditious analysis to the alternatives for solving northern Virginia's water supply problems.

I have sent a copy of your analysis to the State Water Control Board, and by copy of this letter am requesting that the Board and the State Water Study Commission review your analysis and provide me with further recommendations.

Colonel G. R. Witness
Page Two
May 21, 1979

I am sure that the State Water Study Commission and the State Water Control Board will incorporate your reports appropriately in their report to the General Assembly and to me in December of this year. Also, I am sure that they will be in touch with your office during the course of their deliberation in constructing their final report.

With all good wishes, I am

Very truly yours,

John N. Dalton

JND:hw

cc: The Honorable T. Lewis Rawls, Jr.
Mr. James H. Dillard, II
The Honorable Maurice B. Rowe
Mr. R. V. Davis

THE PRINCE GEORGE'S COUNTY GOVERNMENT

June 18, 1979

Mr. William E. Trieschman, Jr.
Chief, Planning Division
U.S. Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

Reference is made to your transmittal memoranda dated April 30 and May 4, 1979, which forwarded the eight technical appendixes concerning the Washington Area Water Supply Study.

Review of the extensive material reveals that a very thorough and far-reaching effort has been put forward by the Corps in evaluating the water supply situation for the metropolitan Washington area. As a result, the documents are very comprehensive and detailed for each item which is addressed.

Not only has the study itself addressed a multitude of alternative solutions or combinations thereof, but the process followed in the study is to be commended. Full involvement of local citizens, citizen groups, local governments, agencies, and boards--combined with the higher level interaction by the Water Resources Planning Board, Board of Trade, and other regional groups--has enabled the Corps to receive input from virtually all sectors of the metropolitan area which have an interest in our future water supply situation.

Although the documents are well prepared, we do have some additional comments of both a general and specific nature which we would like to present for your consideration:

1. To assist the reader in identifying key issues and conclusions, it would be beneficial if an executive summary volume was prepared, or contained in the front of each document.

2. A reduction in repetitive matter which is found in several volumes would make the document more readable. Each volume is, to a certain extent, self-contained. As such, each volume contains information of a general nature which is also found in other volumes. In particular, reference is made to repetitive descriptions of the metropolitan area, including topography, population, etc.

County Administration Building -- Upper Marlboro, Maryland 20870

3. More consistent organization of each volume and between volumes is needed to make the documents more understandable and, therefore, more usable. Although the writing is clear and concise, the overall effect is somewhat confusing due to the lack of clear organization.

4. We are pleased to note that your evaluation has determined that the metropolitan area can meet its needs through local and/or regional solutions, without going to out-of-area dams or using more exotic treatment systems, as would be the case with an estuary treatment plant. However, we are confused as to the relationship between the Phase I study and Phase II, slated for completion in the early 1980's. Since the alternatives identified could meet our needs through the planning period (2030), what will be the major output for Phase II? Also, will there be any adverse impact on present plans of local agencies as the region awaits completion of Phase II (necessary permits, etc. at the Federal level)?

5. It is not readily apparent how the releases are expected to be managed from the Little Seneca Lake reservoir for both the subregional and regional alternatives. For example, under either alternative, what will be the frequency for release of water downstream from the dam during times of low flow? Will this become an annual event in the next century, or just an infrequent one? Also, what is the reason for the 120 mgd limitation identified in the study for release from Little Seneca Lake? Additionally, what magnitude of shortage for the Washington Aqueduct does the Corps anticipate having the WSSC supplement, in addition to meeting the Commission's needs?

6. As you know, the Bi-County area, through the WSSC, has embarked upon plans to build the Little Seneca Lake, with construction expected to be completed in the next few years. This, of course, requires the commitment of time, land, and dollars by residents of the Bi-County area. One of the alternatives outlined in the report involves a combination of Little Seneca and a cross-County pipeline between the Potomac and Patuxent Rivers. Another alternative involves the Little Seneca Lake and a cross-County line between the Potomac and Occoquan Reservoir. Although the cost for the latter line is slightly greater than the Potomac-Patuxent line,

it should be pointed out that this alternative would bring the entire metropolitan area into the regional picture, not just the Maryland portion.

7. The scenarios demonstrate that significant savings of water consumption can be achieved which are beyond the effects that have already been seen with imposition of innovative plumbing codes enacted in recent years by Maryland, the District of Columbia, and Virginia. However, deletion of the most restrictive scenario (#5) in the final iteration would appear to indicate an assumption by the Corps that extensive reductions in water usage would not be supported by the region's residents through adoption or encouragement of more restrictive codes. Based upon changes in public attitudes which have become evident in recent years regarding allocation and usage of natural resources, this may be a premature assumption.

I hope these comments are of assistance to you as the final draft is prepared for release in August. Should you have any comments or questions, please do not hesitate to contact me.

Sincerely,

Kenneth V. Duncan

Kenneth V. Duncan
Chief Administrative Officer

cc: Robert McGarry
Samuel Wynkoop

NABPL-U

23 AUG 1979

Mr. Paul Eastman
Interstate Commission on the
Potomac River Basin
1055 First Street
Rockville, Maryland 20850

Dear Mr. Eastman:

This is in response to your request for our comments on your proposal to provide support to the major water suppliers and some coordination activities concerning future water supply studies in the Potomac River Basin.

Basically, the concept of a totally integrated comprehensive plan for optimal development of the water supply storage capacities in the Potomac River Basin to meet future needs in the metropolitan Washington, D.C. area (MWA) is a sound idea. And I agree with ICPRB's objectives of trying to provide a mechanism to achieve this goal; however, I must emphasize that I can only operate Bloomington Lake within the specific authority given to me by the Congress.

The Bloomington Lake Reformulation Study may provide an avenue to better manage this new source of water in harmony with any total water management plan for the MWA. In this regard, there are specific studies that must be accomplished by the Corps. One of these, recreation potential of various lake levels, was proposed by you to be done by others. In accordance with our regulations, this study will be done by the Corps during the reformulation study.

All other work items or tasks proposed by you are agreeable to the Corps, and we don't believe any duplication of effort will be accomplished during our separate but related activities.

Thank you for the opportunity to comment on your proposal and I look forward to our continued cooperation.

Sincerely yours,

CREWS/NABPL-U/jmt/2668
NELSON/NABPL
TRIESCHMAN/NABPL
RHEN/NABDD-CW
PECK/NABDE

JAMES W. PECK
Colonel, Corps of Engineers
District Engineer

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

October 15, 1979

Colonel James W. Peck
District Engineer
Department of the Army
Baltimore District, Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

At its meeting of September 27, 1979, the Water Resources Planning Board (WRPB) of the Metropolitan Washington Council of Governments approved a set of comments on the development of plans and plan components within your Metropolitan Washington Water Supply Study. These comments are provided to you in this letter. Specifically, on the basis of analysis by our staff and our Water Supply Advisory Committee (WSAC), we have prepared comments on five of the technical appendices of your study. The five appendices are: 1) Raw Water Interconnections Specialty Appendix; 2) Finished Water Interconnections and Reregulation Specialty Appendix; 3) Local Storage Specialty Appendix; 4) Conservation and Demand Reduction Specialty Appendix; and 5) Formulation, Assessment, and Evaluation of Detailed Plans Specialty Appendix.

The WRPB and the WSAC are presently reviewing a sixth and final appendix, the "Institutional Analysis and Economics Appendix," which we have recently received. Comments on this appendix are being developed and upon approval, will be forwarded to you.

We support your efforts in water supply planning for the Washington area and hope that you find these comments useful.

WRPB COMMENTS ON THE METROPOLITAN WASHINGTON WATER SUPPLY STUDY

To Date, The Corps has performed a Good Study

In general, the Corps' current metropolitan Washington area water supply study, to the extent of the five appendices reviewed, is an excellent effort and deserves commendation. These

- more -

plans are responsive to earlier comments and are very constructive in moving the area toward resolution of our serious regional water supply problems. The Corps has developed plans incorporating innovative, local solutions to provide for our future water supply. These solutions make use of water conservation, reregulation (management) of existing water systems, raw water interconnections, and local water storage. All phases of the Corps' study has been open to scrutiny and comment by the public. The efforts made to gain the views of various portions of the Washington community should facilitate regional adoption of study results.

Local Solutions Have Been Developed to Our Water Supply Problems

Previous water supply studies for the Washington area focused on developing water projects outside of the metropolitan area such as large reservoirs on the tributaries of the Potomac River Basin or groundwater supplies in south-central Maryland. Recognizing that Washington area needs can be solved within its bounds, the Corps, in their present study, has provided local solutions to Washington's water supply problems. The Corps broadened their additional study of structural projects such as dams to include nonstructural solutions such as water conservation and reregulation of existing water supplies. All of the Corps' plans include water conservation plus combinations of the following projects:

1) Raw Water Interconnections--The Corps recognized the benefits of maximizing use of existing raw water sources, i.e., the Potomac River and reservoirs in the Occoquan and Patuxent watersheds. Raw water interconnections would enable maximum use of the Potomac during periods of adequate flow and non-Potomac reservoirs during periods of Potomac water shortages.

2) Local Storage--During the past 20 years, about twenty large reservoirs have been proposed for construction in the Potomac River Basin, with the construction of only one, Bloomington Reservoir. In their present study, the Corps has only considered small water storage projects which were already being studied locally.

3) Reregulation--The Corps took a fresh look at managing water withdrawals from the Potomac River and local reservoirs. They found that the withdrawals could be coordinated to store water in anticipation of Potomac low flows. Reregulation would make best use of existing water supplies and facilities.

The Potomac water resources management model, developed at Johns Hopkins University should be considered for managing use of raw water supplies in the Washington area.

The Corps' emphasis on increased reliance on local resources, particularly with regard to local reservoirs, is supported by WRPB policy indicating that governments must assume the responsibility for effective conservation and management of existing water supply reservoirs. Governments should also protect future water supply impoundment sites within the region.

Water Conservation is an Integral Part of the Proposed Plans

The WRPB has forthrightly stated its position of encouraging water conservation methods. Permanent water conservation measures should be a part of an overall water resources management strategy for the region. From five increasingly stringent water conservation scenarios (0-28 percent savings) for the Washington area, the Corps selected an intermediate level of conservation (11 percent savings) for incorporation in their recommended final plans. This scenario is composed of: 1) installation and retrofitting of low water use fixtures and water-saving devices for residential water use; and 2) promotion of indoor and outdoor water conserving practices for residential and nonresidential use by public education programs. This scenario would include the use of local and state plumbing codes to promote water conservation as supported by the WRPB. Moreover, the WRPB believes that further conservation through more stringent codes should be considered. Local governments and water utilities should adopt programs which will provide incentives for retrofitting of existing plumbing devices to conserve water. The General Services Administration should encourage federal agencies to retrofit and repair existing plumbing facilities to further reduce water consumption where it is cost-effective.

The Study Reflects the Views of Many Segments of the Washington Community

Extensive efforts were made to gain the participation of citizens, water supply agencies, private industry, and federal, state and local government. This was accomplished via citizen workshops, public hearings, a citizen participation committee, a federal-interstate-state-regional advisory committee, a public opinion survey, newsletters, and meetings with individuals. The Corps' efforts to incorporate the views of various portions of the Washington community should facilitate regional adoption of study results.

The Corps Should Use the Most Recent Local Demographic Forecasts

Plans were formulated to meet projected water demands of the Washington area. The most probable projection of water demand was selected from a range of projections to the year 2030. The WRPB realizes that the best existing demographic forecasts, i.e., Cooperative Forecasts, Round I, were incorporated in the projections of water demand. However, the Corps should revise their projections of water demand using the most recent, regionally

approved, Cooperative Forecasts, Round II. Significant reductions of 20 and 14 percent exist between Rounds I and II Forecasts of population for Prince George's County and employment for the District of Columbia, respectively.

Once the Corps has finalized their projections of water demand, the WRPB would like to make them available for areawide use.

Recommended Plans are Designed to Meet Severe Drought Conditions

Several drought situations were investigated requiring water supply plans to meet average 30-day demands and 7-day peak demands. Selection of final plans was based on meeting the more stringent 7-day peak demand. This may still require occasional restriction of water use during infrequent periods of water shortage lasting less than7 days. However, the final plans will not incur the substantially higher costs required to construct more and/or larger water supply projects to meet even more severe drought conditions.

A Minimum Potomac Flow is Part of Plan Design

The Corps has recognized the need for a continuous flow into the Potomac Estuary for the protection of the estuary. A study, managed by the State of Maryland, is presently underway to ascertain the minimum inflow required to protect the estuary. Because this study is incomplete, the Corps has had to assume a minimum inflow of 100 MGD and assess the sensitivity of their water supply planning to larger inflows. When results of the inflow study are available, the Corps should determine the impact of this new information on their study recommendations.

The Corps' concern for estuary water quality indicates that they are aware of the need for integrated water supply and water quality planning.

Results of the Water Supply Study Should be Incorporated in Revisions of the Region's Water Quality Management Plan

The WRPB recognizes that new or increased water withdrawals will raise the risks of shortages occurring in the Washington metropolitan area. The Corps' water supply study is the most regional in scope of several presently underway to reduce this risk. The results of the Corps' study should be considered for incorporation in the

revisions of the Metrcpolitan Washington Water Quality Management Plan (20º Plan). This effort will produce a more comprehensive approach to water resources planning.

If you have any questions regarding these comments, please call Austan Librach, Director, Department of Water Resources (tel. no. 202-223-6800).

Sincerely,

Austan S Librach for

James M. Scott, Ohairman
Water Resources Planning Board

mm/PW/JMS

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

D24-190(NCR-LUCE)

OCT 22 1979

Colonel James W. Peck
Baltimore District
Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

On behalf of Secretary Andrus, thank you for the draft copy of the August 1979 progress report of the "Metropolitan Washington Area Water Supply Study for the Potomac Water Users." Since we are not one of the major users identified in this portion of the total study, we look forward to the second portion which will investigate other ways of providing additional raw water to the Metropolitan Washington area.

We are particularly concerned with water withdrawal from the river during periods of low flow. Not only would associated resources be lost by complete water removal from certain segments of the river, but health dangers would result from interruption of the flushing action downstream. Every effort should be made to identify the actual minimum low flow required to sustain the life of the river and a plan alternative should be designated to prevent drawdown below this point.

Several elements of the proposed plans will involve the use of National Park Service lands, and planning for these elements should be closely coordinated with the Service.

We wish to point out the water supply needs of the Chesapeake and Ohio Canal and suggest that future studies note these needs and the potential of the canal as a water resource.

We look forward to continued participation in water supply planning for the Washington metropolitan area.

Sincerely yours,

Director
Acting

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD
2111 Hamilton Street

Office
Vice Secretary

P.O. Box 11143
Virginia 23230
0056

BOARD MEMBERS
George M. Cornell
Chairman
Kenneth B. Hollins
Vice-Chairman
Col. J. Leo Bourassa
Warren L. Braun
Millard B. Rice, Jr.
William L. Tate
H. Alton Wright

TESTIMONY OF THE STATE WATER CONTROL BOARD
TO BE PRESENTED AT THE PUBLIC HEARING
OF THE U.S. ARMY CORPS OF ENGINEERS
ON OCTOBER 25, 1979*

It is my privilege to represent the Commonwealth of Virginia tonight in presenting comments relative to the Corps of Engineers' Metropolitan Washington Area Water Supply Study.

I would like to start out by saying that we heartily commend the Corps of Engineers for maintaining a very high-quality product while undertaking the very difficult task of evaluating the water supply needs for the Washington area and developing implementable, equitable solutions to meet those needs. During the development of alternatives, the Corps maintained an excellent program of public participation and education, and was very responsive to comments received from citizens and government officials. The components selected for inclusion in the final plan formulation reflected past concerns such as a need to include reasonable levels of water conservation when projecting future demands, and a need for limiting alternatives to implementable local and regional projects, as opposed to undertaking controversial projects located outside of the region. The appendices contain a wealth of information on the various projects, which is very helpful in evaluating their desirability and feasibility.

I would like to state that even though ample time was made available in the past to review most of the supporting appendices as they were developed, we find ourselves at this late hour being suddenly confronted with the final critical component on institutional and economic considerations and only very minimal time to review and respond to the completed plans as presented. This document is the most important product of the study, since the various projects and components are assembled to form several "Plans for Choice," with proposed cost allocations among the major utilities. Each of these plans, if implemented, would have far-reaching impacts on the citizens of the Washington area. Our comments tonight, therefore, can reflect only the general concerns of the Commonwealth relative to the suggested water supply plans and distribution of benefits and costs, and more detailed comments will be forthcoming in future months as we have the opportunity to work together with Virginia jurisdictions in evaluating

---

* Presented by Thomas M. Schwarberg, Jr., Regional Director, Northern Regional Office, State Water Control Board

the implications of each alternative.

In reviewing the "Plans for Choice", we find that with the exception of reregulation and conservation, the available supply of water will be increased by a combination of one or more of the following projects: Little Seneca Lake, a Potomac-Patuxent raw-water interconnection, a Potomac-Occoquan raw-water interconnection, and the Bloomington Reservoir. When examining the capital costs for each of these projects, it becomes readily apparent that there is a wide range in the cost-per-MGD for the additional water provided. As can be expected, the reservoir storage alternatives are very significantly cheaper per unit yield than the raw-water pipeline projects. Specifically, the Little Seneca Lake and Bloomington projects would provide water at a cost of $170,000 per MGD and $320,000 per MGD, respectively. Compare this with a cost of anywhere from $520,000 per MGD to $820,000 for the Fairfax County Water Authority (FCWA) or Washington Suburban Sanitary Commission raw-water interconnections. Thus, those users who are able to obtain water from the reservoir sources will receive a great benefit in terms of reduced costs for water supply when compared with the other alternatives. An examination of the "Plans for Choice" reveals that Virginia users are repeatedly forced to pay higher costs because of restrictions on their use of Potomac River water. On one hand, the Corps is publicizing the fact that: "Presently, a large percentage of the water supply storage (in Bloomington) is still uncommitted, and, therefore, is available to any agency interested in purchasing storage...",[1] and yet on the other hand only minimal amounts of the Bloomington flow releases are made available to Virginia users in the "Plans for Choice." For example, under the assumption of "frozen" Potomac allocation ratios after 1988, the FCWA receives only 5 MGD, or 4%, of the Bloomington flows in the year 2030, even though the FCWA's needs represent 22% of the area's water demand in that year. In the "unfrozen" allocation scenario, the FCWA receives 30 MGD or approximately 22% of the Bloomington flow; however, the possibility of a frozen formula in 1988 looms threateningly over the Virginia users. Virginia cannot accept this almost inevitable mandate. In the local alternative, the FCWA is allocated 10 MGD of the Bloomington flows. We could find no explanation or rationale for this reduction. It appears that Bloomington is the salvation of all downstream water users except Virginia. Along these lines, it is also important to take notice of the fact that the required amount of flowby to the Potomac Estuary has not been determined, and any amount required in excess of the 100 MGD assumption in the study will have a very significant impact on available future water supplies. Another factor which impacts the flows in the Potomac is the operation of the Bloomington Reservoir. The Commonwealth wholeheartedly supports the study presently underway at Johns Hopkins University in which various flows and release schedules are being analyzed to determine an optimum operational schedule. We also support the Corps study just underway, which will examine the feasibility of allocating a greater storage volume in the Bloomington project to the purpose of water supply augmentation. The results of these two studies will play an important part in determining how much water will be available to Potomac users. With such an uncertainty as to the availability of

[1] Draft/Progress Report Background Information and Problem Development Appendix, page 133.

Potomac water, especially in light of the high cost of alternatives to the Potomac, it is difficult to determine which plan is the most desirable.

In summary, then, we commend the Corps of Engineers for a well-prepared, high-quality project which has been responsive to citizen and governmental concerns, but we are concerned with the way the components have been assembled into the final "Plans for Choice." In all cases, Virginia users are asked to bear inequitably high costs due to assumptions limiting their participation in low-cost alternatives such as Bloomington and Little Seneca Lake. We will be working together with the State Water Study Commission, the Corps of Engineers, and local jurisdictions and utilities in the upcoming months in an effort to arrive at alternatives which will more fairly address the rights and needs of Virginia water users. I thank you for this opportunity to provide comments on behalf of the Commonwealth of Virginia.

STATEMENT ON THE METROPOLITAN WASHINGTON AREA
WATER SUPPLY STUDY

PUBLIC MEETING
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS

Submitted by:

Charles Vincent, Chairman of the Water Supply Advisory Committee
to the Metropolitan Washington Water Resources Planning Board

Metropolitan Washington Council of Governments

October 25, 1979

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
STATEMENT REGARDING THE METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY
AT THE ARMY CORPS OF ENGINEERS PUBLIC MEETING

October 25, 1979

Mr. Chairman, my name is Charles Vincent. I am Chairman of the Water Supply Advisory Committee to the Water Resources Planning Board (WRPB) of the Metropolitan Washington Council of Governments (COG). I am here to present the position of the WRPB on portions of the Metropolitan Washington Area Water Supply Study now being performed by the Army Corps of Engineers. We appreciate this opportunity to present comments on the study from the regional perspective.

The Water Resources Planning Board has been reviewing various portions of the Corps study for several years. Most recently the WRPB reviewed several draft appendices which deal with plan components and development of recommended plans. Unfortunately, we have only recently received the Draft Main Report and the Institutional Analysis and Economics Appendix, and have had insufficient time to review them. However, the following comments on the Corps' study were approved by the WRPB at its meeting of September 27, 1979, and relate to all of the Draft Main Report except the last two chapters (VI and VII) which present financial and institutional arrangements for the recommended plans.

The Corp Study is Responsive to Local Needs

In general, the Corps' current metropolitan Washington area water supply study, to the extent of the 5 appendices reviewed to date, is an excellent effort and deserves commendation. These plans are responsive to earlier comments and are very constructive in moving the area toward resolution of our serious regional water supply problems. The Corps has developed plans incorporating innovative, local solutions to provide for our future water supply. These solutions make use of water conservation, reregulation (management) of existing water systems, raw water interconnections, and local water storage. All phases of the Corps' study has been open to scrutiny and comment by the public. The efforts made to gain the views of various portions of the Washington community should facilitate regional adoption of study results.

Local Solutions have been Developed to Our Water Supply Problems

Previous water supply studies for the Washington area focused on developing water projects outside of the metropolitan area such as large reservoirs on the tributaries of the Potomac River Basin or groundwater supplies in south-central Maryland. Recognizing that Washington area needs can be solved within it bounds, the Corps, in their present study, has provided local solutions to Washington's water supply problems. The Corps broadened their traditional study of structural projects such as dams to include nonstructural study solutions such as water conservation and reregulation of existing water supplies. All of the Corps' plans include water conservation plus combinations of the following projects:

1) Raw Water Interconnections--The Corps recognized the benefits of maximizing use of existing raw water sources, i.e., the Potomac River and reservoirs in the Occoquan and Patuxent watersheds. Raw water interconnections would enable maximum use of the Potomac during periods of adequate flow and non-Potomac reservoirs during periods of Potomac water shortages.

2) Local Storage--During the past 20 years, about twenty large reservoirs have been proposed for construction in the Potomac River Basin, with the construction of only one, Bloomington Reservoir. In their present study, the Corps has only considered small water storage projects which were already being studied locally.

3) Reregulation--The Corps took a fresh look at managing water withdrawals from the Potomac River and local reservoirs. They found that the withdrawals could be coordinated to store water in anticipation of Potomac low flows. Reregulation would make best use of existing water supplies and facilities.

The Potomac water resources management model, developed at Johns Hopkins University should be considered for managing use of raw water supplies in the Washington area.

The Corps' emphasis on increased reliance on local resources, particularly with regard to local reservoirs, is supported by WRPB policy indicating that governments must assume the responsibility for effective conservation and management of existing water supply reservoirs. Governments should also protect future water supply impoundment sites within the region.

Water Conservation is an Integral Part of the Proposed Plans

The WRPB has forthrightly stated its position of encouraging water conservation methods. Permanent water conservation measures should be a part of an overall water resources management strategy for the region. From five increasingly stringent water conservation scenarios (0-28 percent savings) for the Washington area, the Corps selected an intermediate level of conservation (11 percent savings) for incorporation in their recommended final plans. This scenario is composed of: 1) installation and retrofitting of low water use fixtures and water-saving devices for residential water use; and 2) promotion of indoor and outdoor water conserving practices for residential and nonresidential use by public education programs. This scenario would include the use of local and state plumbing codes to promote water conservation as supported by the WRPB. Moreover, the WRPB believes that further conservation through more stringent codes should be considered. Local governments and water utilities should adopt programs which will provide incentives for retrofitting of existing plumbing devices to conserve water. The General Services Administration should encourage federal agencies to retrofit and repair existing plumbing facilities to further reduce water consumption where it is cost-effective.

The Study Reflects the Views of Many Segments of the Washington Community

Extensive efforts were made to gain the participation of citizens, water supply agencies, private industry, and federal, state and local government. This was accomplished via citizen workshops, public hearings, a citizen participation committee, a federal-interstate-state-regional advisory committee, a public opinion survey, newsletters, and meetings with individuals. The Corps' efforts to incorporate the views of various portions of the Washington community should facilitate regional adoption of study results.

The Corps Should Use the Most Recent Local Demographic Forecasts

Plans were formulated to meet projected water demands of the Washington area. The most probable projection of water demand was selected from a range of projections to the year 2030. The WRPB realizes that the best existing demographic forecasts, i.e., Cooperative Forecasts, Round I, were incorporated in the projections of water demand. However, the Corps should revise their projections of water demand using the most recent, regionally approved, Cooperative Forcasts, Round II. As previously stated, significant differences of 20 and 14 percent exist between Round I and II Forecasts of population for Prince George's County and employment for the District of Columbia, respectively.

Once the Corps has finalized their projections of water demand, the WRPB would like to make them available for areawide use.

Recommended Plans are Designed to Meet Severe Drought Conditions

Several drought situations were investigated requiring water supply plans to meet average 30-day demands and 7-day peak demands. Selection of final plans was based on meeting the more stringent 7-day peak demand. This may still require occasional restriction of water use during infrequent periods of water shortage lasting less than 7 days. However, the final plans will not incur the substantially higher costs required to construct more and/or larger water supply projects to meet even more severe drought conditions.

A Minimum Potomac Flow is Part of Plan Design

The Corps has recognized the need for a continuous flow into the Potomac Estuary for the protection of the estuary. A study, managed by the State of Maryland, is presently underway to ascertain the minimum inflow required for the protection of the estuary. Because this study is incomplete, the Corps has had to assume a minimum inflow of 100 MGD and assess the sensitivity of their water supply planning to larger inflows. When results of the inflow study are available, the Corps should determine the impact of this new information on their study recommendations.

The Corps' concern for estuary water quality indicates that they are aware of the need for integrated water supply and water quality planning.

Results of the Water Supply Study Should be Incorporated in Revisions of the Region's Water Quality Management Plan

The WRPB recognizes that new or increased water withdrawals will raise the risks of shortages occurring in the Washington metropolitan area. The Corps' water supply study is the most regional in scope of several presently underway to reduce this risk. The results of the Corps' study should be considered for incorporation in the revisions of the Metropolitan Washington Water Quality Management Plan (208 Plan). This effort will produce a more comprehensive approach to water resources planning.

While the WRPB has not reviewed the Corps' financial and institutional analyses, we wish to comment upon the difficult problem of plan implementation based on the summary information presented in the Draft Main Report. In examining the four suggested institutional arrangements for implementation of a selected water supply plan, we find that none of the institutions incorporate direct participation of metropolitan Washington local governments.

With over 75 percent of the Potomac River Basin's population located in the Washington area we feel that local objectives in water supply management are of high priority. Because the Corps' recommended water supply plans allow for short duration water shortages, citizens and the business community of the Washington area would be directly affected by water supply management decisions. Under these circumstances, coordination of water supply management and local implementation of emergency and conservation procedures is needed. In conclusion, we feel that any institution that eventually evolves to manage water supply in the Washington area should involve direct participation of local governments.

I hope I have provided you with information that you will find useful as you complete the current phase of your study for Potomac River users. We offer the services of the WRPB to continue to work with you and to provide additional information as you may require.

Delegate candidate Jim Dillard charged the Army Corps of Engineers with bias against Fairfax County water authority in its latest plan to solve metropolitan water problems. Dillard, in a statement prepared for the Corps public hearing tonight on the Metropolitan Washington Area Water Supply, said the Corps has slanted the cost-benefit distribution to favor the District of Columbia. He noted that the District receives its water supply from the Washington Aqueduct Division, a Corps agency under the same Corps office in Baltimore that prepared the study. According to Dillard this conflict of interest between the Corps national planning and regulatory role and its water supply utility role for D.C. caused problems two years ago when Fairfax was held up in obtaining a Corps permit to build its water supply intake on the Potomac. "Now" says Dillard, they've done it again!"

The latest Corps study recommends four plans to meet Metropolitan area water needs through the year 2000. Without a solution there is a chance of a shortage within ten years. Assuming regional water conservation and a continuation of the current regional formula for sharing the Potomac, the Corps estimates a metropolitan need for 315 million gallons per day in additional supplies for 2050. This need is split between the Fairfax County Water Authority (76 MGD or 24%), Maryland's Washington Suburban Sanitary Commission (131 MGD or 42%) and the Corps Washington Aqueduct Division (106 MGD or 33%). The total cost of meeting the need in the four plans runs from $107 million to $137 million. Dillard says this much of the plan has been publicized for months and has developed considerable support.

Dillard charges the Corps has withheld until this month the part of the plan that apportions costs among the jurisdictions and only released it a few weeks before the single public hearing scheduled for tonight.

Two of the plans would require a regional water supply institution to be created, which is politically impossible according to most observers. The other two plans distribute a much higher cost to Fairfax than to the other parties, as shown in these tables:

	cost	% cost	% water
Washington Aqueduct	$34m	28%	33%
WSSC	$26.3m	21%	43%
Fairfax Co. Water Authority	$61.6m	51%	24%
total	$121.9m	100.0	100.0

Plan 3 "Subregional Plan"

	cost	% cost	% water
Washington Aqueduct	$45.7 m	35%	33%
WSSC	$3217 m	27%	43%
Fairfax Co. Water Authority	$45.8 m	36%	24%
total	$122.2 m	100%	100%

The Corps has put forth plans that would deny Fairfax a fair share in upstream reservoirs, instead allocating almost all of this low cost water to Md. and D.C., according to Dillard. Bloomington Reservoir is a Corps project now under construction and furnishes 33% of the water needs in each plan. Dillard says this is still another example of the Army Engineers using their national role to favor their D.C. water supply agency.

October 23, 1979

James W. Peck, Colonel
Corps of Engineers
Dept. of the Army
Baltimore District
P. O. Box 1715
Baltimore, Md. 21203

Dear Colonel Peck:

My name is Frank J. Clark. I reside at 4702 Iris Street, Rockville, in Montgomery County, Maryland 20853.

I have been a member of the Corps' Water Supply Citizens' Task Force since July 1978, during which time I have actively pursued the issues involved with the Metropolitan Washington, D. C. water supply study as authorized by Section 85 of the Water Resources Development Act of 1974, Public Law 93-251.

Since this program's inception in 1976, the annual funding through FY 80 has been $2,730,000, with an estimated total study cost through 1982 of $3,450,000.

However, despite this exorbinate expenditure of public funds, it is questionable as to whether or not the Corps has come up with a plan that is totally acceptable.

To solidify my concerns, the following report, pages 1 thru 8, are presented herewith for the records.

Sincerely,

Frank J. Clark

cc; file (2)

REVIEW OF

THE

METROPOLITAN WASHINGTON AREA

WATER SUPPLY STUDY

FOR THE

POTOMAC RIVER USERS

PREPARED BY

THE DEPARTMENT OF THE ARMY

BALTIMORE DISTRICT

CORPS OF ENGINEERS

-PHASE ONE-

AUGUST 1979

C O N T E N T S

1. Alternatives
2. Conservation of Water Resources
3. Basis of Study
4. Pollution Potential
5. Cost Analysis
6. Balance Sheet
7. Energy Conservation
8. System Analysis
9. Plan Proposal
10. Plan Analysis
11. Deferral of Decision
12. Institutional Arrangements
13. Risk Level
14. Political Impact
15. Low Flow
16. Additional Comments

17-111-4

1) ALTERNATIVES:

It is essential that the Corps Study include alternatives to the plan proposals in the event any or all of them become invalid or unacceptable, in whole or in part.

2) CONSERVATION OF WATER RESOURCES:

Consideration should be given to the conservation of water in the Upper Potomac Basin as reflected in the increased demand of downstream users, in and above the Metropolitan area.

Studies should be provided which would embrace methods for protection of delected watersheds against the impact of adverse uses, as examplified by other metropolitan areas such as New York and Boston, who have, by foresighted watershed conservation and land acquisition policies, assured their expanding populations of safe and adequate water supplies for future use.

The Dept. of State Planning should be solicited relative to the impact which the plan proposals will have on areas of critical concern.

3) BASIS OF STUDY:

This study, or any other study, which addresses itself to the water needs of the Washington Metropolitan area, must of necessity include the following three (3) elements which are essential to its completeness:

1) Water Quality
2) Water Quantity
3) Cost

Without these elements the final report will neither address itself to the Congressional mandate or to the needs of the public.

The availability of anadequate water supply and the cost to provide this valuable resource can only be justified based on the adequacy of the final report- - - - in this case, a source of safe drinking water supply.

The absence of water quality considerations in this report is setting-up a distinction regarding the Corps'

responsibilities in the Metropolitan area relative to water quality control, which appears to leave the determination of this issue up to EPA and the State to resolve.

4) POLLUTION POTENTIAL:

The potential exists within the systems contemplated to create a condition of pollution which would not otherwise exist.

Therefore, to protect the public's health, safety and welfare, the system design should mandate the need for water quality analysis in order to assure the public that a system of adequate supply will meet the requirements of the Clean Water Act, Potable Water Requirements and Drinking Water Regulations.

The potential for pollution and contamination is inherent in the systems proposed, and therefore mandates the need for water quality analysis.

5) COST ANALYSIS:

It is apparent from a review of the scope of the proposed projects that they will be costly to implement and maintain.

It is therefore necessary to indicate how these projects will be funded if approved, and specifically, how their funding will directly affect the rate payers involved. The draft of the main progress report should, in Chapter 6, show the per capita plan costs.

This concern is somewhat enhanced by the variations in user-rates to the consumer in different jurisdictions, as determined by the water authority sevicing a specific area, and further raises the question of equity relative to the costs involved.

This area of cost is also of concern in the instance that Federal funds are not currently available for water supply systems, as per the Water Supply Act of 1958.

6) BALANCE SHEET:

It is not clearly illustrated or described in the report the supply (availability) of or the withdrawal (use) of water from the areas involved. In many instances, the conclusions reached are based on unsupported assumptions.

What is needed is a water balance sheet and an analysis which will plot the water withdrawals against the sources of potential water supply.

As one example: Water withdrawal for agricultural irrigation is not accounted for in the study.

7) ENERGY CONSERVATION:

Four of the five systems proposed envision raw water interconnections with pumped capacities varying from 60 to 180 MGD.

These systems are energy intensive, and therefore the report should be provided with an energy-conservation study.

8) SYSTEM ANALYSIS:

There is no clear-cut definition as to the availability and cost of additional utility services to provide the support required by the proposed interconnection system component.

The hydraulics encountered in counter-flow systems could be critical relative to maintaining the integrity of the system, which as mentioned in the report, utilizes "reversible pipelines".

9) PLAN PROPOSAL:

The distinguishing features of the various plans are lost in their commonality.

Essentially, the Corps' five (5) plans are really one plan with modifications, and therefore supports the recommendation made elsewhere in this report for provision of a viable alternative(s), should this plan or plans not succeed.

10) PLAN ANALYSIS:

In reviewing the concept of plan analysis based on Item (c) evaluation, I found it necessary to assign a priority to each of the seven elements involved, as I believe there is reasonable justification to conclude that they should not be equally rated.

FJC/10-79

Having had done this, and then evaluating the levels of acceptance based on frequency of occurrence, I arrived at the following order of priority relative to plan approval:

Priority 1 - Plan 5
Priority 2 - Plan 3
Priority 3 - Plan 2
Priority 4 - Plan 4 and
Priority 5 - Plan 1

This is somewhat different to the Corps' proposal which indicated that "Plan 2 was formulated as the most likely plan to be implemented------".

Additionally, this review indicated the relative value of the seven elements comprising the evaluation-(Item (c) pg. 45) as follows:

1- Limited environmental impact
2- Social cohesion
3- Low Cost
4- Economic equity
5- Ease of implementation
6- Planning compatability
7- Flexibile

This analysis is indicative of the fact that a project with limited environmental impact should receive the major consideration.

Plan 5 which also received a number one priority meets this requirement.

It is my belief that the reason given for recommending Plan 2 ("because it consists of projects presently under active consideration") is without merit, and tends to rule out a more acceptable project based on its merits, and not necessarily on its political and jurisdictional acceptance (ease of implementation) alone.

In any instance, it would be somewhat naive to believe that a plan will be successful which relies wholly or in part for its implementation on the good-will and judgement of local officials.

11) PERSPECTIVE OF EVALUATION:

In deference to the Corps' analysis (page 48), it is possible that a crisis condition could be the very thing that

will break a deadlock and foster the implementation of an acceptable plan. Nor is it correct to assume that all decisions made under crisis conditions are poor ones.

In many instances crisis conditions create a unity of action which might not otherwise be present, and by so doing, bring together the necessary elements and expertise which were previously lacking.

12) INSTITUTIONAL ARRANGEMENTS:

It is somewhat premature to address the subject of institutional arrangements with five (5) plans being offerred for consideration; each having variations in geographic identification (local, sub-regional, regional), and political and jurisdictional control and/or involvement.

Institutional arrangements, of necessity, should be coordinated with the specific plan it is intended to implement.

13) RISK LEVEL:

Statements on page 6 of the report indicate that the proposed plans were evaluated utilizing eight (8) specific elements, one of which was "low risk".

However, "low risk" was the only element omitted from the plan evaluation as shown on page 45.

It is also questionable as to why plan 5 or any other plan utilizing pump capacity would not or could not be affected by failures of pumps to function, for any one of a variety of reasons.

It is assumed that system design and equipment selected would provide the necessary back-up potential to reduce or eliminate the risk factor, especially under the conditions of "emergency"use; a fact that the WSSC has come to accept relative to their recent plant breakdown.

14) POLITICAL IMPACT:

The system of accounts (pg. 44-45) is deficient, in the instance it does not specifically evaluate political impact on plan approval and/or implementation.

The plan evaluation as shown on pg. 45 and a "case of implementation" does not support the statements made on pg. 43, nor does it indicate why plan 5 is the least acceptable, except to say it is difficult to implement.- - a statement which could apply to any of the plans under consideration.

15) LOW FLOW:

The statement made on page 31 relative to environmental impacts indicated that "excessive drawdown of local reservoirs, and associated decrease in water depth could have a dramatic impact on reservoir fisheries should it occur during peak spawning periods".

This statement assumes a condition which is not likely to occur, in the instance that the peak spawning period does not occur during periods requiring drawdown.

Proceedings of the Susquehanna Upper Bay Conference (April 25, 1979), in discussing low flow conditions, indicate that the period of April 15 to June 15 was the critical spawning season for fish.

In any case, based on the frequency of occurrance and other factors, one would question the concern relative to the possible loss of one spawning season when compared to the need for an emergency supply of water for public use.

16) ADDITIONAL COMMENTS:

A) The background statement (pg. 1) that, "the river still flows from headwaters to the Chesapeake Bay unfettered by major dams or reservoirs" is somewhat inaccurate in the instance that Bloomington Dam is currently under construction.

B) I am concerned with the statement on page 2 that, "*further authorization of Sixes Bridge is contingent upon a* full and complete examination of the water resource needs of MWA.

In the instance the Corps' study addresses itself to this problem, and the fact that the Sixes Bridge project is not considered in the final report, could one logically *assume that the Corp will recommend* cancellation of the Sixes bridge project?

C) The statement on page 43 that, "Plan 5 (Regional Plan) is the least flexible plan for choice" is apparently in conflict with Table VI-7,pg.45, which gives plan 5 a totally flexible rating.

16) ADDITIONAL COMMENTS: continued

D) Figure 1-7, pg. 8 can best be read if a mirror is available!

E) The report does not accommodate local jurisdictions' existing and proposed water storage facilities, such as the 2 MGD filtered water storage tank presently under construction by WSSC in Montgomery County as a source of water supply.

F) The remnants of Cedar Run Dam appear throughout the report. However, it is not included in any of the final plans, giving rise to the question regarding the justification for its elimination, and further questioning the exclusion of any new impoundment structures in Virginia, which would conceivably become a very viable part of the Corps' study.

Additionally, it raises the question relative to the discussion of local storage projects (pg. 22), when apparently only one (1) new structure (Seneca Dam) is involved.

G) I view the section on Social Impacts (pg.34,35) with some concern, and question why the study could not provide *a more definitive analysis of what* would occur and how it would be compensated for.

30 to 40 references are made in the text indicating events that could or may occur,with no assurance that this would be the case, or if so there is any planned action to mitigate the social impact(s).

Also, street cleaning, to the best of my knowledge, is a dry-type operation primarily utilizing little, if any water.

Operations of water hydrants for recreational purposes should in any case, be eliminated in light of the need to conserve our natural resources.

Also, car washes and other similar establishments should be encouraged to install recycling equipment, where feasible.

H) Considerable reference is made to costs in connection with economic impacts. However, I believe that this factor is overemphasized, in light of the frequency of occurrence of drought conditions and the need during an emergency to provide the public with a water supply.

1) It is questionable that a primary social benefit would be generated by construction of the Little Seneca Lake Dam relative to the recreational capability it would provide.

In many instances, other jurisdictions have adequate recreational facilities of this type already in place (Virginia).

It is also questionable if people from other jurisdictions would desire to drive into upper Montgomery County, considering gas shortage and cost to make use of this proposed facility, which does not provide for public bathing, which is allowable in reservoirs and impoundments in other States, and was discussed at one time as a viable recreational use for the Patuxent River Reservoirs.

EAC/10-77

NATIONAL CAPITAL PLANNING COMMISSION
1325 G STREET NW
WASHINGTON, D.C. 20576

In Reply Refer To:
NCPC File No. 1615

NOV 7 1979

Col. James W. Peck
District Engineer
Baltimore District Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Col. Peck:

At its meeting on November 1, 1979, the National Capital Planning Commission, in comments to the Baltimore District, U. S. Army Corps of Engineers on the Metropolitan Washington Area Water Supply Study for the Potomac River Users-Draft Report:

1. commended the Baltimore District for the preparation of a study that thoroughly identifies and examines the water supply problems in the Potomac River Basin and examines a number of water supply alternatives that appear to be feasible to serve the short- and intermediate-range needs of the Metropolitan Washington Area (MWA);

2. endorsed the concept, as represented by the alternative plans in the study, of meeting the short- and intermediate-range projected water supply needs of the most urban portions of the MWA through a combination of intergovernmental management arrangements, conservation, and capital improvements projects, such as Little Seneca Lake and/or raw water interconnections between the Washington Suburban Sanitary Commission (WSSC) facilities on the Potomac and Patuxent Rivers or the Fairfax County Water Authority (FCWA) facilities on the Potomac River and Occoquan Creek;

3. recommended that the Baltimore District reassess its findings and alternative plans, adjusting for the increased deficit of water supply to the year 2030 that would be represented by any additional Potomac River flow-by requirements, if the determination, now underway, of the flow-by level necessary to protect the Potomac River environment, as well as flow-by requirements for the Patuxent River and Occoquan Creek, significantly change the assumptions in the study report;

4. requested that the Commission be included in the Federal-Interstate-State-Regional Advisory Committee (FISRAC) or any similar committee that is established to advise the Baltimore District in the preparation of Phase II of the study; and

... noted that Phase 2 of the Metropolitan Washington Council of ... cooperative forecasts of the population in the National Capital ... 6 percent lower than the Round I forecasts used in the study, resulting in some reduction in ... from the levels incorporated in the study.

In view of the significant federal interests in assuring an adequate water supply for the Federal establishment in the National Capital Region and for the area that must be supplied by the Washington Aqueduct Division (WAD), a Federal agency, under legislative mandate, the Commission recommended that the water supply and distribution agencies and jurisdictions in the area covered by the Phase 1 study report:

1. cooperate in establishing intergovernmental arrangements at the regional level necessary to assure adequate water supply for all parts of the MWA covered in the report; and

2. select a plan for the provision of an adequate water supply that is based on the concept outlined in the study and provides for high levels of cost-benefit efficiency while distributing costs among users as equitably as possible.

The Commission urges Federal agencies with installations in the National Capital Region to:

1. complete preparation of their Water Supply Emergency Plans for the MWA as soon as possible, where such plans have not been prepared or completed;

2. prepare year-round conservation plans for their installations and facilities in the MWA that will contribute to the regional goal of a 10 percent reduction in demand through conservation proposed in the study by the Baltimore District; and

3. incorporate water conservation and demand reduction features in all new construction, renovation, and rehabilitation projects in the MWA, indicating such features in plans submitted for Commission review pursuant to the National Capital Planning Act of 1952, as amended.

A copy of the Executive Director's Recommendation, as approved by the Commission, is enclosed for your information.

Sincerely,

Reginald W. Griffith
Executive Director

Enclosure

94-111-C-46

NATIONAL CAPITAL PLANNING COMMISSION
... G STREET NW
WASHINGTON, D.C. ...

NCPC File No. 1815

METROPOLITAN WASHINGTON AREA
WATER SUPPLY STUDY FOR THE POTOMAC RIVER USERS:
DRAFT REPORT

Executive Director's Recommendation

October 26, 1979

The Executive Director recommends that the Commission, in comments to the Baltimore District, U.S. Army Corps of Engineers on the Metropolitan Washington Area Water Supply Study for the Potomac River Users - Draft Report:

1. commend the Baltimore District for the preparation of a study that thoroughly identifies and examines the water supply problems in the Potomac River Basin and examines a number of water supply alternatives that appear to be feasible to serve the short- and intermediate-range needs of the Metropolitan Washington Area (MWA);

2. endorse the concept, as represented by the alternative plans in the study, of meeting the short- and intermediate-range projected water supply needs of the most urban portions of the MWA through a combination of intergovernmental management arrangements, conservation, and capital improvements projects, such as Little Seneca Lake and/or raw water interconnections between the Washington Suburban Sanitary Commission (WSSC) facilities on the Potomac and Patuxent Rivers or the Fairfax County Water Authority (FCWA) facilities on the Potomac River and Occoquan Creek;

3. recommend that the Baltimore District reassess its findings and alternative plans, adjusting for the increased deficit of water supply to the year 2030 that would be represented by any additional Potomac River flow-by requirements, if the determination, now underway, of the flow-by

level necessary to protect the Potomac River environment, as well as flow-by requirements for the Patuxent River and Occoquan Creek, significantly change the assumptions in the study report;

4. request that the Commission be included in the Federal-Interstate-State-Regional Advisory Committee (FISRAC) or any similar committee that is established to advise the Baltimore District in the preparation of Phase II of the study; and

5. note that Round 2 of the Metropolitan Washington Council of Government's Cooperative Forecasts of the population in the National Capital Region are 6.6 percent lower than the Round 1 forecasts used in the study, resulting in some reduction in demand from the levels incorporated in the study.

Related Recommendation

The Executive Director recommends that, in view of the significant Federal interests in assuring an adequate water supply for the Federal establishment in the National Capital Region and for the area that must be supplied by the Washington Aqueduct Division (WAD), a Federal agency, under legislative mandate, the Commission recommend that the water supply and distribution agencies and jurisdictions in the area covered by the Phase I study report:

1. cooperate in establishing intergovernmental arrangements at the regional level necessary to assure adequate water supply for all parts of the MWA covered in the report; and

2. select a plan for the provision of an adequate water supply that is based on the concept outlined in the study and provides for high levels of cost-benefit efficiency while distributing costs among users as equitably as possible.

The Executive Director also recommends that the Commission urge Federal agencies with installations in the National Capital Region to:

1. complete preparation of their Water Supply Emergency Plans for the MWA as soon as possible, where such plans have not been prepared or completed;

2. prepare year-round conservation plans for their installations and facilities in the MWA that will contribute to the regional goal of a 10 percent reduction in demand through conservation proposed in the study by the Baltimore District; and

3. incorporate water conservation and demand reduction features in all new construction, renovation, and rehabilitation projects in the MWA, indicating such features in plans submitted for Commission review pursuant to the National Capital Planning Act of 1952, as amended.

* * *

Description of Study

The Metropolitan Washington Area Water Supply Study is being prepared in compliance with the Water Resources Development Act of 1974, which directs the Chief of Engineers to make a complete investigation of the water resource needs of the MWA. The study area includes the jurisdictions within the National Capital Region and Charles County, Maryland. Within this area there are 25 independent water supply systems, but of these systems, three furnish approximately 95 percent of the total water treatment capacity. These three systems are WAD, operated by the Corps of Engineers, which serves the District of Columbia, Arlington County, Falls Church, and part of Fairfax County northwest of Arlington County; WSSC, which serves Montgomery and Prince George's County; and FCWA which serves Fairfax County, Alexandria, and part of Prince William County. These suppliers obtain their water from one or more of three sources, including: Potomac River (WAD, WSSC, and, in the near future, FCWA), Patuxent River (WSSC), and Occoquan Creek (FCWA). A fourth system, the city of Rockville, although relatively small, is, like WAD, totally dependent on the Potomac River.

The study is being conducted in two phases. Phase I, the portion currently before the Commission for review, presents plans to meet the needs of the four Potomac River users (WAD, WSSC, FCWA, and Rockville) to the year 2030. The Baltimore District has focussed on these users and the areas they serve first, because they supply the majority of water in the MWA and have the greatest impact on available water supplies. Phase II of the study will address the water needs of the remaining areas in the MWA, which include part of Prince William County, Loudoun County, Charles County, and the City of Fairfax. The second phase will also explore long-range water supply alternatives, including land application of wastewater, ground water, wastewater reuse, use of the Potomac estuary, storage, and alternatives suggested by others as the study progresses.

The first phase of the study involved an analysis of the available water supplies and needs, the formulation of alternative plans to meet identified needs to the year 2030, and a comparison of the alternative plans, including consideration

[illegible] economic, [illegible], social [illegible] cultural [illegible]. Although the alternative plans are developed in sufficient detail to [illegible] choice, the study does not select or endorse a particular plan. The study also gives consideration to alternative institutional management arrangements but does not endorse a particular plan. It does conclude that a regional water policy and management plan are needed to insure adequate supplies.

The study includes five alternatives, one of which represents the existing conditions supplemented by available supply from the Bloomington Lake project in Garrett County, Maryland and Mineral County, West Virginia, and raising the level of the Occoquan River dam by two feet (called the "without" conditions alternative in the study). All of the plans would be capable of meeting the water needs of the area until 2030, except the "without" conditions plan, based on certain assumptions, including an assumption as to the amount of flow needed to be maintained in the Potomac River to protect environmental quality (flow-by). The five plans evolved from analyses of 18 plans, of which nine plans were further examined in narrowing the alternatives to the five presented. In addition to their ability to satisfy the objective of meeting water supply needs, the various alternatives were evaluated for their environmental impact, ease of implementation, flexibility, planning compatibility, economic equity, social cohesion (impact on community activities and lifestyles), and cost, in selecting the alternative plans presented in the report.

The study included the preparation of nine supporting appendices. Four primary appendices, covering background information, problems, and needs; the formulation, assessment, and evaluation of detailed plans; the public involvement program; and institutional and economic analysis, form the basis of the study report. Five detailed technical appendices, covering supply and demand, raw water interconnections, finished water interconnections, water conservation, and local storage, were all developed and used in the formulation, assessment, and evaluation of the plan alternatives. These appendices contain over 1,400 pages of technical material which is summarized in the Draft Main Report.

On the basis of recommendations from its advisory committee (FISRAC), the Baltimore District based its determination of water needs on the following factors and assumptions: a 7-day duration low flow occurrence in the Potomac River, a once in 100 year recurrence probability, water demand that would occur with the implementation of 10 percent reduction in existing and projected demands through conservation, a 100 million gallons per day (mgd) flow-by to the Potomac estuary, and the release of 135 mgd from Bloomington Lake in the month of August, with varying releases during other months. These assumptions led to a determination that a maximum regional deficit of 180 mgd (280 mgd without the 10 percent reduction in demand through conservation) would occur by 2030.

The analysis of needs based on a simulation of drought conditions led to the conclusion that the major water supply problem in the area covered in the first phase of the study is a two-part problem. Flow in the Potomac River could lead to severe shortages under conditions likely to occur with a 100 year recurrence value, while there would be sufficient water in the reservoirs on the Patuxent River and Occoquan Creek. On the other hand, the simulation study indicated that these storage areas could be [illegible] while there was plentiful flow in the Potomac River. The analysis [illegible] that depletion of all sources would ever occur simultaneously. Since there is presently no way to manage the existing supplies to better use the available

the area the study concludes that the 180 mgd deficit noted above [illegible] by 2030, as noted above. The nature of this two-fold problem had a direct bearing on the analysis of ways to solve future water supply needs and the selection of the alternative plans presented in the study.

As suggested by the summary of the appendices, above, various components were analyzed in formulating the plans. They include raw water interconnections, between river or stream sources and treatment facilities or a reservoir; finished water interconnections, between two adjacent or nearby distribution systems; reregulation, which involves a flexible system permitting an area to be served with water from either of two independent sources, depending upon which has available or more plentiful supply at any one time; local storage, consisting of a dam and impoundment lake on a minor tributary to the Potomac River; and conservation and demand reduction. In its analysis of the broader range of alternatives, the Baltimore District eliminated all plans involving direct raw water interconnections between two streams because of potential environmental problems, but new raw water connections to treatment facilities are included.

Each of the five alternatives includes Bloomington Lake, which should be capable of releasing 135 mgd of water during dry periods by 1981. As noted above Alternative 1, the "without" conditions alternative, which includes no plans to alter the management of water resources in the MWA, does assume that the Occoquan Creek dam will be raised by two feet. This alternative also assumes that existing conservation codes would apply but does not incorporate more ambitious conservation goals. Alternative 1 does not satisfy the water needs of the MWA to the year 2030, since it includes no plans to alter the management of water resources. Under this alternative a once in 100 year, 7-day deficit in water supply has the potential for occurring as early as 1990.

The Potomac Low Flow Allocation Agreement, which has been signed by the District of Columbia and the States of Maryland and Virginia, as well as by the local supply and distribution jurisdictions, is assumed as a given in the "without" conditions alternative, as well as in the four alternatives involving new development projects. This agreement provides for set proportions of river water to be taken by each Potomac River user to the year 1988. After that year, under certain conditions, the proportion will gradually change to permit a greater share to serve suburban areas, where more growth in population is expected.

Each of the four alternatives involving new management and/or development proposals assumes that Conservation Scenario 3, a program examined in the study, will be in effect and will reduce existing and projected demand by approximately 100 mgd. This savings, in effect, matches the amount of Potomac River flow-by, 100 mgd, which has been assumed in the study for all alternatives. Therefore, each alternative (except the "without" conditions plan) is designed to meet a deficit of 180 mgd by the year 2030, which, as noted earlier, was calculated on the basis of various assumptions, including the availability of water from Bloomington Lake.

Alternative 2, which is designated the "Local plan" because it requires no new management arrangements, includes two development proposals, Little Seneca Lake, a reservoir that has been proposed on Little Seneca Creek in Montgomery County, and a Potomac to Occoquan raw water interconnection in Fairfax County. This alternative would require no significant new levels of regional cooperation since Little Seneca Lake would serve WSSC exclusively and the raw water interconnection would serve FCWA exclusively. WSSC and FCWA would apply reregulation in their service areas depending upon whether low flows occured in the Potomac River or in the Patuxent River or Occoquan Creek. Under this alternative WAD would be supplied with most of the uncontracted for water supply in Bloomington

C-VIII-48

Lake. This [illegible] this alternative plan, [illegible] alternatives provide [illegible] all the service areas to be benefited by Bloomington Lake supply.

Alternative 3, designated as the "subregional plan" by the Baltimore District, would also involve the development of Little Seneca Lake and the Potomac to Occoquan raw water interconnection. Under this plan, however, water from Bloomington Lake would be distributed to all service areas, and WSSC and FCWA would reduce withdrawals in the Potomac River equivalent to the capacities of the two new projects during times of low flow in the Potomac. This plan also incorporates reregulation by WSSC and FCWA. Alternatives 4 and 5 are designated as "Regional Plans" by the Baltimore District. Alternative 4 provides for the development of Little Seneca Lake and a 60 mgd Potomac to Patuxent raw water interconnection. Under this plan a higher degree of regional cooperation would be required since the developments would be designed to meet the entire Potomac River water needs of each user regardless of the location of such need. Although both major developments would be in Maryland, in times of low flow in the Potomac deficits for WAD and FCWA would be offset by increased reliance by WSSC on these two facilities or by releasing Little Seneca Lake water to the Potomac. Reregulation would be applied by WSSC under this plan.

Alternative 5 is similar to Alternative 4 in its requirement for greater regional cooperation. The essential difference is that Little Seneca Lake would not be developed, and the Potomac to Patuxent raw water interconnection would be sized at 180 mgd rather than 60 mgd. Low flows in the Potomac River would be offset by greater WSSC reliance on the Patuxent River reservoirs. Reregulation would be applied by WSSC.

As noted earlier the study does not propose or endorse a specific plan. It does, however, evaluate the alternatives in terms of costs and benefits and environmental impacts. The most serious impacts are associated with Alternative 1, under which water shortages could begin to occur by 1990. The impacts would possibly include not only social and economic problems but also natural environmental effects when excessive drawdown of local reservoirs would occur. Under the other alternatives, deficits are not expected to the year 2030, and the principal impacts would be directly related to the capital improvements projects incorporated in the alternatives.

The costs of the projects were calculated and evaluated based on the ratios of river water allocation in 1988 incorporated in the Potomac Low Flow Allocation Agreement and ratios of allocation that would be in effect by 2030, assuming there is not freeze or previous change in the allocated formula. In this analysis the costs to the WAD service area would increase after 1988 since it would receive less allocation of Potomac River water and would need allocations from other sources to make up a greater deficit. In the cost/benefit analysis, Alternative 4 was found to provide the highest ratio of benefit to cost, while Alternative 5 was found to have the lowest ratio. The cost of the 180 mgd raw water interconnection under the latter alternative is considerably higher than the cost of the 60 mgd interconnection and Little Seneca Lake, combined, which are incorporated in Alternative 4.

Alternative 5 is considered the most inflexible plan since it would involve no mechanism to provide supplies to FCWA. Under Alternatives 2, 3, and 4, through releases from Little Seneca Lake, shortages in the Potomac River could be ameliorated. Alternative 5 is considered to be the least disruptive of the plans involving new construction projects, however. Although Alternative 4

would have the highest benefit to cost ratio and would be the least expensive plan from a regional viewpoint, it would not be the least expensive for all service areas, most notably for WSSC. The plans incorporating Little Seneca Lake are considered to be more flexible, since water can be drawn down from the Lake by WSSC or released to supplement the flow in the Potomac River. Therefore, Alternative 5, which excludes Little Seneca Lake and relies on one capital project, the 180 mgd raw water interconnection, is considered to have a higher risk than the other plans.

The study does not, as also noted earlier, include any definitive recommendations on institutional arrangements to manage water supply in the MWA. It does, however, outline four management alternatives, including a council format involving the major service areas in the MWA, a strong state form of government management plan, a Lower Potomac basin agency, or a regional basin agency.

Federal Interests

The Federal government is a major water consumer in the MWA. The Corps of Engineers estimates that the Federal government consumed 28.9 mgd in 1976. This was equivalent to 9.6 percent of the region's total water consumption at that time. The Federal government consumed 36.2 percent of Prince Williams County's total consumption in 1976, 14.1 percent of the Washington Aqueduct's consumption, 6.0 percent of the Fairfax County Water Authority's consumption, and 3.5 percent of the Washington Suburban Sanitary Commission's total consumption. However, 95.5 percent of the water consumed by the Federal government in 1976 was in the Washington Aqueduct service area. As a major water consumer, the Federal government is interested in assuring an adequate available supply of water to meet its existing and future needs throughout the MWA.

The Federal government is a major supplier of water to a large portion of the MWA. The Washington Aqueduct Division, U.S. Army Corps of Engineers, provided 195.2 mgd to local water supply distributors in its service area in 1976. This was equivalent to 46.4 percent of the MWA's total water consumption at that time. Although the WAD's relative share of the total water consumption in the MWA is likely to decrease with anticipated growth in other service areas, the Federal government will still provide a substantial share of the future water supply in the area. Although WAD was originally established to serve the Federal government, it now has a legislative requirement to supply the District of Columbia and authority to supply other parts of the MWA as well.

There is also a significant level of Federal interest in the quality of the Potomac River environment, as well as the environments in the Patuxent River and Occoquan Creek areas. These rivers are integral parts of the natural environment of the area and have a great impact on the quality of life of the Nation's Capital.

Referral of Study

The study was referred by the Baltimore District to several Federal Agencies in the National Capital Region and copies of the comments of the National Capital Region of the National Park Service and the Environmental Protection

[illegible] to the [illegible] Commission's review of the document. In addition, the staff referred the study to major Federal water users in the region not covered by the Baltimore District's mailing, including the Departments of the Army, Navy, and Air Force, the General Services Administration, and the Architect of the Capitol.

The D.C. Metro Program Office of EPA has advised that:

1. the report is a welcome addition to the water supply studies and proposals for the region, and it commends the Corps of Engineers for its sensitive and constructive proposals;

2. it views the alternative plans in the study report as realistic in regard to the potential for implementation;

3. it is pleased by the treatment of implementation problems, including the representation of the issues of intergovernmental conflicts and constraints, and believes the report could provide the basis for decisions to bring about more effective management of water resources in the MWA; and

4. it is pleased that the interrelationships of water supply and waste-water management are reflected in the report.

Comments have been received to date from the Departments of the Air Force and Navy. The Department of the Air Force endorsed Alternative Plans 2, 3, or 4, each of which it felt would have a positive impact on Air Force installations in the area. The Department of the Navy emphasized the need for the requirements of Federal Agencies to be considered in water supply planning and suggested some form of continuing National Capital Planning Commission representation in water supply planning task forces or any future Potomac Basin agency.

Evaluation of Study

The Baltimore District has produced an informative and useful study that carefully documents the water supply problems and needs in the MWA and provides practical short- and intermediate-range solutions to the supply problems. The Baltimore District should be commended for the excellence of this study. The study has the potential for fostering the creation of mechanisms to assure adequate water supplies for many years in the future.

The various technical, environmental, cost, and institutional factors affecting the selection of an acceptable plan make it difficult to endorse or recommend any particular plan at this time. The issues raised by the study make it clear, in fact, that one of the major problems in selecting a water supply plan will be the balancing of the efficiency of the various alternatives available with the potential for their costs to be equitably distributed among the users. The concept outlined in the study clearly provides, however, for short- and intermediate-range solutions to water needs through better management of the water available in the Potomac and Patuxent Rivers, and Occoquan Creek.

This concept should be endorsed by the Commission, and the major jurisdictions and supply and distribution agencies should be encouraged to select a plan based on the concept of improved management which has a high benefit to cost factor and for which costs can be distributed as equitably as possible among the users. Such a plan will require new intergovernmental arrangements for planning and execution, and the jurisdictions and agencies involved should be encouraged to cooperate in creating appropriate institutional mechanisms to assure adequate water supply for all parts of the MWA covered in the study report.

In comments to the Baltimore District, two additional matters should be raised. As described above, the study plan alternatives are based on a fixed assumption of flow-by in the Potomac River of 100 mgd. This is the minimum flow-by level that has been suggested as adequate to protect the environmental quality of the lower free-flow area and upper estuary. If this flow-by level is determined to be insufficient and a higher level is needed, the period for which the alternative plans would provide adequate water supplies would be shortened. One report indicates that if flow-by assumptions were increased to 200 mgd, the plans would only be adequate to 2010. With a 300 mgd flow-by requirement the alternative plans would assure an adequate water supply only to 1990.

The State of Maryland is now serving as the lead agency in a study to determine a range of flows necessary for maintenance of the environmental conditions in the lower portion of the free-flowing Potomac River and in its upper estuary. This study must be based on empirical observations, however, and it cannot be completed until there has been an opportunity to study conditions in relatively low-flow periods. When the State of Maryland study is completed, and flow-by needs have been established for the Patuxent River and Occoquan Creek, the Baltimore District should reassess its findings and proposals if the flow-by requirements are increased above the level assumed in the study. The types of plans necessary to assure an adequate supply of water to the year 2030 should be outlined and assessed if the assumption must be significantly changed, so that the affected agencies and jurisdictions can plan to meet such conditions.

The Commission was not included in FISRAC during the preparation of the first phase of the water supply study. In view of the high level of Federal interest in an adequate water supply for the area and in the environment or the Nation's Capital, it would be desirable for the Commission, as the central planning agency for the Federal Establishment in the National Capital Region, to be represented on this advisory committee.

The Commission, on behalf of the Federal government, has been coordinating the preparation of water supply emergency plans by affected Federal Agencies and Departments in the region. A total of 48 such plans have been completed or are in preparation, using the Council of Governments Draft Guide Plan for the region. This effort has been carried out in cooperation with COG's Water Resources Planning Board. In addition, the Commission has been involved in discussions with other affected Federal Agencies and Departments about the need for year-round water conservation plans for their facilties and installations in the National Capital Region to reduce water consumption to the maximum extent practicable. Some reductions have already taken place in cooperation with the conservation efforts of local water suppliers in the region. The Commission should encourage all Federal Agencies that do not have an emergency supply plan to complete such a plan as soon as possible.

All Federal Agencies with facilities in the region should be requested to prepare conservation plans for such facilities to help contribute to the ten percent reduction in demand through conservation that is assumed by the Baltimore District in its study. As part of their conservation plans Federal Agencies should incorporate conservation and demand reduction features in all new construction and in renovation and rehabilitation projects. Retrofitting of such features in all facilities should be encouraged. Federal Agencies should reflect demand reduction features in all project plans submitted to the Commission for review.

C-1111-51

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER-79/907

NOV 13 1979

Colonel James Peck
District Engineer - Baltimore
Corps of Engineers
Department of the Army
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

The Department of the Interior has completed its review of the Draft Progress Report on the Metropolitan Washington Area Water Supply Study. We have the following comments.

General Comments

The study document presents, in many respects, a very detailed analysis of the water supply problems faced by the Metro-Washington region during the next 50 years. A wide range of plans and designs were investigated and several *efficient and environmentally compatible plan components* have been proposed. These plans and designs have been incorporated into five alternative plans, four of which are considered "action plans." Although certain components of each plan provide for fish and wildlife resource protection, each plan also relies heavily on Potomac River withdrawals to meet demands and could ultimately result, during a low flow period, in extensive and severe losses to aquatic resources in a large segment of the Potomac River.

The problem of maintaining adequate flows in the Potomac River during low flow periods is by far the most important environmental issue to be addressed in the Water Supply Study. To provide for adequate Potomac River flow a "Low Flow Agreement" has been drawn up between various Federal, State, and local agencies. This agreement sets up a framework for providing a river flow adequate to maintain "environmental conditions" in the river. Preliminary results of a low flow study being conducted by

the State of Maryland and this Department's Fish and Wildlife Service indicate this flow figure will likely be in the 800-1200 MGD range. Unfortunately, the figure used by the MWA study was set at 100 MGD, a figure which has no biological significance. Water Supply Study data were analyzed and conclusions drawn based on this figure. When a realistic flow-by figure (i.e., 1000 MGD) is used for planning purposes the results of the study will, in many cases, no longer be valid. Demand during a 7-day low flow event will significantly exceed supplies and none of the four action plans will then satisfy the study objectives. For this reason, it is felt that to present a realistic assessment of supply conditions several significantly higher flow-by levels should have been used in calculating the results.

The problem faced by water suppliers of meeting water supply needs through the year 2030 becomes a question of dealing with the intricacies of supply and demand. Either the supply of drinking water in the MWA must be increased or demand for it must be decreased (or a combination of both). Although a certain amount of conservation is built into each plan (10% demand reduction) the main thrust of the plans is to increase supply. This will be accomplished by reregulation of existing supplies for more efficient distribution (interconnections), and by significantly increasing Potomac River withdrawals. More emphasis should be placed on reducing demand or increasing supply by means other than river withdrawals during critical flows.

Reduction of demand without resorting to growth control can be accomplished only through implementation of water conservation measures. The level of conservation proposed in scenario 3 is accomplished almost exclusively through the use of water saving devices for residential and non-residential purposes, and a limited voluntary reduction through educational programs. A far-reaching level of conservation requiring changes in water use practices through in-house metering, price structuring, and limitations of availability for certain uses (i.e., outdoor watering) must be implemented. Per capita water use in the MWA shows a wide variation with the District of Columbia more than double that of other jurisdictions. Part of this discrepancy is apparently due to leakages in the system, a problem which requires further study and action. In summary, it appears that a more intensive level of conservation should be considered, well beyond that provided in scenario 3.

C-4111-52

The MWA Water Supply Study has focused on increasing water supply through increased year-round Potomac River withdrawals. The practice of river withdrawals during low flow periods (May - September) is not only environmentally unsound, it is also unsound from a water supply management perspective. This is due to the highly variable nature of flow levels during this period. What is needed is increased storage capacity that can utilize high flows (October - April) to supplement demands during low flow periods. More study of possible off-stream pump-storage systems should be investigated.

The Corps of Engineers has repeatedly stated that the Water Supply Study has been conducted according to planning guidelines set forth in the Water Resources Council's "Principles and Standards" (P & S). The MWA study is presently at the stage 3 planning level. This level calls for modification and reduction in the number of alternatives that will ultimately be considered as feasible plans for potential recommendation. P & S further require that at least one recommended plan optimize National Economic Development, and at least one other must emphasize Environmental Quality, and that equal consideration be given to both. Although the final plans presented in the study document are not labeled as either NED or EQ plans, it is obvious that when one considers the environmental consequences of each of the five plans, none provide the environmental quality objectives required by P & S.

On page 43 of the "Main Report" document, the statement is made that "...each of the plans contribute a net positive effect on the environment." This supposition is incorrect when one considers the fact that during a low flow event water demands cannot be met without critically impacting the aquatic resources of the Potomac River. Even though flows in the river may be slightly higher than they might otherwise be during certain, less severe, low-flow periods, the potentially critical, and possibly irreversible impacts that could ultimately result, precludes these plans from being considered as providing a "net positive" effect on the environment. The significance of a low flow event as a determining factor of the quality of an aquatic resource cannot be overemphasized. With higher withdrawal demands the frequency of a 7-day or longer low flow could drastically increase. This could result in a dramatic deterioration of not only the 18 mile freshwater portion of the Potomac River above Little Falls, but the estuarine portion of the river as well.

What seems to be lacking among the plans listed for consideration in the planning document, is a plan which provides for comprehensive environmental quality for the project area. A plan of this type must have components wh ch mitigate impacts, compensate for losses, and which ul mately provide a net environmental gain. In the Corps of Engineers "Plan of Study" document, Chapter VI, page 70, under "Statement of Planning Objectives" a list of EQ objectives was stated. It included the following statement:

> Avoid irreversible commitments of resources to future uses by emphasizing a continuous approach in meeting development objectives. This would minimize the possibility of undesirable and perhaps irreversible changes in the natural environment.

Allowing water suppliers to withdraw Potomac River water in amounts that would reduce flow to the potential level of 100 MGD does not provide for the required degree of environmental quality. Mitigating measures such as relocating the water intake structures farther downstream towards Little Falls could reduce the impacts on the freshwater portion of the river. Also, reconstructing the fish-pass at Little Falls could reestablish anadromous fish species to their once historical range. Measures of this type could reduce significantly the overall impact of certain Water Supply Study plan proposals. If conditions are such that a plan in which environmental quality cannot be maintained under the constraints of the Water Supply Study Plan objectives cannot be devised, it should be so stated.

Specific Comments

Main Report, page 32 - In table V-1, "Impact Assessment," no delineation of acres of wetlands lost or impacts is provided.

Formulation Appendix, page 6 - A discussion of terrestrial resources states that the slimy salamander is the only amphibian represented. This is incorrect as several species of frogs and salamanders inhabit the project area.

Formulation Appendix, page 19 - A list of EQ objectives for the Study are discussed. The objectives provide a strong basis for maintaining environmental quality. Unfortunately, the alternative plans do not meet these objectives, particularly (b) and (d).

Formulation Appendix, page 66 - As stated, the Soil Conservation Service did a study of the area for potential water supply reservoir sites. Our Fish and Wildlife Service participated in this study, and it was found that of the six sites studied, SCS #3 was the least desirable environmentally. At least one other site provides similar water supply benefits and was environmentally less damaging. Other sites besides SCS #3 should also be considered for the purposes of the Water Supply Study.

Formulation Appendix, page 81, paragraph 3 - The text states that certain water conservation scenarios were considered while others were eliminated. Scenario 3 level of conservation provides only minimal demand reduction (10%). More stringent conservation methods should be reconsidered for the purposes of this study.

Formulation Appendix, page 85 - The statement is made that decreased water use will result in a cost savings to the customer on a per unit basis. This has been shown not to be true in many cases, as prices per unit often rise as a result of decreased use.

Summary

The importance of maintaining adequate flows in the Potomac River cannot be overemphasized. The Potomac historically has been one of the premier small mouth bass, shad, and striped bass streams in the country and, although presently not as productive as it should or could be, the Potomac River's aquatic resources cannot afford to be further stressed. If the MWA chooses to rely as heavily on Potomac River withdrawals to meet future water demands as the proposed plans indicate, then a significant water resource allocation conflict will result during low flow periods.

Using a 100 MGD for planning purposes provides unrealistic study results which will become glaringly apparent when a higher, more realistic flow-by figure is used. It is for this key reason that the Department of the Interior feels that the Water Supply Study has not adequately dealt with the problem of water supply in the Metro-Washington area. Our staffs have discussed this issue in the past, and we appreciate this written opportunity to set forth our chief concerns.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review
and Interior representative
to FISRAC

November 15, 1979

Colonel James W. Peck
District Engineer
Baltimore District
Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

Enclosed is a copy of the Resolution to create an Article III Section of the Interstate Commission on the Potomac River Basin for Cooperative Water Supply Operations on the Potomac (CO-OP) which was adopted unanimously by the Commission at a special business meeting on November 1, 1979. The draft CO-OP tasks are attached to the resolution.

You will remember that Dan Sheer and I discussed with you and your colleagues last summer the proposal to establish this CO-OP unit of ICPRB, the purpose of which is to provide special assistance to the States, the District of Columbia, and the Metro Washington Area utilities concerned with optimum management and coordination of water supply from North Branch reservoirs and Potomac intakes and reservoirs in the Metro Area. Now that the Commission has established the CO-OP unit we are preparing a specific work plan so that the two-year CO-OP project can get underway officially by April 1, 1980. We will, of course, continue to coordinate its preparation with your staff and others concerned.

Yesterday Dan and I met with Bill Baines of your Metro Washington Water Supply Study group to make certain that CO-OP activities are smoothly meshed with both that Study and the Bloomington Lake Reformulation Study. The latter is vital to the success of the CO-OP project and we are pleased to see how competently its scope and content is developing.

Thank you for the help and cooperation, and if you have any questions about the CO-OP project, please don't hestitate to let me know.

Sincerely,

Paul W. Eastman
Executive Director

PWE/pc

Encl:

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN
1055 First Street
Rockville, Md. 20850
(301) 340-2661

RESOLUTION TO CREATE AN ARTICLE III
SECTION OF THE INTERSTATE COMMISSION ON
THE POTOMAC RIVER BASIN FOR COOPERATIVE WATER
SUPPLY OPERATIONS ON THE POTOMAC (CO-OP)

WHEREAS: The Interstate Commission on the Potomac River Basin (ICPRB) is the only interstate agency with basin-wide authority to study water resources problems, to develop solutions, and to assist with and coordinate state, federal and local agencies' programs in the Potomac basin aimed toward their solution, and;

WHEREAS: The Bloomington Reservoir on the Potomac North Branch is expected to be completed and in operation in conjunction with the existing Savage River Reservoir by the U.S. Army Corps of Engineers in 1981, and;

WHEREAS: Recently completed studies by the ICPRB and others have established that through proper coordination of the operation of major local reservoirs and water supply systems of the Washington Metropolitan Area portion of the basin in the District of Columbia, Maryland, and Virginia, and the Savage River and Bloomington Reservoirs in Maryland and West Virginia, industrial and municipal water supply reliability can be enhanced and low flows augmented in the main stem of the Potomac to protect water quality and aquatic ecosystems; the major purposes of coordinated system management being:

(1) Flow maintenance at Luke, Maryland, for water quality improvement and industrial water supply;

(2) Recreation on the reservoirs;

(3) Water supply downstream (particularly in the Washington Metropolitan Area);

(4) Fresh water flow into the Potomac estuary for water quality improvement (environmental flow-by), and;

WHEREAS: ICPRB recognizes (1) the need to have one central cooperative technical center to receive all pertinent data on water availability throughout the water year and throughout most of the basin, and, (2) the need to have these and related data evaluated by computer model so that

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN
1055 First Street
Rockville, Md. 20850
(301) 340-2661

efficient operation can assure maximum reliability of water supply and quality, and;

WHEREAS: The ICPRB has the technical expertise to establish and operate such a cooperative technical center, and;

WHEREAS: Article III of the ICPRB Compact provides the legal authority to undertake such programs through the creation of a Section consisting of Commissioners from the affected signatory bodies;

NOW THEREFORE BE IT RESOLVED:

That the ICPRB, in meeting assembled,

(1) creates a Section pursuant to Article III of the ICPRB Compact consisting of the Commissioners of the District of Columbia, Maryland, Virginia and West Virginia to carry out the purposes set out in the preamble to this resolution and;

(2) specifies the geographic area of the Section to include the watershed in Maryland and West Virginia of the Potomac North Branch to and including the mouth of the Savage River (Garrett County, MD, and Grant and Mineral Counties, WV), together with riparian counties of the main stem of the Potomac North Branch and the Potomac River downstream from the Savage River to and including the Washington Standard Metropolitan Statistical Area, excluding Charles County, Maryland (Alleghany, Washington, Frederick, Montgomery and Prince Georges Counties, MD; Hampshire, Morgan, Berkeley and Jefferson Counties, WV; Loudoun, Fairfax and Prince William Counties, VA; and the independent cities within those geographical boundaries), and;

(3) directs that the attached plan "Tasks for Cooperative Water Supply Operations on the Potomac" as separately approved and amended from time to time by ICPRB, to be carried out pursuant to a Work Program approved by the Section members shall provide the framework to begin the work of the Section, and;

(4) directs the Executive Director of the ICPRB to provide assistance as deemed necessary or requested, and;

(5) directs the General Counsel of the ICPRB to provide assistance as deemed necessary or requested, and;

(6) charges the Section Commissioners to meet as soon as it is convenient to appoint a Section Director who shall prepare the necessary program plan and budget, and;

(7) resolves that the Section shall become legally operative upon the written approval of the necessary numbers of the Commissioners from the affected signatories to the Compact, i.e., the District of Columbia, and the states of Maryland, Virginia and West Virginia.

(8) resolves that unless otherwise provided, the Section shall be dissolved September 30, 1982.

Adopted unanimously at the
ICPRB Special Business
Meeting in Harpers Ferry,
West Virginia,
November 1, 1979

Paul W. Eastman
Executive Director

ADDENDUM: The Commissioners appointed by the President of the United States exercised their rights under Article III and have formally agreed to participate in the Section.

Attested:

Paul W. Eastman
Executive Director

DRAFT

TASKS FOR COOPERATIVE WATER SUPPLY OPERATIONS ON THE POTOMAC (CO-OP)

November 1, 1979

Bloomington Reservoir on the North Branch of the Potomac River is scheduled for completion in 1981. Of the 92,000 acre feet (30 billion gallons) of conservation storage in the reservoir, 55% will be federally owned, with costs allocated to water quality improvement. The remaining 45% will be non-federally owned; its costs are allocated to water supply augmentation. Some 17% of the water supply storage (7.78% of the total conservation storage) has been contracted for by the Maryland Potomac Water Authority (MPWA). No contracts have been let for the remainder. Over the next few years, contracts will be negotiated for the purchase of the remaining conservation storage, agreements on operating policy will be reached between the owners of the conservation storage and the U.S. Army Corps of Engineers (COE), procedures for scheduling releases will be specified, and payment for the non-federal costs of the project will begin.

In the process of determining operating policies for the reservoir, issues concerning the conflicting multiple purposes of the conservation storage will have to be resolved. These purposes are:

1. Flow maintenance at Luke, Maryland, for water quality improvement and industrial water supply;

2. Recreation on the reservoir;

3. Water supply downstream (particularly in the Washington Metropolitan Area);

4. Fresh water flow into the Potomac estuary for water quality improvement (environmental flow-by).

Maintaining flows of 200 mgd at Luke (the safe yield of the combined Savage River and Bloomington Dam system, as well as the flow used to estimate benefits for water quality when the project was authorized) will require drawdowns of the conservation pool affecting recreation and beginning as early as late spring. Maintaining high flows at Luke also conflicts with maintaining flows at Washington for either water supply or environmental flow-by; a reduction of 50 mgd at Luke will allow an increase of approximately 100 mgd downstream, according to studies performed at the Johns Hopkins University. There is a direct tradeoff between maintaining water supply in the Washington Area and environmental flow-by, and both impact storage for recreation behind the dam.

The Section for Cooperative Water Supply Operations on the Potomac (CO-OP) is established and directed by the Interstate Commission on the Potomac River Basin (ICPRB) to assist in resolving these issues, negotiating contracts and agreements, and developing operating procedures.

In particular, in cooperation with other federal, state and local agencies and with other assistance as required, CO-OP shall:

1) Develop river flow forecasting techniques suitable for use in scheduling releases from reservoirs which provide water supply, flood control and other benefits within the section boundaries (hereafter referred to as the Reservoirs).

2) Develop and evaluate the effects of operating policies and strategies for the Reservoirs on all of their multiple purposes.

3) Coordinate the operation of the Reservoirs and Potomac River Water Supply Intakes.

4) Coordinate agreements on purchase of conservation storage in Bloomington Reservoir.

5) Assist and coordinate with other relevant studies, especially the Maryland Department of Natural Resources' Environmental Flowby Study and the Baltimore District Corps of Engineers' Bloomington Reformulation Study.

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

1055 First Street
Rockville, Md. 20850
(301) 340-2661

NABPL-U

19 NOV 1979

Mr. Paul Eastman
Interstate Commission on the
Potomac River Basin
1055 1st Street
Rockville, Maryland 20850

Dear Mr. Eastman:

Since the second meeting of the Federal-Interstate-State-Regional Advisory Committee (FISRAC) to the Metropolitan Washington Area (MWA) Water Supply Study on 16 February 1979, much has been accomplished. A draft Progress Report, which presented several plans designed to meet projected demands, was released for review in August 1979. Informal workshops, as well as a public meeting, were conducted to identify the assumptions and methodology involved in plan formulation. As a result of these efforts, several concerns were raised regarding costs and implementation, while others addressed issues basic to the formulation of the plans themselves.

This letter is to inform you that a FISRAC meeting to discuss the early-action results and issues has tentatively been scheduled for 13-14 December 1979 at the Braddock Motor Inn, Cumberland, Maryland (see inclosure for information on accommodations). While this "working session" will involve the participants in discussions of regional water supply concerns, it is also hoped that the FISRAC membership will indicate to what extent additional Corps work is necessary for the early-action draft Progress Report. The meeting will also provide the Corps an opportunity to preview work activities envisioned as part of the long-range portion of the MWA Water Supply Study and to receive your comments on this next phase of the study. As part of this program, the Bloomington Reformulation Study will be discussed, and the meeting will conclude with a field trip to the Bloomington project site on the morning of the 14th.

Approximately one week before the meeting, a packet of information will be forwarded to you containing a proposed agenda and a set of issue papers. These papers will present issues relevant to the MWA Water Supply Study and will outline possible implications. In the interim, a review of the reports on the Potomac River users will provide the

NABPL-U
Mr. Paul Eastman

necessary background for a full discussion of the issues. A member of my staff will be calling you in the near future to determine whether you will be attending this meeting. Should further information be desired, please call Mr. Harold Nelson at (301) 962-2668.

Sincerely yours,

1 Incl
As stated

JAMES W. PECK
Colonel, Corps of Engineers
District Engineer

Identical letter sent to:

KIDD/NABPL-U/jk/2668
NELSON/NABPL-U
LADD/NABPL
TRIESCHMAN/NABPL
BREN/NABDDE
PECK/NABDE

Mr. Austan Librach
Director
Department of Water Resources
Metropolitan Washington Council
of Governments
1225 Connecticut Avenue, NW
Washington, DC 20036

Mr. John Egan
U.S. Environmental Protection Agency
Region III
6th and Walnut Streets
Philadelphia, PA 19106

Mr. Bruce Blanchard
Director
Office of Environmental Project Review
Department of Interior
Washington, DC 20240

Mr. James J. Corbalis, Jr.
Engineer - Director
Fairfax County Water Authority
Box 1500
Merrifield, VA 22116

Mr. Jean Levesque
Administrator
Water Resources Management Administration
Department of Environmental Services
5000 Overlook Avenue, SW
Washington, DC 20032

Mr. Robert S. McGarry
General Manager
Washington Suburban Sanitary Commission
Hyattsville, MD 20781

Mr. Charles R. Malone
Executive Secretary
Committees for Water Supply Reviews
National Research Council JH-332
2101 Constitution Avenue, NW
Washington, DC 20418

COMMONWEALTH of VIRGINIA
COUNTY OF PRINCE WILLIAM
9250 Lee Avenue, Manassas, Virginia 22110 (703)368-9171

COUNTY EXECUTIVE
Robert S. Moe, Jr.

BOARD of COUNTY SUPERVISORS
K. K. Seefeldt, Chairman
D. L. White, Vice Chairman
James Byrd
A. J. Donnelly
A. E. Humphries
J. J. McCourt
T. C. Wood

20 November 1979

District Engineer
Baltimore District, U.S. Army Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

SUBJECT: Metropolitan Washington Area Water Supply Study
for the Potomac Users - Draft

Dear Sirs:

The Prince William Board of County Supervisors wishes to make a short general comment on subject document in view of the fact that written statements must be received within thirty (30) days of the Public Meeting held on 25 October 1979, in order to be made part of the record of the hearing.

We are aware that the future water needs of Prince William County are being addressed in another phase of the Metropolitan Washington Area Water Supply Study, but there are some aspects of this phase that cause this Board some concern. The late delivery of the last two chapters did not allow sufficient time for a detailed analysis.

This Board and previous Boards have commissioned several studies on our water needs. We are presently considering various water supply alternatives available to us, including the possibility of a new relationship with the Fairfax County Water Authority. It appears from a general analysis of the "Plans of Choice" contained in the Draft Main Report that the FCWA users, as well as other Northern Virginia users, will be required to pay higher costs than the users in Maryland and District of Columbia because of restrictions imposed upon withdrawals by Virginia Potomac users. It appears in the make-up of the "Plans", Virginia users are limited from benefiting from Bloomington and Little Seneca.

We will be monitoring the progress of this phase, as well as future phases, through members of the County staff who will continue to participate in the agencies involved in meeting the water needs of the area.

Very truly yours,

Kathleen K. Seefeldt

Kathleen K. Seefeldt
Chairman

8-1111-G

COMMISSIONERS
DAVID B. SCOTTON
Chairman
LAWRENCE L. BROOKS, SR.
Vice Chairman
SALLY KANCHUGER
JESSE MAURY
JOHANNA S. NORRIS
ANDREW M. VISLOSKY

ROBERT S. McGARRY
General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION
4017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (301) 699-4000
Department of Engineering: ADDITION BLDG. • 213 MARSHALL AVE. • LAUREL, MD. 20810

NOV 21 1979

Colonel James W. Peck
Baltimore District
Corps of Engineers
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

I wish to provide the following Washington Suburban Sanitary Commission comments, for the record, on the Metropolitan Washington Area Water Supply Study.

The report entitled Metropolitan Washington Area Water Supply Study of the Potomac River Users is an absolutely essential element in the eventual solution of this area's water supply problems. In my judgment the Corps has evaluated a wide-range of alternative strategies, has incorporated the public interests and opinions concerning water supply into the report and into the development of these strategies, and has laid out clearly the decisions that must be made. I believe the report reveals the following:

First, the water supply problem is not as critical as it has been viewed in the past. I can recall when we were predicting shortages of 100 million gallons per day by the year 2000 on a 30 day basis. The revised figures show that the shortage of that magnitude for that duration will not occur until considerably later than 2000 and that deficits of shorter duration (1 day and 7 day) will not be as severe nor will they occur as soon as we had previously predicted. A cause of this is, of course, a change in the rate of growth in the metropolitan region. In addition, the affects of the regional efforts to conserve water are recognized and they are indeed reducing our demand for water.

Perhaps the most important conclusion that can be drawn from the Corps of Engineers' report is that solutions for the mid-range period can be implemented locally. Through the use of high flow skimming techniques to conserve or replenish existing reservoirs in Virginia and Maryland or through the construction of a small reservoir (Little Seneca Lake) in Maryland a very adequate supply of water can be guaranteed the Washington Metropolitan Region. Thru 1995, it no longer appears necessary to consider reservoirs outside the Washington Metropolitan Region in order to insure an adequate supply of water. Thus, for the first time the solution to a very old problem is in the hands of local decision-makers. This is both encouraging and discouraging. It is encouraging because of the difficulties in the past in

obtaining agreement and support for the construction of facilities outside the region. It is discouraging because the record of regional cooperation on water and sewer matters is far from outstanding.

While noting that the solutions for the water supply problem in the region can be solved locally, I believe it is equally important to note that the District of Columbia water supply problems cannot be solved within the District's jurisdiction. While Maryland and Virginia jurisdictions have land and existing reservoirs the District of Columbia does not. Thus, the District's problem can only be solved through cooperation on the part of Maryland and Virginia.

The necessity for local cooperation is recognized in the report except for Plan 2 - Local Plan. Plan 2 implies that the District of Columbia and Rockville have the option of purchasing the uncontracted water supply storage in Bloomington Reservoir without the concurrence of the other jurisdictions. This implication is in conflict with the Potomac River Low Flow Allocation Agreement (PRLFAA). Paragraph 5 of the PRLFAA allocates the maximum capacity practicable from all upstream reservoirs, including Bloomington. While the PRLFAA could be amended to recognize purchase of the uncontracted water supply storage as an augmentation under Paragraph 5, regional agreement and cooperation are necessary.

I wish to bring to your attention the status of the recently completed Bi-County Water Supply Study. The task force recommended the construction of a reservoir on Little Seneca Creek to meet the water supply needs of Montgomery and Prince George's Counties. The reservoir is today under design and land acquisition is progressing. There is virtually no opposition to this solution and I am confident it will be built - financed entirely by the residents of Prince George's and Montgomery Counties.

I do not believe that the ultimate solution to the Washington Metropolitan Region water supply problems lie in the hands of the Federal government and Federal decision-makers. I believe water supply has been traditionally a local matter, and that the costs will be less to the region if they are local solutions. An example of our costs and problems with a Federal solution is Bloomington Dam. Bloomington Dam was authorized in 1962 but it will not be on line until 1981. Under the Federal water supply policies the jurisdictions will have to reimburse the government for the costs of Bloomington Reservoir. If Bloomington had been constructed by WSSC or the State of Maryland it could have been completed 10 to 15 years earlier with the resultant savings in inflation costs. The authority for either the State or WSSC to build such a reservoir exists. In addition, had Bloomington been built by state or local agencies exclusively for water supply and perhaps flood control the current need to re-examine the project authorization with a view toward increasing the water supply potential would not be necessary. This, of course, is hindsight, but it is an example of the costs that jurisdictions bear in the area of water supply if they depend on a "Federal solution."

We simply must face up to the problem that the water (and sewer) problems of this region will only be resolved through cooperation on the part of the local governments. I strongly believe that the time has come for the governments of Washingon, D.C., Fairfax County, Prince George's County and Montgomery County to form a Washington Metropolitan Region Water Supply Task Force similar to the Bi-County task force to solve the regional problem. The Corps of Engineers' study provides the technical data and the locally implementable solutions to the problem. All that remains is for local leadership to get together in the form of a task force to develop a total regional management strategy. It is not an impossible task. All that is lacking is the determination and leadership to get it done.

Sincerely,

David R. Scotton

David R. Scotton
Chairman

7020 Westbury Rd.
McLean, Virginia, 22101
Nov. 21, 1979

Baltimore District
U.S. Corp of Engineers
P.O. Box 1715
Baltimore, Md. 21203

Dear Sir:

I attended the Maryland and Virginia work shops concerning the August interim report on the Washington Metropolitan Area Water Supply Study and reviewed the August 1979 reports. I was unable to attend the Public Hearing and so request that the following comments be included in the record of the October 25, 1979 public hearing.

A.W.Plummer
Water Resource Engineer

COMMENTS

1. In estimating the 100 year minimum flow of the Potomac River and other streams, no allowance has apparently been made for the effects of future growth in upstream depletions due to increased water uses. Reservoir storage provisions should make some allowance for this contingency.

2. The August reports do not provide a complete list of reservoir storage sites investigated in the study and a summary of the storage potentials, capital and annual costs, good points, and bad points concerning each site. The reader gets the impression that the Corp of Engineers has not made a comprehensive analysis of each of the potential storage sites, but instead has relied heavily on past reports and local officials recommendations of sites which may or may not have been influenced greatly by various local pressure groups.

In this connection I believe that special consideration should be given to analyzing storage possibilities on the lowest part of Beaver Dam Creek above its confluence with the North Fork of Goose Creek above Highway 15, and on Seneca Creek two miles above its confluence with the Potomac River. Reservoirs at these two locations would be adapable tostoring supplemental flows by pumping excess flows from Goose Creek and the Potomac River, respectively, to minimize the duration of drawdowns if such proved desireable in the future.

3. The report does not give the 1976 or 1980 average per person monthly use of water nor what it would normally be by months in the year 2030 with and without conservation in normal years and during the hot drought months the project is designed for. It appears from figures given in the report that the new facilities are being planned to meet per capita water uses of about 30% less than during the 1966 drought when there may have already been some amount of conservation efforts in effect. More elaboration of water conservation practices assumed during normal conditions and during droughts could be helpful for the public to understand how much savings is expected per person. Also, what would the additional cost be for water supply facilities if there was no increase in conservation by the water users?

4. The interim report does not appear to be concerned with the quality of the raw water supply from the various sources. It provides no information as to whether or not one source is better quality or easier to maintain in quality over other sources. I believe very careful and extensive study should be given to the quality of the raw water since so many toxic substances can now get into the water supplies and many are not adequately identified or evaluated in present management practices. With 5 miles of Interstate 270 passing thru the 20 square mile watershed of the Little Seneca Storage site, I think that this site will be very vulnerable to contamination and to land development pressures that could deteriorate the quality of this small watershed or make maintenance of low density land development and high quality water supply expensive.

If the quality of water is not a major problem, then a reservoir site on Seneca Creek two miles above its confluence with the Potomac should be given more consideration as it would have a more assured volume of natural runoff and could be easily replenished by pumping from the Potomac River if desireable.

With Occoquan Reservoir having the fast growing towns of Manassas and Manassas Park and the fast growing suburban areas of Fairfax and Prince William Counties lying in the reservoir watershed, serious consideration should be given to eventually converting Occoquan Reservoir into a recreation and water quality improvement reservoir and finding a new reservoir with a better quality and more easily protected watersupply to replace Occoquan. This may eventually be less expensive than providing the very expensive tetiary sewage treatment and land use controls necessary to maintain suitable water quality in Occoquan. A dam on (upper) Beaverdam Creek just above its confluence with the North Fork of Goose Creek and 1.6 miles upstream of the main branch of Goose Creek appears to offer one of the most protectable storage sites for Loudoun and Fairfax Counties. The (upper) Beaverdam watershed is very sparsely populated and contains large estate type grassed livestock and wooded arms. It contains only one paved secondary road and about two miles of State highway #7. The watershed extends to within three miles of the Shenandoah River, which at some future date could be skimmed at suitable times to provide a supplemental source of water.

A dam about 70 feet high and 1100 feet long at the mouth of (upper) Beaverdam Creek with water stored to elevation 350 feet would have a surface area of roughly 820 acres and a gross storage capacity of about 20,000 acre feet. Such a reservoir could skim additional water from the North Fork of Goose Creek and Goose Creek by pumping if desireable to minimize the time the reservoir might be drawn down. In order to protect the quality

of the water in the reservoir, it would likely be best for the government to leave the ownership of the reservoir land with the existing owners and pay for the necessary storage easement under a negotiated master agreement concerning reservoir use, permissible drawdowns, land use of the watershed, and disposal of any sewage tributary to the reservoir.

6. The dispersion of responsibilities between various Federal, State, and local juristictions for water supply, sewage disposal, instream water quality, flood control, water based recreation, public health, and fisheries, and land development. has resulted in a piecemeal approach to the planning, development, and management of the water resources of the Patuxent River and Potomac River watersheds east of the mountains. Although efforts are being made to coordinate certain of these functions, there still remains much room for improvement in the intergration and management of these various water resources. In particular,the long range needs of water supply should be planned together with the long range sewage disposal needs and the necessity to maintain the quality of water in the streams of the area for all of the various purposes.

I have previously proposed to the Council of Governments and EPA representatives and others that careful study should be given to a multipurpose "North and East By-Pass Plan" The plan in rough form would consist of a 29 mile long multipurpose gravity flow tunnel of about 18 feet diameter extending from the Potomac River at elevation 180 feet just below Seneca Creek to elevation 100 feet in the flood plain of the Patuxent River just below the Baltimore-Washington Parkway. This tunnel with a gravity flow capacity of 1200mgd could be partitioned into four separate conduits having a combined capacity of about 500 mgd to carry:

a. Raw sewage from the Dulles Interceptor and the areas uphill of the tunnel, including Rockville and Wheaton.

b. Polluted storm water crossing the tunnel and or Potomac River water for augmenting Patuxent River flows.

c. Raw Potomac River water to within 4 miles of Patuxent treatment plant to which it could be pumped along I-95.

d. Treated water between the distribution systems of the Potomac and Patuxent River service areas.

By using one tunnel to serve the needs of raw sewage, storm runoff, and water supply, considerable economies may be achieved, energy consumption and annual maintenance costs decreased, interferance with public traffic minimized during construction, and a great deal of flexibility achieved in the future if a need arises of reallocated capacity between the different functions.

The raw sewage picked up by the tunnel would reduce the flow to the Blue Plains treatment plant and would be treated with secondary treatmentat the exit of the tunnel and given tertiary treatment in ponds or disposed of by irrigating. The storm water would be treated in a holding pond and some additional treatment provided at the secondary sewage treatment plant if

necessary. Nutient rich effluents from the secondary treatment would pass thru a series of treatment ponds and then either disposed of by land spreading or discharged into the Patuxent River and passed thru a continuous series of four instream reservoirs, 20 miles. From the lowest reservoir water could be diverted at elevation 20 feet and passed thru a six mile long tunnel to an outfall conduit in Chesapeake Bay in order to assist in controlling the flow and nutrients passing into the Patuxent estuary.

Since no one government office is responsible for all aspects of the " North and East Bypass Plan" , none has choosen to tackle the problem of intergrating the planning involved in studying such an idea, even though over 10 million dollars of studies will have been made by 1985. Therefore I would like to see the Corp of Engineers make at least a reconnaisance cost estimate for the multipurpose "North and East Bypass Plan" and assist the Statesof Maryland and Virginia develope a comprehensive water plan for the Patuxent and Potomac River Basins.

THOMAS C. ANDREWS
Director

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
(301) 269-3675

November 23, 1979

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Baltimore District Corps
of Engineers
Box 1715
Baltimore, Maryland 21203

RE: NAPPL-R

Dear Mr. Trieschman:

The Water Supply Division of the Water Resources Administration has reviewed the Draft Progress Reports of the Washington Metropolitan Area (WMA) Water Supply Study. The Main Report and the appendices are generally complete and easy to read. The comments in paragraphs below deal with the overall planning process presented in the Main Report and those topics in each appendix that related to Maryland's water supply management program. We request that these comments be included in the record for the October 25, 1979 Public Meeting as well as being a response to your requests for comment dated August 31st, September 14th, and September 28, 1979.

Main Report

The Report is a good summation of the Corps planning process. First, the water supply problem for the WMA is identified as the inability of the Potomac River to satisfy projected 7 day demands during infrequent droughts. Next, five general water supply components that could be implemented within the WMA were evaluated in detail, and separate technical appendices were prepared on each. The Corps then abstracted the most feasible projects of each component and formulated five plans for further evaluation. In this process, the sensitivity of the results to key assumptions and parameters were evaluated. In particular, the impact of higher environmental flowbys into the Potomac Estuary was analyzed. Until the flowby study discussed on pages 9 and 48 is completed, the Corps analysis of this assumption is prudent.

The evaluation of the plans considered economic, environmental, and social criteria and these findings are useful to decision-makers and the general public. The Corps has and intends to continue informing the interested parties of their findings.

Regardless of the usefulness of this evaluation, it is doubtful that the WMA decision makers will approve one specific plan. We anticipate that approval will occur on a project by project basis. One limitation on approval of a specific plan is that the impacts of each plan on instream water uses and water quality still need to be evaluated. Maryland's review of the environmental impact analysis in the study is presented in the attached memorandum from Sarah Taylor to Ernest Rebuck.

Maryland will continue to encourage regional cooperation in supply development. To accomplish this, we are evaluating the feasibility of repaying the entire future water supply cost of Bloomington Reservoir through the Maryland Potomac Water Authority. The Department of Natural Resources has advised the Governor to indicate Maryland's intent to contract for the entire future water supply storage.

Comments on Appendices

Although the Corps plan has provided useful information, we suggest some improvement to the test of certain appendices. As appropriate these suggestions also apply to the Main Report.

I. Institutional Analysis and Economics

This appendix is a relatively good summary of the existing management programs, like Maryland's water appropriations permits. Because implementation of the selected plans, whether local or regional, will rely on the existing programs or institutions, we are uncertain of the objective of refining the potential institutional arrangements in Chapter III. If the analysis is just to present possibilities, the presentation is thought provoking. On the other hand, if this presentation is intended to recommend a specific arrangement, such an objective can *not* be accomplished. Because of this, our general suggestion is that Chapter III be expanded to present an evaluation of implementing each plan by the existing institutions.

Specific suggestions are as follows:

(1) On pages 17-18, the discussion of Maryland's water appropriation permit program is misleading. Maryland's program does not actually insure an adequate supply to all users and each permit does not require legislative approval. Therefore, the last two sentences of the paragraph should be worked as follows:

> Therefore, Maryland regulates the appropriation of water from the main stem Potomac River to assure that water is used in a reasonable manner and that users share equitably when drought conditions limit the available supply. To sanction this assurance, administrative approval (i.e., a permit with conditions) is a prerequiste to withdrawal of water.

(2) The 5-year regional or river basin water supply facility plans are not being prepared. Instead the state relys on approval of the county water and sewerage plans to provide the long-range perspective to the permit program. Because of this, the following paragraph should be substituted for the first full paragraph on page 18:

> To make the permit a more effective management tool, the Water Resources Administration relates permit decisions to the water supply recommendations in each county's comprehensive water and sewerage plan. In 1969, the General Assembly required each county and Baltimore City to prepare such a plan and to update it annually. Each plan or amendment must be approved at state level. Through this review, the state can identify and correct limitations or deficiencies in the plans. Also, the state could, if necessary, develop specific 5-year regional or river basin water supply facility plans.

(3) The list of powers and duties of the Department of Health and Mental Hygiene on page 21 should include review and approval of county comprehensive water and sewerage plans and/or amendments.

(4) The paragraph on page 22 should delete the words, "contractual and" in the eighth line and the phrase "should it decide to do so at a later date". The Maryland Potomac Water Authority's contracting power is not limited to initial water supply costs and District has already decided to pay for the initial storage. This fact is also misstated on page 82. Furthermore, on page 79, the text indicates that the agreement allocated 20% to Northern Virginia consumers. Because the D.C. agreement does not specify any percentage, the phrase (since in the agreement they get 20%) should be deleted.

II. Problem Identification

A. The discussion on page 110 regarding the environmental flow-by study for which the Maryland Water Resources Administration is the lead agency, should indicate that the needed analysis can not be conducted without hydraulic measurements obtained during preferably two different low stream flow occurrences. This suggestion also applies to page 9 of the Main Report.

B. The section on page 132, entitled, "Deferral of Decisions" should be deleted. As drafted, this section implies that because necessary decisions were avoided for many years without valid reasons, a water supply crisis has developed in the Washington Metropolitan Area. However, this discussion downplays the effectiveness of established mechanisms for coordination and overlooks the fact that past plans overestimated future demand and underestimated the supply currently available from the Potomac River and the Occoquan and Patuxent Reservoirs. This suggestion also applies to page 48 of the Main Report.

C. On pages 131-132, the concept of using water and sewerage facilities to control growth is discussed. The Water Resources Administration follows the policy of encouraging development of a sufficient quantity of water to satisfy all reasonable local demands.

III. Plan Formulation

The text of the appendix on pages 181 does not show the benefits of the District's existing agreement with the MPWA to pay for a share of the initial water supply costs. Because the District has already committed itself for some additional water supply, the amount of future supply storage in Bloomington that the District would need should be specified. In addition, any quantitative data that would support the statements that WSSC and FCHA would receive little or no benefit from releases from the future water supply storage in Bloomington should be presented.

IV. Public Involvement

Although the public involvement process seems to be adequate to inform the public about how the plan was formulated and the specifics of the alternative plans, the appendix does not indicate the Corps future role in implementing the selected plan.

V. Supply and Demand Appendix

A. The revision to the water quality section that is shown as Attachment 1 is needed. Also, the text should reference the sources of the water quality data, particularly the 2.2 mg/l measurement of dissolved oxygen for the North Branch (page 16) and the chlorophyll, oxygen, and nitrogen measurements (page 17). In addition, those subreaches of the Potomac below Oldtown that have high algal production should be specified and the quantitative measurements should be included in the text.

B. The discussion on pages 44-45 regarding the water rights of WSSC in the Patuxent Basin should include Maryland's water appropriation permit. The current permit authorizes WSSC to withdraw an average of 55 mgd and requires specific releases downstream of Rocky Gorge reservoir. The appropriation permit program is an administrative mechanism in the state for resolving conflicts among users and for setting some priorities among users.

C. The Maryland Department of State Planning (DPS) has reviewed the population projections for Montgomery, Prince Georges, and Charles Counties. Their review indicated the projections used in the WMA Study for Prince Georges and Charles Counties are out-of-date. DSP suggested that a year 2000 projection of 95,000 for Charles County and 996,000 for Prince Georges would be more correct.

Further, DSP suggested that the sensitivity of the projections should be evaluated and the results discussed in the appendix.

D. The last paragraph on page 110 specifies an operational release schedule for Bloomington Reservoir. This schedule has not been officially adopted and does not consider any specified releases by the Maryland Potomac Water Authority from the initial future water supply storage. We suggest that these qualifications should be included in the paragraph.

E. The assumed flowby for 15 mgd for a Shenandoah-Occoquan interconnection presented on page 110 is too low to protect downstream and instream users. The required flowby should be at least 30 mgd, and more effective protection of these users would be provided if the project were designed to compensate for consumptive use or diversion when the flow is less than the seven day, ten year low flow. This policy applies to users subject to Maryland's water appropriation permit program.

F. The last sentence of page 182, which discusses the Low Flow Allocation Agreement, should be revised to read as follows:

> The agreement further stipulates that after January 1, 1988 the formula can be "frozen" if a replacement formula is desired, but it can not be agreed on by the governing parties. Until an agreement is reached, the interim allocation ratio will be fixed at the ratio that would have been in effect for the summer of the year in which negotiations on a replacement formula began.

This suggestion also supplies to page 9 of the Main Report.

VI Local Storage

The text of this appendix should indicate that plan development and water appropriation permits from the Maryland Water Resources Administration are needed for the proposed Seneca Lake project. These permits, if issued, would impose conditions to prevent or mitigate environmental impacts of the project. For example, the water appropriation permit will specify minimum release requirements to mitigate downstream impacts in Little Seneca Creek.

Because of the analysis of environmental impacts presented in Chapter VI is not specific, and because the rating system is not easy to interpret, the appendix as drafted, will not facilitate a comparison of alternative storage facilities or a permit decision regarding the Seneca Project.

VII. Raw Water Interconnections

The generalized conclusions on page 69 suggest the feasibility of raw water interconnections, but these conclusions, as drafted, are not linked to the preliminary environmental analysis on pages 18-27. Because of this, it is not clear whether the Potomac-Patuxent interconnection that was selected for Plans of Choice 3 and 5 is the best alignment from environmental criteria as well as engineering criteria. To correct this, the conclusions should be stated more specifically and should show explicitly the relationship between the technical appendix and the Main Report.

In conclusion, please contact me if any comments or suggestions need to be clarified.

Sincerely,

David A. Schultz

David A. Schultz, Asst. Chief
Water Supply Planning Section

DAS:emp

JAMES D. COULTER
SECRETARY

STATE OF MARYLAND

LOUIS M. PHIPPS, JR.
DEPUTY SECRETARY

DEPARTMENT OF NATURAL RESOURCES
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401

(201) 269-2784

TIDEWATER ADMINISTRATION

November 21, 1979

MEMORANDUM

TO: Ernest C. Rebuck, Water and Waste Management

FROM: Sarah Taylor, Coastal Resources Division

SUBJ: Draft/Progress Report Metropolitan Washington Area Water Supply Study

The Coastal Resources Division (CRD) is the lead coordinating agency for Maryland's Coastal Zone Management Program. Fundamental to the Coastal Zone Program is a set of goals and objectives which defines the broad framework within which the program operates. Several of these goals are directly related to the Water Supply Study. These goals are as follows:

- To preserve and protect coastal resources
- To protect and promote the economic and social stability of coastal communities in an environmentally compatible manner
- To promote appropriate methods of use of coastal areas in order to prevent deterioration of coastal resources

It is for the reasons implicit in these program goals that the CRD is interested in reviewing efforts such as the Water Supply Study. We are interested also because the study falls within the guidelines of activities which are subject to a determination of federal consistency as specified in Section 307 of the Federal Coastal Zone Management Act of 1972.

The Baltimore District Corps of Engineers and all of the study participants are to be commended for accomplishing such an awesome task. I fully appreciate the difficulties in getting agreement among a variety of user groups on alternatives to an issue as sensitive as regional water supply. After reviewing the main report and supporting appendices, the CRD considers the study comprehensive and well written. Based upon the assumptions used in the study, the alternatives presented seem to be the most practical and workable. There were some sections of the study which could have been more detailed in evaluating environmental impacts. Since a discussion of these sections is provided in the enclosed comments from the Tidal Fisheries Division

of the Tidewater Administration, further discussion in this letter is not necessary.

The report stated that the volume of flow-by into the Potomac Estuary of 100 mgd is a value adopted from the NEWS study and used in this study by general agreement of the participants. Maintenance of an adequate supply of water to the downstream estuary is a major issue in regional water supply plans. The volume of flow-by needs to be chosen based upon the best available technical data related to the water flow requirements of the aquatic communities downstream. In the absence of such data, values selected by arguments should be used only for planning activities. The low-flow study being undertaken by the State of Maryland will provide technical data on water flow requirements of a downstream section of the Potomac Estuary. Until such information is available and a definitive value for the flow-by is determined, the Metropolitan Washington Area Water Supply Study should be considered a draft and used only for planning activities. Because volumes greater than 100 mgd have been suggested (i.e., U.S.F.W.S., p. 144, "Formulation, Assessment, and Evaluation of Detailed Plans", Appendix) developing water supply alternatives assuming a greater flow-by (e.g., 600 or 1,000 mgd) should be considered.

In summary, the Draft/Progress Report of the Metropolitan Washington Area Water Supply Study is a comprehensive, thorough study which presents realistic, sound water supply alternatives based upon the assumptions used. There still exists however some question of the validity of the 100 mgd flow-by. Until the low-flow study has been completed and a definitive volume for flow-by to the Potomac Estuary is agreed upon, a consistency determination cannot be made.

Thank you for the opportunity to review this study. If there are any questions please call me at the above telephone number. Because of issues which effect coastal resources, the CRD would like to be kept abreast of the study's development.

SJT/MB/ras

Potomac
River
Association OF ST. MARY'S COUNTY

Valley Lee Md 20692

24 November 1979

Department of the Army
Corps of Engineers
Baltimore, Maryland

Gentlemen:

With respect to theMetropolitan Washington Area Water Supply Study, the following comments are submitted.

The Potomac River Assn concurs with and supports the recommendations made by the Citizen's Task Force.

Further investigation is required and is recommended to make the subject study reasonably valid. This further study and action includes.

Providing an opportunity for lower Maryland and Virginia County Jurisdictions to review and comment on the study.

Preparation of an Environmental Impact Statement on the favored alternative, and identification and evaluation of the most environmentally benign alternative as required by current federal regulations.

Placing the study in context with the other major perterbations of the Patuxent and Potomac River Water Quality and suppoy.

It is further recommended that the critiques of the National Academy of Science Committee be included in the record of the study public review.

We specifically take objection to alternatives which interconnect the Potomac and Patuxent Rivers.

In our view, the sum of the efforts of the Corps of Engineers, and [illegible] and Metropolitan Washington will ultimately destroy the culture and livelihood of Maryland and Virginia Potomac watermen.

Sincerly,

JOHN F. HERRITY
CHAIRMAN
4100 CHAIN BRIDGE ROAD
FAIRFAX, VIRGINIA 22030
TELEPHONE 691-3331

COMMONWEALTH OF VIRGINIA
COUNTY OF FAIRFAX
BOARD OF SUPERVISORS
FAIRFAX, VIRGINIA 22030



November 26, 1979

Mr. William E. Triesman, Chief
Planning Division
Department of the Army
Baltimore District Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Mr. Triesman:

The purpose of this letter is to submit the Fairfax County Board of Supervisors' comments regarding the Corps draft water supply plans ("Plans for Choice") for the Metropolitan Washington Area. This study by the Corps is a major step forward in ascertaining the region's water supply needs and in developing a series of resolutions for inhibiting water shortages to 2030. Fairfax County commends this difficult yet professional effort but remains concerned regarding the economic burden assigned to it by several of the projected plans to meet the region's water supply needs.

Fairfax County believes it is imperative that the water supply plans be equitable to all participants (Washington Aqueduct Division (WAD), Washington Suburban Sanitary Commission (WSSC) and Fairfax County Water Authority (FCWA). Although some of the individual water supply components as outlined are equitably proportioned, when they are combined to form specific water supply plans significant inequities result between the water service areas.

Notable are the average annual costs attributed to the water supply distributors (WAD, WSSC, and FCWA) in the Corps local (Plan 2) and sub-regional (Plan 3) water supply plans (1988 allocation ratios). Fairfax County's assigned costs for water supply in Plans 2 and 3 are 3.7 times greater than or a 270% increase over the water supply costs assigned to WAD and WSSC. This apparent inequity is lessened among FCWA and WSSC in the regional plan but not between FCWA and WAD. In the latter comparison, FCWA has been assigned water supply costs 70% and 140% above WAD costs in regional plans 4 and 5, respectively.

Unfortunately, the projected average annual water supply costs for the 2030 allocation ratios are also inequitable to Fairfax County. With the local plan (Plan 2), water supply costs for FCWA are 280% and 322%, respectively, above WAD and WSSC costs. These discrepancies are reduced in Plan 3;

however, the costs differences remain significant, 58% and 170%, respectively. While the regional plans (Plans 4 and 5) under 1988 allocation ratios have costs discrepancies, these plans with the 2030 allocation ratios are equitable to all service areas.

The common element attributed to the costs inequities is the use of Bloomington Reservoir for water supply. All plans with the 1988 allocation ratios restrict FCWA to less than 4% of the reservoir's total daily discharge (135 MGD). Utilizing the 2030 allocation ratios, FCWA is assigned only 7% with the local plan and 22% with the regional plans.

These low water supply ratios versus high water supply costs are not equitable to Fairfax County and appear inconsistent with the probable ratios the Maryland Potomac Water Authority (MPWA) will offer as it proportionates the Bloomington Reservoir's water supply. According to staff's information, MPWA is considering the regulation of the reservoir's water supply to a permit program similar to its current water supply process. This approach appears as the most equitable solution to a difficult and conflicting problem. Notwithstanding the Corps Low Flow Allocation Agreement, all plans would be more equitable if the Corps applied a higher rate of the Bloomington Reservoir or some other equitable strategy to Fairfax County's water supply needs.

In conclusion, the Fairfax County Board of Supervisors supports a cooperative and equitable approach in resolving the region's critical water supply problem and will continue to monitor and comment on the Corps progress in developing such relationships in the Metropolitan Washington Area.

Thank you for the opportunity to comment on this impressive and important study.

Sincerely,

John F. Herrity
Chairman
Board of Supervisors

cc: Board of Supervisors
cc: State Water Study Commission: Delegate James H. Dillard, II
Louis L. Guy, Jr., P.E.
cc: Chairman and Members, Fairfax County Water Authority
cc: Engineer/Director, Fairfax County Water Authority
cc: Chairman and Members, Water Resources Planning Board, Council of Governments
cc: Austan S. Librach, Director of Water Resources, Council of Governments

December 23, 1979

Mr. Cliff Kidd
Washington Water Supply Study
Army Corps of Engineers
P.O. Box 1715
Baltimore, Md. 21203

Dear Mr. Kidd:

I have enclosed our final comments on the WMA Water Supply Study (ie, the Draft Report, published in August, 1979).

As you know, the Citizens Task Force met a number of times this fall; in October, we arrived at a consensus view about the Study which I wrote up and sent to you. I considered that a "draft" of our own - and asked you to send copies around to all of our task force members for further comment.

Unfortunately, I was sick during the public hearings and did not testify on behalf of the Task Force. In the meanwhile, I asked you to let our "draft" comments stand until I heard from other Task Force members.

In November and December, you also circulated to the Task Force comments written up by two members, Frank Clark and Louis Koffman.

Although your contract with the Metropolitan Council of Governments had run out, we had a final Task Force meeting - that I chaired - on December 21. We thought it imperative to pull together everyone's final comments, and submit our final consensus position to you.

The enclosed comments represent our final thoughts about the draft Water Supply Study, and we would like them made a part of the public record.

You will note that we make the same five points that we had agreed on when we submitted our "draft" comments; there has been substantial editing (this version is shorter), and we tried to tighten up the organization.

I speak for all of the participating members of the Task Force in saying that we have enjoyed working with you, and appreciate your help on all of the logistics and the many meetings.

Sincerely,
Ed Wesely
Ed Wesely
Chairman, Citizens Task Force

CITIZENS TASK FORCE

The following members participated in our meeting on 12/21:

Marion Agnew
John Chesley
Louise Chesnut
Frank Clark
Elizabeth Horvath
Louis Koffman
Jack Nolen
Edwin Wesely (Chairman)
Shirley Zenith

Other members who regularly attended our fall meetimgs and contributed to our draft comments were:

Bill Breichner
Sheila Keeney (and her alternate)
Martha Mohler

E7W

WASHINGTON METROPOLITAN AREA WATER SUPPLY STUDY - CORPS OF ENGINEERS

COMMENTS by the CITIZENS TASK FORCE

I N T R O D U C T I O N

The Citizens Task Force was established by the Corps of Engimeers to review and evaluate their Metropolitan Washington Area Water Supply Study during various stages of the planning process. The comments that follow represent a consensus of all participating task force members about the final draft Report, published in August, 1979.

In general, we believe the Corps of Engineers has been too optimistic in accepting as givens five planning elements that we single out for discussion.

(1) The Study assumes that whatever water will be available during the next fifty years can be treated - at affordable costs - to meet Environmental Protection Agency drinking water standards, no matter what contaminants it may contain.

Neither health aspects nor costs to the consumer (which may increase dramatically) are considered in the draft Study.

(2) The Study assumes that all water supply sources now available to the Metropolitan Washington region will be available through the Year 2030.

But population growth and urbanization of the Metropolitan and upstream areas over the next fifty years is likely to diminish both the quantity of water available in our streams and reservoirs, and its quality.

(3) The Study assumes that 100 million gallons a day (MGD) of fresh water will be allowed to "flow-by" from the upper Potomac River

into the Potomac Estuary below Chain Bridge.

If ongoing studies show that larger fresh water flows are needed to maintain a healthy Estuary, the Corps' calculation of potential water shortages on the upper Potomac will be in error.

(4) The Study assumes that after 50 years the region's existing water supply resevoirs will hold the same amount of water they do now.

This ignores the continuing (and increasing) siltation of these reservoirs.

(5) The Study assumes that local and regional political strategies needed to implement various plan elements can be accomplished.

These problems need much more analysis than the two and one half pages given to them in the draft Study.

Having outlined these points, we now address them in detail.

1. WATER QUALITY

The Problem: The Corps Study does not consider questions of water quality, assuming that whatever water is available during the next 50 years can be made potable.

But the present history of the Occoquan Reservoir proves that it may be difficult and expensive to protect some of our water supply sources. Protecting the Occoquan has already required construction of an $80,000,000 sewage treatment plant, and to halt contamination of the Occoquan by "non-point source" pollutants from urbanizing areas may require large additional expenditures.

We Recommend: The Water Supply Study should include the following information:

(1) A detailed evaluation of year round water quality, present and projected, in the Potomac River and in the Patuxent and Occoquan Reservoirs.

(2) Present and projected costs - to the consumer - of treating present and future water supplies to meet EPA drinking water standards.

(3) An evaluation of the effects on the Potomac River's water supply if it has to be used to replace any reservoir source.

In case these analyses are not added to the Study, it should be made clear in the opening pages that:

(1) the Study does not address problems of water quality;

(2) the study assumes present and future water supplies can be treated to meet EPA drinking water standards, no matter what pollutants they contain;

(3) the Study does not assess the effect of EPA's new standard for Trihalomethanes: will it require changes in water treatment technology? increased costs to the homeowner? or even abandonment of existing water supply sources?

2. EFFECTS OF POPULATION GROWTH AND URBANIZATION

The Problem: The draft Study covers the 50 years between 1980 and 2030 AD, but assumes the region's rivers and streams will maintain their present and historic flows for the entire period.

Historic data on streamflow in creeks like Rock Creek should enable the Corps to make estimates about what will happen if the population of the Potomac Basin grows at projected rates over the next 50 years. (a)

Impervious rooftops, parking lots, roads, and other structures that replace forests and meadows in urbanizing areas speed and swell runoff from the land during rainstorms. Much of this is water that soaked into the ground in bygone years, and fed our streams during the summer.

(a) During the last 50 years, according to THE CREEK AND THE CITY, published by the U.S. Department of Interior in 1963, "In Rock Creek's watershed just above the District line...64 miles of flowing natural streamcourses that showed on a reliable 1913 map have dwindled to 27 miles aboveground today....It was simpler to cover them over than to cope with the mess that our kind of urbanization made of them."

Given the example of Rock Creek, it's certain we can expect less surface and ground water to be available during dry periods over the next 50 years.

We can also anticipate increased "non-point source" pollutants such as silt, lead and petroleum products - which are ubiquitous and can, at best, be imperfectly controlled as they run off the land.

We Recommend: The Corps of Engineers should use area master plans and population projections to calculate the likely effects of urbanization on streamflows in the Potomac and Patuxent River Basins during the next 50 years.

3. ENVIRONMENTAL "FLOW-BY" INTO THE POTOMAC ESTUARY

The Problem: In calculating potential water supply shortages over the next 50 years, the draft Study assumes an environmental "flow-by" past Great and Little Falls of 100 million gallons of fresh water a day.

Even so, the amount of fresh water that water utilities should allow to "flow-by" into the Estuary is currently being studied by a "multi-agency task force."

Fresh water portions of the Potomac Estuary around and below Washington are vital spawning and nursery grounds for resident and migratory commercial fish species. These parts of the river have already been badly stressed by sewage discharges, and sediment flows from the upper Potomac - during dry periods, large water supply withdrawals above the falls will add still another threat.

The Corps of Engineers recognizes that much higher "flow-bys" have been proposed to protect water quality and aquatic life in the Estuary, "ranging from 100 to 900 mgd with some values even higher." (draft Study, page 48)

We Recommend: Two sets of data should be developed and included in the Study:

(1) The Corps should calculate water supply deficits for ranges of "flow-bys" greater than 100 mgd.

(2) The final Study should tell us the probable effects on the Estuary for various time frames (one week, one month, etc.) during which the Estuary receives only the minimum water assigned in the "flow-by" - whether this be 100 mgd, 600 mgd, or some other figure.

4. SILTATION OF AREA STREAMS AND RESERVOIRS

The Problem: The Study assumes that the same volume of water presently available in the region's reservoirs will be available for the next 50 years.

But it's unreasonable in water resource planning to assume a 50 year life for any reservoir, and especially unrealistic in an urban region like ours, subject to rapid and massive land clearing and development. (a)

How much storage capacity has already been lost to area reservoirs through inadequate land-use and sediment controls?

What sediment flows can we reasonably expect in the next 50 years?

We Recommend: The Corps of Engineers should search out the best available data about current and projected sediment flows in the Potomac and Patuxent River Basins - and use it to calculate the future storage capacity of existing and proposed reservoirs.

5. PLAN IMPLEMENTATION

The Problem: The Study depends on local and regional strategies needed to implement various plan elements being accomplished. But history shows that Washington area governments have often refused to adopt strategies aimed at orderly use and conservation of water resources.

(a) Watts Branch is a small stream in Montgomery County, Md. that discharges into the Potomac just above the intake to a major WSSC water filtration plant. According to Mr. Robert McGarry, General Manager of WSSC, about 1,100 tons of sediment a year is filtered from raw water treated in the plant. With continued development along Watts Branch, he expects the problem to worsen - and that it will cost $200,000 a year to remove the sediment.

We hope, too that the Study will not lead to unforseen and unwelcome results: that area officials will not lose their sense of urgency about the region's water supply problems, and begin to encourage uncontrolled economic growth on the assumption that there will now be adequate water resources to meet their needs - postponing, in the meanwhile, the complex political decisions needed to develop essential regulatory and administrative structures.

To win political support, the various plans will have to make fiscal sense to local taxpayers. But we don't think the Study gives area residents enough meaningful cost data.

We Recommend: The Study can remedy these deficiencies in two ways:

(1) By a more thorough and specific analysis of problems that can hinder local, subregional, and regional cooperation.

One example: Unless Fairfax and Prince William Counties agree to adopt strict land-use and non-point source controls to halt further degradation of the Occoquan Reservoir, who will support a $58,000,000 interconnection between the Occoquan and the Potomac River?

(2) We need at least three sets of costs:

(a) The Corps should indicate how each project - if approved - will be funded, and especially how funding will effect ratepayers in each water utility district.

Residents should know the per capita costs for each project.

(b) The Corps should determine future operating costs for each project- this is a serious lack in the draft Study.

(c) Energy costs should be computed for each project - especially for those that will involve intensive pumping through raw water interconnections. If energy conservation alternatives are available for a given project, the Study should give us the operating costs with and without energy conservation.

IN CONCLUSION

Because the draft Water Supply Study rests on questionable assumptions about important water resource matters, it cannot be a reliable guide for solving the area's water problems.

As soon as possible, we suggest that the Corps of Engineers develop the data and analyses that we have requested - and incorporate them into the body of the present Study, or publish them as an appendix.

Without such data, the public - including area decision makers - won't be able to make informed decisions about options proposed in the Study.

If the draft Study is revised and printed before the necessary data about water quality, sediment loads, etc. is available, the Corps should detail, in a preface, exactly what assumtions have been made; and what important studies are still to be done.

*****

In the next round of planning - whenever that begins - we'd like the Corps to spell out the need to protect and conserve our water supply sources, and to outline ways in which this can be done in the Potomac Valley. Given the present history of the Occoquan Reservoir, we can't assume this will be done automatically or by "benign neglect" over the next 50 years.

Fairfax County Federation of Citizens Associations, Inc.

13802 Sauterne Way
Chantilly, VA 22021

29 December 1979

Col. James Peck
District Engineer-Baltimore
Corps of Engineers
Department of the Army
Post Office Box 1715
Baltimore, MD 21203

Dear Col. Peck :

The attached resolution on regional allocation of Potomac River water supply and cost was adopted without dissent by the Fairfax County Federation of Citizens Association on Thursday, December 20, 1979. For the past 32 years the Federation has represented citizens associations throughout Fairfax County, Virginia. Current membership is approximately 100 civic associations.

In essence, the Federation's resolution commends the Corps for its report " Metropolitan Washington Area Water Supply Study for the Potomac Water Users," but points out that the two plans (Nos.2 and 3) identified by the Corps as most easily implemented discriminate against Fairfax County Water Authority users by allocating almost all low cost reservoir benefits to Maryland and/or the District of Columbia. The effect of implementation of these plans would be to charge Fairfax residents several times the comparable charge for additional water to other jurisdiction's residents. The Federation resolution suggests that area governments and water authorities form a task force to develop a more equitable allocation of costs and benefits for the Corps' plan.

The Federation stands ready to assist the Corps in any manner on this important concern.

Sincerely,

Michael Joseph Ellis

Michael J. Ellis
First Vice President

Enc: resolution
cc: Fairfax County Board of Supervisors
Fairfax County Water Authority
Mr. Gary Hoffman, Federation President
Mr. Louis Guy

ADOPTED BY THE FAIRFAX COUNTY (VA) FEDERATION OF CITIZENS ASSOCIATIONS WITHOUT DISSENT ON THURSDAY, DECEMBER 20,1979. 12/20/79

Background

The latest metropolitan water supply study by the Corps of Engineers accurately projects the potential water deficit for Potomac users over the next fifty years and proposes specific projects and programs to meet the needs. However, the latest volumes of the report, released shortly before the October public hearing, set forth plans for sharing costs that are weighted heavily in favor of Washington Aqueduct Division and Washington Suburban Sanitary Commission and against Fairfax County Water Authority.

The least resistance plan, which requires no further approval, would cost Fairfax County Water Authority $61.6 million for 76 MGD additional supply, WSSC $26.3 million for 133 MGD additional supply, and the Corps own WAD $34 million for 106 MGD additional supply. The problem centers on selection of the target design year and on interpretation of the fine print in the Potomac River Low Flow Allocation Agreement. It is vitally important to Fairfax County citizens, present and future, that the Corps allocation of costs be challenged promptly, and that a more equitable cost sharing approach be developed, proceeding to implementation of a selected plan.

Resolution on Regional Allocation of Potomac Water Supply and Costs

WHEREAS, the U.S. Corps of Engineers, Baltimore District, has released recently its latest water supply study entitled "Metropolitan Washington Area Water Supply Study for the Potomac Water Users," and

WHEREAS, this analysis incorporates significant input from the citizens of this area as to rate of growth, target design conditions (a drought lasting 7 days or more, occurring once in a hundred years), and the implementation of strong but realistic water conservation methods, and

WHEREAS, three major projects (Little Seneca Lake, Potomac-Occoquan Reversible Pipeline, and Potomac-Patuxant Reversible Pipeline) have been identified as politically and technically feasible components of a solution, in varying combinations, and

WHEREAS, the latest elements of the Corps report included several plans for allocating the costs and benefits of these projects, along with the Bloomington Reservoir which is now approaching completion, and

WHEREAS, the two plans (Nos. 2 & 3) identified by the Corps as most easily implemented, discriminate against Fairfax County Water Authority users by allocating almost all (low cost) reservoir benefits to DC and Maryland, and

WHEREAS, the effect of implementing these cost allocation plans would be to charge Fairfax County Water Authority users several times the comparable charge for additional water to other metropolitan communities

NOW, THEREFORE BE IT RESOLVED that the Fairfax County Federation of Citizens Associations commends the Corps of Engineers for its analysis of future metropolitan water supply demand, and its development of alternative plans to meet the needs, but rejects, as inequitable, its proposed allocation of costs and benefits for the Corps' plans, and

BE IT FURTHER RESOLVED that officials representing the major water authorities and local governments in the area should form a task force to develop a more equitable allocation of costs and benefits for the Corps' plans, and

BE IT FURTHER RESOLVED that consideration be given to focusing on the demand in 2020, instead of the Corps' target year 2030, with a complete metropolitan solution utilizing Bloomington and Little Seneca only, deferring for at least a decade further consideration of the demand beyond 2020, and

BE IT FURTHER RESOLVED that copies of this resolution be addressed to the District Engineer, Baltimore District, to the Fairfax County Board of Supervisors and to the Fairfax County Water Authority.

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
(301) 269-3875

THOMAS C. ANDREWS
DIRECTOR

January 4, 1980

Harold Nelson
Urban Studies Branch
Baltimore Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Nelson:

I have attached a statement of Maryland comments to the December 13, 1979 meeting of the Federal-Interstate-State-Regional Advisory Committee. If you have any questions regarding these comments, please contact Mr. David A. Schultz of the Water Supply Division (301-269-3675).

Sincerely yours,

Ernest C. Rebuck, Program Director
Water and Waste Management Program

ECR:DAS:emp
Attachment

COMMENTS OF THE STATE OF MARYLAND FOR THE DECEMBER 13, 1979
MEETING OF THE FEDERAL-INTERSTATE-STATE-REGIONAL ADVISORY COMMITTEE
by Ernest C. Rebuck, Program Director
Water and Waste Management Program
Water Resources Administration

The State of Maryland considers the "Plans for Choice" and the supporting analyses presented in the Draft Progress Report of the Washington Metropolitan Area (WMA) Water Supply Study to be valuable planning information. This information should help in the development and management of water supply for WMA. Maryland is pursuing the following efforts to encourage a regional agreement regarding supply development: (1) environmental flowby study, (2) repayment for the cost of the future water supply storage in Bloomington Reservoir, and (3) regulatory review of the Seneca Lake Project.

I. The Environmental Flowby Study

As the Draft Progress Report states, the Water Resources Administration (WRA) is the lead agency in conducting the Environmental Flowby Study. The Study involves collection of needed hydrologic and biological measurements at low streamflow occurrences as well as data analysis. In October of 1978, one set of the needed data was collected, but since that time, river flows have exceeded 2000 cfs. Whenever flows decrease to what can be considered *low streamflow, hopefully only a few hundred cfs, the needed data collection* will continue. Maryland is delaying a recommendation on flowby until the data are collected and analyzed.

II. Repayment of Future Water Supply Costs in Bloomington Reservoir

The Water Resources Administration and the Maryland Potomac Water Authority have evaluated the feasibility of repaying the future water supply costs. Governor Harry Hughes on November 28, 1979 indicated Maryland's intent to contract for the entire future water supply cost. This letter indicated that formal negotiations on the contract would begin after completion of the Cooperative Operations on the Potomac Study that will be conducted by the Interstate Commission on the Potomac River Basin. The results of this study should relate the financial committment for future storage to each users' projected water use.

III. Regulatory Review of the Seneca Lake Project

Seneca Lake Project will need the regulatory approval of the State of Maryland whether it is developed as a local or as a regional project. WSSC has already applied for a plan development permit, which is the first step in Maryland's regulatory process.

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

January 4, 1980

Colonel James W. Peck
District Engineer
Department of the Army
Baltimore District, Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

At its meeting of December 20, 1979, the Water Resources Planning Board (WRPB) of the Metropolitan Washington Council of Governments reviewed and commended on the Corps' Metropolitan Washington Water Supply Study. Specifically, on the basis of staff and committee analysis of the "Institutional Analysis and Economics Appendix," it was felt that in accordance with *established* policies of the WRPB, any water supply management institution recommended by the Corps in their Metropolitan Washington Water Supply Study should include participation of local elected officials and be structured to facilitate regional cooperation.

We support your efforts in water supply planning for the Washington area and hope that you find this statement useful.

If you have any questions regarding our consensus, please call Austan Librach, Director, Department of Water Resources (Tel. No. 202-223-6800).

Sincerely,

Austan Librach for
Neal Potter, Chairman
Water Resources Planning Board

THOMAS C. ANDREWS
DIRECTOR

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
301-269-3348

January 9, 1980

Colonel James Peck
District Engineer - Baltimore
Corps of Engineers, Dept. of the Army
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

This will confirm the statement made by Dr. Ernest Rebuck at the December 13, 1979 FISRAC meeting regarding the assertion in Mr. Bruce Blanchard's Department of Interior letter to you dated November 13, 1979. Mr. Blanchard asserted that a specific flow-by amount had been indicated in preliminary results of a low flow study being conducted by the State of Maryland and the U.S. Fish and Wildlife Service.

As you know, the Water Resources Administration is acting as lead agency in a multi-agency flow-by study effort. Among the agencies participating are the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the Commonwealth of Virginia's State Water Control Board, and the District of Columbia. At this time no preliminary results have been developed from this study. In fact, preliminary results cannot be made using the methodology selected by the study participants until at least one more set of field measurements has been collected. Mr. Blanchard's statement represents the opinion of the U.S. Fish and Wildlife Service only, and does not constitute preliminary results of the multi-agency study.

I regret that this misinformation was presented to you and I trust that this letter will help avoid duplication of this inaccuracy in future correspondence and studies.

Sincerely,

Thomas C. Andrews
Director

TCA/dlk

Fairfax County Chamber of Commerce

January 10, 1980

Colonel James W. Peck, P.E.
District Engineer, Baltimore District
U. S. Army Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

The Fairfax County Chamber of Commerce wishes to comment, for the record, on the Corps' latest study of the Metropolitan Washington Area Water Supply. We refer to the multi-volume progress report dated August 1979, addressing in particular the Potomac Water Users.

We compliment the Corps on its analysis of the problem and its development of an approach with specific plans to meet projected water needs. This data, incorporating the value judgments of the metropolitan community, should be very helpful in creating a consensus that leads to positive action to solve the real problem.

In reviewing the proposal allocations, however, it is obvious that regional equity is missing. Fairfax County Water Authority customers would pay much higher rates per gallon, in meeting future water needs, than would other Potomac water users in the Metropolitan Washington area. Futhermore, the Corps identifies its Plan 2 as the most likely to be implemented. This plan permits the Corps' own Washington Aqueduct Division to meet its projected needs for additional water supply at a cost of $321,000 per MGD, whereas the Fairfax County Water Authority would pay from $728,000 to $810,000 per MGD (2 to 2.5 times as much) to meet its respective needs.

We note that the Corps has attempted to justify this inequitable cost allocation by referring to a minor clause in the Potomac River Low Flow Allocation Agreement, a clause still subject to interpretation. The Corps chose to ignore this same clause when it interfered with meeting the Washington Aqueduct needs (Plan 2 with the 2030 Allocation Ratios), and altered the plan to benefit Washington Aqueduct.

The Chamber cannot accept the Corps' allocation of costs and benefits. We recommend that this portion of the Corps report be withdrawn. Representatives of the affected local governments and utilities should develop an equitable plan for sharing benefits and costs. This approach should be taken, building on the solid foundation of the rest of the Corps' study, with the intent of reaching a regional agreement and initiating

Fairfax County Chamber of Commerce

implementation as soon as possible.

The Fairfax County Chamber of Commerce is very interested in a solution to this vital problem - our future water supply - and we appreciate this opportunity to comment.

Sincerely,

W. R. BENDER
President

WRB/dhh

WASHINGTON SUBURBAN SANITARY COMMISSION

4017 HAMILTON STREET

HYATTSVILLE, MD. 20781

ROBERT S. McGARRY
GENERAL MANAGER

January 22, 1980

Colonel James W. Peck
District Engineer
Baltimore District Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Jim:

As requested by the FISRAC I have attempted to form a Regional Task Force. Attached, for your information, is a copy of a letter I sent to schedule an initial meeting.

On January 18, 1980 we did meet and tentatively agreed to establish a Regional Task Force. The representatives of each of the governments indicated they would request approval from both branches of their government and nominate members of the Task Force. It was agreed that the membership of the Task Force should be elected officials. It was further agreed that WSSC, FCWA and WAD/DES would provide the membership and resources for the technical advisory group to do the work for the Task Force. We agreed to have a citizens' advisory group and I believe we agreed to finish the task by the 30th of July.

At the close of the meeting each of the jurisdictions assured me I would receive a letter from them in reply to my letter agreeing to a Task Force. If I receive such letters we may solve this problem. At the present time I am somewhat optimistic.

Sincerely,

Robert S. McGarry
General Manager

RSMcG/H
Enc.

COMMISSIONERS

DAVID B. SCOTTON
Chairman
LAWRENCE L. BROOKS, SR.
Vice Chairman
SALLY KAMCHUGER
JESSE MAUBY
JOHANNA S. MORRIS
ANDREW M. VISLOSKY

ROBERT S. McGARRY
General Manager

WASHINGTON SUBURBAN SANITARY COMMISSION

4017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (301) 699-4000
Department of Engineering: ARBITRON BLDG.-911 MARSHALL AVE.-LAUREL, MD. 20810

January 2, 1980

Mr. Parris N. Glendening, Chairman
Prince George's County Council
County Administration Building
Upper Marlboro, Maryland 20870

Dear Mr. ~~Glendening~~ Parris:

The Corps of Engineers has completed the Metropolitan Washington Area Water Supply Study of the Potomac River Users. I believe the MOST IMPORTANT CONCLUSION IS:

> Mid-range (thru 2030) solutions to our regional water supply problem can be implemented locally.

Local decision-makers can solve the problem - if they wish - through regional cooperation.

In our comments on the Corps' study (copy attached) we recommended the governments of Washington, D. C., Fairfax County, Prince George's County and Montgomery County form a Washington Metropolitan Region Water Supply Task Force to develop a cost effective regional management strategy. At the third meeting of the Corps' Federal-Interstate-State-Regional Advisory Committee (FISRAC) this recommendation was unanimously endorsed. The members of the FISRAC also recommended that WSSC initiate action to form the task force.

A similar organization, the Bi-County (Prince George's and Montgomery) Water Supply Task Force successfully developed (and is implementing) solutions for WSSC's mid-range water supply needs. The Bi-County Task Force was co-chaired by the Presidents of the two County Councils and their leadership was essential. I believe a Metropolitan Task Force will also require such leadership. The technical work has been completed - the remaining issues (economic, the degree of interjurisdictional cooperation, and supply strategies such as drought management) require the leadership of elected officials.

I am writing this same letter to Mr. John F. Herrity, Chairman, Board of Supervisors, Fairfax County; Mr. Scott Fosler, President, Montgomery County Council, and Mr. Arrington L. Dixon, Chairman of the City Council, District of Columbia, to suggest you four meet at 10:00 A.M., on January 18, 1980, to consider the formation of a Regional Task Force.

As requested by the FISRAC, we will host the meeting at WSSC headquarters in Hyattsville, Maryland. I will arrange a brief overview of the Corps' study, a summary of the remaining issues and the techniques used by the Bi-County Task Force.

I am the WSSC and Bi-County representative to the FISRAC, and can brief you on the FISRAC meeting, the issues, and why they endorsed the task force concept.

Sincerely yours,

Bob

Robert S. McGarry
General Manager

RSMcG/H
Attachment

bcc: Robert Haven, Dept. of Engineering

Letters sent to:

Mr. Arrington L. Dixon, Chairman
District of Columbia City Council

Mr. John F. Herrity, Chairman
Board of Supervisors, Fairfax County

Mr. R. Scott Fosler, President
Montgomery County Council

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

1825B Virginia Street
Annapolis, MD 21401

January 29, 1980

Colonel Peck
Baltimore District, Corps of Engineers
Post Office Box 1715
Baltimore, MD 21203

Dear Colonel Peck:

This letter is written to elaborate on and clarify a portion of the Department of the Interior letter dated November 13, 1979, commenting on the Draft Progress Report on the Metropolitan Washington Area Water Supply Study.

Our most vehement criticism of the study and our central concern in its results to date, as discussed in paragraph three of the referenced letter, is the assumption that a flow of 100 MGD will be sufficient to maintain the aquatic resources of the Potomac River. This Department has consistently and repeatedly attempted to alert the District to the fact that 100 MGD does not represent a sound environmental flow-by value and its continued use in the study may jeopardize the validity and acceptability of study results and recommendations.

The preliminary analysis of a suitable environmental flow-by of 800-1200 MGD as stated in the above referenced letter was provided to the District via a planning aid report dated 2/16/79 which was prepared by the U. S. Fish and Wildlife Service. This flow value was calculated by applying Potomac River hydrologic data gathered by the Interagency Potomac River Low-flow Study Group to minimum flow guidelines developed by Tennant in a procedure known as the Montana Method. This analysis was performed by the Service to fulfill, in part, the consultation responsibilities of the Service to the Baltimore District on the Metropolitan Washington Water Supply Study. The analysis did utilize hydrologic information specific to the Potomac River.

While the Fish and Wildlife Service believes the 800-1200 MGD value has validity and represents a realistic attempt to protect the river's natural resources, it should be emphasized that it is based on preliminary data using a new methodology. It should not be construed as being endorsed by the Interagency Group or the State of Maryland.

The importance of maintaining adequate flows in the Potomac River cannot be overemphasized. We sincerely believe that continued use of a 100 MGD flow-by figure, which itself lacks any scientific validity, will jeopardize acceptance of a realistic value once it is identified. Moreover, continued water supply planning based on this unrealistic value will create a difficult and potentially conflicting situation when an environmentally based environmental flow-by is incorporated into the area's water resource management plan.

Sincerely yours,

Glenn Kinser
Supervisor
Annapolis Field Office

FAIRFAX COUNTY WATER AUTHORITY

8560 ARLINGTON BOULEVARD—P. O. BOX 1500

MERRIFIELD, VIRGINIA 22116

Fred C. Morin, Chairman
Bill G. Evans, Vice Chairman
William J. Madden, Jr., Secy.-Treas.
David G. Russell
William M. Walker
John L. Connelly
Lois Sharpe
Nancy L. Shands
Robert J. Random, Jr.

James J. Corbalis, Jr.
Engineer-Director

Telephone
703—698-5800

February 22, 1980

Colonel James W. Peck
District Engineer, Baltimore District
Corps of Engineers
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Re: Draft/Progress Report,
Metropolitan Area Water Supply
Study for the Potomac River
Users, August 1979

Dear Colonel Peck:

We set forth herein our comments concerning the above referenced study which we request you to consider in finalizing this phase of the study and in undertaking the remaining phase of the study.

(1) We wish to extend our compliments to you, your staff and the several consultants who were engaged in this study and report which, in our opinion, clearly identify the various water supply problems facing the metropolitan Washington area and offer an array of practical and attainable "early action" solutions thereto.

(2) Our chief concern with the report relates to the manner in which the costs of the several Plans for Choices were apportioned among the users, which resulted in an inequitable portion of the costs being allocated to the Authority. We suggest that the apportionment of costs should embody the principles presented and discussed at the December 13, 1979 FISRAC meeting by Mr. Corbalis, our Engineer-Director, a copy of which is enclosed. We understand that the method of apportionment contained in the report is only one of several apportionment methods that might be utilized and, as such, is not meant to convey a conclusion that it is the only one, or the best one, to be utilized or that it is a method acceptable to the users. The report, however, does not made this distinction. In the finalization of the report, either the costs apportionment section should be revised to embody the enclosed principles or a statement should be made that the costs apportionment method included therein is merely one of several methods which might be utilized; it being the ultimate responsibility of the users to select a method acceptable to them.

(3) We endorse the plans of the Corps, as outlined at the December 13, 1979 FISRAC meeting, to undertake and complete the remaining phase of the study which will examine other alternative or supplementary solutions to the metropolitan Washington area water supply problems.

(4) We concur with the statement made by the Washington Suburban Sanitary Commission that the water supply problems of the region will only be resolved through cooperation on the part of the local governments and that the time has arrived for these governments to form a regional water supply task force to solve the problems. We pledge our support for the formation of such a task force and for active participation in its program.

Very truly yours,

Fred C. Morin
Chairman

FCM/jma
enc.

cc: Members of Fairfax County Board of Supervisors
Acting County Executive
Mr. Robert B. McGarry, General Manager, WSSC

FAIRFAX COUNTY WATER AUTHORITY

SUGGESTED PRINCIPLES FOR APPORTIONMENT OF COSTS OF
"PLANS FOR CHOICE" - METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

DECEMBER 13, 1979

1. Water available from the Bloomington Lake Project is subject to allocation under the Potomac River Low Flow Allocation Agreement (LFAA) (Article 2-C-5, Page 17).

2. According to the LFAA and estimates of water use in 2030, the total water available from the Bloomington Lake project would be allocated as follows:

User	% Total	MGD
WAD/Rockville	37.2	49
WSSC	41.3	56
FCWA	21.5	30
Total	100.0	135

3. The total cost of the non-federal, water supply portion of the Bloomington Lake project ($53,550,000) (rather than the uncommitted cost of $43,300,000) should be apportioned among the users in accordance with their respective allocations.

4. Each user is entitled to the full use of its respective allocation of water from the Bloomington Lake project.

5. If the combined total amount of water available to any user from the natural flow of the Potomac River and from the water made available from the Bloomington Lake project in accordance with the LFAA is insufficient to meet its needs, such user should be responsible for overcoming the deficiency either by developing and financing its own supply augmentation plan or by participating in the financing of a supply augmentation plan developed by one or more of the other users which has been enlarged to accommodate the needs of such user.

6. Any user may transfer any part or all of its allocation of Potomac River water, including water from the Bloomington Lake project, to any other user(s) and payment therefor should be made on the basis of sharing the cost (on a proportionate capacity basis) of providing an equivalent amount of water from a supply augmentation project of the user transferring such allocation.

7. Under principle 4 above, no part of the water available from the Bloomington Lake project allocated to WSSC (56 mgd) and FCWA (30 mgd) should be transferred to WAD/Rockville as was done in the apportionment of costs under the Local Plan where 37 mgd was transferred from WSSC and 20 mgd was transferred from FCWA. In the case of FCWA, this transfer has the effect of increasing the cost of water to FCWA by substituting 20 mgd of capacity in the more expensive Potomac-Occoquan RWI at a unit cost of $885,000/mgd ($58,400,000 ÷ 66) for 20 mgd of capacity in the less expensive Bloomington Lake project at a unit cost of $320,000/mgd ($43,300,000 ÷ 135); a difference of $11,300,000.

8. Under principal 6 above, the WAD/Rockville deficit of 57 mgd in 2030 should be made up by the financial participation of WAD/Rockville in the Potomac-Occoquan RWI, the Potomac-Patuxent RWI, Little Seneca Lake or some combination thereof.

9. The components of plan formulation and apportionments of construction costs and average annual costs now included in the Washington Area Water Supply Study for the several Plans of Choice should be revised in accordance with the principles enunciated herein.

FAIRFAX COUNTY WATER AUTHORITY

8560 ARLINGTON BOULEVARD—P. O. BOX 1500
MERRIFIELD, VIRGINIA 22116

JAMES J. CORBALIS, JR.
ENGINEER-DIRECTOR

TELEPHONE
703—698-5600

February 22, 1980

Colonel James W. Peck
District Engineer, Baltimore District
Corps of Engineers
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Re: Metropolitan Area Water Supply Study for the Potomac River Users

Dear Colonel Peck:

I am writing in connection with your plans to proceed with the remaining studies relating to the Metropolitan Washington Area Water Supply Study, as outlined at the FISRAC meeting held on December 13-14, 1979.

With particular reference to studies of upstream reservoirs, I suggest that you review those potential reservoir sites identified in the report: Water Supply Study For Washington Metropolitan Area, prepared by Black & Veatch, Consulting Engineers, dated April 1974, which are located relatively close to the Potomac River and which would lend themselves to "high flow skimming" or "pumped storage" from the river. In addition, I suggest that consideration be given to a potential reservoir site located on an unnamed tributary of the Potomac River in Loudoun County, Virginia, immediately upstream of Catoctin Creek, as shown on the enclosed map.

I think it would be helpful, also, if the studies of potential reservoir sites included a table of reservoir storage volumes which are required to meet the projected supply deficits of each of the water users (WAD/Rockville, WSSC and FCWA) in the year 2030, both with and without a 1988 "freeze" under the Potomac River Low Flow Allocation Agreement, as well as the reservoir storage volume required to meet the continued deficit of all of the users (if more or less than the sum of the individually required reservoir storage volumes). With this information,

it would be possible for each user to determine the options which may be available to it; i.e., reservoir and/or raw water interconnections, either for its own needs or in combination with the needs of other users.

Very truly yours,

James J. Corbalis, Jr.
Engineer-Director

JJC/jmm
enc.



DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U

28 February 1980

TO: Attendees, Federal-Interstate-State-Regional Advisory Committee Meeting, Metropolitan Washington Area Water Supply Study

Inclosed is a copy of the minutes for the third Federal-Interstate-State-Regional Advisory Committee (FISRAC) meeting held on 13 December 1979 at the Braddock Motor Inn, LaVale, Maryland. Also inclosed is a copy of Maryland's comments on the meeting dated 4 January 1980 and a copy of a 9 January 1980 letter clarifying the status of the Potomac River flow-by study effort.

If you have any comments or revisions, please submit them in writing.

Sincerely yours,

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

3 Incl
As stated

METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY
MINUTES
FEDERAL - INTERSTATE - STATE - REGIONAL ADVISORY COMMITTEE
13 December 1979

1. The third meeting of the Federal-Interstate-State-Regional Advisory Committee (FISRAC) for the Metropolitan Washington Area (MWA) Water Supply Study was held on 13 December 1979 at the Braddock Motor Inn, LaVale, Maryland, from 8:30 a.m. to 4:30 p.m. A list of attendees is attached.

2. Colonel Peck stated the purpose of the meeting was to respond to concerns raised about the Progress Report and to decide on the future course of action for implementing plans identified in the Progress Report.

Allocation of Costs in Progress Report

3. Mr. Corbalis stated that Bloomington water is no different than the natural flow under the Low Flow Allocation Agreement (LFAA). Each of the using parties is entitled to a share of the total Potomac flow (including Bloomington) and that share is not transferable as was done for Plan 2 (Local Plan) in the Progress Report. Mr. Corbalis didn't object to this transfer but felt that the receiving party should share in the cost of the additional project needed to make up for this transfer. He felt that the parties concerned should get together to implement a plan. Cost allocation of any plan to be implemented would be addressed by those implementing the plan.

Mr. Trieschman stated that the cost allocation in the report was one way of distributing costs. It was not intended to be the only method of sharing the costs of components in the plans. That would be worked out between the implementing agencies. It was necessary, however, to treat Bloomington different under Plan 2 Local Plan since the District of Columbia does not have the ability to implement any project to provide more water.

Mr. Jones suggested that the problem would be solved if you lump the component costs including Bloomington in each plan and apportion the cost based on the amount of water that each utility uses. Mr. McGarry disagreed by stating that if a jurisdiction developed additional water supplies then that was theirs to use as they saw fit. Mr. Corbalis agreed that Mr. Jones' proposal would work if there was uniformity of philosophy of water use so one party doesn't get unfair advantage. Mr. White noted there is an inclination towards a regional philosophy towards water conservation as exemplified by the signing of the Water Supply Emergency Agreement.

Potomac Flow-By

Mr. Rebuck stated that Mr. Blanchard's letter (DOI) was incorrect concerning Maryland's flow-by study. The Interior letter indicated that a preliminary value of 800-1200 mgd had been identified. The state has not advanced any preliminary numbers. The state is hopeful for another period of low flow to do biological assessments, water quality measurements, and cross-sectional surveying to get another data set for use in computer models which would lead toward development

of recommendations regarding environmental flow-by. The study has been a cooperative effort between the state and several Federal agencies, but nothing has been advanced by the principals of the study on what flow-by should be.

Colonel Peck stated that as we move to increasing levels of flow-by, large upstream reservoirs are probably the only solution.

Mr. McGarry stated that consideration should be given to paying the price for this unusual event in terms of both people and fish and wildlife; the environmental impact of having no impact on fish and wildlife is large reservoirs or mass exodus and neither is acceptable. He suggested that the British system be used where a table is developed that tells the decision-makers what the impact is every step of the way toward shutting off flow to the estuary. Mr. Nelson suggested that this be expanded to identify whether the river can recover at each step, how long will it take to recover, whether any man-made actions are needed to make it recover, and the cost of such actions.

Mr. Rebuck said that the Maryland study can't wait more than one or two years because it has to inter-play with the Corps' study. The state does not feel committed to a single, fixed, guaranteed number.

Mr. Trieschman stated that for the long-term study the Corps will need to know the order of magnitude of the required flow-by.

Mr. Rebuck stated that they want to gather the best information possible on the relationship between the flow-by and the fishery resource, and then discuss it with a body such as FISRAC.

Colonel Peck stated that the Corps will use 100 mgd for flow-by in developing alternative plans until a better number is developed.

AGENCY COMMENTS

Mr. Bozarth outlined MCPC's role with respect to water conservation and the region's Federal establishment.

Mr. White stated that the Water Supply Advisory Committee of the MWCOG recommended to the WRPB that any water supply management institution recommended by the Corps include participation of local elected officials and be structured to facilitate regional cooperation (see attachment 2). Colonel Peck indicated that there will be no further detailed study on institutional arrangements.

Mr. Corbalis felt that the institutional arrangements should be left to the local governmental bodies. His recommendation to the FCWA is that they should join in implementing a plan and that effort should include study of possible institutional arrangements.

Mr. Dillard indicated that there is still an unresolved problem of riparian rights. He said the LFAA is an agreement for sharing the shortages but not a basis for allocating costs. He believes the Corps made a number of prejudicial decisions in developing the plans in use of the LFAA and the sharing of Bloomington flow. He said the cost apportionment is grossly inequitable and a fair apportionment of costs would be based upon each withdrawer paying in proportion to the amount of water they withdraw (refer to tables in attachment 3). Mr. Dillard thought Regional Plan 4 has real possibilities; however, Virginia would like to

discuss the cost-sharing arrangements. Mr. Levesque shared the consensus that a task force ought to be established to plan for implementation of a solution. The District of Columbia would lean towards Plan 4.

Mr. Rebuck indicated that the Water Resources Administration is reviewing the Little Seneca Project from a regulatory perspective.

Mr. Co[illegible]lis indicated the information from this meeting will be used by the FCWA in determining its position regarding the Corps efforts. They will incorporate the idea of joining in a task force. With regard to the 2-foot addition to the Occoquan Dam, two permits still have to be obtained: one from Prince William County dealing with local planning and zoning and one from the State Water Control Board with regard to dam safety. It is scheduled to be built before the summer of 1980.

Mr. McGarry indicated that he would cooperate in a regional solution and that to ignore D.C.'s problem is not acceptable. He suggested that he not chair the Task Force but that the elected officials are the ones that should get the Task Force started since they must be involved in the decision. Mr. McGarry said he would be willing to open up regional talks if they are chaired by elected officials.

Mr. Okun outlined NAS/NAE participation in the Corps study and stated there are several areas of major concern. The Corps study is being viewed by NAS/NAE as a model study and should incorporate the latest methodologies and approaches. Second was the concern that water supply facilities can't be planned without some knowledge of wastewater facilities in the region and the effects that system interactions have on demand. The most important thing omitted was water quality. He mentioned upstream pollutant problems that affect the Potomac, water quality associated with Bloomington, and that reregulation could cause water quality problems in the distribution system. The implications of these ought to be stated so that decision-makers are informed. Mr. Okun said he would report back to his committee that there is a desire to go ahead with some kind of regional solution.

Mr. Bennet stated that Montgomery County determines water supply facility construction in the County and that the County intends to cooperate with other jurisdictions in the region to review water supply needs.

Mr. Suto stated that effective water resource management must deal with both the quantity and the quality aspects of natural resource systems. EPA would like to be an active participant in further efforts to assess options and assist in any way possible in seeking resolution of institutional constraints.

Mr. Trieschman indicated the newer population projections would be included in the final report document. The final document would also reflect the conclusions of that progress report, the status of any implementation, a sensitivity analysis of how the progress in the next year or two has affected any conclusions, what's been implemented, and how that reflects on options remaining beyond the implementation potentials discussed.

Mr. McGarry indicated the best institutional arrangement is one recommended by the people who will have to live with them.

Mr. Okun stated that NAS/NAE feels that an independent group of people unfamiliar with the area should identify a series of options for the elected people to have as a starting point. Mr. McGarry and Mr. Trieschman then related their experience with the Binghamton Wastewater Management Study and the people's unwillingness to accept options presented to them by outsiders. Mr. Okun indicated that this discussion was persuasive and he would discuss it with the NAS/NAE committee.

Mr. Dillard proposed that ". . . WSSC should act as the coordinative agency in the formation of a Metropolitan Task Force." The committee concurred. Mr. McGarry agreed to set up a meeting with the political leadership of the jurisdictions.

BLOOMINGTON LAKE

Mr. Bob Craig, Upper Potomac Area Engineer, gave a slide presentation on the current status of Bloomington and the remaining work to be accomplished. Colonel Peck read Governor Hughes' letter stating the State's intent to purchase the future water supply storage in Bloomington. Colonel Peck indicated that if storage can be reallocated then the additional storage might be available to other parties. Mr. Schultz added that it is Maryland's intent to purchase any additional water supply storage that may be reallocated.

Mr. Kanowitz made a presentation on the planned operational scheme of the Bloomington Reservoir. The storage is currently allocated as follows:

2,400	acre-feet for sediment reserve
51,000	acre-feet for water quality
41,000	acre-feet for water supply
36,200	acre-feet for flood control and surcharge storage
130,600	acre-feet total storage

The Maryland Potomac Water Authority has contracted for 7,158 acre-feet of water supply storage. During normal flow periods, the Lake will be maintained at 1466 feet msl (94,400 acre-feet) from April to October. From October to January, this will be lowered to 1410 feet msl (50,000 acre-feet) and this level will be maintained until mid-April. During high periods, inflow will be passed through the outlets until the North Branch below the dam approaches flood stage. Then, the gates will be closed to obtain maximum downstream reduction in flood stage. After the river crests, the gates will be opened gradually.

During low flow periods, the lake will be regulated as follows:

- A minimum flow of 93 cfs must be met at Luke from Bloomington and Savage reservoirs.
- Water quality releases will be made to meet downstream water quality standards as much as possible.
- Water supply releases from the contracted storage would be made as requested by the purchaser with the only limit being public safety.
- As additional water supply storage is purchased, it will be released as requested by the purchaser.

Mr. Juhle indicated a systems concept is being planned for water quality to operate as best as possible to meet Maryland standards. This may require that water quality storage be held in the reservoir. He stated that Bloomington will serve as an averaging device as the quality downstream of the Luke confluence will be closer to its long-term average. Mr. McGarry suggested that the same approach discussed regarding the Potomac Estuary (people needs vs. river needs) be considered in figuring releases.

Mr. Haines outlined the intent of the Bloomington Lake Reformulation Study as discussed in the study initiation notice. A Progress Report will be published in the summer of 1980 with a Final Report in September 1982 as part of the MWA Water Supply Study.

Colonel Peck stated that reallocating water quality to water supply is probably within the District Engineers' authority while a reallocation of flood control may require Congressional authorization. If water supply storage is increased, the amount of repayment is increased. A decision to reallocate water quality storage or recommend flood control reallocation won't be made until all existing water supply storage is contracted.

Mr. Jones said, based on an actual case in Virginia, that Westvaco-Luke may be in a position to challenge the Corps Bloomington release rules and require a fixed release of 305 cfs. Mr. Jones stated that because the Gathright Dam was authorized under a certain written justification it could not be changed. He said that if Westvaco wants to expand they may not have to do anything to their current facility but their expansion may be based upon a certain stream capacity. Colonel Peck indicated that the District would investigate this case.

ICPRB CO-OP PROGRAM

Mr. Sheer stated that this program will concentrate on getting various tools in place for the day-to-day operation of the reservoirs in the MWA. Several papers identifying the work program were passed out (these are included as attachment 4) The National Weather Service will cooperate with ICPRB in developing flow forecasting techniques for the entire Potomac Basin. Trade-offs will be determined between water quality and flow and Maryland will use the waste load allocation model developed by Hydroscience. Techniques will be developed for annual drought risk assessment and emergency operations coordination consisting of annual drought rehearsals for persons involved in the reservoir operation.

Mr. Corbalis, Chairman of the CO-OP Section, said his intention would be to ask for a steering committee to examine the budget and agree on a funding mechanism. The Section would request funding from the agencies. He felt the water supply task force should recognize this CO-OP effort as an indication of the seriousness with which the supply problem is being viewed.

LONG-RANGE STUDY ACTIVITIES

Mr. Pace briefly discussed the alternatives to be examined in the remaining portion of the MWA Water Supply Study and presented a status report on each alternative. The alternatives to be examined include: (1) Pilot Estuary Water Treatment Plant Testing Program; (2) Upstream Reservoirs; (3) Groundwater; (4) Pricing Study; (5) Bay Model Testing Program; (6) Wastewater Reclamation; (7) Local County Investigations; and (8) the Bloomington Reformulation Study. A status report on each of these alternatives was presented.

Subsequent discussion centered around the focus and need of the long-range study. Colonel Peck stated that the Corps has an obligation to display all the water supply alternatives so that they are available even though they may not be most likely candidates.

Mr. Corbalis felt that the long-range study could be viewed as looking to solve the problem outside the MWA backyard.

Mr. McGarry thought the study should be terminated. He though the Task Force might defer actions pending the 1981 report.

Mr. Levesque agreed that the study should stop.

Mr. Bennett questioned whether upstream jurisdictions' needs would be considered.

Mr. Sheer felt that upstream consumptive use may increase and, therefore, upstream reservoirs or other alternatives may be needed.

Mr. Corbalis said that all the things don't have to be undertaken simultaneously - maybe build Seneca now and five years later the Potomac-Occoquan interconnection. If the task force can agree on cooperation and apportionment, that would reserve for the future a consideration of what other options there are.

Mr. Okun agreed local initiative is important but that a long-term examination is also important because the demand for water will increase and water is fixed in amount. There is not much question that reservoirs will see a resurgence and from an energy standpoint become more cost-effective. Long-term possibilities should be identified early not for implementation but for the purpose of carrying them through so that they aren't excluded from further consideration.

Colonel Peck indicated that he does not have the option to discontinue the study based on this meeting's discussion. He also said that the long-term plans are not to be held out for the same time frame. Instead, the long-range effort should be viewed as an extension of the Task Force and not a substitute for the short-range alternatives. It should be viewed as an extension for increased flow-by, projecting beyond 2030, other needs such as upstream consumptive use.

Mr. McGarry said that the wording should be carefully selected; perhaps, that the Corps is looking at the next set of decisions for needs beyond the quantities already shown and to insure that the quantities shown are available.

Colonel Peck requested that the FISRAC members submit written comments on the alternatives to be studied in the long-range portion of the study.

ATTENDANCE
FISRAC MEETING

Name	Agency	Phone No.
Cliff Kidd	Corps of Engineers	(301) 962-2668
Robert S. Pace	Corps of Engineers	(301) 962-2668
Michael Kanowitz	Corps of Engineers	(301) 962-4840
Pete Juhle	Corps of Engineers	(301) 962-4893
Joseph Hamler	Corps of Engineers	(301) 962-4970
Don Bozarth	National Capital Planning Commission	(202) 724-0185
Dan Shear	ICPRB CO-OP	
David Schultz	Maryland Water Resources Administration	(301) 269-3675
Ernie Rebuck	Maryland Water Resources Administration	(301) 269-3875
Bob Haven	WSSC	(301) 441-4002
Robert McGarry	WSSC	(301) 699-4187
Robert Craig	Corps of Engineers	(301) 359-0211
J. William Haines	Corps of Engineers	(301) 962-2547
Harold Nelson	Corps of Engineers	(301) 962-2668
William E. Trieschman	Corps of Engineers	(301) 962-4710
Col. James Peck	Corps of Engineers	(301) 962-4545
John F. Herbert, III	Corps of Engineers	(301) 962-3385
Audrey B. Urling	Corps of Engineers	(301) 962-3385
Harry Ways	Washington Aqueduct	(202) 282-2753
Koge Suto, Jr.	EPA	(215) 597-2786
J.J. Corbalis, Jr.	FCWA	(703) 573-4412
Terry Martin	USDI	(202) 343-6128
Jean B. Levesque	Department of Environmental Services, D.C.	(202) 767-7651
James Dillard	Virginia Water Study Commission	
Dale F. Jones	Virginia State Water Control Board, Richmond	(804) 786-6422
Paul White	COG	(202) 223-6800
Walter R. Lynn	NAS/NAE	(202) 389-6785
Daniel A. Okun	NAS/NAE	(202) 389-6785
Mamadou M. Watt	D.C. WRRC	(202) 282-7333
Thomas M. Schwarberg, Jr.	Virginia SWCB	(703) 750-9111
Phil Bennett	Montgomery County	(301) 279-1316
Linda Fohs	Montgomery County Gov't	(301) 279-1316
Austan Librach	MWCOG	(202) 223-6800

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

MEMORANDUM

DATE: November 20, 1979

TO: Water Resources Planning Board

FROM: Charles Vincent, Chairman
Water Supply Advisory Committee

SUBJECT: Recommended Comments Regarding the Corps of Engineers' "Institutional Analysis and Economic Appendix"

As part of the Metropolitan Washington Water Supply Study, the Army Corps of Engineers has solicited comments from the Water Resources Planning Board (WRPB). To date, the WRPB has reviewed five study documents[1] and provided comments to the Corps. The Corps has requested comments on a sixth and final document, the draft "Institutional Analysis and Economics Appendix." Comments provided by the WRPB will be considered by the Corps as they revise their draft "Main Report for Potomac Water Users" during late fall and early winter.

The Corps has formulated water supply plans to ensure a sufficient water supply to the year 2030 for the Washington area. The Institutional Analysis and Economics Appendix presents the costs of plan components, allocates total plan costs to participant water supply agencies, and suggests five possible institutional arrangements to implement each plan. The Corps does not intend to select a water supply plan and an institutional arrangement to implement the plan. They will leave that determination entirely to the states, local governments, and water supply agencies.

COMMENTS BASED ON WRPB WATER RESOURCES POLICY

Based upon investigations by the Water Supply Advisory Committee within the context of the water resources policies adopted by the WRPB, the Committee recommends that the WRPB transmit the following comment to the Corps of Engineers:

> In accordance with established policies of the Water Resources Planning Board, the Board recommends that any water supply management institution recommended by the Army Corps of Engineers in their Metropolitan Washington Water Supply Study include participation of local elected officials and be structured to facilitate regional cooperation.

[1] The five technical documents written by the Corps are: 1) Raw Water Interconnections Specialty Appendix; 2) Finished Water Interconnections and Reregulation Specialty Appendix; 3) Local Storage Specialty Appendix; 4) Conservation and Demand Reduction Specialty Appendix; and 5) Formulation, Assessment, Evaluation of Detailed Plans Specialty Appendix.

STATE WATER CONTROL BOARD POSITION STATEMENT

ON

"PLANS FOR CHOICE"

I. VIRGINIA RIPARIAN RIGHTS PERSPECTIVE

A. Although Virginia would greatly desire a negotiated plan for solving the water resources needs of the Metropolitan Washington Area (MWA), Virginia could never accept any plan that would abrogate her riparian rights to the Potomac River. It is noteworthy that we were unable to find any recognition of Virginia's riparian rights in the main report, and what is worse, we find a total lack of recognition of Riparian Economic Equity as a criterion for developing the plans.

B. The Potomac River Low Flow Allocation Agreement is an agreement for the fair and equitable sharing of the water only during shortages by all the inhabitants of the Washington Metropolitan Area who are relying on the Potomac River for their water supply. It is not an agreement for allocating costs. It is not an agreement to form the basis for developing a water supply plan for the MWA. The agreement only covers a small segment of the Potomac River at low flow conditions.

The "Plans For Choice" were formulated on the deficits associated with the Potomac River Low Flow Allocation Agreement projected into the future without regard to the guaranteed riparian rights to the Potomac River. These riparian rights are guaranteed by all the Potomac River compacts.

Presented by Dale F. Jones, Director, Bureau of Water Control Management, State Water Control Board, at December 13-14, 1979 meeting of FISRAC.

Attachment 3

The Corps of Engineers Information Paper outlined a number of prejudicial decisions that were made in developing deficits and satisfying them; such as, WAD-Rockville shortage should be filled prior to sharing Bloomington water to other service areas.

This raises a very basic question as to whether it will be possible for the Corps of Engineers ever to be able to make equitable cost allocations while having a vested interest in the operation of the Washington Aqueduct.

II. RELATION OF SYSTEM COSTS AND QUANTITIES

A fatal flaw in the cost apportionment made by the Corps was to consider the natural low flow to have no value associated with it and for the major benefits from this "no cost" or "zero cost" water to accrue principally to WAD and WSSC. For FCWA and Virginia to receive credit for only one (1) mgd of the natural flow at "zero cost" from a total low flow of 401 mgd is so grossly inequitable that the SWCB staff could never recommend approval of any plan using this cost apportionment scheme. The disproportionate cost to Virginia and FCWA is shown in Table I for Plans 2 through 5 and the cost per 1,000 gallons in 2030 shows FCWA paying a high of 13.22¢ for Plan 2, to a low of 4.7¢ in Plan 4, but, in every plan paying a much higher cost per unit than each of the other riparian users. We maintain that this violates the recognized legality of riparian rights and any other equitable apportionment.

TABLE I

AVERAGE ANNUAL COST APPORTIONMENT
2030 ALLOCATION RATIOS

2. LOCAL PLAN

	COST (MILLION $)	% OF COST	POTOMAC USE (MGD)	COST (CENTS/1000 GAL)
WAD	$1.5	17.8	310	1.33
WSSC	2.0	24.3	305	1.88
FCWA	4.8	57.9	100	13.22
	$8.3	100.0	715	

3. SUBREGIONAL PLAN

	COST (MILLION $)	% OF COST	POTOMAC USE (MGD)	COST (CENTS/1000 GAL)
WAD	$3.0	35.7	310	2.7
WSSC	2.1	24.5	305	1.9
FCWA	3.3	39.8	100	9.0
	$8.4	100.0	715	

4. REGIONAL PLAN

	COST (MILLION $)	% OF COST	POTOMAC USE (MGD)	COST (CENTS/1000 GAL)
WAD	$2.3	33.1	310	2.0
WSSC	3.0	42.5	305	2.7
FCWA	1.7	24.4	100	4.7
	7.0	100.0	715	

5. REGIONAL PLAN

	COST (MILLION $)	% OF COST	POTOMAC USE (MGD)	COST (CENTS/1000 GAL)
WAD	$3.1	32.3	310	2.7
WSSC	4.1	42.7	305	3.7
FCWA	2.4	25.0	100	6.6
	9.6	100.0	715	

III. A FAIR APPORTIONMENT OF COSTS

Virginia would suggest that one possible way to resolve the water supply problem in the MWA would be based on an equitable cost to those using the Potomac River (in need now and in the future) without having the natural flow apportioned under the Riparian Doctrine by the Congress or Supreme Court.

A. That all withdrawers from the Potomac pay for the costs of a water supply plan in proportion to the amount of water they withdraw. That is, a uniform surcharge or tax for each 1,000 gallons withdrawn from the common reach of the Potomac.

B. A corollary to this is that all the surcharge or withdrawal tax be allocated to finance the plan to increase the quantity of water in the MWA.

C. Table II shows the average annual cost in million dollars for the year 2030 based on a uniform cost per 1,000 gallons for projected Potomac usage, using the Corps' alternatives Numbers 2, 3, 4 and 5.

TABLE II

	Potomac Use In MGD 2030	Cost In Millions 2030
PLAN 2		
WAD	310	3.6
WSSC	305	3.6
FCWA	100	1.2
TOTAL	715	8.4

TABLE II (Continued)

	Potomac Use In MGD 2030	Cost In Millions 2030
PLAN 3		
WAD	310	3.6
WSSC	305	3.6
FCWA	100	1.2
TOTAL	715	8.4
PLAN 4		
WAD	310	3.1
WSSC	305	3.0
FCWA	100	1.0
TOTAL	715	7.1
PLAN 5		
WAD	310	4.1
WSSC	305	4.1
FCWA	100	1.3
TOTAL	715	9.5

IV. CONCLUSION

The main report does outline a number of "Plans For Choice" that technically could solve the water supply problems of MWA, but the cost apportionment is so grossly inequitable and violates the Economic Equity Criteria outlined at the beginning of the Report of Study that it is unacceptable.

December 12, 1979

Two Year Work Program for ICPRB Section Activity

Bloomington Reservoir is scheduled for completion in 1981. Of the 92,000 acre feet (30 billion gallons) of storage in the reservoir, 55% will be federally owned, with costs allocated to water quality improvement. The remaining 45% will be nonfederally owned; its costs are allocated to water supply augmentation. Some 17% of the water supply storage (7.78% of the total conservation storage) has been contracted for by the Maryland Potomac Water Authority (MPWA). No contracts have been let for the remainder. Over the next few years, contracts will be negotiated for the purchase of the remaining conservation storage, agreements on operating policy will be reached between the owners of the conservation storage and the U.S. Army Corps of Engineers (COE), procedures for scheduling releases will be specified, and billing and payment for the non-federal costs of the project will begin.

In the process of determining operating policies for the reservoir, issues concerning the conflicting multiple purposes of the conservation storage will have to be resolved. These purposes are:

1. Flow maintenance at Luke, Maryland, for water quality improvement and industrial water supply;
2. Recreation on the reservoir;
3. Water supply downstream (particularly in the Washington Metropolitan Area);
4. Fresh water flow into the Potomac estuary for water quality improvement. (environmental flow-by).

Maintaining flows of 200 mgd at Luke (the safe yield of the combined Savage River and Bloomington Dam system as well as the flow used to estimate benefits for water quality when the project was authorized) will require drawdowns of the conservation pool affecting recreation and beginning as early as late spring. Maintaining high flows at Luke also conflicts with maintaining flows at Washington for either water supply or environmental flow-by; a reduction of 50 mgd at Luke will allow an increase

Attachment 4

approximately 100 mgd downstream, according to studies performed at the Johns pkins University. There is a direct tradeoff between maintaining water supply the Washington Area and environmental flow-by, and both impact maintaining storage or recreation behind the dam.

Resolving these issues, negotiating contracts and agreements, and developing perating and billing proceedures will be greatly facilitated if the following tasks re performed. The tasks are broken into two groups below; those which could be erformed by in-house staff of a state or local public agency, and those which equire the assistance of federal or private agencies, They are presented in a emi-outline form.

I. Outside Studies

A. Develop Flow Forecasting Techniques - Ten to fifteen day flow forecasts will be essential if reservoir storage is to be used efficiently to maintain flow in the Washington Metropolitan Area. These can be made by the National Weather Service when their forecast models are calibrated for the Potomac basin, and if some enhancements are made to their forecasting programs.

B. Establish Time of Travel for Releases from the Reservoir and Estimate Instream Water Losses - These are also used in scheduling releases. This work, which may require some data collection to estimate losses, can be carried out by either the COE directly or the U.S. Geological Survey (USGS).

C. Conduct Reallocation Study for Bloomington Reservoir - Reallocation of the costs of the reservoir may be desirable to increase operating flexibility. The COE is currently undertaking a reallocation study.

D. Complete Study on the Effects of Reduced Environmental Flow-by - This information is required to establish tradeoffs between environmental quality downstream and the other purposes of the reservoir. The work is currently being performed by the Maryland Department of Natural Resources (Md. DNR).

E. Evaluate Effects of Reservoir Storage Levels on Recreation Potential - This information is necessary to determine the impacts of operating policies on recreation. This work could be performed by the University of West Virginia through a grant from the Office of Water Research and Technology of the Department of Interior (or other source); West Virginia has the largest access to recreation on the reservoir.

II. Staff Analysis Tasks

A. Determine Tradeoffs Between Water Quality and Flow at Luke, Md. - This is required to ascertain the effects of operating policies on upstream water quality. This could be accomplished using the model calibrated for the Interstate Commission on the Potomac River Basin by Hydroscience, Inc.

B. Develop and Test Operating Strategies for the Bloomington, Savage, Patuxent and Occoquan Reservoirs - This would be a continuation of the work carried out for the last two years at the Johns Hopkins University, but with the active participation of the COE. All work must take into account the latest data on sizes and facilities available for flow maintenance operations.

C. Coordination Agreements on Purchase of Storage and Operating Strategies - Because of the large number of groups concerned with the operation of the reservoir and their diverse interests, a substantial coordinative effort will be required.

D. Develop Techniques for Annual Drought Risk Assessments and Emergency Operations Coordination - These techniques will provide early indications that a drought may occur in a given year, and lay the groundwork for cooperative operations among the utilities to minimize the potential effects of that drought.

TASKS FOR COOPERATIVE WATER SUPPLY OPERATIONS ON THE POTOMAC (CO-OP)

Approved by ICPRB on December 6, 1979

Bloomington Reservoir on the North Branch of the Potomac River is scheduled for completion in 1981. Of the 92,000 acre feet (30 billion gallons) of conservation storage in the reservoir, 55% will be federally owned, with costs allocated to water quality improvement. The remaining 45% will be non-federally owned; its costs are allocated to water supply augmentation. Some 17% of the water supply storage (7.78% of the total conservation storage) has been contracted for by the Maryland Potomac Water Authority (MPWA). No contracts have been let for the remainder. Over the next few years, contracts will be negotiated for the purchase of the remaining conservation storage, agreements on operating policy will be reached between the owners of the conservation storage and the U.S. Army Corps of Engineers (COE), procedures for scheduling releases will be specified, and payment for the non-federal costs of the project will begin.

In the process of determining operating policies for the reservoir, issues concerning the conflicting multiple purposes of the conservation storage will have to be resolved. These purposes are:

1. Flow maintenance at Luke, Maryland, for water quality improvement and industrial water supply;

2. Recreation on the reservoir;

3. Water supply downstream (particularly in the Washington Metropolitan Area);

4. Fresh water flow into the Potomac estuary for water quality improvement (environmental flow-by).

Maintaining flows of 200 mgd at Luke (the safe yield of the combined Savage River and Bloomington Dam system, as well as the flow used to estimate benefits for water quality when the project was authorized) will require drawdowns of the conservation pool affecting recreation and beginning as early as late spring. Maintaining high flows at Luke also

1055 First Street
Rockville, Md. 20850
(301) 340-2661

conflicts with maintaining flows at Washington for either water supply or environmental flow-by; a reduction of 50 mgd at Luke will allow an increase of approximately 100 mgd downstream, according to studies performed at the Johns Hopkins University. There is a direct tradeoff between maintaining water supply in the Washington Area and environmental flow-by, and both impact storage for recreation behind the dam.

The Section for Cooperative Water Supply Operations on the Potomac (CO-OP) is established and directed by the Interstate Commission on the Potomac River Basin (ICPRB) to assist in resolving these issues, negotiating contracts and agreements, and developing operating procedures.

In particular, in cooperation with other federal, state and local agencies and with other assistance as required, CO-OP shall:

1) Develop river flow forecasting techniques suitable for use in scheduling releases from reservoirs which provide water supply, flood control and other benefits within the section boundaries (hereafter referred to as the Reservoirs).

2) Develop and evaluate the effects of operating policies and strategies for the Reservoirs on all of their multiple purposes.

3) Coordinate the operation of the Reservoirs and Potomac River Water Supply Intakes.

4) Coordinate agreements on purchase of conservation storage in Bloomington Reservoir.

5) Assist and coordinate with other relevant studies, especially the Maryland Department of Natural Resources' Environmental Flowby Study and the Baltimore District Corps of Engineers' Bloomington Reformulation Study.

INTENSIVE EXAMINATION OF THE POTOMAC RIVER BASIN

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
(301) 269-3875

THOMAS C. ANDREWS
DIRECTOR

January 4, 1980

Harold Nelson
Urban Studies Branch
Baltimore Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Nelson:

I have attached a statement of Maryland comments to the December 13, 1979 meeting of the Federal-Interstate-State-Regional Advisory Committee. If you have any questions regarding these comments, please contact Mr. David A. Schultz of the Water Supply Division (301-269-3675).

Sincerely yours,

Ernest C. Rebuck, Program Director
Water and Waste Management Program

ECR:DAS:emp
Attachment

COMMENTS OF THE STATE OF MARYLAND FOR THE DECEMBER 13, 1979
MEETING OF THE FEDERAL-INTERSTATE-STATE-REGIONAL ADVISORY COMMITTEE
by Ernest C. Rebuck, Program Director
Water and Waste Management Program
Water Resources Administration

The State of Maryland considers the "Plans for Choice" and the supporting analyses presented in the Draft Progress Report of the Washington Metropolitan Area (WMA) Water Supply Study to be valuable planning information. This information should help in the development and management of water supply for WMA. Maryland is pursuing the following efforts to encourage a regional agreement regarding supply development: (1) environmental flowby study, (2) repayment for the cost of the future water supply storage in Bloomington Reservoir, and (3) regulatory review of the Seneca Lake Project.

I. The Environmental Flowby Study

As the Draft Progress Report states, the Water Resources Administration (WRA) is the lead agency in conducting the Environmental Flowby Study. The Study involves collection of needed hydrologic and biological measurements at low streamflow occurrences as well as data analysis. In October of 1978, one set of the needed data was collected, but since that time, river flows have exceeded 2000 cfs. Whenever flows decrease to what can be considered low streamflow, hopefully only a few hundred cfs, the needed data collection will continue. Maryland is delaying a recommendation on flowby until the data are collected and analyzed.

II. Repayment of Future Water Supply Costs in Bloomington Reservoir

The Water Resources Administration and the Maryland Potomac Water Authority have evaluated the feasibility of repaying the future water supply costs. Governor Harry Hughes on November 28, 1979 indicated Maryland's intent to contract for the entire future water supply cost. This letter indicated that formal negotiations on the contract would begin after completion of the Cooperative Operations on the Potomac Study that will be conducted by the Interstate Commission on the Potomac River Basin. The results of this study should relate the financial committment for future storage to each users' projected water use.

III. Regulatory Review of the Seneca Lake Project

Seneca Lake Project will need the regulatory approval of the State of Maryland whether it is developed as a local or as a regional project. WSSC has already applied for a plan development permit, which is the first step in Maryland's regulatory process.

THOMAS C. ANDREWS
DIRECTOR

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401
301-269-3338

January 9, 1980

Colonel James Peck
District Engineer - Baltimore
Corps of Engineers, Dept. of the Army
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

This will confirm the statement made by Dr. Ernest Rebuck at the December 13, 1979 FISRAC meeting regarding the assertion in Mr. Bruce Blanchard's Department of Interior letter to you dated November 13, 1979. Mr. Blanchard asserted that a specific flow-by amount had been indicated in preliminary results of a low flow study being conducted by the State of Maryland and the U.S. Fish and Wildlife Service.

As you know, the Water Resources Administration is acting as lead agency in a multi-agency flow-by study effort. Among the agencies participating are the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the Commonwealth of Virginia's State Water Control Board, and the District of Columbia. At this time no preliminary results have been developed from this study. In fact, preliminary results cannot be made using the methodology selected by the study participants until at least one more set of field measurements has been collected. Mr. Blanchard's statement represents the opinion of the U.S. Fish and Wildlife Service only, and does not constitute preliminary results of the multi-agency study.

I regret that this misinformation was presented to you and I trust that this letter will help avoid duplication of this inaccuracy in future correspondence and studies.

Sincerely,

Thomas C. Andrews
Director

TCA/dlk

96-111-C

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U

7 August 1980

Mr. Frank J. Clark
Cold Water Coalition
4702 Iris Street
Rockville, Maryland 20853

Dear Mr. Clark:

This letter is in response to your 1 July 1980 letter inquiring as to the status of the Phase II Draft Report on the Metropolitan Washington Area (MWA) Water Supply Study. Subsequent to the transmittal of this Draft Report to the members of the Citizens Task Force in May 1980, a decision was made to delay the MWA Water Supply Study one year. While work on the Study will continue in fiscal year (FY) 1981, the scheduling delay dictates that an intensive effort will not be resumed until FY 1982. Consequently, the Final Report on the MWA Water Supply Study is now scheduled for release in September 1983.

While delays of any sort are undesirable, this delay does result in several advantages with respect to associated planning activities and the overall study product. One of these advantages relates to the Pilot Estuary Water Treatment Plant testing program. With the 1983 study completion date now scheduled, it will be possible to incorporate one year of testing results in the Final Report. The Bloomington Lake Reformulation Study will also benefit from the revised study schedule. Because the efforts of both the Metropolitan Washington Regional Task Force and the ICPRB Section III Co-operative Operation (Co-op) study group will address Bloomington's contribution to regional water supply management, the year delay will allow for detailed analysis and documentation of any impacts and implementation efforts that may result. Additionally, with the increased emphasis that is being placed on the important issue of environmental flow in the Potomac River, it is appropriate that the revised study schedule will allow for inclusion of any data developed by Maryland's Potomac low flow study.

NABPL-U 7 August 1980
Mr. Frank J. Clark

Your concern about the lack of coordination with the CTF Committee since spring 1980 is appreciated. However, due to the immediacy of the budgetary and scheduling concerns previously discussed, only a small amount of time has been directed over the past several months toward refinement of the Draft Report. To more fully address the events of the past several months, the present study status, and the future study direction, a meeting of the CTF Committee has been scheduled to begin promptly at 10:00 a.m. on 26 September 1980 in the Chemical Building conference room at the Washington Aqueduct. You are requested to submit your written comments relating to the 1980 Draft Report on the MWA Water Supply Study at this time.

Also included with your correspondence was a copy of a letter to the President authored by Mr. Edwin Wesely. In this letter, Mr. Wesely expressed his concerns about a legislative bill (H.R. 5259) which would allow the Washington Suburban Sanitary Commission to build a weir. The bill in which the weir provision was included was approved by Congress and signed by the President as Public Law 96-292 on 28 June 1980. If there are other concerns which you may have, please call Mr. Clifford Kidd, a member of my staff, at (301) 962-2668.

Sincerely yours,

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

CF: CTF Committee Members

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U 4 February 1981

SUBJECT: Metropolitan Washington Area (MWA) Water Supply Study - Bloomington Lake Reformulation Study: Review of The Progress Report of The Bloomington Lake Reformulation Study

TO: Members of The Citizens Task Force to Review The Metropolitan Washington Area Water Supply Study

The subject report which is inclosed for your review represents the progress to date on the study to investigate feasibility of reallocating the Bloomington Lake project storage for providing additional flow in the Potomac River at Washington, D.C., to alleviate projected water supply shortages in the MWA. The document includes a main report bound to five appendices dealing with different aspects of the study efforts.

The report is a preliminary draft which is subject to revision and not intended for release to the general public.

Should you have any questions regarding the report, please call Mr. P. Singh Bhutani at (301) 962-2547.

Sincerely yours,

Harold L. Nelson
for WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

1 Incl
As stated

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U

5 February 1981

SUBJECT: Metropolitan Washington Area (MWA) Water Supply Study - Bloomington Lake Reformulation Study: Review of the Progress Report of the Bloomington Lake Reformulation Study

TO: Federal-Interstate-State-Regional Committee and National Academy of Sciences - National Academy of Engineering Committee

The subject report, which is inclosed for your review and comment, represents the progress to date on the study to investigate feasibility of reallocating the Bloomington Lake project storage for providing additional flow in the Potomac River at Washington, D.C., to alleviate projected water supply shortages in the MWA. The document includes a main report bound to five appendices dealing with different aspects of the study efforts.

The report is a preliminary draft which is subject to revision and not intended for public release. Your comments on the report are requested for submission to this office by 1 May 1981.

Should you have any questions regarding the report, please call Mr. Noel Beegle, Chief, Urban Studies Branch, at (301) 962-2668.

Sincerely yours,

Harold L. Nelson
for WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

1 Incl
As stated

Bloomington
General Corresp

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U

10 February 1981

SUBJECT: Metropolitan Washington Area (MWA) Water Supply Study - Bloomington Lake Reformulation Study: Review of The Progress Report of The Bloomington Lake Reformulation Study

TO: Representatives of Public Water Utilities, Interested Agencies, and Individuals.

The subject report which is inclosed for your review represents the progress to date on the study to investigate feasibility of reallocating the Bloomington Lake project storage for providing additional flow in the Potomac River at Washington, D.C., to alleviate projected water supply shortages in the MWA. The document includes a main report bound to five appendices dealing with different aspects of study efforts.

The report is a preliminary draft which is subject to revision and not intended for release to the general public. Your comments on the report are requested by 1 April 1981. Further work on the Bloomington Lake Reformulation Study will continue and additional and revised information will be forwarded to you as it is developed.

Should you have any questions regarding the report, please call Mr. Noel Beegle, Chief, Urban Studies Branch, at (301) 962-2668.

Sincerely yours,

Harold L. Nelson
for WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

1 Incl
As stated

County Commissioners of Allegany County, Md.

John J. Coyle, President
Arthur T. Bond
William M. Kenny

March 12, 1981

Colonel James Peck
District Engineer
Department of the Army
Baltimore District Corp of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

We regret scheduling conflicts prevented our meeting with you on March 6, 1981. However, we appreciated and benefited from the opportunity to meet with Lt. Colonel James Dunmeyer in your absence. Lt. Colonel Dunmeyer ably and cooperatively responded to our inquiries on the Bloomington Dam Project as well as several other topics of concern. As a result of that meeting, we respectfully request your assistance in having the ongoing Bloomington Lake Reformulation Study consider the allocation of operating costs of the Savage River Reservoir.

As you are aware, Allegany County currently finances the full operating costs of the Savage River Reservoir through the Upper Potomac River Commission and is now being asked to contribute a proportionate share of the capital water supply and operating costs of the Bloomington Reservoir. While we recognize our responsibility to contribute a rightful share to the cost of these facilities, we feel that since optimizing water supply and pollution abatement benefits will necessitate operating Bloomington and Savage impoundments as an integral "system", the Reformulation Study should address the sharing of overall operating costs proportionate among all potential users.

County Office Building
3 Pershing Street
Cumberland, MD 21502

Telephone (301) 777-5811
(Marcom 220-5812)

We would appreciate any assistance you can provide in regards to this request and hope to discuss this matter in further detail with you and your staff at a later date.

SINCERELY,

ALLEGANY COUNTY COMMISSIONERS

John J. Coyle, President

Arthur T. Bond

William M. Kenny

ACC:ckc

cc: Upper Potomac River Commission
Lt. Colonel James Dunmeyer
Herbert M. Sachs, Natural Resources Department
Maryland Potomac Water Authority

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

REPLY TO ATTENTION OF

NABPL-U

20 July 1981

Mr. Robert S. McGarry
Chairman, CO-OP Advisory Committee
1055 First Street
Rockville, Maryland 20850

Dear Mr. McGarry:

I am pleased to forward to you a copy of the Baltimore District's review of the Interstate Commission on the Potomac River Basin's CO-OP Model which was undertaken in response to your request at our meeting on 27 February 1981.

The model was evaluated from two perspectives: (1) as a tool for guiding daily regulation decisions for the reservoirs which serve the Metropolitan Washington Area, and (2) as a planning tool for developing regulation policies for the entire MWA water supply system. Several conclusions and recommendations are contained in the report for improving the model's capabilities from both of these perspectives.

A copy of this report has also been furnished to Dan Sheer. Please contact me if you have any questions or comments regarding this report.

Sincerely yours,

1 Incl
As stated

JAMES W. PECK
Colonel, Corps of Engineers
Commander and District Engineer

Copy furnished:
Mr. Daniel P. Sheer
Director, CO-OP
Interstate Commission on the
Potomac River Basin

Retyped in Executive Office

C-1111-97

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

DIVISION OF ECOLOGICAL SERVICES
1825B Virginia Street
Annapolis, Maryland 21401

January 8, 1982

Colonel James W. Peck
District Engineer
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203

Dear Sir:

This letter is being written in an attempt to resolve some critically important issues concerning low flows in the Potomac River. These issues developed as a result of the construction of one additional water supply intake and the modification of another, the proposed construction of Little Seneca dam and impending water supply shortages when another severe drought occurs.

The Low Flow Allocation Agreement (LFAA) was drafted on January 11, 1978 to deal with water supply shortages. Subsequently, a Memorandum of Intent (MOI), dated 20 July 1978, was written by the Corps to address concerns of the Department of the Interior (DOI) over environmental impacts resulting from water supply operations. The environmental issue was succinctly stated in the MOI: "The problem at issue is to assure that there will be enough water remaining in the Potomac River after withdrawals by the proposed intake structure to avert severe and irreparable damage and disruption to the Potomac River ecosystem". The LFAA in turn has also attempted to deal with this problem as follows: "In calculating the amount of water available for allocation the Aqueduct will determine, in consultation with the parties and based upon then current conditions and information, any amount needed for flow in the Potomac River downstream from the Little Falls dam for the purpose of maintaining environmental conditions ('environmental flow-by'), and shall balance such need against essential human, industrial and domestic requirements for water". The LFAA authorized a joint study, The Potomac River environmental flow-by study (PREFBS), to be conducted by the State of Maryland, DOI and others. The study was to be used as a basis for determining the "environmental flow-by" amount as specified in the LFAA. When the results of the study were completed it was suppose to constitute the biological data for formulating the "environmental flow-by".

It is the belief of the Fish and Wildlife Service that the "environmental flow-by" concluded in the PREFBS was to be based on biological and scientific data. This flow-by value would be able to "avert severe and irreparable damage

and disruption to the Potomac River ecosystem...." It is of utmost importance that this figure be derived from sound scientific judgement, and only consider the ecology of the river, not other needs. Conversely, the MOI, recognizing that an "environmental flow-by" based on ecology may be unattainable, specified that the flow-by study develop "a schedule of the ecological consequences of each level of flow below the 'environmental flowby' amount". In this manner the Washington Aqueduct (WAD) can balance benefits from the environmental flowby against human, industrial and domestic requirements for water. Also "the Aqueduct's determination shall be based upon the <u>data</u> (our underline) and shall give substantial weight to conclusions for environmental flowby submitted by the State". The State has not yet provided these ecological scenarios to allow for evaluation. Instead they have provided a figure based on human needs which is not their responsibility to provide. Paragraph 2 of the MOI specifies that the Aqueduct will make that determination.

The Service now finds itself in a tenuous position. We strongly believe that the conclusions of the PREFBS (that 100 million gallons/day (MGD) is an appropriate environmental flowby) are totally inadequate in that they are not based on scientific data and biological principles. This has resulted in an inadequate minimum flowby recommendation of 100 MGD to both WAD and the other Signatories of the LFAA.

More concisely, the State's best scientific, biologic estimate of the minimum "environmental flow-by" is exactly the same as their recommended flow-by based on environmental needs plus water supply, and human needs. This is not ecologically supportable, or unjustifiable.

The Annapolis Field Office is quite familiar with the Environmental Flow-by study as we were contracted by the State to do the data collection. The major analytical tool used in this study was the Fish and Wildlife Service Instream Flow Incremental Methodology. A limitation of this particular model is that fisheries habitat can only be reliably predicted to 0.4 below the lowest flow for which hydraulic data was taken. In the Potomac Study the lowest measured flows were around 1400 CFS (903 MGD) which only allows for habitat predictions down to 560 CFS (361 MGD). Thus, the 100 MGD figure concluded and recommended by the State could not be the result of an objective analysis using the IFG incremental methodology. Since the low flow methodology was not used and no other techniques were presented, we do not totally understand the basis for their decision. We find it incredible that a decision could be made on the flow-by issue without sufficient data.

We have worked with the State to develop scientific and sound environmental flow-by requirements, but our agencies have failed to come to a common understanding. The State still insists that an environmental flow-by of 100 MGD below Little Falls is adequate and reasonable. In fact, during the 1966 drought substantial fish kills were observed below Little Falls at a flow of 60 MGD. Major population reductions may frequently occur at levels substantially above that level which causes fish kills. We continue to disagree with the State that a 100 MGD environmental flow-by is an appropriate value which will "avert severe and irreparable damage and disruption to the Potomac River ecosystem".

An important concept which must be recognized when developing any flow-by value is frequency. A figure as low as 100 MGD, a little more than 1% of the average annual flow for the Potomac, could probably occur on a very infrequent basis, e.g. once every 100 years, with little impact. Any increase in this frequency will certainly have a more substantial and cumulative impact.

Looking at the other extreme what if two 100 MGD flow-bys occurred within 6-20 years of one another? Certainly this would have a significant effect on the Potomac River fisheries. In essence what we are saying is that an unqualified or uncompromised 100 MGD flow-by value is scientifically and biologically unjustifiable and under certain scenarios will result in substantial and irreversible impacts. We strongly disagree with the conclusions of the Draft PREFBS submitted by the State of Maryland. These conclusions should be re-examined and based on more scientific judgment. After this is done a new flow-by recommendation can be submitted to the LFAA signatories which would be based on the conclusions from the revised report. If the conclusions of the report are inaccurate then any subsequent recommendation is inappropriate. This has put the State in a dilemma. Since they concluded that only 100 MGD was needed to protect the Potomac River fisheries, they cannot recommend any higher flow as more water might become available in the future. This was pointed out in the Corps review of the draft PREFBS. As a result the 100 MGD flow-by may never be changed and will ultimately result in a substantial and irreversible impact to the Potomac.

We therefore recommend that the Corps ask the State to reconsider revising only the conclusions of their draft flow-by value based solely on science and biology. This figure will certainly be above 100 MGD (probably between 250 and 500 MGD). The State recommendation can then reflect future availability of water. They have indicated their current recommendation is based on an unregulated river. With Bloomington Dam becoming operational the ICPRB's co-op model shows an additional 70 MGD can be safely added onto the 100 MGD flow-by, bringing the total to at least 170 MGD. However, based on the current figure the State cannot change its recommendation to reflect this because their biological conclusions on the draft study are inaccurate and much too low.

The State has concluded in the flow-by study that the minimum "environmental flow-by" below Little Falls is 100 MGD. It is our contention that the flow-by does not have the scientific data to support such a conclusion. We realize that water needs may necessitate a reduction in a revised minimum "environmental flow-by". However, we must insist that the flow-by be based on some biological assessment of the needs of aquatic organisms in the Potomac River. If the State will not reconsider the conclusions of the flow-by study the Service will appeal the 100 MGD flow-by through the Department of the Army to the Moderator of the LFAA as specified in paragraph 6 of the MOI.

We are additionally concerned over the Little Seneca Permit which is inextricably involved in the low flow issue. A December 23 letter from Fairfax County Water Authority (FCWA) (Inc 1) has raised doubt about their sincerity in this matter. The applicants have continually assured

ub this project was truly multipurpose including water supply and recreation. It now appears the FCWA believes Little Seneca will only be used for water supply. Additionally we understand that FCWA may not be participating in the funding of Little Seneca. We have continually expressed a strong desire to see this project be constructed only if it was funded and operated as a regional facility. This recent development points out that this project seems to be continually changing and that the environmental impacts might not be outweighed by the benefits.

There are many current issues involved in the Potomac River Basin. We would be happy to discuss these issues or answer any question you may have on our position.

Sincerely yours,

Glenn Kinser

Glenn Kinser
Supervisor
Annapolis Field Office

SGOODBRED:vk:1/7/82
Charge to: 1120-420

cc: Mr. Robert Gore, COE
Dr. Sheer, ICPRB
Dr. Massey, EPA
Mr. Tom Andrews, MD DNR

C-VIII-99

CY

NAEPL-E

9 FEB 1982

Dr. Glenn Kinser
Supervisor
Annapolis Field Office
U.S. Fish and Wildlife Service
1825-B Virginia Avenue
Annapolis, Maryland 21401

Dear Dr. Kinser:

This letter is in response to your 9 January 1982 letter regarding the Potomac River Environmental Flow-By Study (PREFBS). In your letter, you identified several items that were of a concern and requested that in light of these concerns the Corps of Engineers ask the State of Maryland to consider revising their environmental flow-by recommendation. Furthermore, you indicated that in the event that the State would not reconsider, you would appeal their recommendation through the Department of the Army to the moderator of the Low Flow Allocation Agreement (LFAA) as specified in Article 6 of the Memorandum of Intent (MDI).

I would like to point out that the intent of Article 6 of the MDI was not to appeal the State's PREFBS or subsequent recommendations but rather that the decisions of the Washington Aqueduct (WAD) in administering Article 2C of the LFAA could be appealed. Also, on 21 January 1982, subsequent to receiving your letter, the State of Maryland published the Final PREFBS. Consistent with the actions of the signatories to the Low Flow Allocation Agreement to accept the recommendations, this report will constitute the data and conclusions to which reference is made to in Article 2C of the LFAA. However, it should be emphasized that the completion of the PREFBS and the adoption of the State's recommendation by the signatories of the LFAA does not prevent changes to either the data or conclusions in the report in the future should they be warranted. As stated in your letter, the Corps has the ultimate responsibility to determine the environmental flow-by requirements based on current conditions and information. In the course of any additional studies on the Potomac River, should any information be developed that would contribute to our knowledge of the Potomac River during low flow events, it would constitute data that would be used by the WAD in its

NABPL-E
Dr. Glenn Kinser

administering of the environmental flow-by amount. The State of Maryland could modify its recommendation as needed. Additionally, in recognition of your concern, I would like to extend an invitation to you to attend the April meeting of the signatories of the LFAA to present any information that you feel is necessary. The time and place of the meeting is still yet undetermined but I will contact your office as soon as the information is known.

Should you have any questions, please feel free to contact me.

Sincerely,

JAMES W. PECK
Colonel, Corps of Engineers
District Engineer

Copy furnished:
Mr. Thomas C. Andrews
Director
Water Resources Administration
Department of Natural Resources
Tawes State Office Building
Annapolis, Maryland 21401

CF: NABPL-U (Beegle)
Office of Counsel
NABEN-R (Hemler)

2

C-VIII-130

8

FAIRFAX COUNTY WATER AUTHORITY

8560 ARLINGTON BOULEVARD—P O BOX 1500
MERRIFIELD, VIRGINIA 22116-0815

FRED C. MORIN, CHAIRMAN
BILL G. EVANS, VICE CHAIRMAN
WILLIAM J. MADDEN, JR., SECY TREAS
DAVID G. RUSSELL
WILLIAM M. WAUGH
LOIS SHARPE
NANCY L. SHANDS
ROBERT J. RANSOM, JR.
WILLIAM F. FOSTER

JAMES J. CORBALIS, JR.
ENGINEER-DIRECTOR
FRED P. GRIFFITH, JR.
ASSISTANT ENGINEER-DIRECTOR
TELEPHONE
703-698-5600

December 7, 1982

Gerald C. Brown
Colonel, Corps of Engineers
District Engineer, Baltimore District
Department of the Army
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Brown:

I appreciate the opportunity you have given me to review your preliminary draft report on the Metropolitan Washington Area Water Supply Study. I have found this to be a very comprehensive report and one which should be a very valuable addition to the library of reports on this subject.

The principal comments or suggestions which I have to offer relate to the references in the report to increasing the height of our Upper Occoquan Dam by an additional three (3) feet, as a potential source of additional water supply. During the course of our studies which led to increasing the height of the dam by two (2) feet in 1980, we ascertained that, contrary to the general understanding which prevailed until that time, a two-foot increase was the maximum increase which could be accommodated without causing reservoir levels during flood periods to rise above existing flood easement levels. Consequently, any further increase in the height of the dam would require additional land acquisition. Such acquisition would include a substantial number of developed and developing properties along the Prince William County shoreline and parklands along the Fairfax County shoreline with attendant adverse environmental disruptions --- situations which I believe would make this proposal unattainable. Accordingly, I suggest that all references to this proposal be deleted. A listing of such references (not guaranteed to be complete) is enclosed. Please advise if you desire further information regarding this proposal.

Other comments and suggestions are contained on copies of the respective report pages enclosed herewith.

Very truly yours,

James J. Corbalis, Jr.
Engineer-Director

JJC/kwm
enc.

COMMISSIONERS
ANDREW M. VISLOSKY
Chairman
LEONARD H. TEITELBAUM
Vice Chairman
LAWRENCE L. BROOKS, SR.
JESSE L. MAURY
JOHANNA S. MORRIS
DAVID B. SCOTTON
ROBERT S. McGARRY
General Manager

WASHINGTON SUBURBAN
SANITARY COMMISSION

4017 HAMILTON STREET · HYATTSVILLE, MARYLAND 20781 · (301) 699-4000
Department of Engineering · ARBITRON BLDG 811 MARSHALL AVE. · LAUREL, MD. 20707

December 13, 1982

Colonel Gerald C. Brown
Corps of Engineers
District Engineer
Department of the Army
Baltimore District
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Brown:

In reply to your letter of November 4, 1982, regarding the preliminary draft of the final report for the Metropolitan Washington Area Water Supply Study, we have reviewed it and find the facts and figures pertaining to the WSSC water supply system are correct.

I also concur with the findings of the report and the recommendation of no further Federal action.

As you are aware, the recently signed agreements between the users in the Washington Metropolitan Region have resolved our water supply needs for the next 50 years. We would not have been able to achieve this objective without the outstanding work of the Corps and specifically the studies and findings of the MWA Water Supply Study. I personally believe this is an outstanding example of how the Corps can assist State and local governments in resolving serious problems through their professional studies and recommendations. Without your work we would never have been able to achieve agreement.

Sincerely,

Robert S. McGarry
General Manager

RSMcG/H

CC: Mr. H. C. Ways
Mr. James Corbalis

C-VIII-101

Planning Division

Mr. Robert V. Davis
Executive Secretary
Virginia State Water Control Board
2111 North Hamilton Street
Richmond, Virginia 23230

Dear Mr. Davis:

As you are aware, the Corps of Engineers has been conducting a comprehensive water supply study of the Metropolitan Washington Area (MWA). The study is being conducted under the authority of Section 85-2 of the Water Resources Development Act of 1974 (Public Law 93-251).

The study is nearing completion with a draft final report presently being prepared for circulation and review by Federal and state agencies and the interested public. The principal finding and recommendation of the study is that no further Federal action is required at this time in order to satisfy the MWA water supply needs. No Federal action is required as non-Federal interests have implemented regional solutions to the long range water supply problems of the MWA.

As it further related to water supply issues, Section 85-b of the 1974 Act authorized the Verona Lake Project in Augusta County, Virginia for Phase I, Advanced Engineering and Design, by the Corps. This office conducted detailed design studies on that project until the Governor of Virginia, by letter dated 13 September 1977, indicated that the Commonwealth would no longer provide the local assurances necessary for project construction. Further design work on the project was deferred; however, the project is still authorized.

Based on the findings of the MWA Water Supply Study the Verona Project will not be required to meet any identified downstream water supply needs and should be considered for desauthorization. Prior to the Corps recommending desauthorization it is requested that your office review any local/regional need for the project and advise this office as to your views on desauthorization. In order that a recommendation on the Verona Project may be incorporated in the Final Report of the MWA study it is requested that your comments on this matter be furnished by 28 February 1983. Any questions regarding the Verona Project or the results of the MWA study should be directed to Mr. Noel E. Beegle, Chief, Urban Studies Branch at (301) 962-4710.

Sincerely,

Gerald C. Brown
Colonel, Corps of Engineers
District Engineer

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF ECOLOGICAL SERVICES
1825B Virginia Street
Annapolis, Maryland 21401

February 1, 1983

Colonel Gerald C. Brown
District Engineer
Baltimore District, Corps of Engineers
Post Office Box 1715
Baltimore, Maryland 21203

C-VIII-102

Dear Colonel Brown:

This letter constitutes the report of the U. S. Fish and Wildlife Service on the Metropolitan Washington Area Water Supply Study and is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). We have been participating in the Study since 1977 and have provided written input via letters dated June 16, June 22, July 5, September 18, September 19, and October 19, 1978; January 3, January 30, February 6, March 5, and November 13, 1979; January 29, February 6, and May 9, 1980; August 4, and December 31, 1981; and July 15, 1982. The Service's position on the project is based on the information and recommendations presented in the draft Metropolitan Washington Area Water Supply Study report dated September 1982.

Before the Study was initiated, large water supply deficits were being forecast for the Metropolitan Washington Area. However, as the study progressed several important actions were taken by non-Federal organizations to reduce the projected water supply shortages. As a result, the Study has demonstrated that there is no need for additional projects. The U. S. Fish and Wildlife Service is in agreement with the Study conclusions and the recommendation that no Federal action be taken.

However, it is important to realize that the ever increasing water supply withdrawals will have a substantial adverse impact on the fishery resources of the Potomac River during drought conditions, especially with the low 100 mgd flowby requirement. Therefore, we strongly encourage that all appropriate conservation and demand reduction measures continue to be pursued. Some of the potential adverse impacts of water withdrawals and low water in the Potomac River may be alleviated by managing water releases from Bloomington Lake. The Study has indicated that it will be possible to utilize a portion of the Bloomington Lake water quality storage for environmental flowby. The Potomac River Instream Flow Committee, which is chaired by Dr. Daniel Shear of the Interstate Commission on the Potomac River Basin, is in the process of formulating management plans for Bloomington Lake and Savage Reservoir to maximize downstream fishery benefits. Although water shortages during severe droughts will continue to cause problems for fishery resources, especially downstream from the water supply intakes, we are hopeful that with prudent management the adverse impacts can be minimized.

Sincerely,

Glenn Kinser
Supervisor
Annapolis Field Office

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD
2111 Hamilton Street

R. V. Davis, P.E.
Executive Director

Post Office Box 11143
Richmond, Virginia 23230
(804) 257-0056

BOARD MEMBERS
Millard B. Rice, Jr.
Chairman

Watkins M. Abbitt, Jr.
John H. Ariell, Jr.
George M. Cornell
Joseph S. Cragwell, Jr.
David H. Miller
Patrick L. Standing

Gerald C. Brown
Colonel, Corps of Engineers
District Engineer
Baltimore District Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Brown:

Thank you for your letter of 21 January 1983 concerning the Verona Lake Project.

We have advised the local water suppliers in Augusta County (Augusta County, Cities of Waynesboro and Staunton) that the Verona Lake Project might be deauthorized and requested their input. The attached letter and resolution from Augusta County expresses their present view that "no local need exists now or in the foreseeable future for any water impoundment in the Verona area."

Although we did not hear from anyone else, we are not aware of any other local need for such a project.

As you may recall the State Water Control Board took action in September 1977 opposing the construction of Verona Dam. Accordingly, nothing has changed from the Board's action of September 1977 opposing the construction of Verona Dam.

Sincerely,

R. V. Davis

R. V. Davis, P.E.
Executive Director

jes

Attachment

cc: SWCB - Valley Regional Office

An Affirmative Action/Equal Opportunity Employer

COUNTY OF AUGUSTA, VA.

BOARD OF SUPERVISORS
ORIN W. GILBERT, JR. — Beverley Manor Magisterial District
WILLARD B. CLINE — Middle River Magisterial District
R. M. HARSHBARGER — North River Magisterial District
DAVE S. SHOWKER, JR. — Pastures Magisterial District
BEATTY L. SPECK — Riverheads Magisterial District
DAVID R. DEYERLE — South River Magisterial District
CHARLES O. RUNKLE — Wayne Magisterial District

R. E. HUFF · COUNTY ADMINISTRATOR
COUNTY BLDG. · BOX 448 · STAUNTON, VA. 24401
STAUNTON (703) 885-8831 EXT. 301
WAYNESBORO (703) 942-5113 EXT. 301 (TOLL FREE)

February 25, 1983

Mr. R. Bradley Chewning, P.E.
Regional Director
Valley Regional Office
116 North Main Street
P. O. Box 268
Bridgewater, Virginia 22812

Dear Mr. Chewning:

In reference to your letter dated February 9, 1983, the Augusta County Board of Supervisors discussed the Verona Lake Project and adopted a resolution stating their position , a copy of which is enclosed.

I feel the enclosed resolution is self-explanatory and if you have any further questions, please do not hesitate to contact this office.

Sincerely,

John C. McGehee
Assistant to the County
Administrator

/jsh

Enclosure: 1

RECEIVED
FEB [illegible] 1983
VALLEY REGIONAL OFFICE

TOLL FREE NUMBERS: From Mt. Solon [illegible] From Raphine [illegible]
From Craigsville & Deerfield — Enterprise [illegible]
From Weyers Cave, Harrisonburg, Bridgewater & Grottoes [illegible]

C-VIII-103

R E S O L U T I O N

WHEREAS, the Army Corps of Engineers has been conducting a water supply study of the metropolitan Washington area, and

WHEREAS, the aforementioned study recommends that no further Federal action is required at this time in order to satisfy the Metropolitan Washington area water supply needs, and

WHEREAS, the Augusta County Service Authority is successfully providing adequate water supplies for the citizens of Augusta County, and

WHEREAS, the Augusta County Service Authority has the capabilities of developing still further water supplies for Augusta County, and

WHEREAS, the Army Corps of Engineers has apparently recommended de-authorization of the Verona Lake Project; and

WHEREAS, the State Water Control Board is soliciting comments concerning the Verona Lake Project.

NOW, THEREFORE, BE IT RESOLVED, that the Augusta County Board of Supervisors meeting in regular session on February 22, 1983, hereby informs the State Water Control Board that no local need exist now or in the foreseeable future for any water impoundment in the Verona area.

NOW, BE IT FURTHER RESOLVED, that a copy of this resolution be forwarded to the Honorable Congressman James R. Olin and the Honorable Senator Paul S. Trible, Jr. and the Honorable Senator John S. Warner.

Assistant to the County Administrator

Adopted: February 22, 1983

RECEIVED
FEB 28 1983
VALLEY [illegible]

[illegible] 1[illegible], 1983

[illegible] Division

[illegible]
[illegible]
[illegible]

Dear Senator [illegible]:

Enclosed for your information is the Draft Main Report concerning the Metropolitan Washington Area Water Supply Study.

The report included a comprehensive analysis of water supply problems facing Washington, D.C., and seven surrounding counties in Maryland and Virginia. Severe water supply shortages [illegible] forecast for the Metropolitan Washington Area, and the study identified and evaluated alternative methods for alleviating future deficits.

On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and programs. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least 2000, and possibly longer. Consequently, the Draft Report recommends no further action by the Corps of Engineers at this time.

The Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests prior to final revisions later this year. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted.

Sincerely,

Enclosure

[illegible] Furnished Head Offices
[illegible]
[illegible] Office Building
[illegible]
[illegible]
[illegible]
[illegible]

C-VIII-104

[illegible]

[illegible]
United States Senate
Washington, D.C. [illegible]

[illegible]
House of Representatives
Washington, D.C. [illegible]

Honorable Margaret [illegible]
House of Representatives
Washington, D.C. [illegible]

[illegible]
House of Representatives
Washington, D.C. [illegible]

Honorable Beverly B. Byron
House of Representatives
Washington, D.C. 20515

Honorable Michael [illegible] Barnes
House of Representatives
Washington, D.C. [illegible]

Honorable [illegible] Hughes
Governor of Maryland
State House
Annapolis, Maryland 21401

Honorable Paul [illegible] Tribble, Jr.
United States Senate
Washington, D.C. [illegible]

Honorable John [illegible] Warner
United States Senate
Washington, D.C. [illegible]

Honorable [illegible] Whitehurst
House of Representatives
Washington, D.C. [illegible]

Honorable [illegible]
House of Representatives
Washington, D.C. [illegible]

Honorable [illegible] Robinson, Jr.
House of Representatives
Washington, D.C. [illegible]

[illegible] (Cont'd)

[illegible]
House of Representatives
Washington, D.C. [illegible]

[illegible]
House of Representatives
Washington, D.C. [illegible]

Honorable Charles [illegible]
Governor, Commonwealth of Virginia
Capitol Building, Ninth Floor
State Capitol
Richmond, Virginia 23219

Honorable [illegible] C. [illegible]
United States Senate
Washington, D.C. [illegible]

Honorable Jennings Randolph
United States Senate
Washington, D.C. 20510

Honorable [illegible] Staggers, Jr.
House of Representatives
Washington, D.C. 20515

Honorable Walter [illegible] Fauntroy
House of Representatives
Washington, D.C. 20515

Honorable Marion S. Barry, Jr.
Mayor, District of Columbia
Washington, D.C. 20004

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: Federal-Interstate-State-Regional Advisory Committee
Citizens Task Force
Other Interested Parties

Enclosed for your review and comment is the Draft Report concerning the Metropolitan Washington Area Water Supply Study. The study included a comprehensive analysis of water supply problems facing Washington, D.C., and seven surrounding counties in Maryland and Virginia. Severe water supply shortages had been forecast for the Metropolitan Washington Area, and the study identified and evaluated alternative methods for alleviating future deficits.

On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and program. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least the year 2030, and possibly longer. This statement, of course, is based on a number of assumptions. Some of the most important assumptions are that existing sources will continue to furnish water supply undiminished in quantity and potable in quality, flowby into the Potomac Estuary will be maintained at or above 100 million gallons per day, and recent agreements and commitments to regional cooperation will be honored. Given these assumptions, the Draft Report tentatively recommends no further action by the Corps of Engineers at this time.

The Draft Report contains a Main Report and nine supporting appendices which document the decisions, analyses, and conduct of the entire study. The Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted. Comments on the Draft Report must be received in this office by May 2, 1983, so they may be incorporated into the Final Report scheduled for completion later in 1983. Should you have questions concerning the report, please call Mr. Noel Beegle or Mr. William Haines at (301) 962-4710 or (FTS) 922-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: NAS-NAE Members, Committee to Review the Metropolitan Washington Area Water Supply Study

Enclosed for your information and review is the public Draft Report concerning the Metropolitan Washington Area Water Supply Study. On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and programs. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least the year 2030, and possibly longer. This statement, of course, is based on a number of assumptions. Some of the most important assumptions are that existing sources will continue to furnish water supply undiminished in quantity and potable in quality, flowby into the Potomac Estuary will be maintained at or above 100 million gallons per day, and recent agreements and commitments to regional cooperation will be honored. Given these assumptions, the public Draft Report tentatively recommends no further action by the Corps of Engineers at this time.

The public Draft Report contains a Main Report and nine supporting appendices which document the decisions, analyses, and conduct of the entire study. The public Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted.

Comments on the public Draft Report must be received by May 2, 1983, in order to be incorporated in the Final Report scheduled for completion later in 1983. If you have any questions, please ask them at the Committee meeting in April or call Mr. Noel Beegle at (301) 962-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: Clearinghouses

Enclosed for your review and comment is the Draft Report concerning the Metropolitan Washington Area Water Supply Study. The study included a comprehensive analysis of water supply problems facing Washington, D.C., and seven surrounding counties in Maryland and Virginia. Severe water supply shortages had been forecast for the Metropolitan Washington Area, and the study identified and evaluated alternative methods for alleviating future deficits.

On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and programs. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least the year 2030, and possibly longer. This statement, of course, is based on a number of assumptions. Some of the most important assumptions are that existing sources will continue to furnish water supply undiminished in quantity and potable in quality, flowby into the Potomac Estuary will be maintained at or above 100 million gallons per day, and recent agreements and commitments to regional cooperation will be honored. Given these assumptions, the Draft Report tentatively recommends no further action by the Corps of Engineers at this time.

The Draft Report contains a Main Report and nine supporting appendices which document the decisions, analyses, and conduct of the entire study. The Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted. Comments on the Draft Report must be received in this office by May 2, 1983, so they may be incorporated into the Final Report scheduled for completion later in 1983. Should you have questions concerning the report, please call Mr. Noel Beegle or Mr. William Haines at (301) 962-4710 or (FTS) 922-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: Report Repositories

The Baltimore District, Corps of Engineers, has completed its Draft Report for the Metropolitan Washington Area Water Supply Study. The study included a comprehensive analysis of water supply problems facing Washington, D.C., and the surrounding counties as well as an examination of alternative methods for alleviating future deficits. A newsletter summarizing the study will be distributed throughout the Metropolitan Washington Area.

In the past, we have used your office or library as a report repository. The newsletter will indicate that additional information about the study is contained in the Draft Report which is available for public review at several locations. Accordingly, copies of the Draft Report are enclosed for general public review at your office or library.

Should you have any questions, please call Mr. William Haines at (301) 962-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: Metropolitan Washington Council of Governments
Water Resources Planning Board

The Baltimore District, Corps of Engineers, has completed its Draft Report for the Metropolitan Washington Area Water Supply Study. The study included a comprehensive analysis of water supply problems facing Washington, D.C., and the seven surrounding counties in Maryland and Virginia. It also examined alternative methods for avoiding future water supply shortages.

On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and programs. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least the year 2030, and possibly longer. This statement, of course, is based on a number of assumptions. Some of the most important assumptions are that existing sources will continue to furnish water supply undiminished in quantity and potable in quality, flowby into the Potomac Estuary will be maintained at or above 100 million gallons per day, and recent agreements and commitments to regional cooperation will be honored. Given these assumptions, the Draft Report tentatively recommends no further action by the Corps of Engineers at this time.

The Draft Main Report is enclosed for your review and comment. The Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted.

Comments on the Draft Report must be received in this office by May 2, 1983, so they may be incorporated into the Final Report scheduled for completion later in 1983. Should you have questions concerning the report, please call Mr. Noel Beegle at (301) 962-4710 or (FTS) 922-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

March 18, 1983

REPLY TO ATTENTION OF
Planning Division

TO: Interested Parties

Enclosed for your information and review is the Draft Main Report concerning the Metropolitan Washington Area Water Supply Study. The study provided a comprehensive analysis of water supply problems facing Washington, D.C., and seven surrounding counties in Maryland and Virginia. Severe water supply shortages had been forecast for the Metropolitan Washington Area, and the study identified and evaluated alternative methods for alleviating future deficits.

On the basis of information and progress reports prepared by the Corps of Engineers during the 7-year study, non-Federal interests have already undertaken a number of water supply projects and programs. These projects and programs are expected to satisfy the water supply needs of the major water utilities in the Metropolitan Washington Area until at least the year 2030, and possibly longer. This statement, of course, is based on a number of assumptions. Some of the most important assumptions are that existing sources will continue to furnish water undiminished in quantity and potable in quality, flowby into the Potomac Estuary will be maintained at or above 100 million gallons per day, and recent agreements and commitments to regional cooperation will be honored. Given these assumptions, the Draft Report tentatively recommends no further action by the Corps of Engineers at this time.

The Draft Report is presently being coordinated with the appropriate Federal, state, and local agencies and interests. Because there are no recommendations for action by the Corps of Engineers, no final public meeting will be conducted. Comments on the Draft Report must be received in this office by May 2, 1983, so they may be incorporated into the Final Report scheduled for completion later in 1983. Should you have questions concerning the report, please call Mr. Noel Beegle or Mr. William Haines at (301) 962-4710 or (FTS) 922-4710.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosure

ANNEX C-IX

COORDINATION WITH

NATIONAL ACADEMY OF SCIENCES-NATIONAL ACADEMY OF ENGINEERING

ANNEX C-IX

COORDINATION WITH NATIONAL ACADEMY OF SCIENCES - NATIONAL ACADEMY OF ENGINEERING

DATE	ITEM	PAGE
8 April 1976	Letter from Corps to NAS/NAE,	C-IX-1
24 May 1976	Letter from NAS/NAE to Corps	C-IX-2
9 May 1977	Letter from NAS/NAE to Corps	C-IX-2
3 August 1977	Letter from NAS/NAE to Corps	C-IX-3
5 August 1977	NAS/NAE Letter Report, NEWS Study	C-IX-4
21 August 1978	NAS-NAE Letter Report, Plan of Study	C-IX-17
16 October 1978	Letter from Corps to NAS/NAE	C-IX-19
17 November 1978	Letter from NAS/NAE to Corps	C-IX-20
13 April 1979	Letter from NAS/NAE to Corps	C-IX-21
11 December 1979	NAS/NAE Comments on Progress Report	C-IX-22
6 March 1980	Letter from Corps to NAS/NAE to Corps	C-IX-23
26 June 1980	Letter from NAS/NAE to Corps	C-IX-24
1 October 1980	NAS/NAE Report Transmittal Letter	C-IX-25
October 1980	NAS/NAE Report - Water for the Future of the Nation's Capital Area	C-IX-25
19 June 1981	Letter from Corps to NAS/NAE	C-IX-49
24 July 1981	NAS/NAE Letter Report	C-IX-50
20 August 1981	Letter from Corps to NAS/NAE	C-IX-55
5 March 1982	Letter from Corps to NAS/NAE	C-IX-56
3 November 1982	Letter from Corps to NAS/NAE	C-IX-57

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

NABPL-U

8 April 1976

NATIONAL ACADEMY OF SCIENCES
APR 13 1976
OFFICE OF THE PRESIDENT

Dr. Phillip Handler
Chairman, National Research Council
2101 Constitution Avenue
Washington, D.C. 20418

Dear Dr. Handler:

The Baltimore District, U.S. Army Corps of Engineers, recently held two public meetings concerning the interim results of the Northeastern United States Water Supply (NEWS) Study, inclosure 1, and the initiation of the Metropolitan Washington Area (MWA) Water Supply Study.

As you are probably aware, the NEWS Study was authorized by Public Law 89-298, Title I, to assist in the solution of water supply problems in the northeast. This study offers a coordinated general plan for essential water supply development and management in the northeast. The NEWS Study contains recommended programs to be transmitted to the Congress which provide for the involvement of Federal, state, local, and private organizations in the formulation and cost-sharing of these programs.

One of the identified critical regional areas in need of water supply is the Metropolitan Washington Area. For this area the NEWS Study suggested several early action programs to help alleviate the critical water shortage problems. Verona Dam and Lake, Virginia, Sixes Bridge Dam and Lake, Maryland and Pennsylvania, and a Pilot Estuary Treatment Plant were considered as constituting the first actions needed to solve the more immediate water supply problems for the area.

In essence, the NEWS-MWA Study only focused on the more immediate needs for water supply in the D.C. Area and did not go into an in-depth analysis of long-range alternatives. Because of this, the aim of the MWA Study assigned to the Baltimore District under the Water Resources Development Act of 1974 (P.L. 93-251) will be: (1) to make a detailed study of future water supply needs of the MWA including identification of all feasible alternatives and their associated impacts, and (2) to

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

make recommendations on a course of action for meeting both the short and long-range water supply needs of the area.

Section 85 of P.L. 93-251, stated that the Corps of Engineers would request the National Academy of Sciences-National Academy of Engineering to review and, by written report, comment upon the scientific basis for conclusions reached by the investigation and study of the future water resource needs of the Washington Metropolitan Area. Such review and report shall be completed and submitted to the Congress within one year following the completion of both the water supply study and the pilot treatment plant testing program. The act also provided $1,000,000 for the purpose of carrying out the above provisions.

The Baltimore District is currently preparing a Plan of Study for the MWA that will guide the efforts of the overall study for the next several years. In this regard, I feel that it would now be appropriate for our two agencies to initiate coordination activities and for you to outline a plan of action (for inclusion in the Plan of Study). This would be essentially a proposal for coordination and review of the technical aspects of the study as outlined in Section 85, P.L. 93-251.

After you have had a chance to review the inclosed report and consider how the Academy of Sciences would participate in this study, we should meet to define our coordination efforts and clarify any concerns.

Should you desire further information, please do not hesitate to call me or Mr. William E. Trieschman, Jr., (301) 962-4710, of my staff.

Sincerely yours,

Robert E. McCarty
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

NAS, Gen Con

NATIONAL ACADEMY OF SCIENCES
2101 CONSTITUTION AVENUE
WASHINGTON, D. C. 20418

May 24, 1976

Colonel Robert S. McGarry
Baltimore District
District Engineer
Corps of Engineers
Department of the Army
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel McGarry:

This is in reply to your letter of April 21, 1976, concerning the proposed review and comment on the National Academy of Sciences-National Academy of Engineering of the scientific basis for conclusions reached by the investigation and study of the future water resource needs of the Washington Metropolitan Area undertaken by the Corps of Engineers.

Within the National Research Council, which is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations, the Assembly of Engineering will take the lead for the preparation of a proposal to undertake the proposed review. To that end, the Assembly plans to arrange a small planning meeting to discuss the nature of the study. Following this planning meeting, the Assembly will prepare a formal response to your request.

If you have any questions concerning the above, please contact Mrs. Kerstin Pollack, Associate Director for New Programs Development, Assembly of Engineering, telephone (202) 389-6822.

Sincerely yours,

Original signed by
John S. Coleman
Executive Officer
John S. Coleman
Executive Officer

bcc: M. Naftalin
K. Pollack

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington, D. C. 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6788

May 9, 1977

Mr. James E. Crews
Chief, Urban Studies Branch
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

RE: Contract Number - DACW31-77-C-0045
Washington Metropolitan Area Water Supply Study

Dear Mr. Crews:

The Committee to Review the Washington Metropolitan Area Water Supply Study held its first meeting on May 4-5, 1977. At that time you made several presentations and discussed the draft Plan of Study for the Washington Metropolitan Area Water Supply Study and the Northeastern United States Water Supply Study Report (Washington Metropolitan Area component) with the Committee.

In your briefing on the Corps' Plan of Study, you mentioned that the Corps plans to perform a re-analysis of the water supply and demand considerations for the Washington metropolitan area and that this re-analysis would be based on methodology previously used in Corps of Engineers studies. The Committee is concerned that the re-analysis, scheduled to be completed by December 1977, will not meet high standards if there is no individual on the Corps' staff qualified in the area of water demand and supply analysis. If this lack of expertise exists, the Committee would like the Corps to consider employing several recognized consultants in the area of supply/demand analysis to provide the study methodology needed for the re-analysis. These consultants should have the following skills:

1. ability to project water demand under various price, water use technology, and regional growth regimes;

2. knowledge of existing water availability, recognizing the probablistic nature of river flows;

3. knowledge of water supply interconnections and emergency supply services;

4. skill in estimating future water restrictions based on the given supply and demand projections.

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

James E. Crews
May 9, 1977

In addition to the need for consultants, the Committee members concluded that availability of the Plan of Study is necessary for them to properly evaluate the study at its present stage of development. Since the Plan of Study will ultimately be reviewed by the Committee, failure to have it now may result in redundant work and in delaying the District's study. For these reasons we would like to receive copies of the Plan of Study as soon as possible so that the Committee can refer to it in its review of the NEWS report.

If the Plan of Study is made available to us prior to being released publicly, we will treat it as privileged information.

Sincerely yours,

Daniel A. Okun

Daniel A. Okun
Chairman,
Committee to Review the Washington
Metropolitan Area Water Supply Study

cc: Water Supply Review Committee
C. Malone

D-1-X-13

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington, D.C. 20418

COMMITTEE FOR WATER SUPPLY REVIEWS (202) 389-6786

August 3, 1977

Mr. James E. Crews
Chief,
Urban Studies Branch
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Crews:

The Committee to Review the Washington Metropolitan Area Water Supply Study was established by the National Research Council pursuant to Contract Number DACW31-77-C-0045 with the U.S. Army Corps of Engineers, Baltimore District. The Committee's purpose is to review and comment upon the Corps' study of the future water resources needs of the Washington metropolitan area (WMA), as directed by Congress in Section 85 of the Water Resources Development Act of 1974 (PL 93-251).

During the Committee's first meeting on May 4-5, 1977, you described to us the Corps' plans for the forthcoming water supply study. These include an assessment of existing information on Washington's water supplies, the more important of which is the Northeastern United States Water Supply Study (NEWS) published by the Corps in 1975. It was our impression that the WMA component of the NEWS report, referred to as WMA-NEWS, might be substantially utilized in the current water supply study. For this reason, we concluded in discussions with you that a review of WMA-NEWS could prove helpful to the Corps if the comments were made relative to the adequacy of WMA-NEWS as an information base and point of departure for the Corps' forthcoming study.

A major portion of the Committee's May meeting was spent critiquing the WMA-NEWS report, and subsequent to that, the Committee members have offered additional comments on the report. All of these comments were assembled by an ad hoc executive committee during a meeting on June 16 and the subsequent critique of WMA-NEWS was reviewed by the Committee. Attached is our evaluation of WMA-NEWS as a basis for further study for meeting the water supply needs of the metropolitan area.

A principal concern of the Committee is that the assumptions upon which the conclusions are based and the methodologies used in WMA-NEWS are not explicit. Furthermore, the Committee is concerned that some water supply options are dismissed out-of-hand because of anticipated difficulties in their implementation.

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

Substantively, several issues seem to have been given little attention in the study: (1) the inadequacy of population and demand forecasting and the evaluation of deficits that will need to be managed in the WMA; (2) the public health significance of continuing to draw water from the Potomac River, particularly as so much attention is being given to evaluation of the health significance of using Potomac estuary water; and (3) the institutional arrangements needed to permit optimizing use of resources in the region.

We appreciated the opportunity to meet with you last May 4-5, and we look forward to cooperating with the Corps as the Washington Metropolitan Area Water Supply Study progresses. The next meeting of the Committee is scheduled for November 16 and 17 and we hope to learn at that time if the attached critique of the WMA-NEWS study was helpful. The Committee stands ready to provide a more detailed exposition of the issues raised in the attached document at your convenience. If we can be of further assistance prior to November, please call upon us.

Sincerely yours,

Daniel A. Okun

Daniel A. Okun
Chairman,
Committee to Review the Washington
Metropolitan Area Water Supply Study

h-XI-2

NAS, [illegible]

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D.C. 20418

EXECUTIVE OFFICE

August 5, 1977

Mr. James E. Crews
Chief,
Urban Studies Branch
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Crews:

I am pleased to transmit herewith three copies of a letter report by Daniel A. Okun, Chairman of the Committee to Review the Washington Metropolitan Area Water Supply Study, and the accompanying report of the Committee. These reports consist of reviews of the Washington Metropolitan Area Water Supply Study Report of the Northeastern United States Water Supply *Study*.

The work by the Committee was carried out as part of Contract Number DACW31-77-C-0045 between the Department of the Army, Baltimore District, Corps of Engineers, and the National Academy of Sciences.

Sincerely yours,

Micah H. Kaftalin

Micah H. Kaftalin

enclosures
cc: Daniel A. Okun
Charles R. Malone
Catherine E. Little

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington, D C 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6785

August 3, 1977

Mr. James E. Crews
Chief,
Urban Studies Branch
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Crews:

The Committee to Review the Washington Metropolitan Area Water Supply Study was established by the National Research Council pursuant to Contract Number DACW31-77-C-0045 with the U.S. Army Corps of Engineers, Baltimore District. The Committee's purpose is to review and comment upon the Corps' study of the future water resources needs of the Washington metropolitan area (WMA), as directed by Congress in Section 85 of the Water Resources Development Act of 1974 (PL 93-251).

During the Committee's first meeting on May 4-5, 1977, you described to us the Corps' plans for the forthcoming water supply study. These include an assessment of existing information on Washington's water supplies, the more important of which is the Northeastern United States Water Supply Study (NEWS) published by the Corps in 1975. It was our impression that the WMA component of the NEWS raport, referred to as WMA-NEWS, might be substantially utilized in the current water supply study. For this reason, we concluded in discussions with you that a review of WMA-NEWS could prove helpful to the Corps if the comments were made relative to the adequacy of WMA-NEWS as an information base and point of departure for the Corps' forthcoming study.

A major portion of the Committee's May meeting was spent critiquing the WMA-NEWS report, and subsequent to that, the Committee members have offered additional comments on the report. All of these comments were assembled by an ad hoc executive committee during a meeting on June 16 and the subsequent critique of WMA-NEWS was reviewed by the Committee. Attached is our evaluation of WMA-NEWS as a basis for further study for meeting the water supply needs of the metropolitan area.

A principal concern of the Committee is that the assumptions upon which the conclusions are based and the methodologies used in WMA-NEWS are not explicit. Furthermore, the Committee is concerned that some water supply options are dismissed out-of-hand because of anticipated difficulties in their implementation.

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

Substantively, several issues seem to have been given little attention in the study: (1) the inadequacy of population and demand forecasting and the evaluation of deficits that will need to be managed in the WMA; (2) the public health significance of continuing to draw water from the Potomac River, particularly as so much attention is being given to evaluation of the health significance of using Potomac estuary water; and (3) the institutional arrangements needed to permit optimizing use of resources in the region.

We appreciated the opportunity to meet with you last May 4-5, and we look forward to cooperating with the Corps as the Washington Metropolitan Area Water Supply Study progresses. The next meeting of the Committee is scheduled for November 16 and 17 and we hope to learn at that time if the attached critique of the WMA-NEWS study was helpful. The Committee stands ready to provide a more detailed exposition of the issues raised in the attached document at your convenience. If we can be of further assistance prior to November, please call upon us.

Sincerely yours,

Daniel A. Okun /cam

Daniel A. Okun
Chairman,
Committee to Review the Washington
Metropolitan Area Water Supply Study

August 3, 1977

Attachment to letter to James E. Crews

COMMENTS ON THE WASHINGTON METROPOLITAN AREA
COMPONENT OF THE NORTHEASTERN UNITED STATES
WATER SUPPLY STUDY

Prepared by

COMMITTEE TO REVIEW THE WASHINGTON METROPOLITAN AREA WATER SUPPLY STUDY

INTRODUCTION

The U.S. Army Corps of Engineers was authorized by Congress in 1974 to study and report upon the future water resources needs of the metropolitan Washington, D.C. area. The objective of the study is to recommend the optimum course of action to be taken in developing water resources and managing water supplies to assure a dependable supply of water to the metropolitan area.

Congress directed the Corps to have its study and report reviewed by the National Research Council (NRC). The NRC Committee to Review the Washington Metropolitan Area Water Supply Study was established for this purpose and is following the development of the Corps' study. It is anticipated that the Committee's final report commenting upon the scientific basis of the Corps' findings and conclusions will be completed in 1984. In the meantime, the Committee will comment on significant aspects of the study as they develop.

In the course of preparing its plan of study, the Corps will make appropriate use of existing information and previous studies on Washington's water supplies. One of the most important past studies was the Northeastern United States Water Supply Study (NEWS) published by the Corps in November 1975. The report on the NEWS study included a primary volume and four annexes on the Washington metropolitan area (WMA), and these documents are referred to collectively as WMA-NEWS. Their titles are as follows:

(1) Washington Metropolitan Area Water Supply Study Report, U.S. Army Corps of Engineers, North Atlantic Division, November 1975.

(2) Washington Metropolitan Area Water Supply Study Annex A: Open Planning and Coordination

(3) Washington Metropolitan Area Water Supply Study Annex B: Water Supply, Demand and Deficits

(4) Washington Metropolitan Area Water Supply Study Annex C: Engineering Feasibility of Alternative Water Supply Projects

(5) Washington Metropolitan Area Water Supply Study Annex D, Volume 1: Effects of Water Supply Deficits

(6) Washington Metropolitan Area Water Supply Study Annex D, Volume 2: Socioeconomic Impact Study of Alternative Water Supply Programs

Because WMA-NEWS constitutes a significant body of information and analyses on Washington's water supplies, it can be considered as a basis and departure point for the forthcoming study. With this in mind, the Corps and the Committee agreed that it would be appropriate for the Committee to review and comment upon WMA-NEWS.

In organizing this review, the Committee found it helpful to consider the principal aspects of a water supply analysis and to base its comments on those considerations. Thus, the following critique discusses:

(1) Water Demand Management Options

(2) Water Supply Options

(3) Impact Evaluation

(4) Institutional Arrangements

WATER DEMAND MANAGEMENT OPTIONS

The comments in this section are based upon the WMA-NEWS Report, Annex B, and Annex D, Volume 1. They are concerned with the methodologies employed in the study, the data and assumptions used, and the conclusions reached.

In general, the Committee found that the Report does not incorporate adequately

the uncertainty and the willingness to bear it that must affect water supply decisions based on management options. This is especially true regarding the probabilities of water supply deficits, the consequences of deficits, and willingness to pay for avoidance. Without such fundamental insights, policy decisions cannot be based on a balance between expected net benefits and the assessment of risks.

The following topics are addressed in greater detail below:

(1) Projection of water demand

(2) Characterization of present water supply

(3) Water Supply deficits and effects of deficits

Projection of Water Demand

A. Summary

To assess the adequacy of an existing or proposed water supply system, it is necessary to forecast the rate of water withdrawal during various critical future periods. Normally, this requires estimates of the maximum day rate of withdrawal for each year throughout the planning period, and may also require forecasts of withdrawals for maximum three-day, seven-day, thirty-day, or other periods. In WMA-NEWS, such forecasts have been based on projections of average annual water use. It is assumed that average water use will remain in the vicinity of 142 gallons/capita/day during the period 1970-2020 and that the WMA population will grow from 3,684,000 in 1980 to 6,773,000 in 2020 (Annex B, p. 7). The product of per capital use and forecast population for each year provides an estimate of average water use. This estimate is, in turn, adjusted slightly downward to reflect the assumed effect of conservation efforts (Annex B, p. 11), then disaggregated into Potomac and non-Potomac withdrawals (Annex B, pp. 11-30). Historical water use records were used to estimate variations in withdrawals from month to month, and to develop peaking ratios. Maximum seven-day and one-day withdrawal

rates were estimated by applying the appropriate peaking ratio to the estimated monthly withdrawals (Annex B, pp. 30-32).

B. Comment

1. Water use forecasts in WMA-NEWS are based on the per-capita concept of water use (water use is assumed to change proportionately with population). This concept produces forecasts which are insensitive to possible future changes in the relative size of non-residential sectors, in family size, in residential housing patterns, and in water conservation practices. The various factors which determine water use are subject to change, and tend to increase total water use, while others may tend to decrease it. Analysis of water use records may suggest an overall trend in per-capita water use, but the effects of trends in the individual determinants of water use cannot be separately identified. Forecasts of future water use should not be based on per-capita assumptions, therefore, but should rest on explicit assumptions regarding the size and nature of various water-using sectors, as well as explicit forecasts of the relevant economic parameters.

2. Apparently, the WMA-NEWS study did not include projections of employment and incomes by type for the WMA. It also appears that population projections have been made independently of economic projections and independently of water resource cost projections or other environmental constraints. Studies of this type should be based on explicit recognition of the inter-relationships existing among the water, demographic, and economic sectors.

3. Partly as a result of the addition of water use-based charges for wastewater treatment, the real price charged for water by many Washington-area jurisdictions has approximately doubled in the last 5-10 years. Since increases in price, other things being equal, tend to reduce the quantity of water used, analyses of water use patterns in the recent past which omit consideration of price effects may seriously understate the true demand for water. Useful forecasts of future water use cannot be prepared without consideration of price effects, and of likely future

changes in the real price of water. These considerations are missing from WMA-NEWS.

.. Day-to-day and month-to-month variations in water use are largely a result of seasonal weather-sensitive uses of water. For example, the maximum day water use for a given year is not a single, predictable quantity - it could be any of a range of quantities. Conventional statistical techniques are available which permit the expected maximum day water use to be estimated, or the highest value which will occur with a specified probability. When the purpose of the water use forecast is to predict withdrawals from an unregulated water supply, the use of such probabilistic concepts of seasonal water use seems essential.

5. While WMA-NEWS discusses the effect of water conservation efforts on water use, it appears to have resorted to an arbitrary adjustment to reflect this effect (aggregate water use is reduced by an amount equal to the number of years between the base year and the forecast year). What is needed are specific forecasts of the implementation rate and the impact of various water conservation techniques, including water saving devices, pressure reduction, non-potable reuse of water, and public education programs. It is important in this respect not to double-count water use reductions which stem from water conservation efforts undertaken as a consequence of higher water prices.

Characterization of Present Water Supply

A. Summary

The existing water supply of major interest in WMA-NEWS is the unregulated flow of the Potomac River. Streamflow gages are available near Washington, D.C., and at Point of Rocks, Maryland. The supply analysis was based on the Point of Rocks gage, which has a longer, more reliable record. Adjustments for changes in streamflow between the Point of Rocks gage and the water intake point at Great Falls were made with the aid of a hydrologic simulation model. The available streamflow

was reduced by 100 MGD to provide for a minimum flow into the Potomac estuary, and increased by the projected releases from storage at the Bloomington reservoir, now under construction. Both the minimum flow into the estuary and the release rule for Bloomington are taken as fixed and invariant (Annex B, p. 36). The Potomac Supply, as adjusted, is characterized by the 1930 streamflow sequence, which is the most severe drought of record by many measures. (Short period flows were lower during the 1966 drought.) Monthly average adjusted flows were computed for the months of July, August, September, October, and November; minimum seven-day and minimum one-day flows were obtained for each month. The lowest expected one-day adjusted flows for each calendar month range from 415 MGD for November to 493 MGD for September. These data are taken as characterizing future unregulated streamflow.

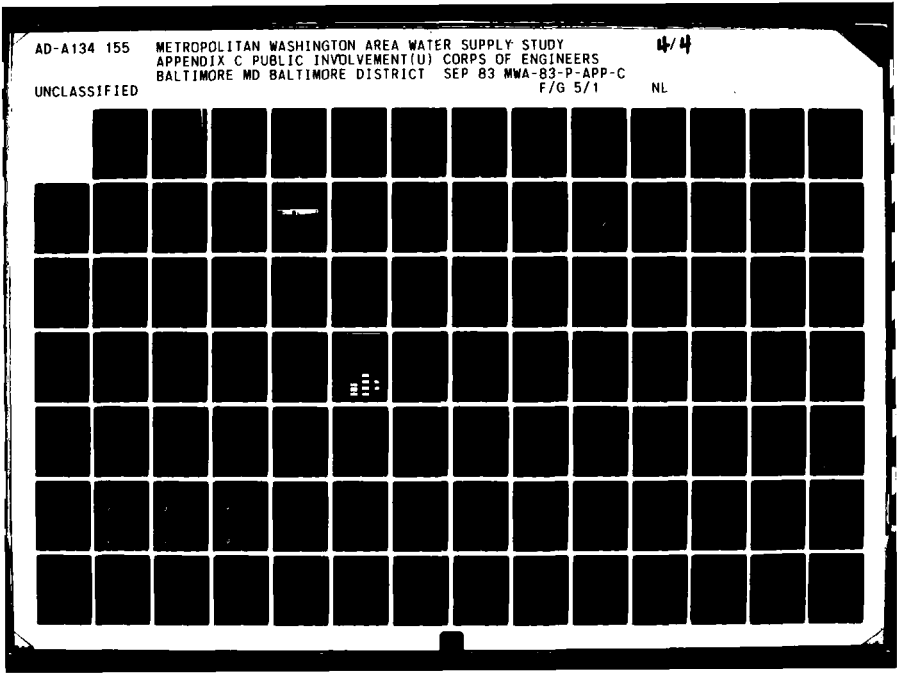
B. Comment

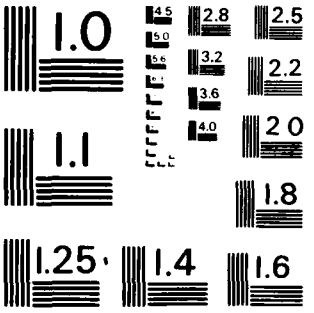
1. No justification is presented for the use of the worst drought of record as a characterization of future supply. No information is presented which would indicate the probability of occurrence of another drought similar to that of 1930, and no estimate is given of the probability of occurrence of other droughts, either more or less severe than this one. Future streamflows are highly uncertain and, like water use, they are weather dependent. While no single streamflow or streamflow sequence can be predicted, statistical techniques do permit various statements to be made concerning expected flows, and relative risks associated with specific low flows. Such probabilistic statements concerning possible droughts can, and should be made to facilitate studies of simultaneous variation of water supplies and demands that are essential to a good management plan. While a longer gage history would certainly make probabilistic statements more reliable, available data will support a much better analysis than that presented in WMA-NEWS.

2. Since the purpose of the supply analysis is to assist in predicting events of considerable importance but of highly infrequent occurrence - water supply failures-

AD-A134 155 METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY 4/4
APPENDIX C PUBLIC INVOLVEMENT(U) CORPS OF ENGINEERS
BALTIMORE MD BALTIMORE DISTRICT SEP 83 MWA-83-P-APP-C

UNCLASSIFIED F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

it seems unreasonable to base the analysis on an arbitrary minimum estuary inflow of 100 MGD, and on reservoir release rules which are assumed invariant over all time. While a 100 MGD estuary inflow may well be a desirable minimum, it is not clear whether the WMA water supply systems would be permitted to fail rather than reduce this quantity. If the minimum estuary inflow would be reduced under emergency conditions, this fact should be reflected in the supply calculations. Similarly, no indication is given as to whether the Bloomington release rule is optimal in *some sense, or whether it relates to water supply at all.* Whatever its origins, it seems likely to be modified in the event of an imminent water supply failure, provided sufficient warning is available. This, too, should be reflected in planning. If the capability to decrease estuary inflows and to increase Bloomington releases is conceived of as sort of emergency reserve, not to be included in planning calculations, this fact should be brought out, and the significance and cost of this reserve indicated.

Water Supply Deficits and Effects of Deficits

A. Summary

Water withdrawals from the Potomac River have been estimated for future years by *means of a deterministic*, per-capita requirement method; available streamflow in the river is characterized in terms of recorded streamflows during the drought *of* 1930. *For each* calendar month of each forecast year, maximum day and maximum seven-day withdrawals are estimated, as well as minimum day and minimum seven-day *available* streamflows. Deficits are forecast by assuming that the maximum withdrawal is attempted on the day of *minimum streamflow*, and that the maximum seven-day *withdrawals are* simultaneous with the minimum seven-day streamflow. Monthly average withdrawals and monthly average streamflows are also compared. These methods produce *deficit forecasts* which are summarized at page 49 of Annex B.

Several types of deficits and several *classes of effects are distinguished:* deficits may occur due to insufficient flow in the Potomac River, or they may result from treatment and/or distribution inadequacies or from some managerial or *operational failure; effects* can be traced to steps taken by utilities to avoid *potential deficits (drought management) or to the actual deficits themselves.* In WMA-NEWS, studies of the effects of deficits (Annex D, Volume 1) are principally directed to those deficits or potential deficits which result from insufficient streamflow in the Potomac River. Effects considered include those associated with implementation of drought management measures as well as with actual supply shortfalls. Attempts were made to measure short-term economic losses associated with use restrictions or deficits. These losses are estimated for the municipal, domestic, commerical, governmental, and industrial sectors. Also, various social impacts, such as unemployment, health and fire hazards, and unaesthetic conditions are reviewed. Domestic economic losses are considered to be changes in consumer surplus. Commercial and governmental losses are defined in terms of changes in gross revenues. Industrial losses are considered to be changes in value added.

B. Comment

1. Both water withdrawals and streamflows are weather-related and therefore *correlated;* but *they* are not perfectly correlated. The chance of a specific streamflow and a specific withdrawal occurring simultaneously is less than the chance of either of them occurring independently. The withdrawal rates used in the deficit analysis have some chance of occurrence, not stated but possibly about 50 percent *for any year.* The streamflows used also have some chance of occurrence, again not stated but perhaps on the order of one percent or less for any year. The probability *of a specific streamflow and a* specified withdrawal occurring simultaneously would therefore, be less than either of the two associated probabilities. The WMA-NEWS Report, by ignoring the true probabilistic nature of these phenomena, does not permit

any assessment of the real risk of drought. The only conclusion that can be drawn is that droughts identical to those forecast may be less likely than the report implies. There may be other, less severe droughts which can be expected to occur with much greater frequency, but this is not revealed in the report. There can be no substitute for an explicitly probabilistic approach to such a forecasting problem.

2. Low flows in the Potomac River do not occur without warning: in fact, the now-pending Low Flow Allocation Agreement includes a staged series of warning procedures designed to permit the various water utilities and their customers to prepare for possible deficits. It is unlikely, therefore, that any of the area's water utilities would permit a supply failure without making strenuous efforts to reduce water use (drought management) and thereby eliminate the potential deficit. Depending on the methods chosen, these efforts may modify the level and the structure of water use, as well as consumer behavior and attitudes. Should an actual deficit ensue, the demand for water may be of a somewhat different nature from that which would be projected from historical records of non-deficit years. There is no indication that the WMA-NEWS deficit forecasts considered the possibility of drought management by the area's utilities.

3. Since drought management measures may include, among other things, mandatory restrictions or prohibitions of selected water uses, such measures may well prevent most expected water supply failures. In this sense, drought management is an alternative to supply augmentation. Various levels of drought management impose various levels of costs on the water users, just as various levels of supply augmentation impose various costs on water users, taxpayers, and other users of the environmental amenities. An optimal water supply program might be imagined, one which maximizes the net benefits to society by balancing the costs of adding an increment of supply against the costs of not so augmenting supply. Such a program might well include some degree of supply augmentation together with some expectation

of the future use of drought management techniques. There is no indication that the WMA-NEWS study has seriously considered such an outcome, or has performed the type of analyses which would permit consideration of such alternatives.

4. The discussion of drought loss estimation methodology contained in Annex D, Volume 1, is too sketchy to allow a careful critique. This is especially true of the items which appear to dominate the results; the tourism and industrial sectors. There are, however, some indications that upward biases may have been built in. The assumptions necessary to perform the types of analysis indicated are not explicitly stated. No justification is presented for the use of lost revenues or lost value added, rather than lost profits, as estimators of drought loss. No explanation is offered for the choice of accounting stance (evidently local rather than national), or for the decision to exclude consideration of possible re-timing, rather than loss, of business as a consequence of drought.

WATER SUPPLY OPTIONS

The comments in this section are based upon the WMA-NEWS Report and Annex C. In the Report (see Table 65, "Summary of Program Data," pgs. 95-96), eleven alternative water supply structural options are presented. These options appear to be based upon two main assumptions: 1) that the water supply developed through each option or set of options will be sufficient to meet the estimated water supply demand forecasts (see Report; Chapters 2 and 3); and, 2) that the Potomac River will serve as the aqueduct into which flows from supplementary sources would be introduced.

The Committee believes that the forthcoming study should expand and further detail the technological alternatives identified in the Report. The Report itself concludes (p. 147) that additional analyses are needed in order to further document the various water supply alternatives.

The major thrust of the Report emphasizes development of acceptable levels of supply. Essentially all of the proposed structural options are based upon the assumption that water supplies, developed through use of impoundments, well-fields

(except for the Coastal Plain Wells) or treated sewage effluents, will be returned to the Potomac River. The Potomac is apparently expected to perform as an aqueduct without adequate consideration given to the long-term water quality conditions that are likely to occur within the River. If the structural water supply options are to fulfill their intended purposes, it is important to analyze and predict the future characteristics of the quality of each alternative supply. This point is further emphasized in the section on Impact Evaluation.

The comments in this section are addressed to:

1. Groundwater
2. Reservoirs and other supplemental supplies
3. Interconnections

Groundwater

A. Summary

In a regional water supply study such as WMA-NEWS, a detailed investigation of all potential groundwater resources should be presented. Because of the special characteristics of the WMA, groundwater supplies should be evaluated in terms of their capacity to respond to shortages of supply (over relatively brief periods of time) rather than as a means of providing long-term expected safe yields.

B. Comment

In WMA-NEWS, apparently only two sources for groundwaters were evaluated (Hagerstown and Coastal Plain well fields). Future studies should indicate the groundwater potential in other areas. A careful inventory of groundwater sources and expected yields would be important in evaluating the appropriateness of this source of water.

For the WMA it seems appropriate to consider using groundwater as a form of water supply storage by which water is held in an aquifer rather than in surface impoundments, as is typically the case. Groundwater supplies can be pumped at high

rates for relatively short periods of time and thus should be evaluated in terms of their potential to serve as water supplies during relatively brief and infrequent shortages in the Potomac supply. Under these conditions the aquifer may be drawn down significantly during periods of intensive pumping but would have extended periods of time for recharge.

Reservoirs and Other Supplemental Supplies

A. Summary

Consideration should be given to development of reservoirs for direct water supply, under the assumption that water in the Potomac River will continue to be of uncertain quality. While considerable effort has been expanded in assessing the quality of the Potomac River estuary, there has been no assessment of the quality of the water to be taken from the Potomac nor of the changes in water quality that might be expected through the year 2020. The WMA-NEWS study has determined that the quality of water to be obtained from the Bloomington Reservoir will not be suitable for direct water supply due to excess acidity. The anticipated quality of other sources also should be determined.

If adequate direct supplies could be developed, the Potomac River would no longer need to be used as an aqueduct, but could serve as an emergency supply. Consideration also should be given to effecting reductions in demand for potable supplies by developing means to use the Potomac River or wastewater flows entering the Potomac to satisfy non-potable demands.

Potential supplementary supplies considered in WMA-NEWS to be too small for immediate and "near immediate (± 1995) demands", should be reassessed to determine whether they can be developed quickly to provide adequate service for an interim period. Such reassessment is important in the forthcoming study.

B. Comment

1. Total reliance on the Potomac as a viable source of potable water is of

questionable merit. This matter cannot be adequately assessed, given the absence of information on water quality in WMA-NEWS.

The relatively recent history of serious chemical episodes that compromise the integrity of run-of-the-river supplies and the possibility that such conditions may occur in the future make it essential that direct supply alternatives be carefully evaluated. While WMA-NEWS places great reliance on the expected effectiveness of an Advanced Wastewater Treatment Plant (AWTP) to augment supplies, direct supply alternatives should be considered in the event an AWTP does not prove to be viable.

2. In conjunction with considering a direct supply system, a vigorous examination of the feasibility of "nearby impounding reservoirs" (i.e., within the WMA) should be undertaken in spite of the relatively small size of these impoundments and the possibility of local objections. (See Report, Item 6c, page 147). A review of "nearby sites" should be made in order to determine whether they are technically and economically viable. The reasons why potential reservoir sites are declared to be unusable should be clearly stated. (Distinction should be made between sites rejected for technical or economic reasons and those rejected because of local community opposition.)

3. Consideration also should be given to the use of existing reservoirs within the WMA for water supply. The protection of supplies such as the Occoquan Reservoir needs to be examined to determine what actions might be required to insure that the quality of the supply can be maintained. Factors which should be evaluated include devising the means by which sewage discharges now entering a reservoir can be diverted.

Interconnections

A. Summary

While WMA-NEWS does consider interconnecting water supplies, a more thorough

analysis of the merits of this alternative seems warrented.

B. Comment

Consideration should be given to more effective management of that which might be provided by enlarging and enhancing interconnections between the now separate water treatment systems within the WMA. This should include possibly expanding existing storage facilities and establishing interconnections between them to permit water transfers during periods of peak demands. (For example, use of excess capacity at the Dalecarlia Water Treatment Plant to supply Fairfax County would reserve Occoquan's storage for the south end of the system and for peaking purposes.)

IMPACT EVALUATION

This section comments upon the adequacy of WMA-NEWS in evaluating the impacts associated with development of alternative water supply resources. It includes comments upon public participation in the study and how the Corps determined public perception of trade-offs associated with the alternatives.

In WMA-NEWS, impacts were discussed throughout the Report, Annex C, and Annex D. Annex A concerns the public participation program. The comments on those components of the study are organized here into three categories:

1) Scope of impact analysis
2) Water quality and public health
3) Ecological impacts.

Scope of Impact Analysis

A. Summary

The general approach to analyzing the alternative water supplies used in WMA-NEWS is appropriate for a multi-objective planning process. The planning objectives are clearly presented and the options available for increasing water supplies are discussed with respect to each objective. However, in discussing the

various options, the analysis of impacts is one of the weaker components of the study. The scope of the impact analyses is limited and the full range of effects are not analyzed in a systematic manner.

B. Comment

1. A primary concern with the impact evaluation is that, with the exception of costs, the evaluation is generally qualitative. Terms such as "relatively small," "Considerably less," "relatively severe," "added economic burdens," "Measureably lessen," "quite disturbing," "significant," are used throughout the evaluation. In several instances, it is indicated that measurement *could be done*, but was *not*. A *satisfactory evaluation* should quantify these effects.

The variables on which more qualitative estimates should be presented include: productivity losses from changed land use, willingness to pay for increased recreation opportunities, basis for project recreation visitor days, full employment and income gains and losses, and economic costs of water restrictions. There should be a formal, openly revealed, and consistent analytic framework for developing quantitative estimates of these benefits and costs.

2. The analysis must be careful to distinguish real economic impacts from income transfers. For example, revenue loss of water companies is not a real economic cost (p. 103 of the Report). *This loss is offset dollar for dollar by consumers having to pay less.* The real cost is the willingness of consumers to pay for avoiding the reduction in water use.

3. The growth of outdoor recreation activities received considerable attention in the impact section. However, the validity of the conclusions is reduced because of the methodology employed. For example, a demand study of outdoor recreation was not undertaken and this shortcoming alone makes the evaluation of recreation potential of limited utility. Overall, the analyses of outdoor recreation do not meet present standards of minimal professional competence.

4. The question of public reaction to alternative projects is discussed in Annex D, Volume 2, but the conclusions reached appear speculative because there was no systematic study of acceptance by the public. The concept of public participation appears paternalistic in that information presented to the public seems to have been selected or rejected unilaterally by the Corps to support an evolving final plan. This apparent deficiency might be avoided in the future and credibility heightened by involving the public from the earliest stage of planning through the consensus of a final study plan, including input on the goals of water supply development and the means of achieving the goals. In the forthcoming study, consideration also might be given to utilizing and citing the existing work of public interest groups in the WMA.

Water Quality and Public Health

A. Summary

The WMA-NEWS study considers many water supply alternatives ranging from traditional reservoirs to indirect wastewater reuse involving effluents from advanced wastewater treatment plants. The feasibility and public acceptance of various alternatives should depend directly on the comprehensive analyses of the water quality and public health aspects of the alternatives. However, little concern is evident in the WMA-NEWS over the many physical, social and economic relationships involving water supply and water quality planning.

B. Comment

The "Environmental Considerations" sections of Annex C display the inadequate consideration given to water quality and public health in the study. However, the report Potomac Estuary Water Supply: A Prototype Water Treatment Facility, published by the Corps in December, 1974 as a part of NEWS, provides an outline of the questions which must be considered for at least the alternative involving use of Potomac estuary water as the supplemental water supply source.

This type of thorough analysis should not be reserved only for the use of Potomac estuary water, but should be extended to groundwater supplies, upper Potomac River supplies (including their augmentation by reservoirs), and reservoirs used for direct supply. Recent research results indicate that trace amounts of various carcinogenic substances in public water supplies may pose a threat to public health. In light of this, consideration should be given to additional treatment processes, modification of existing treatment processes, or development of new sources free of these contaminants to reduce their levels in public water supplies.

Ecological Impacts

A. Summary

Ecological impacts are among the criteria listed in *WMA-NEWS for evaluation*, but as noted previously, they do not appear to have been studied and documented.

B. Comment

The deficiency in regards to ecological impact analysis seems especially critical concerning the proposed alternative of utilizing the estuary of the Potomac River as a water supply source. For example, withdrawals of water from the estuary might permit intrusion of the salt wedge from the Chesapeake Bay such that the biological character of the upper estuary would be affected. It appears that this possibility should be considered along with potential effects on the estuary of other water supply alternatives affecting the flow of freshwater. If studies of this problem already have been conducted by others, such as the U.S. Environmental Protection Agency, they could be utilized as appropriate.

INSTITUTIONAL ISSUES

The multiplicity of agencies serving the Washington metropolitan area confuse long-term planning for water supply. The situation is exasperated by the fact that many of these agencies compete for water from the same source, the Potomac River watershed.

Technical solutions to the water supply problem for the area, even if optimal in terms of benefits and costs, will remain a chimera unless attention is given to implementation of any solution proposed. Such implementation depends upon resolution of some, if not all, of the institutional conflicts. These issues were not addressed in WMA-NEWS, and this is a major weakness in the study.

A. Summary

The WMA-NEWS Report points (p. 22) correctly that there are no local agencies in the WMA with appropriate responsibility for regional water supply solutions and that this limits the range of alternatives that can be selected. A regional approach in the WMA, the study acknowledges, would provide a wider set of projects and programs and resolve issues such as economies of scale, duplication of effort, inequalities in distribution of costs and benefits, control of growth, and efficient use of resources.

The study recites the difficulties involved in achieving regional water management and in pursuing integration of water supply and water pollution control planning. It then proceeds no further with examination of these issues.

B. Comment

The Committee believes that the Corps must incorporate in its current study the several institutional constraints and the reasons for them, as well as methods for overcoming these constraints, with an assessment of each of the approaches suggested. As much or more lead-time will be required for institutional change as for completion of structural projects, and institutional change may be a necessary precursor to proceeding with these projects.

A study of institutional arrangements might include the following elements:

1. A study of federal, state, and local governments and agencies could be made in order to understand the present distribution of authority over water supply and water quality. While many of these agencies may not be able to exercise regional

authority, a survey would provide a base for workable plans for the future.

2. The advantages and disadvantages of assigning regional authority to each of these agencies could be determined and assessed. These would include such issue s ease of decision-making for the region; scale; equity; resource conservation; water quality management; and integration of water supply with water pollution control and wastewater management.

3. Regional agencies in the U.S. could be examined, to help establish which of these might offer a useful model for the WMA, including commissions, authorities, and other appropriate arrangements. For example, the Minneapolis-St. Paul model, the East Bay Municipal Utilities District, the Interstate Compact Commissions, or River Basin Commissions may serve as a beginning point for a regional agency tailored to the WMA situation.

4. Analysis of various regional options could be conducted with recommendations for a regional scheme for the area. Mechanisms for assuring a smooth transition should be examined.

A new multi-purpose regional agency for water supply and water quality management might assume any one of a number of forms. Its major attributes, however, would seem to be the following:

a) Boundaries coterminous with the Potomac basin and several smaller basins.

b) Jurisdiction over both water supply and water quality including wastewater management by such means as pricing policies.

c) Sufficient authority to enforce its decisions throughout the basins including the whole metropolitan area.

The creation of any new authority or combination of authorities to manage water supply in the WMA may not be possible within existing federal and state legislation. Implementation of change may therefore involve both Congress and the Virginia and Maryland legislatures. Any change would pose serious political

problems. In order to evaluate what can be done within existing laws, and what new statutes would be necessary at federal and state levels, the Corps may find it expedient to avoid entering the political arena directly by employing a relatively unbiased group of experts to examine the issues and indicate how a regional, multi-functional authority for water management in the WMA might be established.

In so charged a political setting as the WMA, the Corps may find it prudent to maintain its independence of political judgment, and be seen to be independent, by seeking outside funding for this phase of the study with the further possibility, if really necessary, of creating a separate private ad hoc association to supervise the study and report upon it.

Regardless of the difficulties and political complexities, the Committee believes that examination of the institutional problems involved in implementing a long range plan for water management, to include both the issues of water quantity, water quality, and wastewater management, is essential to a sound resolution of the issues.

JUNE 1977

COMMITTEE TO REVIEW THE WASHINGTON METROPOLITAN AREA WATER SUPPLY STUDY

NAME	ADDRESS	PHONE
Dr. Daniel A. Okun Chairman	Dept. of Environmental Sciences and Engineering School of Public Health 201H University of North Carolina Chapel Hill, NC 27514	(919) 966-1023
Mr. William W. Aultman	James M. Montgomery Consulting Engineers 555 East Walnut Street Pasadena, CA 91101	(213) 796-9141
Dr. Duane D. Baumann	Department of Geography Southern Illinois University Carbondale, IL 62901	(618) 536-3375
Dr. Guthrie S. Birkhead	Dean, Maxwell School of Citizenship and Public Affairs Syracuse University Syracuse, NY 13210	(315) 423-2252
Dr. John Boland	Dept. of Geography & Environmental Engineering 419 Ames Hall Johns Hopkins University Baltimore, MD 21218	(301) 338-7103
Dr. John Cairns, Jr.	Center for Environmental Studies Virginia Polytechnic Institute & State University Blacksburg, VA 24061	(703) 951-5538
Dr. Leo M. Eisel	Director, Illinois Environmental Protection Agency 2200 Churchill Road Springfield, IL 62706	(217) 782-3397
Dr. Robert H. Haveman	Department of Economics University of Wisconsin Madison, WI 53706	(608) 262-6358
Mr. Richard Hazen	Hazen & Sawyer 360 Lexington Avenue New York, NY 10017	(212) 986-0033

Committee to Review the Washington Metropolitan Area Water Supply Study

NAME	ADDRESS	PHONE
Mr. Ronald A. Howard	Dept. of Engineering-Economic Systems Stanford University Stanford, CA 94305	(415) 497-4176
Dr. Walter R. Lynn	School of Civil & Environmental Engineering - 218 Hollister Hall Cornell University Ithaca, NY 14850	(607) 256-3690
David W. Miller	Geraghty & Miller, Inc. 44 Sintsink Drive East Port Washington, NY 11050	(516) 883-6760
Jerome Milliman	Department of Economics University of Florida Gainesville, FL 32611	(904) 392-0120 or 392-0151
Sheldon D. Murphy	Assoc. Professor of Toxicology Harvard School of Public Health 665 Huntington Avenue Boston, MA 02115	(617) 732-1177
Gerard A. Rohlich	Dept. of Civil Engineering 8.6 E. Cockrell Hall University of Texas at Austin Austin, TX 78712	(512) 471-4131 or 471-5602

Staff:

Charles R. Malone Executive Secretary	Committees for Water Supply Reviews National Research Council JH-332 2101 Constitution Avenue, N.W. Washington, D.C. 20418	(202) 389-6785

file

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D.C. 20418

EXECUTIVE DIRECTOR 202/389-6243

August 21, 1978

Mr. James Crews
Planning Division
Baltimore District
U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Crews:

I am pleased to send you herewith three copies of the letter report by Daniel A. Okun, Chairman of the National Research Council's Committee to Review the Metropolitan Washington Area Water Supply Study, along with the report by the Committee, both dated August 21, 1978. These reports consist of reviews of the "Plan of Study," dated March 1978, by the Army Corps of Engineers, for its Metropolitan Washington Area Water Supply Study.

The letter report and the accompanying document have been reviewed by an independent group of experts, other than members of the Committee, according to the customary procedures approved by the Report Review Committee of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The work by the Committee was carried out as part of Contract Number DACW31-77-C-0045 between the Department of the Army, Baltimore District, Corps of Engineers, and the National Academy of Sciences.

Sincerely yours,

Micah H. Naftalin

Micah H. Naftalin

enclosure

cc: Daniel A. Okun
Charles R. Malone

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

C-IX-17

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D.C. 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6785

August 21, 1978

Mr. James E. Crews
Planning Division
Baltimore District, Corps of
Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Crews:

The Committee to Review the Metropolitan Washington Area Water Supply Study was established in April 1977 at the request of the U.S. Army Corps of Engineers to conduct a continuing review of the Corps' study of the future water resources needs in the Washington, D.C. region. This is the second letter report by the Committee. The first one was sent to the Corps on August 3, 1977.

This letter and its attachments contain the Committee's evaluation of the Corps' final "Plan of Study," dated March 1978, for its Metropolitan Washington Area Water Supply Study. The Plan was presented at the Committee's meeting of May 17, 1978, and subsequently reviewed by the members. We found, as the attached comments explain in greater detail, that much of the contents of the Plan is similar to the Corps' November 1975 "Washington Metropolitan Area (WMA) Water Supply Study Report," taken from the "Northeastern United States Water Supply (NEWS) Study," which was reviewed by the Committee last year. For this reason, our approach in commenting upon the Plan was to follow the format of our first letter report by comparing the Plan with the earlier WMA-NEWS Report. To assist you and others in understanding our comments, we have appended the Committee's first review.

As a succinct summary of our latest review, I want to highlight some of the Committee's most important conclusions. We find that the "Plan of Study" calls for investigations and analyses of several factors that were missing from the 1975 WMA-NEWS Report. Among the subjects to be given more thorough consideration in the current study by the Corps are:

- probabilistic estimates of streamflow for the Potomac River;

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

- alternatives for reducing water use demand;
- effects of water supply deficits;
- use of reservoirs for direct water supplies;
- feasibility of interconnections for both raw and finished water supplies.

In some cases, the Committee notes in its comments, the Plan lacks sufficient detail about study methodologies for the program elements listed above so that the Committee finds it difficult to comment on their adequacy. However, it is commendable that several of the deficiencies the Committee had identified in the WMA-MEWS study are to be addressed by the Corps in the current study.

A number of notable weaknesses in the 1975 WMA-MEWS study report that were previously pointed out by the Committee have been identified again in the Plan for the Corps' current study. In particular these are:

- lack of probabilistic estimates of future water use and, therefore, preclusion of adequate forecasts or projections of water supply deficits;
- absence of clear plans for thorough analyses of public health and ecological consequences for various water supply alternatives;
- insufficient emphasis on the importance of assuring good water quality in planning for and choosing among alternative water supplies;
- need for a impartial, independent, and timely analysis of institutional aspects that affect the optimum management of water resources in the metropolitan Washington area.

We further express concern that, while the Corps intends to collect extensive data on potable water quality in connection with its Potomac estuary pilot plant project, the current study involves no investment in assessing present and alternative water supplies for adequate quality and health significance.

Finally, the Committee notes that, considering the Corps' projected expenditures, the Plan devotes substantial effort to the preparation of the study and report in contrast with developing important new information. For example, Work Elements I, V, VI, and VII which provide for preparation of the Corps' final report, for participation by the public, and for review by the National Research Council account for about $1.6 million - almost half the total budget. Even the substantive work elements largely constitute an analysis, assessment, and reassessment of data gathered earlier by the Corps and by others. Except for conducting limited studies

of groundwater, the Corps' resources devoted to acquiring new field data appear to be constrained.

We hope that this review of the "Plan of Study" will be helpful to the Corps as it proceeds with its Metropolitan Washington Area Water Supply Study. The Committee is ready to clarify the attached comments and to elaborate on any of the concerns that it has raised.

Sincerely yours,

Daniel A. Okun/cm

Daniel A. Okun
Chairman
Committee to Review the Metropolitan
Washington Area Water Supply Study

NABDE 16 October 1978

W/16

Dr. Daniel A. Okun
Chairman
Committee to Review the Metropolitan
Washington Area Water Supply Study
National Research Council
2101 Constitution Avenue, N.W.
JH-332
Washington, D. C. 20418

Dear Dr. Okun:

I have read the draft minutes of your 11 September committee meeting, on the Metropolitan Washington Area Water Supply Study. I am somewhat surprised by the following sentences, extracted from those minutes:

> The committee will continue to emphasize the potential importance of the study as a model that can be observed by other metropolitan areas across the nation that are facing water supply problems. In this regard, it is the general approach to the study and the analytical methodologies that are important and not the specific solutions to Washington's water supply problems.

Section 85 of the Water Resources Development Act of 1974 (PL 93-251) directed the Corps of Engineers to conduct a study and report to the Congress on the future water resources needs of the Metropolitan Washington Area. Also, the Corps was directed to request the National Academy of Sciences-National Academy of Engineering to review and comment upon the scientific basis for the conclusions reached in the study.

The Corps of Engineers has interpreted its charge with a specific set of goals and procedures aimed at developing and recommending implementable and practical solutions, as outlined in the plan of study approved by the Office of the Chief of Engineers in February 1978.

Our contract outlines the role of the Academy. The Academy is to comment on the concept and methodology of the study, the nature of the data and analyses used, and the scientific merits of the conclusions.

At our meeting in November 1977, we discussed the Committee's role and its relationship to the study as it progresses. At that time, divergent views

were expressed, but I felt that an understanding had been reached that not all of the Committee's comments will be completely resolved. We appreciate your comments and will endeavor to incorporate into our study those we deem appropriate.

Whatever the desirability of having this study serve as a model for other water supply studies in the future, this is not the requirement stated in Section 85, PL 93-251. I therefore take exception to the thoughts expressed by the two sentences, extracted above, from your draft minutes. I am simply not authorized to perform work not specifically delineated by law, and I wish to insure that you understand the position I am obliged to take.

I will of course be happy to discuss this further, if you wish.

Sincerely yours,

G. K. WITHERS
Colonel, Corps of Engineers
District Engineer

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D. C. 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6748

November 17, 1978

Colonel G.K. Withers
District Engineer
Department of the Army
Baltimore District, Corps of
Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

I appreciate your letter of October 16, 1978, which continues the dialogue we have been having with respect to the standards our committee is employing in its Congressionally mandated review of the Corps' MWA Water Supply Study. At the conclusion of our 8-page letter report of August 21, 1978, the committee expressed the view, or hope, that the Corps' "approach to the study and the analytical methodologies utilized will constitute a model to be observed closely by other metropolitan areas across the nation facing water supply problems." I believe your concern is that by using this language the committee has signalled the adoption of a standard for measuring the Corps' study that goes beyond the Congressional intent and the Corps' scope under the law. Let me reassure you that such is not the intention of the committee.

Section 85 of the Water Resources Development Act of 1974 (PL 93-251), to which your letter referred, called upon the Corps to "make a full and complete investigation and study of the water resources needs of the Washington metropolitan area..." The role of our committee, as summarized in our proposal, is "to observe, review and prepare a final report on the Corps' study that appraises the concept and methodology of the study, the nature of the data and analyses used, and the scientific merits of the conclusions...[V]iews and findings that differ from those of the Corps will be clearly stated and the rationale for the differences will be presented."

It is patently true, of course, that responsibility for the study rests with the Corps, and you are entirely correct in stating that the Corps is not bound to accept all (or any) of the committee's comments and recommendations. On these points, there is certainly no misunderstanding. Moreover, as you know, we have been providing interim reports to ensure that our comments are of maximum assistance to you along the way and that our overall assessment does not arrive at the eleventh hour as a total surprise. In this connection, the letter report of August 3, 1977,

C2-X1-2

conveyed the committee's comments upon the Washington metropolitan area component of the Corps' Northeastern U.S. Water Supply (NEWS) Study. Those comments reflected the committee's opinions on what constitutes "a full and complete investigation and study of the future water resources needs of the Washington metropolitan area" and pointed to the deficiencies in the NEWS Study, as viewed by the committee, thereby representing the committee's expectations of the Corps' current study. On the following November 16-17, 1977, the committee met with Mr. Crews and Lt. Colonel Rhen to discuss the Corps' response to the review of the NEWS Report, and it seemed then that a disagreement existed between the committee and the Corps about the standards of performance to be employed in the conduct of the MWA Study. This was confirmed when you and I met on January 10, 1978, to discuss the committee's review of the study.

I think the point to be kept in mind is that the committee's responsibility is to provide, from the perspective of an independent multi-disciplinary panel of experts, a judgement as to the scientific and technological merits of the concept, methodology and conclusions of the Corps study. The criteria employed by the committee will be, of necessity, in terms of such considerations as high standards of performance, the state of the art of water resources planning, the adequacy of the data relied upon, and the soundness of the engineering and scientific practices employed. Where we disagree with the Corps' plans or assumptions, we are obligated to provide a clear rationale.

As you review my cover letter of August 21, 1978, and the accompanying interim report, I am confident that you will agree that these were the sole criteria employed by the committee in providing its comments. Nowhere in those detailed comments do we apply the criterion of a "model study." Such comments, appended as a final paragraph of the report, were meant to be taken merely as encouragement to the Corps and to suggest that it is the fervent hope of the committee that a truly comprehensive water resources study could provide the additional benefit of providing a model that other metropolitan areas could emulate.

I hope you will find this clarification both helpful and reassuring.

Sincerely yours,

Daniel A. Okun

Daniel A. Okun
Chairman,
Committee to Review the Metropolitan
Washington Area Water Supply Study

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D.C. 20418

EXECUTIVE DIRECTOR 202/389-6243

April 13, 1979

Colonel G.K. Withers
District Engineer
Baltimore District, Corps of
Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

I am pleased to send you three copies of the enclosed letter by Daniel A. Okun, Chairman of the National Research Council's Committee to Review the Metropolitan Washington Area Water Supply Study dated April 10, 1979. This letter comments on the briefing given to the Panel on Institutional Arrangements last February 26 by the Corps' representatives and also reflects on earlier committee concerns reported to Mr. James E. Crews in the committee's letter report of August 21, 1978.

This letter has been reviewed by an independent group of experts, other than members of the Committee, according to the customary procedures approved by the Report Review Committee of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The work by the Committee was carried out as part of Contract Number DACW31-77-C-0045 between the Department of the Army, Baltimore District, Corps of Engineers, and the National Academy of Sciences.

Sincerely yours,

Micah H. Haftalin

enclosure

cc: Daniel A. Okun
Charles B. Malone

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D.C. 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6765

April 10, 1979

Colonel G.K. Withers
District Engineer
Baltimore District, Corps of
Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Withers:

Last February 26, the Panel on Institutional Arrangements of the Committee to Review the Metropolitan Washington Area Water Supply Study met with members of your staff and was briefed by them regarding the status of the Corps' water supply study. The emphasis in the briefing was upon the Early Action Program now underway. The panel was particularly interested in the raw water interconnections being studied and the local, sub-regional, and regional agreements and institutional arrangements that apparently are part of that plan. The purpose of this letter is to once more call attention to some problem areas that the panel considers important enough to require further examination for possible inclusion in the Corps' Early Action Program report, scheduled for release this August.

In our letter report of August 21, 1978, to Mr. James E. Crews of the Corps' Planning Division, the committee discussed the potential consequences that raw or finished water interconnections might have on regional institutional arrangements. That report, with its attachments, consisted of the committee's evaluation of the Corps' "Plan of Study" (dated March 1978) for the Metropolitan Washington Area Water Supply Study. The panel learned at the February 26 briefing that its earlier concerns remain unresolved. For example, if the Corps' early action report recommends regional or sub-regional plans involving agreements and interconnections, which governmental agency or organization will bear the responsibility for implementation? Will any new management arrangements provide for a regional perspective? It appears to this committee that specific assignments of responsibility should be examined now and that recommendations should be included in the Corps report this August.

Recommendations concerning regional water interconnections that involve agreements between the major water suppliers in the metropolitan area over the short term could affect the institutional arrangements that are needed to serve the region in the long run. It therefore follows that the study should include an assessment of the anticipated impacts that the Corps' recommendations could have on governmental patterns and institutions. For

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

example, the proposed five-plan agenda for the Early Action Program, as described by your staff, might provide sufficient water for the metropolitan area until the year 2030. If indeed that is so, and if the plans involving interconnections are implemented, what will be foregone in the way of future regional or river basin arrangements over the decades ahead? What institutional arrangements are most appropriate for the area?

The panel considers that the Corps' study will be far more useful and meaningful if it addresses the questions raised here. As always, we stand ready to discuss these matters in greater detail at your request.

Sincerely yours,

Daniel A. Okun

Daniel A. Okun
Chairman
Committee to Review the Metropolitan
Washington Area Water Supply Study

cc: Charles R. Malone
James E. Crewe

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington, D. C. 20418

COMMITTEE FOR WATER SUPPLY REVIEWS (202) 389-6700

December 11, 1979

Colonel James W. Peck
District Engineer
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203

Dear Colonel Peck:

The National Research Council's Committee to Review the Metropolitan Washington Area Water Supply Study met September 27-28, 1979, to initiate its review of your August 1979 "Draft Progress Report" on the Metropolitan Washington Area Water Supply Study. In expectation of the Corps of Engineers' original plan to publish a final progress report in March 1980, the committee was preparing to complete its review of the draft report by the end of this year. But when the Corps indicated its intention not to publish a final progress report, the committee decided to alter its schedule and to prepare a more comprehensive review of the "Draft Progress Report." Accordingly, the committee's complete report will not be available until next spring.

Even so, the committee considers it important and possibly useful to you to convey its preliminary views of the "Draft Progress Report" -- particularly in view of the forthcoming meeting of the Corps' Federal Interstate State Regional Advisory Committee on December 13-14. The following comments, agreed upon by the committee at its September meeting, reveal the principal themes of the more detailed report to be made in several months.

- The committee was pleased to find that in several respects the "Draft Progress Report" responds to significant deficiencies that were found in previous Corps' studies and plans for the metropolitan Washington area. In this connection the Corps is to be commended for improving its methodology of forecasting water use, giving greater emphasis to nonstructural options for augmenting water supply, indicating the desirability for regional cooperation, and developing plans responsive to local desires.

- The committee is concerned that the Corps' analysis of the costs of alternative water supply schemes for the year 2030 does not take into account the concomitant wastewater investments that might be involved. Taken together, capital and operating costs of wastewater facilities could easily equal or exceed water supply costs. Charges to users for this service, on top of increasing costs for water supplies, might well affect water demand. Apart

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

from this, the location of outfalls for wastewater and intakes for water supply on the Potomac River need to be considered together. Therefore, investment policies for the proposed two kinds of systems should be coordinated in planning for alternative water supplies.

- The committee holds that the Corps should attempt a benefit-cost analysis as contrasted with a cost-effectiveness analysis of the alternative plans described in the report. The cost-effectiveness analysis is important but does not replace the need for benefit-cost analysis. It is possible to perform analyses with standard water resource economics techniques that deal with the magnitude of benefits and costs and their probable distribution. Such information is essential to completing the evaluation of financial and institutional arrangements for implementing alternative plans.

- The committee is concerned about the omission of water quality considerations in the report. For example, the potential consequences of releasing highly acidic water from Bloomington Reservoir, particularly during low-flows, are not assessed. Additionally, no attention is given to the potential impacts of the water quality differences of the several alternatives as they bear on distribution systems, treatment costs, and public health.

- The proposed institutional arrangements lack a freshness of view that may be gained from a study by an independent body. Such a study has been recommended in previous reports by this committee. Furthermore, the Corps' "Draft Progress Report" makes no suggestion as to how regional cooperation could result in potential benefits to be derived from sharing the region's water resources more effectively and equitably among the several counties and municipalities.

In its forthcoming report, the committee will elaborate upon the above issues, try to demonstrate their significance, and suggest means by which the Corps might address the issues. I am prepared to speak about the above points to you and FISRAC on December 13 should that be helpful.

Sincerely yours,

Daniel A. Okun /s

Daniel A. Okun
Chairman
Committee to Review the
Washington Metropolitan Area
Water Supply Study

NADEN-O

6 MAR 1980

Dr. Daniel A. Okun
Chairman, Committee to Review
the Metropolitan Washington
Area Water Supply Study
National Research Council
Assembly of Engineering
2101 Constitution Avenue
Washington, DC 20418

Dear Dr. Okun:

Reference is made to your letter of 11 December 1979 providing preliminary views on the "Draft Progress Report for the Potomac Water Study." Recently, Dr. Charles Helms advised us that the committee's complete report will be completed on about 1 June 1980.

Section 88 of the Water Resources Development Act requires that the National Academy of Sciences-National Academy of Engineering be requested to review and by written report comment upon the scientific basis for the conclusions reached by the investigation and study of the future water resources needs of the Metropolitan Washington Area. The committee's past comments have been helpful and we have tried to incorporate your concerns where we have deemed appropriate. Since no further work will be done on the alternatives outlined in the Draft Progress Report, I would appreciate it if your upcoming report, in addition to elaborating on the committee's views discussed in your 11 December letter, would address the scientific basis for the conclusions reached. Specifically, I am interested in the committee's comments on the technical merit and quality of the procedures used in conducting the investigation.

I enjoyed meeting you at the FISRAC meeting. Your comments contributed greatly to the meeting and I hope the meeting proved valuable to your committee.

Sincerely yours,

JAMES W. PEEK
Colonel, Corps of Engineers
District Engineer

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING

2101 Constitution Avenue Washington, D. C. 20418

COMMITTEE FOR WATER SUPPLY REVIEWS (202) 389-6765

June 26, 1980

Mr. James E. Crews
Chief, Urban Studies Branch
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Jim:

The Water Supply Review Committee has received the "Stage II Draft Report" of the Metropolitan Washington Area Water Supply Study. Over the past two weeks Dan Okun and I have communicated with members of the committee in reference to how we should respond to the report. The consensus is that the material and information contained in the report is not sufficiently significant to warrant a meeting of the committee to review the report.

The committee's opinion and decision is based upon the committee's perception that the methodologies used for water demand analyses of the Metropolitan Washington Area counties is the same as that previously reviewed by the committee. Further, information on the long range water supply alternatives repeats what the committee has seen in earlier reports and otherwise does not warrant comment at this time. Additionally, the committee finds important elements missing such as plans for assessment of water quality for potable purposes and environmental impact analyses which had been recommended by the committee in earlier letter reports.

These and other issues will be discussed by Dan when he meets with Colonel Peck in July. Thus, we do not now anticipate making a formal response to the draft report but instead will discuss it informally during the meeting between Okun and Peck.

Our final comments on the "Draft Progress Report" are being delayed by the internal NRC review process. The hang-up apparently involves the introduction and background to the committee's report and not the substantive comments themselves. Because it will be helpful to you to know what the comments are, I am enclosing the current draft of them

for informational purposes. No formal use of or reference to the enclosed comments should be made because the review process may yet lead to their being further revised. Perhaps I will have a final and public copy of the complete report to give you before Colonel Peck and Dan Okun meet.

Sincerely,

Charlie

Charles R. Malone

enclosure

cc: D. Okun

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

NATIONAL RESEARCH COUNCIL

ASSEMBLY OF ENGINEERING

[illegible] Constitution Avenue — Washington, D.C. 20418

EXECUTIVE OFFICE

October 1, 1980

Colonel James W. Peck
District Engineer
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

On behalf of the National Research Council, I am pleased to transmit to the Baltimore District Corps of Engineers, twenty-five copies of "Water for the Future of the Nation's Capital Area". This report constitutes the comments of the Committee to Review the Metropolitan Washington Area Water Supply Study on the Draft Progress Report, "Metropolitan Washington Area Water Supply Study for the Potomac Water Users" released in August 1979 by the Baltimore District.

The committee's comments constitute the first work of the committee to be released by the NRC in the format of a bound report. This format, rather than the letter format previously used by the committee, was chosen because the report covers all phases of the study addressed to the so-called short term water supply alternatives. Thus, the report encompasses the information presented by the committee in its earlier letters and public testimony and reflects the committee's work from its inception in 1977 to this mid-point in the overall Metropolitan Washington Area Water Supply Study.

Additional copies of this report are available from the committee's staff should you desire them.

Sincerely yours,

David C. Hazen
Executive Director

cc: *Daniel A. Okun*
Charles R. Malone

enclosures

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

Water for the Future of the Nation's Capital Area

Committee to Review the Metropolitan Washington Area Water Supply Study
Assembly of Engineering

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors, according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The National Research Council was established by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and of advising the federal government. The Council operates in accordance with general policies determined by the Academy under the authority of its congressional charter of 1863, which establishes the Academy as a private, nonprofit, self-governing membership corporation. The Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in the conduct of their services to the government, the public, and the scientific and engineering communities. It is administered jointly by both Academies and the Institute of Medicine. The National Academy of Engineering and the Institute of Medicine were established in 1964 and 1970, respectively, under the charter of the National Academy of Sciences.

This report represents work supported by Contract Number DACW31-77-C-0045 between the Department of the Army, Baltimore District, Corps of Engineers and the National Academy of Sciences.

COMMITTEE TO REVIEW THE METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY

Daniel A. Okun (Chairman), University of North Carolina, Chapel Hill, North Carolina

William W. Aultman, James M. Montgomery Consulting Engineers Pasadena, California

Duane D. Baumann, Southern Illinois University, Carbondale, Illinois

Guthrie S. Birkhead, Syracuse University, Syracuse, New York

John J. Boland, The Johns Hopkins University, Baltimore, Maryland

John Cairns, Jr., Virginia Polytechnic Institute and State University, Blacksburg, Virginia

Kenneth P. Cantor, National Cancer Institute, Bethesda, Maryland

Jerome B. Gilbert, J.B. Gilbert & Associates, Sacramento, California

Robert H. Haveman, University of Wisconsin, Madison, Wisconsin

Richard Hazen, Hazen & Sawyer, New York, New York

Walter R. Lynn, Cornell University, Ithaca, New York

Perry L. McCarty, Stanford University, Stanford, California

David W. Miller, Geraghty & Miller, Inc., Syosset, New York

Jerome Milliman, University of Florida, Gainesville, Florida

W.R. Derrick Sewell, University of Victoria, Victoria, British Columbia, Canada

Staff:
Charles R. Malone, Executive Director
Sheila D. David, Staff Officer

WATER FOR THE FUTURE OF THE NATION'S CAPITAL AREA

Committee to Review the Metropolitan
Washington Area Water Supply Study

Assembly of Engineering

National Research Council

C-IX-27

NATIONAL ACADEMY PRESS
Washington, D.C. 1980

PREFACE

This report is a review of the U.S. Army Corps of Engineers' "Draft Progress Report on the Metropolitan Washington Area Water Supply Study for the Potomac Water Users," published in August 1979. The complete report consists of almost 2,000 printed pages. Its appearance was preceded by interim reports, study plans and background documents prepared since the study was initiated in 1976. In addition voluminous reports of the Northeastern United States Water Supply Study were issued from 1965 to 1977 by the Corps of Engineers. All these documents have been important to a proper understanding of the work of the Corps of Engineers in planning for the present and prospective water supplies of the metropolitan region of Washington, D.C.

The problem of future water supplies for the metropolitan Washington area is a complex and controversial one, and in a brief report such as this the historic background of the problem cannot be fully described or documented. An attempt is made in the introductory section to summarize the significant information upon which this report is based.

Despite the committee's efforts to make the report as self-contained and comprehensive as practical, readers may want a complete and reliable understanding of the history of water supplies for the nation's capital region. They are advised to consult the references cited, especially the issues of "Water Forum Notes," published periodically by the Corps of Engineers.

It is important to point out that the data presented in tables and figures in this report were taken from the Corps of Engineers' "Draft Progress Report." The committee responsible for this review has not performed original investigations or gathered data. Instead, the committee has evaluated the information and data provided to it by the Corps. The members of the committee have brought their wide experience and knowledge of water supplies to bear on the technical approach to finding solutions for the problems of the Washington, D.C., area.

Those who want more detail, information, or background than provided here and in the literature cited should contact the staffs of the National Research Council and the Corps of Engineers involved in the continuing study. Addresses and telephone numbers are as follows:

Committees for Water Supply Reviews
National Research Council
2101 Constitution Avenue, NW
Washington, D.C. 20418
(202) 389-6785

Department of the Army
U.S. Army Engineering
District, Baltimore
Corps of Engineers
Box 1715
Baltimore, MD 21203
(301) 962-2668

C-IX-28

CONTENTS

INTRODUCTION AND BACKGROUND.....1

The Metropolitan Washington Area Water Supply Study.....9

Review by the National Research Council.....10

The Draft Progress Report.....11

Comments of the NRC Review Committee
on the Draft Progress Report.....15

I. WATER DEMAND MANAGEMENT OPTIONS.....15

Demand Forecasting.....15

Water Supply and Wastewater Economics.....16

Competing Uses for Potomac River Water.....17

II. WATER SUPPLY OPTIONS.....17

Water Quality.....17

Rejected Alternatives and Plans.....18

III. IMPACT EVALUATION.....18

Economic Project Evaluation.....18

Social Impact Assessment.....20

Ecological and Health Impacts.....21

IV INSTITUTIONAL ARRANGEMENTS AND PUBLIC PARTICIPATION.....22

The Public Participation Program.....24

V GENERAL COMMENTS AND SUMMARY OF IMPORTANT POINTS.....25

REFERENCES.....27

APPENDIX: Testimony by Daniel A. Okun, Chairman, Committee to.....30
Review the Metropolitan Washington Area Water Supply Study,
National Research Council, before the U.S. Senate
subcommittee on Governmental Efficiency and the District of
Columbia on the Metropolitan Washington Area Water Supply
Study of the Corps of Engineers, October 10, 1979.

"The Potomac has now yet another face: It is, from this moment on, a testing place where what is done will be watched and weighed, where hopefully what is achieved is elsewhere followed and fulfilled."

Stewart L. Udall
Secretary of the Interior (1961-1969)
in his introduction to
The Potomac, 1968*

D-1X-23

* U.S. Department of the Interior (1968). The Potomac. Report of the Potomac Planning Task Force, Washington, D.C.

INTRODUCTION AND BACKGROUND

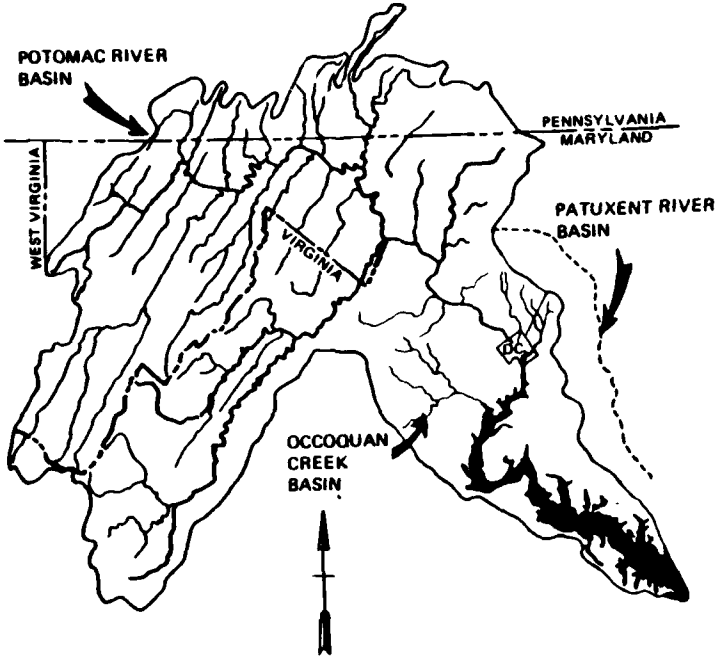
The Mid-Atlantic and Northeastern states have abundant rainfall averaging at least 40 inches per year--the national average being 30 inches a year. Despite this, large cities and metropolitan areas in these states, such as Boston, New York, and Washington, D.C., sometimes experience water shortages during intermittent periods of drought. Since the early 1900's there have been several studies of alternative ways of augmenting the water supplies of these areas through increased water storage capacity and other means. One of the more recent investigations was the Northeastern United States Water Supply (NEWS) Study[1] conducted by the U.S. Army Corps of Engineers and published in July 1977.

In 1974, the U.S. Congress authorized[2] an additional study specifically for the metropolitian Washington area. The Washington area includes almost 3,000 square miles of land and water in the lower reaches of the Potomac River Basin (Fig. 1), which has a watershed of 14,670 sq. mi. The 1980 population of the metropolitan Washington region is almost 3 million. The area's population is expected to double to 6 million by the year 2030 (Table 1).

The increasing population and the expanding economy, centered around the federal government and research organizations associated with it, as well as private corporations and businesses, are imposing new demands on today's water supplies of the nation's capital and surrounding counties in Maryland and Virginia. Unlike other major cities along the eastern seaboard, metropolitan Washington does not have large water storage facilities to meet potentially severe shortages in the future.

Water for the region is now provided by 29 independent systems, with the three largest ones accounting for about 90 percent of the supply (Table 2). The principal systems (Fig. 2) are the Washington Suburban Sanitary Commission (WSSC), which serves Prince Georges and Montgomery Counties in Maryland, the Washington Aqueduct Division (WAD) of the Corps of Engineers, serving the District of Columbia and Arlington and Falls Church, VA., and the Fairfax County Water Authority (FCWA), which serves a significant portion of Northern Virginia.

The total water treatment capacity in the metropolitan Washington area is more than 600 million gallons per day (mgd), which is a striking increase from the average water use of 421 mgd in 1976 (Table 2). About 70 percent of the supply comes from the Potomac River, the



SOURCE Adapted from the "Main Report," Metropolitan Washington Area Water Supply Study for the Potomac Water Users, Department of the Army, Baltimore District Corps of Engineers, August 1979.

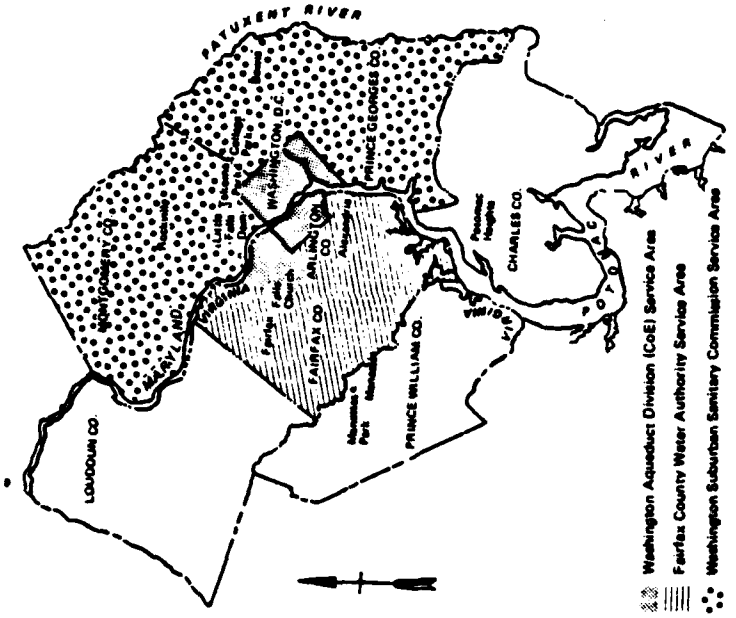
Figure 1. Location of Metropolitan Washington Area.

C-1X-33

TABLE 1 *
POPULATION PROJECTIONS FOR THE METROPOLITAN WASHINGTON AREA, 1980-2030
(1,000's)

Jurisdictions / Benchmark Year	1970	1980	1990	2000	2010	2020	2030
District of Columbia	757	730	772	798	806	810	810
Maryland Counties	1232	1389	1727	1981	2212	2417	2580
Virginia Counties	921	1199	1526	1779	1992	2264	2523
TOTALS	2910	3318	4025	4558	5010	5491	5913

*Source: Adapted from the "Main Report," Metropolitan Washington Area Water Supply Study for the Potomac Water Users, Department of the Army, Baltimore District Corps of Engineers, August 1979.



SOURCE: Adapted from the "Main Report," Metropolitan Washington Area Water Supply Study for the Potomac Water Users, Department of the Army, Baltimore District Corps of Engineers, August 1979.

Figure 2. Boundaries of the Metropolitan Washington Area.

5

TABLE 2

METROPOLITAN WASHINGTON AREA WATER USE - 1976
AVERAGE DAY WATER USE BY CATEGORY (MGD)

DEMAND AREA	SINGLE FAMILY	MULTI-FAMILY	COMMERCIAL INDUSTRIAL	GOVERNMENTAL INSTITUTIONAL	FEDERAL	UN-ACCOUNTED FOR	TOTAL
Washington Aqueduct	42.5	63.4	16.6	10.9	27.6	34.2	195.2
WSSC	61.6	38.0	17.9	3.6	5.0	13.0	139.1
FCWA	28.7	15.3	7.3	3.7	3.8	4.9	63.7
Others	9.9	2.7	3.2	0.7	2.5	3.2	22.2
TOTALS	142.7	119.4	45.0	18.9	38.9	55.3	420.2

Source: Adapted from the "Main Report," Metropolitan Washington Area Water Supply Study for the Potomac Water Users, Department of the Army, Baltimore District Corps of Engineers, August 1979.

main source of water for the area, with the remaining 30 percent taken from various other surface and ground-water sources.

The flow in the Potomac River, one of the great tidal rivers of the East Coast, is highly variable, subject to extreme floods and droughts, and no significant reservoir storage capacity exists on its main stem or tributaries. Serious droughts, such as the ones occurring in the 1930's, have caused hardships in the area. The growth in demand for water in the area has been met largely by ever-increasing withdrawals from the river. One consequence has been that daily withdrawals in metropolitan Washington sometimes can exceed the record low flow of the river. This is illustrated by Fig. 3, in which the base of the figure represents the lowest recorded flow of the Potomac River, 388 mgd, and the vertical bars represent daily withdrawals from the river to meet the area's water demands. Between 1970 and 1978 the withdrawals exceeded the known low flow of the river 41 times.

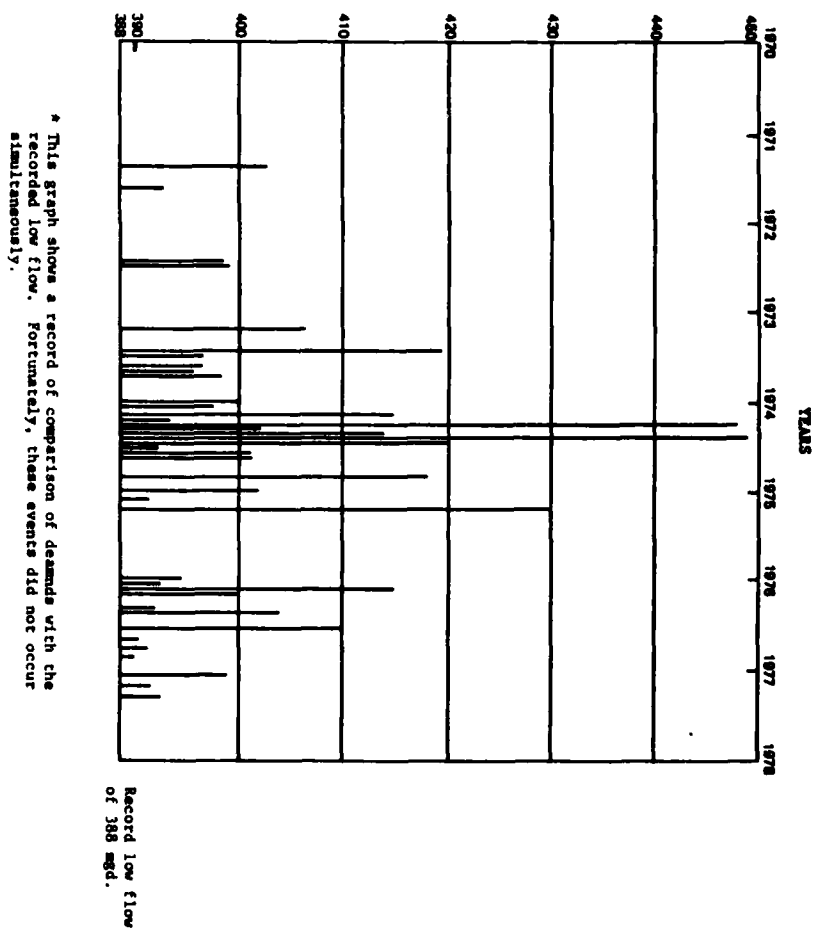
Fortunately for the citizens of metropolitan Washington, withdrawals on any particular day have not been greater than the supply available from the river that day. In other words, low flow and high demand have never occurred together to create an emergency. However, there have been close calls during years of drought,[3] and many water supply planners believe it is only a matter of time before the nation's capital region experiences a crisis. Indeed, as the area's population increases in the future (Table 3), the likelihood of severe water shortage is inevitable.

Despite numerous studies of water resources available to metropolitan Washington, little has been done. The public has opposed many of the principal schemes for controlling and augmenting the region's water supplies--typically, dams and reservoirs in the Potomac River Basin. In all, 16 major reservoirs and numerous small dams have been proposed by the Corps of Engineers, but only Bloomington Dam and Reservoir on the North Branch of the Potomac are under construction. Approval of the Bloomington reservoir was not motivated by the concern for adequate water in metropolitan Washington, because, even if it is used to augment the area's supplies, plans for the discharge of stored water will have to be reformulated.

The NEWS Study, initiated in 1965 and completed in 1977, recommended two additional large reservoir projects in the Potomac River Basin at Verona, Virginia, and Sixes Bridge, Maryland. Opposition to those projects has been strong, resulting in their delay, pending further study of alternatives.

The study of metropolitan Washington water resources that is the subject of this report was authorized by the Congress in Section 85 of the Water Resources Development Act of 1974 (P.L. 93-251).[2] The legislation had the effect of preventing the Corps from making significant progress on the proposed Verona and Sixes Bridge projects

Figure 3. Maximum Daily Demands Exceeding Minimum Daily Supply*



* This graph shows a record of comparison of demands with the recorded low flow. Fortunately, these events did not occur simultaneously.

TABLE 3 *

BASELINE AVERAGE ANNUAL WATER DEMANDS FOR THE MWA (MGD)

WATER SERVICE AREA	BENCHMARK YEARS					
	1980	1990	2000	2010	2020	2030
Washington Aqueduct	196	218	230	235	242	247
WSSC	145	187	215	242	267	288
FCWA	71	89	104	117	135	151
Others	27	36	44	55	67	79
TOTAL	439	530	593	649	711	765

Source: Adapted from the "Main Report," Metropolitan Washington Area Water Supply Study for the Potomac Water Users, Department of the Army, Baltimore District Corps of Engineers, August 1979.

until a detailed study of all feasible alternatives had been completed. The Act directs the U.S. Army Corps of Engineers to

> (A) make a full and complete investigation and study of the future water resources needs of the Washington metropolitan area, including but not limited to the adequacy of present water supply, nature of present and future uses, the effect water pricing policies and use restrictions may have on future demand, the feasibility of utilizing water from the Potomac estuary, all possible water impoundment sites, natural and recharged ground water supply, wastewater reclamation, and the effect such projects will have on fish, wildlife, and present beneficial uses, and shall provide recommendations based on such investigation and study for supplying such needs, and (B) report to the Congress the results of such investigation and study together with such recommendations.

The Act also instructs the Corps to

> ...request the National Academy of Sciences-National Academy of Engineering to review and by written report comment upon the scientific basis for the conclusions reached by the investigation and study of the future water resource needs of the Washington metropolitan area...

The Metropolitan Washington Area Water Supply Study

The water supply study is being conducted by the Corps of Engineers' Baltimore District, within whose jurisdiction lies metropolitan Washington. A "Plan of Study"[1] was issued in October 1977, and showed, as directed by Congress, that the study would build upon the previous NEWS Study.[1] The plan was prepared in accordance with work elements, or tasks, beginning with the development of the plan itself, proceeding to a reanalysis of water supply and demand for the metropolitan Washington and moving to an assessment of early-action alternatives for avoiding water shortages and an evaluation of longer range strategies for increasing water supplies, and finally concluding with a complete report to Congress in 1982.

In 1978, the Corps decided that it would report upon the study in two principal stages. The first stage would center around the early-action alternatives--that is, measures that can be implemented in fewer than 15 years and that attempt to make the most efficient use of existing water. The second and final stage of the study would cover long-range water supply needs. Long-range alternatives generally cover a period between 15 and 50 years, in this case extending to the year 2030, and include measures that augment or

increase water supplies by such means as storage reservoirs, ground-water resources, and reused water.

In concert with its decision to conduct a two-phase study, the Corps began publishing a series of Water Forum Notes to explain the overall study design and its progress. As of July 1980, eight issues of the Notes have been released. They are considered an effective means of quickly presenting the important details of the complicated metropolitan Washington Water Supply Study program and are available from the Corps' Baltimore District.

Review by the National Research Council

The legislation[2] that authorized the Corps' study also directed it to engage the National Academy of Sciences-National Academy of Engineering to review the final report. When the request was made, the academies turned to a special committee in the National Research Council to undertake the review. Accordingly, the Committee to Review the Metropolitan Washington Area Water Supply Study was established in April 1977.

In discussions between the Corps and the National Research Council it was agreed that the effort would be more useful if the review committee observed and commented on the water supply study as it progressed rather than withhold its comments until the study would be completed in 1982. Thus, the committee has been active since its inception and has issued two reports prior to this one. The first report[6] commented on the the Metropolitan Washington area component of the Corps' Northeastern United States Water Supply Study, which served as a foundation and starting point for the present study. The second report[7] discussed the Corps' study plan[5] for the water supply study.

Since March 1978, the Corps has been engaged in a reanalysis of water supply and demand for the Washington metropolitan area and an evaluation of early-action alternatives. These activities were completed in 1979 and reported in the Corps' "Draft Progress Report for the Metropolitan Washington Area Water Supply Study for the Potomac Water Users,"[8] released in August 1979. While the Corps had announced that a final progress report would be published in April 1980, it later revised its schedule and now plans to present information from the progress report in the report on the overall water supply study.

Currently, the Corps is engaged in the long-range stage of the water supply study and anticipates completing and reporting upon the overall study in September 1982. The National Research Council's

review of the final report will be issued within the following year, as specified by the Congress.

The Draft Progress Report

This report by the Committee to Review the Metropolitan Washington area Water Supply Study centers on the Draft Progress Reports, which consists of a "Main Report"[8] and nine appendices.[9-17] The draft includes an evaluation of finished water interconnections and the reregulation of water supplies, raw water interconnections and local storage, and water conservation and demand reduction measures. All of these measures are intended to be confined within the metropolitan Washington area and not affect other portions of the Potomac River Basin.

It is important to understand that the Draft Progress Report is only one phase of the MWA Water Supply Study and that it covers only the reanalysis of supply and demand and the various early-action alternatives. The report includes assessments of "the adequacy of present water supply" and "nature of present and future uses," which were aspects of the congressional mandate to the Corps. Still to be addressed by the Corps, in the second stage of the study, are "the effect water pricing policies may have on future demand," long-range alternatives such as "the feasibility of utilizing water from the Potomac estuary," "all possible water impoundment sites," "natural and recharged ground water supply," "wastewater reclamation," and "the effect such projects will have on fish, wildlife, and present beneficial uses."

The central finding reported in the Draft Progress Report is that by proper management and by sharing existing water supplies, all of the Washington metropolitan area can have adequate water to about the year 2030. Thus, the short-range alternatives initially forecast to be adequate only to 1990 are now viewed to be as effective as what previously was thought to require longer range augmentation of water supplies. This finding was a consequence of the reanalysis of water supply and demand, which revealed that, contrary to the findings of previous studies and to long-standing popular opinion, the present water supply problem in the Washington area is not so much that water is in short supply as it is that water is unevenly distributed. Water needs to be provided where it is required at a particular time. Thus, one jurisdiction in the metropolitan region might be short of water while another has enough for its own needs and a sufficient reserve to assist the other area.

This actually happened in 1977 when a low reservoir forced the Fairfax County Water Authority (FCWA) to resort to water use restrictions while the Washington Suburban Sanitary Commission (WSSC) and the Washington Aqueduct Division (WAD) had plentiful supplies. Had there been means of transferring water from WSSC or WAD to FCWA,

water restrictions in parts of Northern Virginia would have been unnecessary. Or, alternatively, had FCWA had a water supply intake on the Potomac River there would have been no problem.

To accomplish the managing and sharing of existing supplies will involve such complementary or optional measures such as:

- reformulation of plans for releasing stored water from the Bloomington Reservoir;
- constructing and enlarging water intakes on the Potomac River;
- constructing raw water interconnections between the Potomac and Patuxent Rivers or from the Potomac to Occoquan Reservoir;
- reregulating finished water supplies (e.g., shifting distribution from the Potomac River to the Occoquan Reservoir or WSSC reservoirs);
- implementing additional water conservation measures throughout the metropolitan region to achieve a 10 percent reduction in use by 2030.

These various measures, along with two additional ones that provide for relatively small scale local water supply augmentation, are included in the five optional Plans of Choice presented in the Draft Progress Report. The proposed Plans of Choice, any one of which would provide water to 2030, are presented here in Table 4.

Before discussing the five plans further, it is well to understand the process by which they were developed. Working with water supply components that included raw water interconnections, conservation, reregulation, and local storage, the Corps initially conceived a list of eighteen plans. Each contained several components and all but one were considered satisfactory for providing water supplies to 2030. The unsatisfactory plan was the "No Action" plan. Three of the seventeen action plans were labeled "Non-Structural" and consisted of various conservation and reregulation schemes. Another set of five action plans were termed "Structural" and consisted of conservation and raw-water interconnections. There were three "Utilities" plans including the FCWA's for increasing the size of Occoquan Reservoir by building the dam higher, the WSSC's for constructing Little Seneca Lake, and various reregulation and conservation scenarios. Lastly, there were six action plans called "Other Combinations" that included an assortment of raw water interconnections, reregulation, and conservation measures.

In January 1980, the Corps asked the major water suppliers in the Washington area to review and comment upon the eighteen regional plans. On the basis of guidance received from the utilities, the

TABLE 4

Plans of Choice[1] Presented in the Corps of Engineers "Draft Progress Report: Metropolitan Washington Area Water Supply Study for the Potomac Water Users"

Plan	Components
No. 1, No Action Plan	- WSSC Potomac intake increased to 400 mgd - new FCWA Potomac intake of 200 mgd - reformulation of Bloomington Reservoir - increase size of Occoquan Reservoir by raising dam
No. 2, Local Plan	- construction of Little Seneca Lake - construction of Potomac to Occoquan raw water interconnection - conservation to achieve 10% use reduction - reregulation between Potomac River and Local reservoirs
No. 3, Subregional Plan (differs from Plan 2 in size of components and cost sharing required for implementation)	- construction of Little Seneca Lake - construction of Potomac to Occoquan raw water interconnection - conservation to achieve 10% use reduction - reregulation between Potomac River and local reservoirs
No. 4, First Regional Plan	- construction of Little Seneca Lake - construction of Potomac to Patuxent raw water interconnection - conservation to achieve 10% use reduction - reregulation between Potomac River and local reservoirs
No. 5, Second Regional Plan	- construction of Potomac to Patuxent raw water interconnection - conservation to achieve 10% use reduction - reregulation between Potomac River and local reservoirs

[1] Plans are based on meeting design criteria of a 7-day duration low flow once in 100 years for 2030 demands.

plans were reformulated and reduced in number to nine, including a "No Action" plan and eight action plants.

Following this, the Corps convened its advisory committee for the Washington area - FISRAC (Federal-Interstate-State-Regional Advisory Committee) and solicited additional guidance that permitted the plans to be reformulated once more and reduced further in number to the five Plans of Choice proposed in the Draft Progress Report and shown in Table 4.

The first of the final Plans of Choice, the so-called "No Action Plan," involves no measures beyond those already planned or expected to be implemented by local jurisdictions (e.g., expanding WSSC's Potomac intake to 400 mgd, FCWA's new 200 mgd intake on the Potomac, raising the Occoquan Dam). In Plan 2, the "Local Plan," each supplier such as FCWA, WSSC, and WAD would meet its own water supply needs with separately operated projects. Plan 3 involves the same basic components as Plan 2 but differs in the amount of water to be provided by various components. It is termed a "Subregional Plan" because some of its components would be shared by two jurisdictions thus requiring a limited degree of regional cooperation for successful implementation. Specifically, Plan 3 calls for WSSC and WAD to share Little Seneca Lake and for FCWA and WAD to cooperate on a raw water interconnection. The two "Regional Plans" involve component projects that the three major suppliers in the MWA must share regarding construction, operation, and maintenance.

It is important to note that the Corps' five Plans of Choice providing for adequate water supplies for metropolitan Washington until 2030 are founded upon one crucial assumption. Most scientists and engineers agree that even during a period of extreme drought some water from the free-flowing stem of the Potomac River must be allowed to pass the municipal water supply intakes and flow to the estuary in order to protect aquatic ecosystems between the intakes and the estuary. The exact amount of this so-called "environmental flowby" is uncertain, and for lack of a better estimate all of the Corps' projections have been based upon allowing a flowby of 100 mgd. Should a study now underway by the State of Maryland Department of Natural Resources conclude that a flowby significantly in excess of 100 mgd is essential, the Corps probably would revise its plans accordingly, thereby negating the projections to 2030. This uncertainty may persist for some time because the completion date of the Maryland study has yet to be established.

Additional insights as to the amount of essential environmental flowby may result from analyses being conducted by the Corps, using its Chesapeake Bay Model, a large physical model of the Chesapeake Bay that includes the estuary of the Potomac River. The purpose of the model is to predict the movement of freshwater entering the estuary from upstream, the distribution of municipal wastewater discharged into the estuary, and the intrusion of brackish water from

Chesapeake Bay. Information resulting from the analyses should be helpful in evaluating the environmental consequences to the estuary of restricting the freshwater flowby to 100 mgd, as assumed in the Corps' plans.

Comments on the Draft Progress Report

During an initial survey of the entire Draft Progress Report in September 1979, the committee found that one of the appendices provided a comprehensive presentation of the overall study and was sufficiently thorough to enable it to conduct a composite review of the overall report. Therefore, this review concentrates on the "Main Report" and the comprehensive appendix.[9] This review in part follows congressional testimony on the Metropolitan Washington Area Water Supply Study and the Draft Progress Report presented on October 10, 1979 by the chairman of the committee, Daniel A. Okun. Dr. Okun's testimony before the U.S. Senate Subcommittee on Governmental Efficiency and the District of Columbia reflected the committee's views at that time and is included here as an Appendix for background information.

As with the committee's previous reports,[6,7] this one is organized according to the principal aspects of a water supply analysis. Therefore, the committee's comments are based on the following considerations:

I. Water Demand Management Options
II. Water Supply Options
III. Impact Evaluation
IV. Institutional Arrangements and Public Participation.

I. WATER DEMAND MANAGEMENT OPTIONS

Demand Forecasting

The Draft Progress Report describes a disaggregate consumer requirements approach to water use forecasting, an improvement over the Corps' traditional aggregate per capita methodology. The forecasts could have been further enhanced if economic demand models had been employed in the residential sectors to predict changing patterns of water use, as has been done in several communities.[10] Other forecasting efforts[11] also have incorporated detailed assumptions regarding weather and drought management, a technique that would have benefited the Corps' effort. Additional improvements could have been obtained by the Corps through attempts to evaluate the effects of innovative rate-making policies, as others[12] have done.

Instead, the Corps has used a disaggregate requirements approach, with sectoral requirements stated as functions of the number of

residential units or of employment. Disaggregations are either fixed at present ratios or are extrapolated from existing levels. Present levels are, in turn, estimated from data that are known to be

incomplete. An economic demand study was not performed. Thus, no account was taken of possible price elasticities of demand for water and related water services. It is likely that so called "requirements" will be reduced in the face of increasing costs of future supplies. As noted previously, analysis of the effects of pricing on demand will be undertaken by the Corps in the next phase of the study.

The "requirements" method has produced several apparent anomalies in the forecasts. For example, water use per residential unit appears to be higher for multi-family than single-family units in some jurisdictions, even where the single-family units consist almost entirely of medium-to-low density suburban residences with high seasonal use levels. This resulted in implied per capita use rates for multi-family dwellings as much as 70 percent (Fairfax City) greater than those for single-family units. Seasonal water use fractions derived for a suburban area served by the Washington Suburban Sanitary Commission (WSSC) appear to have been used for the entire region. Additionally, the impact of future levels of price and income on water use is not addressed, although such considerations have been shown to be relevant in the metropolitan area.[19,20,21] In the same regard, greater emphasis could have been given to alternatives for water conservation. Little effort was made to develop and compare alternative levels of water conservation incorporating increasingly stringent and expensive measures. For example, a constant level of 10 percent reduction through conservation was used for each of the plans presented, thus preventing an assessment of the sensitivity of water use reduction to different conservation schemes.

C-1X-27

Water Supply and Wastewater Economics

The Corps' analyses examine the costs of alternative water supply schemes to the year 2030 without taking into account the costs of wastewater treatment that are likely to accompany increased water supply and use. The capital and operating costs of wastewater facilities could easily equal or exceed water supply costs. Pricing and investment policies for these two kinds of systems need to be coordinated. The amount of water required in the future will be a function not only of water prices but also will be affected by the charges for wastewater disposal. It so happens that since the imposition of sewerage charges on water bills, the quantity of water demanded by consumers in the Washington region has been lower than earlier use forecasts.[19,20]

Competing Uses for Potomac River Water

Unless a discussion of competing uses for the water supplied by the Potomac River exists somewhere in the Draft Progress Report and was overlooked by the committee, the Corps may wish to consider including it in subsequent reports. Anyone not familiar with the Potomac River Basin and metropolitan Washington may wonder if municipal water suppliers alone use the river water in the region or if high consumption users such as farmers who irrigate upstream from the metropolitan area might compete for the water. A discussion of the significance of competing uses and how they would be regulated or compensated now seems to be called for.

II. WATER SUPPLY OPTIONS

Water Quality

The Draft Progress Report attempts to evaluate the costs of various plans, but no consideration is given to the water quality implications of introducing Potomac River water into parts of the system now using water from other sources or re-regulating parts of the distribution systems. Re-regulation would bring different water to certain zones of the distribution system from time to time. Such alternatives could involve real costs to utilities, especially in meeting the requirements of the Safe Drinking Water Act,[22] and therefore need to be considered in the Corps' plans. For example, the report should include estimates of how changing the source of raw water will affect the water treatment, quality of the finished water, and associated costs of adapting the treatment process to varying qualities.

Although re-regulation of water supplies and raw water transfers through interconnections are discussed in the report and are significant components of most of the five Plans of Choice presented, no attention is given to the consequences for water quality and treatment systems. The quality of a mixture of two domestic waters, each of which may be compatible in the water systems being served, could become aggressive and thereby corrosive when blended. A notable example of this occurred when water from the Colorado River was introduced into Southern California as a supplemental supply by the Metrpolitan Water District of Southern California in the 1940's and 1950's. The corrosion and descaling that resulted in pipelines caused many costly problems for water supply agencies[23] in several municipalities. Thus, the effects of aggressive water[24] on water systems[25] are recognized as potential economic and health problems.

A related matter pertains to the anticipated releases of stored water from the Bloomington Reservoir, under construction in Garrett County, Maryland, and Mineral County, West Virginia, about 220 miles upstream from the metropolitan Washington area. When the Bloomington

water flows into the Potomac, probably in 1981, the blend is likely to be sufficiently acidic to warrant concern about whether it may involve sizable treatment costs to the utilities using the Potomac River on an intermittent basis. It is uncertain if the Bloomington releases will be buffered by the time they reach water supply intakes in the metropolitan area. Such buffering capacity as may exist is less available during periods of severe drought and low river flow. The effectiveness of plans proposed in the Draft Progress Report is subject to question unless the Corps can effectively set this issue to rest.

Rejected Alternatives and Plans

Numerous alternatives have been studied and rejected by the Corps in the process of identifying the five proposed Plans of Choice. The committee suggests that, in addition to describing the options or alternatives that it finds acceptable, the Corps also identify all those that were considered and eliminated and explain why each was excluded from further consideration. This was done in the report on the Washington Metropolitan Area Water Supply Study component of the Northeast U.S. Water Supply Study.[1] Omission of possible alternatives, even those most unlikely to succeed or that are uneconomical, may raise doubts unnecessarily as to the Corps' study and conclusions.

III. IMPACT EVALUATION

Economic Project Evaluation

The benefit-cost analysis presented in the Draft Progress Report is not a true benefit-cost analysis, because no estimates of benefits were made. Instead the Corps has developed a set of water requirements (not true water demands in the economic sense of the term) for the three principal water supply districts in the metropolitan area through the year 2030. The five Plans of Choice in the report were ranked in terms of the costs of achieving the perceived set of demands for 2030. This approach involves cost minimizing and is more properly termed "cost-effectiveness analysis." Under the circumstances, the implication that this approach amounts to a benefit estimate by the alternative cost method[2,6] seems unjustified.

The committee has previously[6,7] urged the Corps to produce a true benefit-cost analysis of the various alternatives. Even at the present level of development of the overall water supply study, it is possible with existing methods[2,7] to make preliminary analyses of the benefits and costs and to evaluate their possible distributional implications.

Without benefit-cost analyses, the determination of the basis for possible regional cooperation (i.e., the optimum institutional arrangements) cannot proceed very far. Each of the parties affected tends to act in its own self-interest, recognizing its gains only in relation to its costs. As a result, the Corps presently states that Plan 2 is most likely to be chosen, because it requires less regional cooperation, though it is the most costly option. By providing information on the distribution of benefits and costs of the various plans, the Corps could provide a basis for negotiation to achieve regional cooperation under less costly plans. At an absolute minimum, the Draft Progress Report should have displayed per capita costs for each plan of choice as shown here in Table 5. This information was presented in issue No. 7 of "Water Forum Notes" (Sept. 1979), but its omission from the progress report was unfortunate.

As the Corps' study now stands, the use of the cost of any particular plan to estimate benefits rests on the following assumptions:

- The plan is one that actually would be attempted in the absence of any federal or federally inspired action.
- The plan is the least costly of any scheme that might be attempted.
- The jurisdictional incidence of benefits must be substantially the same for all plans.
- Future price levels must be substantially the same for all plans.
- It must be assumed that each jurisdiction's willingness-to-pay for an increment of water supply is an adequate estimator of the aggregate willingness-to-pay at current rates by water users for the additional water to be provided.

These assumptions are difficult to evaluate because the Draft Progress Report does not supply clear-cut information about the costs of existing water supplies in relation to the costs of new supplies for the five plans under consideration. Further, the "most likely local alternative" approach, as practiced by the Corps, applies to the analysis of federally constructed alternatives to local projects. Because all the alternatives considered are essentially local, it does not appear that the choice of the benefit estimation methodology need has been constrained by existing Corps procedures. In any case, the report does not reveal any analytic evaluation of the assumptions, so there is no basis for either accepting or rejecting their validity.

TABLE 5
PER CAPITA PLAN COSTS

Plan	1988 Allocation Ratios		2030 Allocation Ratios	
	Interest Rates		Interest Rates	
	5 1/4%	6 7/8%	5 1/4%	6 7/8%
Plan 1				
WAD & Rockville	$ .74	$ .74	$ .49	$ .49
WSSC	.31	.31	.31	.31
FCWA	.05	.05	.26	.26
Plan 2				
WAD & Rockville	.84	.85	1.15	1.16
WSSC	.89	1.05	.70	.85
FCWA	2.54	3.21	2.57	3.25
Plan 3				
WAD & Rockville	.87	.89	1.94	2.32
WSSC	.90	1.05	.75	.87
FCWA	2.51	3.18	1.82	2.24
Plan 4				
WAD & Rockville	.87	.88	1.55	1.82
WSSC	1.33	1.59	1.06	1.26
FCWA	1.15	1.44	.97	1.16
Plan 5				
WAD & Rockville	.87	.89	2.03	2.43
WSSC	1.81	2.22	1.41	1.70
FCWA	1.67	2.10	1.31	1.59

*Based on Average on Average Annual Cost Information and 2030 Population served estimates of 1,288,900 (WAD, Rockville), 2,380,500 (WSSC), and 1,489,900 (FCWA).

Source: "Water Forum Notes" No. 7, Sept. 1979, United States Army, Corps of Engineers, Baltimore District

Social Impact Assessment

Assessment of the social consequences of the alternative plans is given little attention in the Draft Progress Report. The approach taken is basically that of a conventional engineering economic analysis, sometimes described as "flowage assessment" (e.g., miles of railway destroyed; acres of farmland inundated; or value of cargo not shipped).

Studies conducted in the past few years have broadened the concept of social impact analysis well beyond flowage assessment.[28,29]

Consider, for instance, the case of a family displaced by a reservoir. It is not enough to specify the financial cost of buying a new home elsewhere. It is essential to take into account the potential disruption of family relationships or alteration of life-styles caused by the resettlement. In the Corps' Plan 1, the absence of implementation, the cost of "doing nothing" is not zero, for it leaves unanswered the question of what happens when a severe drought occurs, particularly with respect to adverse economic consequences, environmental degradation caused by the total drawdown of reservoirs, and potential health hazards.

Ecological and Health Impacts

In the committee's view, the assessment of potential ecological and health impacts of the early-action alternatives constitutes one of the most apparent deficiencies in the Corps' Draft Progress Report. Environmental impacts are mentioned at several points in various volumes of the report but receive only cursory treatment. This deficiency would be less apparent if there were assurances that no potentially serious ecological consequences could result from the alternatives. However, based on information available to the committee, there appear to be at least two situations where potential adverse impacts are conceivable. The first concerns releases of excessively acidic water from the Bloomington Reservoir during periods of low river flow when aquatic populations already are under stress. Highly acidic water is known to cause extremely adverse impacts on aquatic ecosystems.[30,31] The second concern is for the Potomac estuary during periods of excessive low river flow. Potential environmental stresses on the estuary have been addressed by others,[32,33] but these findings have not been acknowledged in the Draft Progress Report. The committee finds that otherwise good plans resulting from the overall study might be jeopardized by adverse public reactions centering on an environmental issue that the Corps has not addressed.

The important issue of potential health impacts also is not covered in the Draft Progress Report. Such impacts would be a possible consequence of different early-action water supply alternatives, because each of the five Plans of Choice presented in the report could potentially affect the quality of finished water distributed to portions of the metropolitan area. From the scant evidence in the report, the committee cannot conclude whether or not an impact would materialize and if it would be harmful or beneficial to certain areas, because no data on water quality are presented. Thus, it would be helpful if the report provided information about such matters as the relationship of recently proposed toxic substance criteria to the various alternatives and whether each alternative is capable of minimizing the production of trihalomethanes in water

treatment plants and reducing the vulnerability to accidental spills of synthetic organic materials.

Accordingly, three questions will illustrate the need to address the issue of drinking water quality:

- Is it likely that releases of acid water from the Bloomington Reservoir could contain or release immobilized compounds or otherwise affect the quality of raw water provided to treatment plants and subsequently distributed to consumers?

- Is the quality of all the water supplied to users of the Potomac River the same, or is it likely that raw water interconnections and re-regulation of finished water might result in water being distributed that has a different quality than certain users are accustomed to receiving?

- Is water quality in the Potomac River adequate for a safe supply, and will it be so during the coming half century?

In planning water supplies to serve millions of people during the next 50 years, a careful assessment of quality appears to be required. The Potomac River, especially in the vicinity of metropolitan Washington, has a questionable reputation for its quality,[34-36] and questions such as these need to be addressed in view of the public's growing awareness of and insistence on the safest possible drinking water. Accordingly, the public needs to be informed about the quality of water it will receive under the different plans presented in the Draft Progress Report.

IV. INSTITUTIONAL ARRANGEMENTS AND PUBLIC PARTICIPATION

The committee commends the Corps for its major finding in the Draft Progress Report that a form of regional cooperation will provide the lowest cost approach to water supply for the metropolitan Washington area. This point emerges clearly in the "Main Report" as well as in the accompanying appendices. However, comments on the prospects for implementing a regional plan are negative. For example, on page 47 of the "Main Report"[8] the discussion of implementation begins with a quotation that sets the tone for the entire chapter.

> If the Washington area cannot agree on regional cooperation in water and sewage treatment, it is likely to be because we are in a prisoner's dilemma on this issue. Local governments can be said to be caught in a prisoner's dilemma--each could gain by regional cooperation but no way exists to ensure that all would cooperate.
>
> Professor Edwin Haefele
> The Washington Star
> April 13, 1979

Additionally, page 237 of the appendix that presents the detailed plans says of the "local plan":

> Despite the fact that this plan represents a more costly plan than other action plans available, it is the most likely one to be implemented by the local utilities.[8]

The congressional testimony presented by this committee's chairman in October 1979 expressed the group's views regarding the "conventional wisdom" that has characterized the discussion in the metropolitan area thus far.

The data presented in the Corps' report indicate that a regional institutional arrangement would facilitate the lowest cost option, especially for the Fairfax County Water Authority (FCWA). The advantages of a regional plan are sufficiently great for the large population served by the FCWA that some of the savings might be allocated to other utilities, such as the Washington Suburban Sanitary Commission (WSSC), to reduce their costs. As noted previously, this is not readily evident in the Draft Progress Report, particularly in the "Main Report," but it is demonstrated in subsequent analyses published by the Corps in "Water Forum Notes" No. 7. It is unfortunate that such information is not provided in the Corps' progress report.

There are now substantial indications that further cooperation among the water supply agencies in the metropolitan area is taking place and that the opportunities for agreement on a regional institution are greater today than in the past. This is underscored by the recent low-flow allocation agreement[37] for sharing Potomac water during droughts. Additionally, the Corps is working with local water supply agencies on a study of the use of the Bloomington Reservoir for water supply purposes, and the Interstate Commission on the Potomac River Basin (ICPRB) has negotiated an agreement for regional authority to manage the rate of reservoir releases from Bloomington to the benefit of all the downstream users.[38]

Of greater significance is an outcome of the December 13, 1979, meeting of the Corps' Federal-Interstate-State-Regional Advisory Committee (FISRAC) for the water supply study. It was agreed by FISRAC[39] that a Metropolitan Task Force, representing political leaders from the jurisdictions, should be formed to study institutional procedures for regional water supply cooperation. That decision was prompted by FISRAC's belief that an independent advisory

group, as proposed by this committee in previous reports,[6,7] and reiterated in Dr. Okun's congressional testimony, was a less desirable means of seeking solutions than a self-initiated effort. The committee views this as a constructive step that enhances the possibility of achieving a cooperative regional plan for the Potomac River Basin in the future. Accordingly, an initiative by the Corps toward institutional change does not appear to be necessary at this time. The committee continues to believe, however, that ultimately an institutional device will be essential at a level above that represented by the current interjurisdictional discussions.

Public Participation Program

The "Public Involvement Appendix"[1] to the Draft Progress Report details an elaborate program that has been conducted by the Corps. The program reveals extensive forethought and execution, and the committee commends the Corps' efforts toward the difficult task of public participation. The following comments, based upon the appendix, consist of observations made by committee members who attended public workshops and meetings sponsored by the Corps in conjunction with the study.

The general framework of the public involvement program is commendable. The structure allows for opportunities to inform the public as well as to solicit information about their problems and preferences. As with most programs, there were segments that could have been modified to enhance the effectiveness of achieving the overall objectives. The most serious weakness lies not with the program's general structure but in the quality of implementing various techniques for encouraging participation. For example, the workshops did not attract "top influentials" from communities, and the scope of each meeting was so broad that the information presented was often insufficient and abstract. Such shortcomings lead the committee to question the usefulness of the meetings to the public as well as the usefulness of the information obtained by the Corps.

Similar faults were found in the mail questionnaire activity conducted by the Corps. The committee observes that responses to the questionnaire are of little value because of inadequate preparation and sampling. The questionnaire was designed in such a way that the interpretation of the results has been limited. It was distributed to an uninformed sample of the public, and its distribution was biased in a manner that cannot be evaluated and interpreted. While public concerns may have been heightened by the Corps' program, the process of education has been minimal at most, and the effort to assess public preferences premature and biased. The available data do not support the Corps' conclusions that the public has not demonstrated its support for large impoundments nor expressed a demand for conservation measures, water supply interconnections, and local storage projects. Even so, conservation, interconnections, and local storage have

emerged as the most likely alternatives in planning for the metropolitan area's water supplies. Such options may, in fact, be prudent strategies, but not as an outcome of the public involvement program.

GENERAL COMMENTS AND SUMMARY OF IMPORTANT POINTS

Despite the preceding critical remarks, the committee is pleased to see that in some respects the Draft Progress Report avoids the shortcomings of the metropolitan Washington area component of the NEWS Study[1] and the Plan of Study[4] for this activity. Therefore, the Corps is to be commended for:

- partial improvements in water use forecast methodology;
- greater emphasis on nonstructural options;
- indicating the importance for regional cooperation; and
- greater effort toward public participation.

Additionally, the Corps and the local water supply agencies deserve credit for the cooperative attitudes that permitted the Corps to develop plans responsive to perceived local desires. However, the proposed regional plans for sharing water resources appear to be inequitable in the distribution of costs and benefits. Much of the construction would occur in one jurisdiction, while citizens of another jurisdiction would largely reap the monetary benefits. The Corps should examine the means by which benefits such as lower per capita costs could be distributed to help offset some of the costs in areas that will bear the burden of environmental disruption caused by the construction of a local reservoir and a raw water interconnection. By failing to take such steps, or even to display the information, and by repeating at several points in its report that regional cooperation is unlikely, the Corps itself is perpetuating the historic reluctance of local jurisdictions to cooperate in the solution of the metropolitan area's water supply problems. The failure to obtain regional cooperation continues to be the largest obstacle the committee foresees for a reliable supply of high-grade water for the nation's capital region.

Finally, the committee recognizes that the more detailed examination and extensive study called for in this report may not change the order of the options or significantly affect their costs. Nevertheless, in planning a water supply for the metropolitan Washington area for the next half century, the Corps must show evidence that all relevant issues have been examined and evaluated. The congressional mandate for the Corps' study requires no less.

In summary, the Corps will have to pay greater attention in the time remaining for the overall study to the following points:

- A more detailed and complete analysis of future water supply demand;
- Benefit/cost analyses that clearly display the distribution of losses and gains attributable to specific plans;
- Means of equitably distributing the benefits so that all parties stand to gain;
- Potential environmental issues that could result in strong opposition to proposed projects; and
- The importance of drinking water quality characteristics as a factor to be considered when evaluating the several options.

In the absence of firm knowledge concerning these issues, the committee concludes that it will be difficult for the public and its representatives to decide upon which of the Plans of Choice is preferrable. If these points are addressed adequately, the committee is confident that the Metropolitan Washington Area Water Supply Study eventually can be championed as an exemplary water resources planning study.

REFERENCES

1. Department of the Army, North Atlantic Division, Corps of Engineers. Northeastern U.S. Water Supply Study, Summary Report, July 1977.
2. Pub. L. 93-251 (March 7, 1974), Title I-Water Resources Development, H.R. 10203, section 85, page 25.
3. Sheer, D.P., "Analyzing the Risk of Drought: The Occuquan Experience." American Water Works Association Journal, p. 246, May 1980.
4. Department of the Army, Baltimore District, Corps of Engineers. Plan of Study, Metropolitan Washington Area Water Supply Study, March 1978.
5. Department of the Army, Baltimore District, Corps of Engineers. Draft Progress Report, Metropolitan Washington Area Water Supply Study for the Potomac Water Users, August 1979.
6. National Research Council. Committee to Review the Washington Metropolitan Area Water Supply Study, Letter Report to James E. Crews, Baltimore District, Corps of Engineers, August 3, 1977.
7. National Research Council. Committee to Review the Washington Metropolitan Area Water Supply Study, Letter Report to James E. Crews, Baltimore District, Corps of Engineers, August 21, 1978.
8. Corps of Engineers. Draft Progress Report, Main Report, August 1979.
9. Corps of Engineers. Draft Progress Report, Formulation, Assessment, and Evaluation of Detailed Plans Appendix, August 1979.
10. Corps of Engineers. Draft Progress Report, Institutional Analysis and Economics Appendix, August 1979.
11. Corps of Engineers. Draft Progress Report, Finished Water Interconnectors and Regulation Specialty Appendix, August 1979.
12. Corps of Engineers. Draft Progress Report, Raw Water Interconnections Specialty Appendix, August 1979.
13. Corps of Engineers. Draft Progress Report, Local Storage Specialty Appendix, August 1979.
14. Corps of Engineers. Draft Progress Report, Conservation and Demand Reduction Specialty Appendix, August 1979.
15. Corps of Engineers. Draft Progress Report, Supply and Demand Specialty Appendix, August 1979.
16. Corps of Engineers. Draft Progress Report, Background Information and Problem Development Appendix, August 1979.
17. Corps of Engineers. Draft Progress Report, Public Involvement Appendix, August 1979.
18. Hittman Associates, Inc. Forecasting Municipal Water Requirements: The Main II System--Vol. I, Columbia, MD, 1969, available from National Technical Information Service, BP-190-275.
19. Ecological Analysts, Inc. "Water Supply Study for Montgomery and Prince Georges Counties, MD." Prepared for BiCounty Water Supply Task Force and Washington Suburban Sanitary Commission, October 1977.

20. Carver, P.H. "Price as a Water Utility Management Tool under Stochastic Conditions," unpublished Ph.D. thesis, Department of Geography and Environmental Engineering, The Johns Hopkins University, Baltimore, MD, 1978.
21. McGarry, Robert S., and John M. Brusnighan. "Increasing Water and Sewer Rate Schedules: A Tool for Conservation." American Water Works Association Journal, September 1979.
22. Helms, B.P. and Robert M. Clark. "Financing Municipal Water Supply." American Water Works Association Journal, p. 240, May 1978.
23. Personal communication from A.E. Bowers, Water Quality Manager, Metropolitan Water District, Box 54135, Los Angeles, CA 90054.
24. Millette, J.R., et al. "Aggressive Water: Assessing the Extent of the Problem." American Water Works Association Journal, p. 262, May 1980.
25. Ryder, R.A. "The Costs of Internal Corrosion in Water Systems." American Water Works Association Journal, p. 266, May 1980.
26. U.S. Water Resources Council. "Procedure for Evaluation of National Economic Development (NED) Benefits and Costs in Water Resources Planning, (Level C) Final Rule," 44 Fed. Reg. 72892, et seq., December 14, 1979.
27. Jeffrey, E.A. and J. Edward Singley. "Benefits and Costs of Water Quality Improvements." American Water Works Association Journal, p. 675, December 1978.
28. Shields, Mark. Social Impact Assessment: An Analytic Bibliography. Institute for Water Resource, Department of the Army, Corps of Engineers, Fort Belvoir, VA, 1974.
29. Fitzsimmons, S. Social Assessment Manual. Westview Press, Boulder, Colorado, 1977.
30. Herricks, Edwin E. and John Cairns, Jr. The Recovery of Streams Stressed by Acid Coal Mine Drainage, 5th Symposium on Coal Mine Drainage Research, Louisville, Kentucky, National Coal Association, October 22-24, 1974.
31. Herricks, Edwin E. and John Cairns, Jr. The Effects of Lime Neutralization of Acid Mine Drainage on Stream Ecology. Proceedings of the 32nd Industrial Waste Conference, Purdue University, pp. 477-486, 1977.
32. Interstate Commission on the Potomac River Basin (ICPRB). The Potomac Estuary - Biological Resources, Trends and Options. Proceedings of a Symposium, Alexandria, VA, June 4-6, 1975, ICPRB, Rockville, MD, Tech. Pub. 76-2, April 1976.
33. ICPRB. The Potomac Estuary: Potential Water Supply. Proceedings of 1977 Fall Public Meeting, Washington, D.C., October 27-28, 1977, ICPRB, Rockville, Maryland, Con'l. Pub. 78-1, April 1978.
34. Water Pollution Control Federation. "Problems on the Potomac: Cleaning up the Nation's River." Journal of Water Pollution Control Federation, 51(3):446-452, 1979.
35. Flaherty, T.P. and R.H. Harris. "Impacts of Nutrients on the Potomac Estuary." Environmental Defense Fund, Washington, D.C. 1979.

36. Graham, F. "Potomac: The Nation's River." J.B. Lippincott Company, Philadelphia. 1976.
37. Potomac River Low-Flow Allocation Agreement, between the State of Maryland, Commonwealth of Virginia, the District of Columbia (WSSC) and the Fairfax County Water Authority, January 11, 1978.
38. ICPRB, Resolution to Create an Article III Section of ICPRB for Cooperative Water Supply Operations on the Potomac (CO-OP), Adopted at ICPRB Special Business Meeting, Harper's Ferry, West Virginia, November 1, 1979.
39. Federal-Interstate-State-Regional Advisory Committee (FISRAC), Metropolitan Washington Area Water Supply Study, Minutes, December 13, 1979.

APPENDIX

October 10, 1979

TESTIMONY BEFORE THE U.S. SENATE SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA

on the

Metropolitan Washington Area Water Supply Study of the Corps of Engineers

by

Daniel A. Okun, Chairman

Committee to Review the Metropolitan Washington Area Water Supply Study

National Research Council
Washington, D.C.

This statement reflects the views of the National Research Council Committee to Review the Metropolitan Washington Water Supply Study which includes distinguished engineers, natural scientists, political and social scientists and economists from throughout the United States. The statement describes (a) the role of the NRC in the review of the MWA Water Supply Study; (b) the key elements of the water supply problem in the area such as the institutional constraints to sound water supply planning and implementation in the area, and (c) the opportunities revealed by the study, even at this early stage, to provide for the regional solution so necessary to assure adequate water resources in the area at reasonable cost.

1. THE NRC ROLE

The National Research Council is the operating arm of the National Academy of Sciences and the National Academy of Engineering to which the academies turn when requested by Congress or a federal agency to undertake a study. The NRC became involved in the Metropolitan Washington Area Water Supply Study at the request of the U.S. Army Corps of Engineers which was responding to a directive in the Water Resources Development Act of 1974 at the Corps "request the NAS/NAE to review and by written report comment upon the scientific basis for the conclusions reached..." by the Corps. In responding to that request, the NRC's Assembly of Engineering established the

Committee to Review the Metropolitan Washington Area Water Supply study, of which I am the chairman.

Our committee has been in existence since early 1977, and we have reviewed and commented upon the Corps' work at several important junction. In a letter report of August 3, 1977, the committee commented on the Corps' Northeastern U.S. Water Supply Study (NEWS) which served as the foundation for the present study. On August 21, 1978 we submitted another letter report that reviewed the Plan of Study for the present activity. Late last month the committe met to review the August 1979 Draft/Progress Report on the water supply study, and a letter reporting upon that review is currently being prepared. While the NRC review encompasses all aspects of the Corps' study, today's statement is directed primarily to the institutional and management barriers that have constrained water resource management and water supply development in the MWA.

In accepting the Congressionally-mandated responsibility to conduct this review, the NRC recognized that the Corps' study offered an unusual opportunity to develop and apply the most modern planning techniques to a water resources problem that is typical of such problems throughout the U.S. It was the NRC's hope that an exemplary study of the Washington area situation would help elevate the discipline and practice of water resources planning to the benefit of all the people of the country. Figure 1 at the end of this statement shows the importance of exemplary water resources management to the nation. It is estimated that by the year 2000 about a third of the nation will use all of its water resources and that another third will near the same situation. It was this type of reasoning that led the NRC to participate in the study. Understandably it was reluctant to invest its resources in a project limited to a local scope.

In the Metropolitan Washington Area Water Supply Study, the Corps of Engineers was expected to commit greater resources than ordinarily allotted to such projects due to the explicit nature of the Congressional authorization which, among other atypical directives, called for the NAS/NAE review.

2. THE REGIONAL PLAN

In its August 1979 Draft/Progress Report, the Corps reports that by accepting certain risks and by adopting one of several plans presented in the report, the MWA has adequate water resources to carry it well into the next century without resorting to major new structural alternatives.

The Corps is to be commended for modifying its approach to providing water supply for the area up to the year 2030 from a heavy investment in upstream reservoirs to a combination of less-costly measures such as conservation, interconnections, and reregulation,

although ultimately additional water resource development will likely be necessary. Interconnections have been proposed from time to time in the past but institutional barriers that result from the highly fragemented political and water supply jurisdictions in the MWA, fragmentation that is so common throughout the U.S., have prejudiced active consideration of their implementation.

Of the five plans that survived elimination by the Corps, all but one, a so-called "no-action" plan which involves no substantial investment, calls for interconnections between the Potomac and the Occoquan or the Potomac and the Patuxent Rivers. Of the 4 actions plans, Plan 2 (the local plan) requires the least cooperation amongst the three water supply agencies. Plan 4 (a regional plan), while least costly for the region, requires a substantially greater degree of cooperation and institutional innovation. The conventional wisdom concerning the prospects for regional solutions is revealed by the following statement by the Corps:

> "Plan 2 (Local Plan was chosen as the plan which would be most likely in the absence of any coordinated regional action, and this plan was used as the basis for comparison. Despite the fact that this plan represents a more costly plan than other action plans available, it is the most likely one to be implemented by the local utilities. This is because it requires less regional cooperation than the other plans and because it contains projects which are activeiy being planned for."
>
> [Baltimore District, Corps of Engineers, Department of the Army, Progress Report - Metropolitan Washington Area Water Supply Study for the Major Potomac Water Usres, Draft Formulation, Assessment and Evaluation of Detailed Plans Appendix, pages 228 and 237, August 1979.]

Statements that describe the difficulties with regional approaches in the Metropolitan Washington Area and that prophesy lack of cooperation abound. In addition to the statement above, the Corps chooses to use the following quote to introduce its chapter on "Problems of Implementation" in the Main Report.

> "If the Washington area cannot agree on regional cooperation in the water and sewage treatment, it is likely to be because we are in a prisoner's dilemma on this issue. Local governments can be said to be caught in a prisoner's dilemma - each could gain by regional cooperation but no way exists to insure that all would cooperate."
>
> [Haefele, E., The Washington Star, April 13, 1979, quoted in Baltimore District, Corps of Engineers, Department of the Army, Progress Report, Metropolitan Washington Area Water Supply Study for the Potomac River Users, Draft Main Report, page 47, August 1979.]

Even I am quoted in the Congressional Reference Service document "Water Management in the MWA":

> "...resistance to regional government, even on a single function basis, continues to be a hallmark of local government in the U.S."
>
> [De Moncada, C., Water Management in the MWA, Environment and Natural Resources Policy Division, Congressional Research Service, page 53, March 1979]
>
> [Okun, D.A., Regionalization of Water Management in England and Wales, Applied Science Publishers, Britian, 1977.]

The former chairman of the Interstate Commission on the Potomac River Basin (ICPRB), Mrs. Loretta Nimmerrichter, in her opening remarks to the Thames/Potomac Seminar stated:

> "One thing that this seminar is not is another attempt to promote a powerful compact for the Potomac, a proposal which has failed to materialize after ten years of vigorous promotion. Almost the opposite is true. For this exchange is taking place at an exciting time in the Potomac basin, when local government seems to be coming alive again, and showing a renewed determination to assert its rights and assume its responsibilities."
>
> [Interstate Commission on the Potomac River Basin, The Thames/Potomac Seminars, ICPRB general publication 79-2, page 7, July 1979]

These attitudes, statements and prophecies tend to be self-fulfilling and have undoubtedly helped mold the posture of the Corps in its report, a posture that provides little expectation that its least-cost plan, the regional plan, will be adopted.

3. PROSPECTS FOR REGIONAL COOPERATION

Crisis and opportunity make for cooperation. Both have appeared on the scene in the MWA. Crisis led to the low-flow agreement amongst the water supply entities in the area, an important breakthrough. Opportunity showed itself in the soon-to-be completed Bloomington Reservoir which will make additional water available in the lower Potomac River. As of today, the reservoir authorization permits only a rigid schedule of releases. However, releases can be scheduled to optimize water supply for the MWA. Our committee has learned that in

order for such scheduling to be possible, and agreement is now in the negotiation stage under Article III of the Potomac River Compact. If successful it will involve three states and the District of Columbia. This appears to be a promising development.

Another far more powerful opportunity flows from the Corps report which shows the regional plan to be least costly:

> "Plan 4, the Regional Plan, represents the lowest cost plan to meet the 2030 demands for water among the four considered. This region would provide the means for the region to solve its water supply problem in the most affordable way available. Plans 2,3, and 5 each represent plans which do not vary significantly in cost among themselves, but as an aggregate are considerably more expensive than Plan 4."

However, the report goes on to say:

> "Although the Regional Plan provides the least costly regional approach, it is not the least expensive for each individual service area considered."
>
> [Baltimore District, Corps of Engineers, Department of the Army, Progress Report Metropolitan Washington Area Water Supply Study for the Potomac River Users, Draft Main Report, page 46, August 1979.]

Therein lies the problem, and opportunity as illustrated in this abstract from Table 3 of the MWA Water Supply Study Water Forum Notes, No. 7, September 1979.

ANNUAL PER CAPITA PLAN COSTS
1988 ALLOCATION RATIOS @ 6 7/8 % INTEREST

	Local Plan 2	Regional Plan 4	Difference
WAD & Rockville	$ .85	$ .88	$ +.03
WSSC	$1.05	$1.59	$ +.54
FCWA	$3.21	$1.44	$-1.77

The least cost regional plan has little to offer the Washington Aqueduct Division, is more costly (as stated above) for the Washington Surburban Sanitary Commission (WSSC), but offers a substantial savings to the Fairfax County Water Authority (FCWA). Thus, the FCWA and the people served by it would stand to gain by yielding part of their savings to WSSC to encourage WSSC participation in a regional program

If FCWA yields nothing, it loses everything, However, in this situation the Pareto Principle, a basic tenet in the discipline of welfare economics, applies such that if all parties share the costs, the benefits are optimized and not denied or decreased to any individual party. Such situations provide the basis for regional agreements and are quite common in the electric utility field where economies of scale can only be exploited by joint enterprise that inevitably benefits one party more than another. An excellent example of this, and therefore the Pareto Principle, can be found in John V. Krutilla's book, The Columbia River Treaty, published in 1967 by Johns Hopkins University Press.

The potential for substantial savings should be an incentive for citizens groups of all types throughout the area, with leadership to be expected in this instance from the people of northern Virgina.

As pressures for water supply increase in the future, the incentives for such regional effort can only grow stronger.

4. CONCLUSION AND RECOMMENDATION

The history of water management in the U.S. leads the committee to believe that new institutional arrangements in the metropolitan Washington Area are possible. In the arid west, where water resources were recognized as being limited early in our history, a wide variety of regional arrangements helped make best use of them. Concommitant is a growing integration of water supply and wastewater disposal with wastewater being recognized as a water resource important for nonpotable reuse for a myriad of purposes. In the humid east, the demand for water is beginning to press upon local resources, and it is being increasingly recognized that local communities can seldom fend for themselves but must join in common enterprise.

I am sustained in my enthusiam for regionalization of water management by my studies of water management in England. There, regional water authorities plan, design, own, finance and operate all the water facilities in their areas which are defined by hydrologic (watershed) boundaries. This reorganization initiated in 1974, came none too soon, as it helped England survive, with surprisingly little distruption, the most serious drought experienced in England in a millennium. Improved economies and efficiencies have been readily apparent, as a result of their regionalization. While such major reorganization is not appropriate to the U.S., we have much to learn from the British experience.

Accordingly, the committee believes it is worth repeating the recommendations made to the corps in its earlier letter reports. When our committee became involved with the Corps in the MWA Water Supply Study, it was believed that the Corps had an opportunity to facilitate improved water management arrangements in the MWA by initiating a

well-designed study that assessed the constraints to management and the methods for overcoming them. Suggestions for such a study were included in the August 3, 1977 letter report where we also stated that

> "... the Corps may find it expedient to avoid entering the political arena directly by employing a relatively unbiased group of experts to examine the issues and indicate how a regional, multifunctional authority for water management in the MWA might be established. In so charged a political setting as the MWA, the Corps may find it prudent to maintain its independence of political judgement, and be seen to be independent, by seeking outside funding for this phase of the study with the further possibility, if really necessary, of creating a separate private ad hoc association to supervise the study and report upon it."

A year later, when the committee reviewed the Corps' Plan of Study it found no evidence that the Corps would initiate such an effort. Thus, in the August 21, 1978 letter report we again urged that an institutional assessment be initiated. On the basis of discussions with the Corps, the committee recommended:

> "that the Corps a should incorporate in its current study an independent assessment of diverse institutional consideration (for water supply mangement) in the MWA and the methods for dealing with them."

We continued with the following:

> "Experience indicates that neither the Corps nor any of the governmental entities currently vested with authority in the region can render a balanced, impartial judgement of the issues within the MWA."

Two weeks ago when the committee met to begin its review of the Corps' Draft/Progress Report we found that such an assessment remains lacking. We believe that in the approximately three years remaining to the Corps that it continues to be desirable that an independent analysis be undertaken of water supply management for the MWA.

In light of what appears to be reluctance on the Corps' part to initiate such an effort, it is especially encouraging to the committee to see on page 60 of the March 15, 1979 Congressional Research Service Report on Water Management in the Washington Metropolitan Area, that:

> "A study of intergovernmental arrangements to manage water supply seems highly desirable if a regional management plans is to be implemented."

> [DeMoncada, C., Water Management in the MWA, Environment and Natural Resources Policy Dvision, Congressional Research Service, Page 60, March 1979.]

This proposal for an independent body to study the optimum arrangement for managing the water supplies of the Metropolitan Washington Area is what the committee has had in mind, and we believe such an assessment would be a logical next step toward the solution of institutional problems that until now have been viewed as intractable.

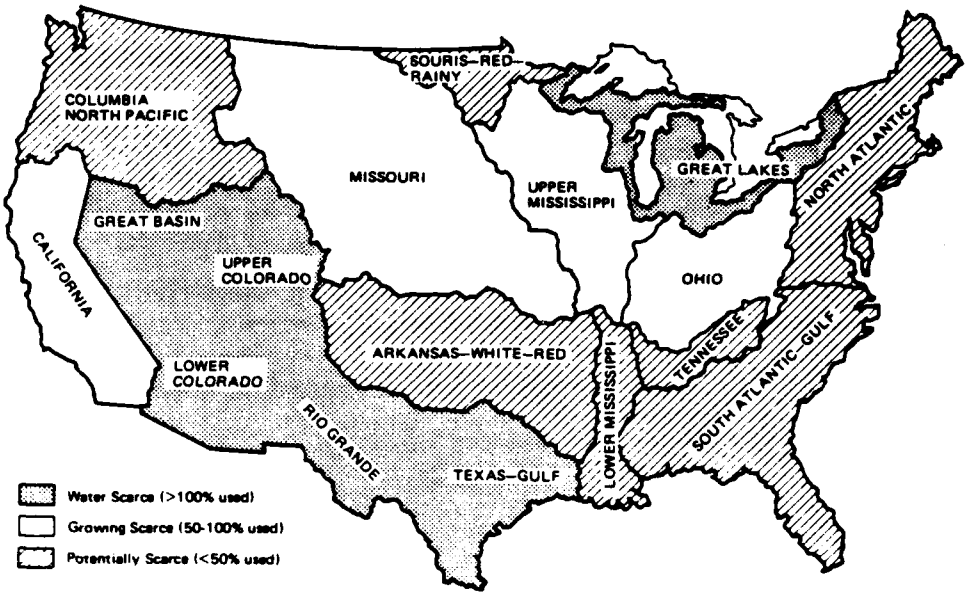


FIGURE 1. Estimated water scarcity in the U.S., 2000 A.D. Based upon the 1968 report of the U.S. Water Resources Council, "The Nation's Water Resources."

NABPL-U 19 June 1981

Mr. Charles R. Malone
Committee for Water Supply Reviews
National Research Council
Assembly of Engineering
2101 Constitution Avenue
Washington, D.C. 20418

Dear Mr. Malone:

Reference is made to the 25-26 March 1981 meeting of the NAS-NAE Committee to Review the MMA Water Supply Study and your subsequent letter of 8 April 1981 regarding the meeting.

As requested during the above referenced meeting, the NAS-NAE Committee desired considerable information relative to the scope and conduct of the remainder of the MMA Water Supply Study. In response to this request, the inclosed information package (attachment 1) was prepared based on a recently completed comprehensive review of the scope, cost and schedule for the remainder of the program. This package includes: (1) the stated objectives of the study; (2) the relationship of the study to other activities to include the State of Maryland Flow-by Study; (3) an annotated outline of the draft final report; (4) scopes of work for all major study elements; and (5) a detailed study schedule. This information should provide the Committee members with a comprehensive overview of the remainder of the study and aid in the development of the scope of work for the Committee's remaining activities.

In response to your interest relative to the Flow-by Study, I am also inclosing a copy of the draft report of this study (attachment 2). It should be noted that this report should be considered preliminary pending review by all interested parties. With regard to your question relative to the significance of the study, you are correct in assuming that the Corps is not bound under the terms of the Low Flow Allocation Agreement (LFAA) to adopt the State's flow-by recommendation; however, this recommendation will be given strong consideration in both LFAA-related decisions and in the conduct of the MMA Study.

NABPL-U 19 June 1981
Mr. Charles R. Malone

Lastly, as you requested, inclosed is a copy of the remarks given by Mr. Singh Bhutani at the 25-26 March meeting (attachment 3). Any questions regarding any of the above matters should be directed to Mr. Noel E. Beagle at (301) 962-2668.

Sincerely,

HCD 22-326

3 Attachments
As stated

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington D.C 20418

EXECUTIVE DIRECTOR 202/389-6263

July 24, 1981

Colonel James W. Peck
District Engineer
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203

Dear Colonel Peck:

I am pleased to transmit herewith three copies of a letter report by Walter R. Lynn, Chairman of the Committee to Review the Metropolitan Washington Area Water Supply Study. The report consists of comments upon the status of the water supply study as presented to the committee by you and your staff last March 25 and 26. Materials and information received by the committee from the Corps since that meeting were not drawn upon for this report.

The work by the committee was carried out as part of Contract Number DACW 31-77-C-0045 between the Department of the Army, Baltimore District, Corps of Engineers, and the National Academy of Sciences. Transmittal of this report constitutes the end of work on the study by this institution until further funds are received from the Corps.

Sincerely yours,

David C. Hazen
Executive Director

Attachments

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

NATIONAL RESEARCH COUNCIL
ASSEMBLY OF ENGINEERING
2101 Constitution Avenue Washington, D.C 20418

COMMITTEES FOR WATER SUPPLY REVIEWS (202) 389-6785

July 24, 1981

Colonel James W. Peck
District Engineer
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Peck:

The purpose of this letter is to report the concerns of the Committee to Review the Metropolitan Washington Area Water Supply Study expressed at its last meeting, March 25-26, 1981. We appreciate the contributions made by you and your staff by providing the committee with *important* insights and information about the current status of the Corps of Engineers' Metropolitan Washington (D.C.) Area Water Supply Study and the work remaining.

Background

Section 85 of the Water Resources Development Act of 1974 (Public Law 93-251) directs the Corps of Engineers to "make a full and complete investigation and study of the future water resources needs of the Washington metropolitan area... ." The legislation specifies that the results of the study will be reviewed by the National Academy of Sciences-National Academy of Engineering.

Accordingly, as the Corps initiated its study, the Academies, through their National Research Council, established in 1977 the Committee to Review the Metropolitan Washington Area Water Supply Study. The committee was assigned the task of reviewing the Corps' study and reporting on it at appropriate stages of its development, in particular at the time the Corps issues its final study report to the Congress.

Since 1977, the committee has met six times to learn about and comment upon the water supply study. Four reports have been issued prior to this one, with the most recent being Water for the Future of the Nation's Capital Area (1980). That report summarized the

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering to serve government and other organizations

committee's three previous letter reports and commented upon the Corps' August 1979 "Draft Progress Report: Metropolitan Washington Area Water Supply Study for the Potomac Water Users". Both the Corps' 1979 report and the committee's 1980 report marked the completion of the "early-action alternatives" stage of the water supply study, designed largely to analyze the means of optimizing the use of existing water supply and thereby forestalling any near-term shortage of water. The Corps' study then moved into a "long-term alternatives" stage, designed to augment the findings of the first stage with various alternatives for increasing the supply of water.

In its report of the "early-action" stage, the Corps described five "Plans for Choice" for managing the metropolitan area's water supply. These embodied such components as finished water interconnections, demand management, and local water supply projects. Each plan implied a different set of consequences pertaining to the degree of interjurisdictional cooperation and the cost sharing strategy for implementing it.

As the plans were developed, two factors were recognized as critical to their success:

(1) the amount of water in the Potomac river which in times of low levels that must be allowed to flow past water supply intakes (environmental flowby) in order to protect the environment of the remainder of the free-flowing river and the upper estuary, and

(2) the manner in which Bloomington Lake (on the North Branch of the Potomac River) would be regulated when it is completed in the fall of 1981.

If Bloomington Lake were "reformulated" to provide more than 135 million gallons of water per day for the Washington area during periods of drought, an additional source of water would be introduced for municipal supplies or for environmental flowby.

With these points in mind, studies of environmental flowby requirements and the possibility of reformulating the use of Bloomington Lake were incorporated into the overall project. These, along with various other studies of the Regional Water Supply Task Force (which is independent of the Corps) and the Corps' study of "long-term alternatives," will provide information that the Corps will use in considering revisions for its 1979 "Plans for Choice." The Corps' draft final report of the overall study is scheduled for completion in September 1982 (see Attachment 1). (Attachment 2 provides a detailed diagram of the major remaining activities in the water supply study and gives their scheduled sequence of completion.)

15-X1-2

Critical Current Activities

An issue regarding the implications of the flowby study is unclear to us, and its resolution seems to dictate the outcome of all plans to provide water for the metropolitan Washington area. We are confused by the Corps' assertion, presented verbally at the committee's last meeting, that it will accept and plan for the amount of flowby found acceptable in the Potomac River Low Flow Study that is now being carried out by the State of Maryland's Department of Natural Resources. Should the flowby determined by Maryland be significantly in excess of the 100 million gallons per day now being used by the Corps for planning purposes, all of the preliminary plans and recommendations would be subject to drastic revision. Subsequent to learning at the March meeting that the Corps might revise its plans, our committee had reviewed the Potomac River Low Flow Allocation Agreement and found that, as a signatory to the agreement with all jurisdictions of the metropolitan area, the Corps reserved the sole authority to determine the flowby on a daily basis, after giving due consideration "to conclusions for environmental flowby submitted by the State (of Maryland)." The committee would appreciate clarification of the significance of the Maryland study and explanation of the method the Corps will use to decide the final flowby volume on which to base its final recommendations for the water supply study report.

The information presented by the Corps to the committee during March 25 and 26 illustrated that the Metropolitan Washington Area Water Supply Study is a complex undertaking with many significant work elements. The Corps did not address nor did the committee attempt to consider each element in full detail because of the limited time available for discussion. However, it was clear that several components of the study currently underway are crucial to the remaining analyses and evaluations. Two of these, the Bloomington Lake Reformulation Study and the Experimental Estuary Water Treatment Plant (EEWTP) will have a significant effect upon the final recommendations of the entire water supply study and are addressed below.

Comments

The remainder of this letter report is devoted to remarks about the Bloomington and EEWTP projects and their implications for the quality of future water supplies in the Washington area. These projects are of special interest because of the manner in which they are being considered by the Corps and their potential effects on the outcome of the Corps' study. The Bloomington Lake project in particular is being heavily depended upon by the Corps in its current "Plans for Choice" to provide additional flow for the Potomac River during low-flow periods in the metropolitan region. While it is not very likely that the Potomac River estuary will have to be utilized in the foreseeable future for water supply, it must be seriously

considered because of the Congressional directive to the Corps. The committee's principal concern for the Bloomington and the EEWTP projects is that the Corps has excluded consideration of the comparative quality of alternative water supplies in conducting its water resources assessment.

The Corps' preoccupation with water quantity and its failure to adequately consider water quality are serious defects that compromise what otherwise may be an outstanding study. This is not a new concern of ours. The committee's 1980 report and others preceding it as early as 1977 commented upon the subject of water quality and its implications for the health of water consumers, the costs of water treatment, and the potential consequences to water distribution systems where reregulation might be practiced. We refer you to our 1980 report for more details on the substance of our concerns.

This concern is also illustrated by the Bloomington Lake Reformulation Study progress report of November 1980 (made available to the committee in February 1981). In reviewing the report, we find little consideration given to the quality of water to be impounded by and released from Bloomington Lake, which is unique and heavily polluted by acid mine drainage. The report gives slight attention to water quality with regard to ecological parameters. No data have been collected, generated, or analyzed for determining the potential consequences to public health and well-being, treatment costs, and *distribution systems that might result from the water's excessive* acidity and heavy metal content. When confronted with this comment during the March 25-26 meeting, staff of the Corps mentioned a water quality task component within the reformulation study, implying that our concerns were being addressed. We suspect that the task involves further analyses of ecological parameters only (e.g. dissolved oxygen, temperature, turbidity) and not water quality characteristics that affect human health and related matters. It would help clarify our understanding of the Corps' water quality task component if we could see the existing description of the task and perhaps discuss it with the members of your staff responsible for water quality in this study.

To further illustrate our concern about the lack of attention to water quality, we point to the EEWTP project, which calls for a two-year testing program. The Corps has expressed the intent to evaluate the estuary as a viable water supply alternative, based on the first year's test data from that project. Attachment 2 shows that completion of the first year of testing will end six months prior to completion of the draft final report on the entire water supply study.

Six months may not be sufficient time for the Corps to adequately evaluate the EEWTP advanced water treatment system and compare it with other alternatives. Therefore, we suggest that one evaluation be based on the first six months of test data and a second evaluation be based on twelve months of test data. This would give the Corps time for adequate testing and evaluation of the system and comparison with

C-1X-52

other alternative water supply sources. The EEWTP project is admirable in terms of the water quality assessments it embodies and thus lends itself well to comparative analyses with other supply alternatives.

Nowhere in the various progress reports and draft reports pertaining to the study does the Corps exhibit an awareness of the importance of the relationships between raw water quality and finished water quality. While public awareness of health issues associated with drinking water has increased greatly in recent years, such considerations are missing from the Corps' evaluation of alternative supplies in water resources planning. For this reason, we strongly suggest that the Corps promptly undertake a work task to produce a section for its final report that places issues of water quality into perspective with other water supply problems of the metropolitan area. Such a section could include a general discussion of the role of water quality in planning, the ability of current water treatment practices to render different waters potable, and alternative planning strategies to cope with deteriorating water quality and possibly changing health standards.

The committee would be pleased to provide comments on a draft work task related to water quality and on the existing description for the task relating to the Bloomington Lake Reformulation Study. In addition it would be helpful to receive an annotated outline of the *final report to enable us to see where issues such as water quality* fit into the evaluation of the different alternatives used in recommending a final "Plans for Action".

Whenever possible we would be ready to provide additional comments on any aspect of the study in addition to those requested above that might be useful to your staff. The most obvious limit to the committee's involvement in reviewing the study comes from restricted funds. Because the Corps has been able to provide less than 20 percent of the annual funding budgeted for the committee's work this fiscal year, our capabilities have been limited and indeed are now exhausted. Our further involvement depends upon receipt of appropriate funds. There was little discussion of the committee's *continued role during the March meeting because further funds appear* not to be forthcoming for the remainder of this fiscal year.

In summary, this committee has strongly encouraged the Corps to address water quality issues and suggested how this can be done. We share your desire that the Metropolitan Washington Area Water Supply Study be an exemplary water resources assessment, and would regret not having it fulfill its potential because it ignored what may prove to be the most critical problem faced by Washington, D.C., and other large metropolitan areas in the near future.

On behalf of the Committee to Review the Metropolitan Washington Area Water Supply Study, I am sincerely yours,

Walter R. Lynn/cm

Walter R. Lynn,
Chairman,
Committee to Review the
Metropolitan Washington
Area Water Supply Study

2-IX-53

Committee to Review the Metropolitan Washington Area Water Supply Study

Walter R. Lynn (Chairman)
Cornell University

Bernard B. Berger
University of Massachusetts

Guthrie S. Birkhead
Syracuse University

John J. Boland
Johns Hopkins University

Paul Busch
Malcolm Pirnie, Inc.

Leo Eisel
Wright Water Engineering

Jerome B. Gilbert
Eastern Bay Municipal Utility District
Oakland, California

Perry L. McCarty
Stanford University

David W. Miller
Geraghty & Miller, Inc.

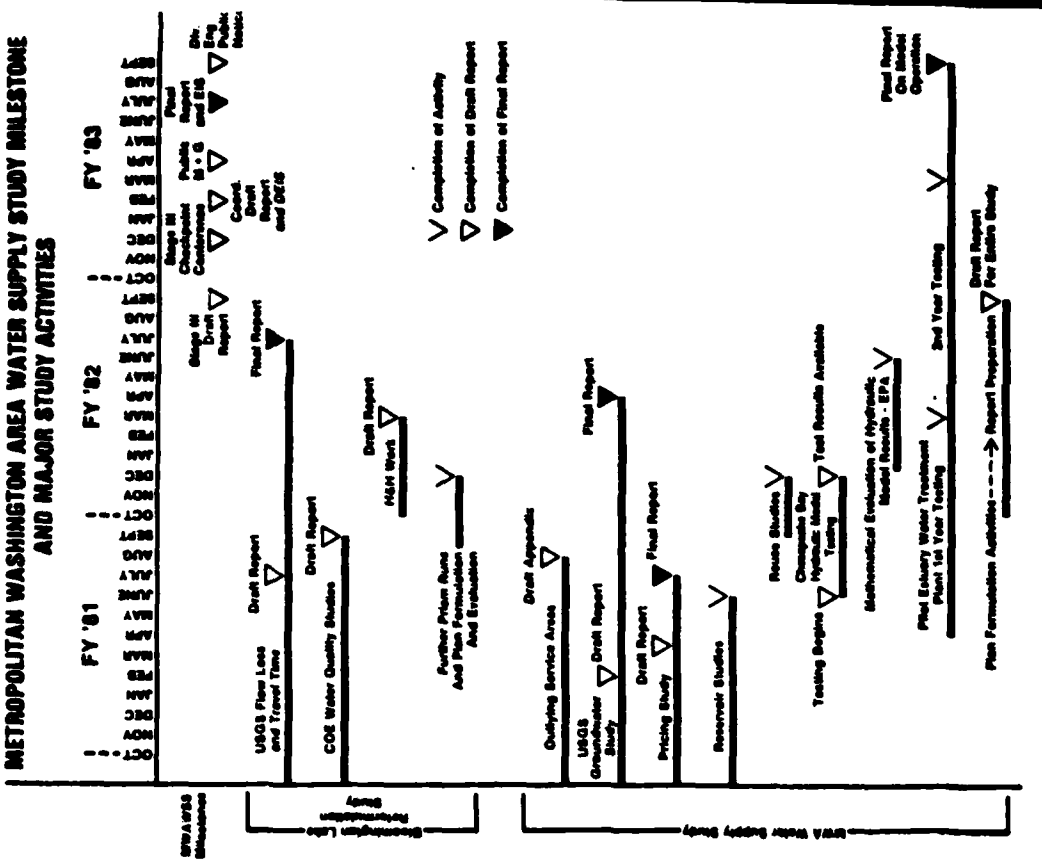
Daniel A. Okun
University of North Carolina

Leonard Ortolano
Stanford University

Staff

Charles R. Malone, Executive Secretary
Sheila D. David, Staff Officer
Jeanne Hardesty, Project Secretary

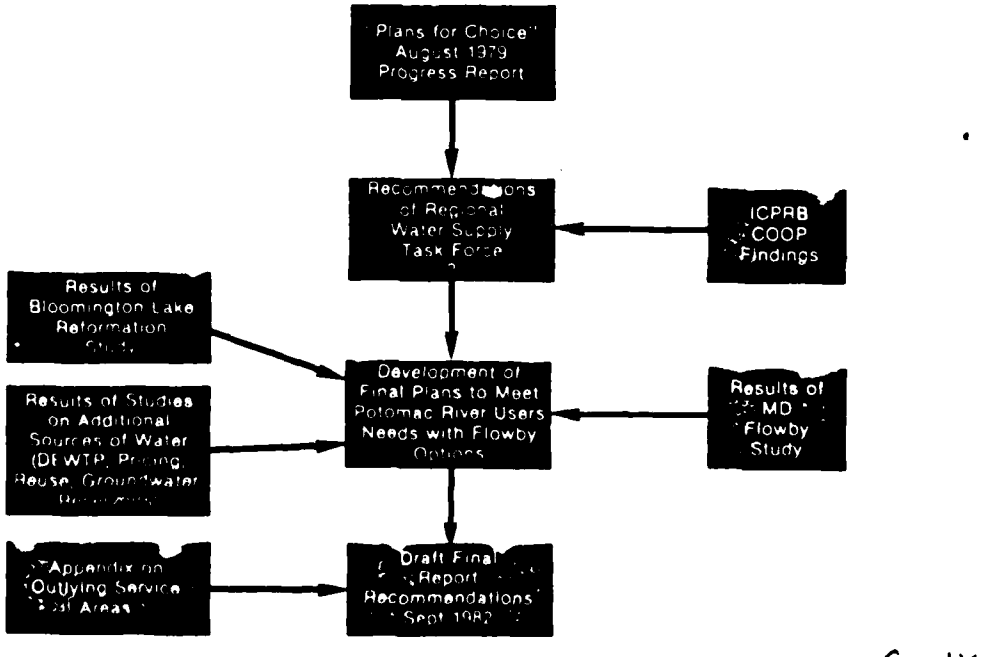
Attachment II



Source: Distributed by Corps of Engineers Staff at March 25-26, 1981 Committee Meeting

Attachment I

REMAINING STUDY ACTIVITIES
METROPOLITAN WASHINGTON AREA WATER SUPPLY STUDY



C-IX-5

Source: Distributed by Corps of Engineers Staff at March 25-26, 1981 Committee Meeting

NABPL-D

Dr. David C. Hazen
Executive Director
National Research Council
Assembly of Engineering
2101 Constitution Avenue
Washington, DC 20418

Dear Dr. Hazen:

Reference is made to your letter of 24 July 1981 which inclosed a letter report of the same date from the Committee to Review the Metropolitan Washington Area Water Supply Study.

The comments provided by the Committee at both the March meeting where the study was discussed and in the aforementioned letter report have been both helpful and thought provoking. I concur with the Committee's findings that the results of the State of Maryland's Flow-by Study, the Bloomington Reformulation Study, and the Pilot Estuary Water Treatment Plant are crucial elements of the overall study. The following paragraphs address several questions or concerns that the Committee raised relative to these crucial elements.

With regard to the State of Maryland's Flow-by Study, a draft report was completed and circulated for review in June 1981. A copy of this draft was furnished as part of the package of information provided to the Committee following the March meeting. As presented in the draft report, it was recommended that a flow-by of 100 million gallons per day (mgd) be maintained downstream from the water supply intakes at Little Falls. This recommendation and the overall report were the subject of a 29 June 1981 meeting of the signatories of the Low Flow Allocation Agreement (LFAA). At that meeting, the 100 mgd recommendation was adopted by the signatories. Under the terms of the LFAA and the accompanying Memorandum of Intent, the Corps will now use the 100 mgd as the environmental flow-by amount and will not invade such an amount absent essential need. In determining such need, the Corps will assure itself that the localities and jurisdictions affected have made maximum use of other sources of water and have imposed maximum conservation measures.

NABPL-D
Dr. David C. Hazen

With respect to the Water Supply Study, adoption of the 100 mgd flow-by coincides with the planning assumptions made in the study to date and 100 mgd will serve as the flow-by value against which alternatives will be formulated and evaluated. It should be noted, however, that further analysis will not be limited to a 100 mgd flow-by. As part of a sensitivity analysis, consideration will also be given to meeting flow-by values of 300 and 500 mgd. This analysis will provide the decision makers with the costs and impacts associated with providing higher levels of environmental flow-by.

As expressed in your letter report, the principal concern of the Committee remains the scope of the water quality investigations particularly as it relates to a comparison of the present and expected future potability of all water supply sources. In response to these concerns which were also raised at the March meeting, the inclosed general scope of work for the potability studies was developed and provided to the Committee as part of the earlier submittal. Given that the above work requires a state-of-the-art assessment as it relates to drinking water quality, this office is presently refining the scope of work and negotiating with the Environmental Protection Agency to conduct the work and prepare the water quality segment of the final report.

As it relates to the quality of the waters to be released from the Bloomington Lake project, this office is presently conducting a series of analyses to define both the quality of the water stored in the project and the manner in which the project should be operated in conjunction with the Savage River project in order to maximize downstream water quality. As described in the scope of work furnished earlier, the Bloomington studies will be limited to an examination of the more conventional environmental parameters to include pH, alkalinity, total dissolved solids, conductivity, dissolved oxygen, biochemical oxygen demand, turbidity, and temperature. A more complete understanding of the water quality aspects of the water stored in the Bloomington project will be dependent on the collection and analysis of various water quality data that are being collected now that the project is operational. While this additional collection and analysis will not be completed in time to incorporate the results in the present study, future operation of the project will be based on our continued monitoring and analysis of the project.

As noted in the letter report, the Committee was also concerned as to the limited amount of time available to incorporate in the planning process the results of the testing at the Potomac Estuary Pilot Water Treatment Plant (PEPWTP). The time constraint on the above work is recognized and this office has planned, as the Committee suggested, to consider any preliminary results of the initial six months of testing as well as the interim report which will be prepared following the initial year of testing.

NADPL-U
Dr. David C. Hazen

Lastly, the Committee's offer to review and provide comments on the scopes of work of future activities is gratefully accepted and this office would appreciate any comments on the package of information which was provided earlier. Additional funding in the amount of $15,000 has been transferred to the Committee for the remainder of the fiscal year and it is anticipated that full funding for the Committee's Fiscal Year 1982 activities will be provided in October. My staff will be meeting with Dr. Lynn and the Committee staff to discuss in more detail the scope of the Committee's work for the remainder of the study.

In closing, the comments of the Committee have been most helpful and will hopefully lead to a more complete and comprehensive final report. Please be assured that it is my intention to be as responsive as practicable to the Committee's concerns within the remaining time and funding.

Sincerely yours,

1 Incl
As stated

JAMES W. PECK
Colonel, Corps of Engineers
Commander and District Engineer

9-X1-56

NADPL-U

5 MAR 1982

Mr. Charles R. Malone
Committee for Water Supply Reviews
National Research Council
Assembly of Engineering
2101 Constitution Avenue
Washington, DC 20418

Dear Mr. Malone:

Reference is made to Dr. Walter Lynn's 26 January 1982 memorandum and subsequent conversations among Dr. Walter Lynn, Mr. Noel Beegle, and yourself, relative to scopes of work for several elements of the Metropolitan Washington Area Water Supply Study.

Included as Inclosure 1 are copies of scopes of work for those elements of the study that were not provided as part of our 19 June and 28 December 1981 submissions. Also inclosed is a copy of the outline for the final report that has been revised to reflect the water quality related concerns that were raised during the subcommittee meeting on 6 January 1982. Any questions regarding the inclosed material should be directed to Mr. Beegle at (301) 962-2668.

Sincerely yours,

HLN 5-82

2 Incls
As stated

HAROLD L. NELSON
Chief, Planning Division

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF
NABPL-U

3 November 1982

TO: Water Supply Review Committee
National Academy of Sciences-
National Academy of Engineering

SUBJECT: Metropolitan Washington Area Water Supply Study

Inclosed for your information is a complete copy of the preliminary draft report for the Metropolitan Washington Area Water Supply Study. The report has been prepared primarily as an information document and contains a tentative recommendation for no further Federal action. This tentative recommendation has been made possible by the recent non-Federal initiatives to implement projects and programs in accordance with an adopted regional plan. This regional plan is similar to one proposed in the Corps' August 1979 Progress Report.

The preliminary draft report is an internal working document presently under review within the Corps of Engineers. Please treat this draft as a priveledged copy that is not available for public release. My purpose in sending it to the Water Supply Review Committee at this time is to enable your review to begin at the earliest possible date. While some of the data and information may change in the coming months as a result of comments, it is anticipated that the final report will be structured in a manner similar to the inclosed document.

Presently, the study schedule calls for public distribution of the draft report in March 1983, followed by a two-month open review period. The report will then be revised based on the comments which are received. Thus, any informal comments you may have should reach us by May 1983 in order to be considered in the final report to be published in September 1983.

Should you have any questions regarding technical aspects of the preliminary draft report, please call Mr. Noel Beegle, of my staff, at (301) 962-4710.

Sincerely,

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

1 Incl
As stated

C-IX-57

ANNEX C-X

COMMENTS AND RESPONSES CONCERNING DRAFT REPORT

ANNEX C-X

COMMENTS AND RESPONSES CONCERNING DRAFT REPORT

DATE	ITEM	PAGE
30 March 1983	Comments from Fairfax County Water Authority	C-X-1
7 April 1983	Memo dated 20 April 1983 from 7 April 1983 CTF Meeting, Comments on Draft Report	C-X-2
	Response to CTF Comments	C-X-4
8 April 1983	Comments from City of Manassas	C-X-5
	Letter response dated 22 April 1983 to City of Manassas	C-X-5
15 April 1983	Comments from Region 8, Planning and Development Council of West Virginia	C-X-6
19 April 1983	Comments from Central Shenandoah Planning District Commission	C-X-7
19 April 1983	Comments from Washington Suburban Sanitary Commission	C-X-8
25 April 1983	Comments from Prince George's County Government	C-X-9
27 April 1983	Comments from State of Maryland, Water Resources Administration	C-X-10
	Response to WRA Comments	C-X-11
28 April 1983	Comments from Commonwealth of Virginia, State Water Control Board, Northern Virginia Regional Office	C-X-12
29 April 1983	Comments from U.S. Environmental Protection Agency, Region III	C-X-13
	Response to EPA Comments	C-X-13
29 April 1983	Comments from Montgomery County Government	C-X-14
	Response to Montgomery County Comments	C-X-15

COMMENTS AND RESPONSES CONCERNING DRAFT REPORT (Cont'd)

DATE	ITEM	PAGE
2 May 1983	Comments from Metropolitan Washington Council of Governments Clearinghouse (contains comments from D.C. Office of Budget, Arlington County, Fairfax City, Falls Church, Tacoma Park, Gaithersburg, College Park, Bowie, Prince George's County, and Montgomery County)	C-X-16
6 May 1983	Comments from Commonwealth of Virginia, Department of Planning and Budget	C-X-24
13 May 1983	Comments from Loudoun County Administration	C-X-25
	Response to Loudoun County Administration	
18 May 1983	Comments from State of Maryland, Department of State Planning (contains comments from Water Resources Administration and Md. Historical Trust)	C-X-28
23 May 1983	Comments from Northern Virginia Planning District Commission	C-X-34
1 June 1983	Comments from Charles County Administration	C-X-35
	Response to Charles County Administration	C-X-36
14 June 1983	Comments from National Capital Planning Commission	C-X-37

FAIRFAX COUNTY WATER AUTHORITY

8560 ARLINGTON BOULEVARD—P O BOX 1500
MERRIFIELD, VIRGINIA 22116-0815

March 30, 1982

JAMES J. CORBALIS JR
ENGINEER-DIRECTOR
FRED P. GRIFFITH JR
ASSISTANT ENGINEER-DIRECTOR

TELEPHONE
703—698 5600

Department of the Army
Baltimore District, Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Attention: Mr. William E. Trieschman, Jr.
Chief, Planning Division

Gentlemen:

We have reviewed the draft Report concerning the Metropolitan Washington Area Water Supply Study referred to in your letter of March 18 and are satisfied with the changes you have incorporated therein as a result of our letter of December 7, 1981 to you.

Again, our compliments on the manner in which you conducted this study.

Very truly yours,

James J. Corbalis, Jr.
Engineer-Director

JJC/kwn

NO RESPONSE NECESSARY

NABPL-U 20 April 1983

SUBJECT: Meeting of the Citizens Task Force (CTF) for the Corps of Engineers' Metropolitan Washington Water Supply Study

MEMORANDUM TO THE FILE

1. On Thursday, 7 April 1983, a meeting of the CTF Committee was held at the Washington Aqueduct. The purpose of this meeting was to discuss the March 1983 public draft of the MWA Water Supply Study final report. A list of attendees is included as Inclosure 1.

2. Chairman Cohen called the meeting to order at 1020 hours by asking for "general" comments or statements on the report. Chesnut stated her concerns that the CTF hadn't progressed very far over the past 5 years. Koffman stated he would like to see the paragraph about assumptions, which is in the March 18th transmittal letter, included in the final section of conclusions. Nolen suggested that a short section (on the order of 1-1½ pages) be put in the final main report that synthesizes what the CTF has recommended over the past few years. Nolen also stated that the report should be given an "E" for excellence - it's a good standard presentation of the technical water supply problem. Chesnut felt the report is quite readable. Cohen suggested putting the Main Report on different color paper to set it off from the rest of the appendices.

3. Cohen perceived the Corps to be saying that there won't be a water supply problem in the foreseeable future in the MWA if (assumption - a very important one) indeed there is regional cooperation in the management of the region's water supplies. Chesnut said it also should be conditioned on whether the water to be depended upon is going to be available and usable in the case of Little Seneca and the Occoquan. Chesnut emphasized that the last chapter doesn't state the problems - and the problems are there! Cohen thinks the Corps would be wise to restate the conclusion to emphasize the imperative to properly manage the water system and the water resource. It's important to emphasize the management aspect because it's too easy to let everyone go off on their own.

4. Nolen felt that the proposed recommendation contained on page C-VII-65 of the Public Involvement Appendix concerning agency coordination and monitoring of the regional situation should become a third recommendation of the final report; not recommend an agency but rather the type of agency. Concerning the first recommendation for no Corps' involvement, the consensus of the CTF was that the assumption immediately preceding this recommendation should be part of the recommendation itself. The words are there; just put the words directly in the recommendation. Kidd suggested that perhaps each of the paragraphs could be numbered; that way the reader wouldn't avoid the preamble and jump to the recommendations. Cohen suggested that the Corps take under advisement what has been said about the manner of presentation. Chesnut expressed her opinion that perhaps one reason the recommendations are so stated is because of the shift in political thinking from Federal control to state control back to Federal control.

C-X-2

5. With regard to specific comments, Chesnut felt that the summary and conclusions section pointed out a lot of useful things and a lot of the weaknesses; however, perhaps the questions raised by these things should be listed or made more explicit than they are. Following a discussion of the substance of the water forum note, Cohen recommended that the release of the final water forum note wait until the changes be made to the draft final report. Koffman stated his desire that a paragraph discussing "potential problems" be added in the summary and conclusions section (page 113 of the Main Report). There was some discussion about the idea of regional management, its potential success or failure, and the appropriate agency to coordinate regional activities (such as MWCOG, ICPRB, States, etc.). There was disagreement with the idea that regional management would solve all the long-range problems because local politicians prevent regional solutions because they guard their own interests. Kidd then indicated that comments on the March 1983 public draft are to be in to the Corps by 2 May 1983, if the comments are to be addressed in the final report. The draft for public review is in the libraries designated as regional repositories Nolen state that, if possible, he would like to develop an annotated table of contents to be inserted in front of the section in the Public Involvement Appendix dealing with the CTF resolutions (C-VII). This would be developed so that the reader would know generally what each resolution contains.

6. The CTF observed that Chapter 7 of the Main Report - Public Involvement - contains no substantive information or material at all. Their activity over the past 5 years and the fact that they came back to several fundamental recommendations at several periods in time are reasons why something ought to be said about CTF views on water quality, low flow, and ideas on prospects for the future. The essence of the CTF recommendations over the past 5 years should be addressed. Koffman then repeated his desire to see a section in the report which discusses potential problems.

7. Chairman Cohen then restated the main points discussed during the course of the meeting. These points are presented below.

a. Reorganize the statement of recommendations so that the CTF suggested modifications relating to the operable assumptions get the attention that an individual recommendation would get; don't put the assumptions in a general, qualifying paragraph ahead of the recommendation;

b. The main body of the report should reflect the principal recommendations and conclusions reached by the Citizens Task Force;

c. The Public Involvement Appendix, at the point where it refers to the CTF resolutions (C-VII), be preceded by an annotated Table of Contents that will make it easier to cull from the voluminous material the essence of what the CTF has recommended and decided;

d. Whatever needs to be done (to the recommendation concerning the future water supply needs in the MWA in the next 50 years) to make the recommendation

NABPL-U 20 April 1983

SUBJECT: Meeting of the Citizens Task Force (CTF) for the Corps of Engineers' Metropolitan Washington Water Supply Study

a little less "pollyannish" should be done. Don't leave sitting the impression that everything is "hunky-dory". If there are assumptions and other parts of the recommendations that accompany the general conclusion that the water situation is better than previously thought then those things should be explicitly stated on a par with the "No-Action" statement - specifically, the emphasis on regional management;

e. There are differences of opinion among CTF members about the feasibility of regional water management. Some members feel it is a do-able thing with representatives of local and state governments; other feel a more centralized "Federal-hand" should be in the process such as the Corps of Engineers or the ICPRB;

f. There should be a substantive summation of the CTF recommendations in the Public Involvement section of the Main Report, as well as a discussion on potential problems.

g. Rather then leave the issues implicit in the Main Report, the issues and problems might be stated more forcefully in the form of questions throughout the body of the Main Report.

8. The members present agreed that the points mentioned in paragraph 7 should somehow appear in the Final Report. If the Corps doesn't want to do something with the comments, then the CTF should be informed so they (the CTF) can do something. There was some discussion regarding future CTF meetings. Cohen stated it would make sense to meet again as the Final Report is being issued (sometime in the July-September 1983 period). Another suggestion was to meet between 2 May 1983 and July 1983, but the citizens present did not know what purpose they could serve at the next meeting. This point was not resolved; however, the CTF did agree to remain in contact with each other over the next several months. The meeting concluded on this item at 1225 hours.

Kidd

CLIFFORD KIDD
Urban Studies Branch

1 Incl
as

C-X-3

ATTENDANCE REGISTER

SUBJECT Metropolitan Washington Water Supply Study

DATE 7 April 1983

LOCATION Washington Aqueduct

Name	Office and Location	Telephone Number
Cliff Kidd	Corps of Engineers, Baltimore District	
Louise Chesnut	Arlington County	
Louis A. Koffman	Falls Church	
John Nolen, Jr.	Committee of 100	
Art Cohen	Charles County, Department of Public Works	

RESPONSE

1) General assumptions pertinent to the overall study are contained in Chapter I of the Main Report under the section titled "Study Purpose and Scope." Specific assumptions concerning the regional plan are assembled in Table 6 of the Main Report. Various important assumptions are discussed at appropriate locations throughout Chapter VIII summarizing the findings and conclusions. Additionally, the final recommendation for no further action by the Corps of Engineers is predicated on the assumption (so stated) that non-Federal agencies will continue to adhere to the regional agreements and contracts signed in 1982. Further detailed discussion of the assumptions elsewhere in the Main Report does not seem warranted.

2) Chapter VII - Public Involvement has been rewritten to include more discussion of the concerns expressed by the Citizens Task Force, the NAS-NAE Committee, and others. The revised chapter also contains a description of the interrelationship between the planning process and the study's public involvement program. An annotated version of Annex VII in the Public Involvement Appendix (Appendix C) was not prepared.

3) In response to comments from the CTF, the NAS-NAE Committee, and EPA, the final chaper containing the recommendations has been expanded to include general recommendations for watershed protection programs and water quality monitoring programs.

4) It is recognized that members of the public may question the feasibility of regional water supply management. However, the purpose in executing the binding contracts and agreements among the water suppliers and state governments was to firmly commit the signatories to regional water supply management by way of legal documents. Additionally, it should be recognized that a centralized approach is being employed to manage the system, primarily through the ICPRB and its CO-OP program.

CITY OF MANASSAS
VIRGINIA

9027 Center Street, P. O. Box 512, 22110 (703) 361-4104

OFFICE OF
C. M. MOYER, JR.
CITY MANAGER

April 8, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Attention: Planning Division

Dear Mr. Trieschman:

I received the Draft Main Report concerning the Metropolitan Washington Area Water Supply Study which you distributed for information and review. I have examined the report and find it quite interesting. I do, however, note the complete absence of any reference to the Manassas Municipal Water System, which has a surface reservoir located on Broad Run, a tributary to Occoquan Creek, with a storage capacity of 5.7 billion gallons of water and an average safe yield of eight million gallons per day.

From reading the draft report the inference to be drawn is either that Manassas is furnished by a small well water system or from the Fairfax County Water Authority and both these inferences would be untrue.

We serve customers in our City, which encompases eight square miles, and have customers in Prince William County along the transmission line from our Filter Plant at the reservoir to the City as well as an interconnect with the Greater Manassas Sanitary District, which supplies the population of thirty or forty thousand people in the Manassas environs and with Manassas Park.

I can understand the lack of information on the Manassas system in your report since we are not represented on the COG Water Resources Planning Board. I doubt that you will want to rewrite the report in view of my comments, but I feel that our system is important enough to be recognized some way since we are in the Metropolitan Washington Water Supply Area.

Sincerely,

C. M. Moyer, Jr.
City Manager

CMM/ca

"Rich in Historic Interest"

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT CORPS OF ENGINEERS
P O BOX 1715
BALTIMORE MARYLAND 21203

April 22, 1983

REPLY TO ATTENTION OF

Planning Division

Mr. C.M. Moyer, Jr.
City Manager
City of Manassas
9027 Center Street
P.O. Box 512
Manassas, Virginia 22110

Dear Mr. Moyer:

I have received your letter of April 8, 1983 regarding the Metropolitan Washington Area Water Supply Study conducted by the Corps of Engineers. You expressed a concern that the City of Manassas and its water supply system were not addressed in the Draft Main Report for our study.

Because of the critical nature of the water supply problems which faced the large service areas in the Metropolitan Washington Area, most of our study efforts were geared toward the Washington Aqueduct, the Washington Surburban Sanitary Commission, and the Fairfax County Water Authority. The Draft Main Report deals primarily with the problems and solutions for these three service areas.

During the course of our overall study, though, we did briefly investigate the water supply situation in some of the smaller service areas surrounding the urban core. These studies are documented in various technical appendices to the Draft Main Report. For your information, I have enclosed two of these technical appendices. Appendix D - Supplies, Demands, and Deficits discusses available sources and projected demands throughout the study area, and Appendix I - Outlying Service Areas addresses some of the smaller communities in more detail than the Draft Main Report.

Thank you for your comments.

Sincerely,

William E. Trieschman, Jr.
Chief, Planning Division

Enclosures

REGION 8 PLANNING AND DEVELOPMENT COUNCIL
OF WEST VIRGINIA

SERVING
GRANT
HAMPSHIRE
HARDY
MINERAL
PENDLETON
COUNTIES

P. O. BOX 887
PETERSBURG, W. VA. 26847
PHONE 304-257-1221

CLEARINGHOUSE COMMENTS

TO: Army Corps of Engineers
Department of the Army
Baltimore District Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

DATE: April 15, 1983

William E. Trieschman, Jr. Chief Planning Division

PROJECT TITLE: Metropolitan Washington Area Water Supply

NO RESPONSE NECESSARY

The Region VIII Clearinghouse has received your summary notification of intent to request assistance in accordance with Clearinghouse Policy for non-construction projects submitted by state and local governments and their agencies, No-Comment will be made by the Council. However, in the event of a request for local government review, their comments will be attached to this finding of No-Comment; such comments should be reviewed and considered.

CENTRAL SHENANDOAH PLANNING DISTRICT COMMISSION

119 W. Frederick Street STAUNTON, VIRGINIA 24401 Post Office Box 1337 Phone (703) 885-5174

DAVID W. RUNDGREN
Executive Director

April 19, 1983
Ref. #4-29

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

Re: Consideration of Draft Report, Metropolitan Washington Area Water Supply Study

The above referenced document was reviewed by the Central Shenandoah Planning District Commission at its April 18, 1983 meeting. The Commission voted to endorse Conclusion Number (3), calling for the deauthorization of the Verona Lake project because there is no useful purpose for this proposal.

If you have any questions, please contact me.

Sincerely,

David W. Rundgren
Executive Director

DWR:SFA:rw

NO RESPONSE NECESSARY

COMMISSIONERS
ANDREW M VISLOSKY
Chairman
LEONARD H TEITELBAUM
Vice Chairman
LAWRENCE L BROOKS SR
JESSE L MAURY
JOHANNA S NORRIS
DAVID R SCOTTON
JOHN M BRUSNIGHAN
Acting General Manager

WASHINGTON SUBURBAN
SANITARY COMMISSION

4017 HAMILTON STREET • HYATTSVILLE, MARYLAND 20781 • (301) 699-4000
Department of Engineering ARBITRON BLDG • 312 MARSHALL AVE • LAUREL, MD 20707

April 19, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

Reference your letter of March 18, 1983, requesting comments on the Draft Report, Metropolitan Washington Area Water Supply Study. I agree with the Report's conclusion that there is no need for additional water supply projects or programs by the Corps of Engineers. The successful negotiation of the regional water supply agreements, signed in July, 1982, should insure the needs of the District of Columbia, Fairfax County Water Authority, and Montgomery and Prince George's Counties will be met until well beyond the year 2000. The support of the Corps and the information provided in the early action reports were important elements in reaching the regional agreements.

Sincerely,

John M. Brusnighan
Acting General Manager

NO RESPONSE NECESSARY

THE PRINCE GEORGE'S COUNTY GOVERNMENT

April 25, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Re: Draft Main Report - Metropolitan
Washington Area Water Supply Study

NO RESPONSE NECESSARY

Dear Mr. Trieschman:

This is in response to your letter dated March 18, 1983 requesting comments on the above-referenced Draft Main Report.

My staff has reviewed the document and has concurred with the Report's tentative recommendations that:

(1) in light of the recent action taken by the local jurisdictions in the metropolitan Washington area which substantially eliminated the projected water supply shortages in this area until at least the year 2030, no further action at this time is required by the Corps of Engineers to satisfy the metropolitan Washington area water supply needs; and

(2) the Report be transmitted to U.S. Congress as an information document.

Thank you for the opportunity to review and comment on the Report.

Sincerely,

John Wesley White
Chief Administrative Officer

cc: Frank P. Casula
John Brusnighan
Edmond M. Piesen

THOMAS C ANDREWS
DIRECTOR

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401-9974
(301) 269-3846

April 27, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District
Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

The Maryland Water Resources Administration has reviewed the Draft Metropolitan Washington Area Water Supply Study. The study was found to be thorough, well-organized and of the highest quality. The main report and its accompanying appendices provide a wealth of information that will contribute significantly to an improved understanding of water supply management in the Washington, D.C. area as well as in the entire Potomac River Basin.

A careful review of Appendix A has revealed some inaccuracies in need of correction. Under a discussion of state agency authorities on page A-101, items 8 and 9 indicate that the Maryland Water Resources Administration has responsibility for the licensing of well drillers and the issuance of well drilling permits, as well as comprehensive pollution control enforcement powers. Effective July 1980, the well drilling permit and licensing program and most pollution control activities were transferred to the Department of Health and Mental Hygiene, Office of Environmental Programs. Pollution control oriented activities that remain within the Water Resources Administration include; erosion and sediment control, oil spill control and enforcement, and stormwater management (see attached organization chart).

Thank you for providing the Water Resources Administration with an opportunity to review and comment on the draft study. We have enjoyed working with your very professional staff over the years on Potomac River and Washington, D.C. area water supply problems and look forward to the same close working relationship in the future. If I can provide you with any clarification of the above comments, please do not hesitate to contact me.

Sincerely,

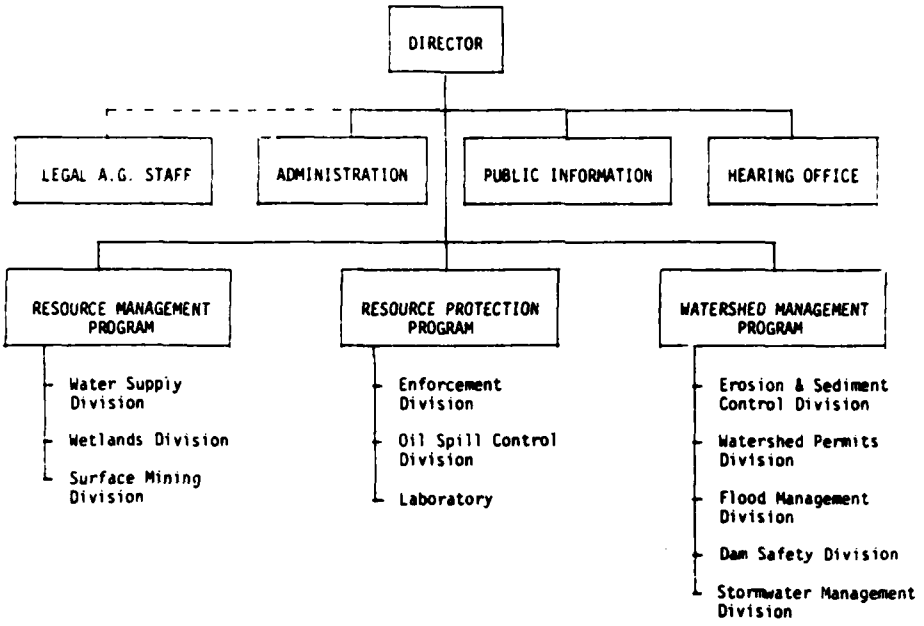
Thomas C. Andrews
Director

TCA:sao
Attachment
cc: State Clearinghouse

II - X - 5

MARYLAND DEPARTMENT OF NATURAL RESOURCES

WATER RESOURCES ADMINISTRATION



5/81
Revised 9/82

RESPONSE

Concur, suggested corrections have been made.

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD
2111 Hamilton Street

R. V. Davis, P. E.
Executive Director

Post Office Box 11143
Richmond, Virginia 23230
(804) 257-0056

Please reply to: Northern Regional Office
9515 Cherokee Avenue, Suite 404
Alexandria, Virginia 22312
(703) 750-8111

April 28, 1983

BOARD MEMBERS
Millard B. Rice, Jr.
Chairman

Watkins M. Abbitt, Jr.
John H. Ariail, Jr.
George M. Cornell
Joseph S. Cragwall, Jr.
David H. Miller
Patrick L. Standing

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Baltimore District, Corps of Engineers
P. O. Box 1715
Baltimore, MD 21203

Re: Draft Report - Metropolitan Washington Area Water Supply Study

Dear Bill:

Thank you for sending us a copy of the subject report. We have no comment on the report, other than to thank you and your colleagues for conducting a high-quality and very valuable technical study. The results of your work were very instrumental in helping to solve the local water supply problems of the D. C. metro area by providing a high level of confidence in the technical viability of the components considered for implementation. We are making use of your report in our preparation of river basin water supply plans in response to legislative mandates, and look forward to working with you and your staff in this effort.

Once again, thank you for the opportunity to comment.

Sincerely,

T. M. Schwarberg, Jr.
Regional Director

TMS/SLH/dre

cc: D. F. Jones

NO RESPONSE NECESSARY

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

William E. Trieschman Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Re: Metropolitan Washington Area Water Supply Study;
Draft Main Report (March 1983)

Dear Mr. Trieschman:

We have received and reviewed the referenced report. Our evaluation of the report and its recommendations emphasized two distinct issues of concern.

(a) the report as a comprehensive analysis of alternative activities to alleviate any existing, and potential, water supply shortages in the Washington D.C. metropolitan area;

(b) the report as a series of specific activities with probable short- and long-term environmental impacts.

We concur with the report's findings and conclusions, and your recommendations. It is feasible for the local non-Federal interests to assume the primary responsibility for developing and implementing regional solutions to water supply problems in the affected area.

However, we strongly recommend the initiation of area-wide water quality monitoring programs to ensure that no adverse environmental impacts result from the activities proposed to ameliorate a water supply shortage. We are particularly concerned that there will remain sufficient flow in the Potomac Basin to protect the integrity of the lower river and the estuary, and to provide appropriate assimilative capacity of the river for any facilities' discharges to that water source. Any adverse impact to the Potomac estuary will also adversely impact the Chesapeake Bay, and substantially threaten the commercial fishing and recreational uses in those areas immediately adjacent to the Potomac River.

Thank you for the opportunity to review and comment upon this report. If we may be of any assistance, please contact Mr. Robert Runowski (215-597-8335) at your convenience.

Sincerely,

Henry P. Brubaker

Henry P. Brubaker
Chief, Planning and
Analysis Section

RESPONSE

1) The last chapter of the Main Report has been expanded to include a general recommendation for watershed protection programs and water quality monitoring programs.

2) The signatories to the Potomac Low Flow Allocation Agreement have adopted a value of 100 mgd as the appropriate level for flowby to the Potomac Estuary, with a corresponding target of 300 mgd for the lower riverine stretch between Great Falls and Little Falls. These values were adopted following studies by the State of Maryland. As stated in the response to the Montgomery County Government letter dated 29 April 1983, proposals for different flowby levels need to consider the appropriate balance between human water supply needs, the recreation and ecological resources of the MWA's reservoirs, and the riverine and estuarine resources of the Potomac River.

Montgomery County Government

ROCKVILLE MARYLAND 20850

Charles W. Gilchrist
County Executive
(301) 279-1384
TTY 279-1083

April 29, 1983

Mr. William E. Treischman, Jr., Chief
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Treischman:

This letter is in response to your letter of March 18, 1983 requesting comments on the Draft Metropolitan Washington Water Supply Study. The information and discussions that originated from the early-action study phase of the Corps study were indeed useful to local governments and water supply agencies and contributed to the formulation and signing of the Regional Water Supply Agreements of 1982. The Corps draft study confirms earlier findings that the region's water supply problems should be solved at least through the year 2030, a real accomplishment.

My staff reviewed the draft water supply study in detail. They have indicated to me that in the sections of the study dealing with sensitivity analysis and reallocation of Bloomington Lake storage, the effects on reservoir storage of 300 MGD and 500 MGD flow-bys for the Potomac River were discussed. The County concurred with and continues to support the 100 MGD flow-by recommended by the State of Maryland and adopted by the parties to the Low Flow Allocation Agreement because the reported effects were minimal and short lived. Furthermore, according to the State's Environmental Flow-By Study, the free flowing river below Little Falls Dam that is subject to the flow-by is a relatively low productivity portion of the Potomac River fishery within Montgomery County.

The Regional Water Supply Agreements provide that reservoirs in Montgomery County (Triadelphia, Rocky Gorge and Little Seneca) will be used during a drought to augment municipal water supplies. The Patuxent reservoirs have well established fisheries, and Little Seneca Lake is expected to have a very productive fishery. As your analysis indicates, Potomac flow-bys of 300 and 500 MGD have a dramatic effect on how quickly reservoir storage can be depleted. It is our concern that while higher flow-bys could produce some marginal benefits to the Potomac fishery, they could seriously harm the reservoir fisheries.

If increased Potomac flow-bys truly become an issue in the future, I would recommend that a comprehensive evaluation of the effects and benefits to all involved water bodies be undertaken. At the present time, I would

not support consideration of higher Potomac flow-bys unless it could be demonstrated that the County's reservoir fisheries would not be stressed unnecessarily. I strongly support reservoir drawdowns for drought relief as provided for in the Water Supply Agreements but am understandably interested in fully utilizing the recreational potential of the impoundments as well as the Potomac River at other times.

I agree with the two principal recommendations of the draft Metropolitan Washington Water Supply Study, that no further action is needed by the Corps, and that the study should be transmitted to Congress. I would appreciate a copy of the final study that will be sent to Congress and the operating rules that have been established for Bloomington Dam. Thank you for the opportunity to comment on the study.

Sincerely,

Charles W. Gilchrist
County Executive

CWG:jm

cc: Tom Andrews, Director
Water Resources Administration

James J. Corbalis, Jr., Director
Fairfax County Water Authority

Paul Eastman, Executive Director
Interstate Commission on the Potomac River Basin

David L. Scull, President
Montgomery County Council

Andrew M. Vislosky, Chairman
Washington Suburban Sanitary Commission

Harry Ways
Washington Aqueduct Division

RESPONSE

The adoption of a flowby value significantly higher than 100 mgd would undoubtably result in large drawdowns within the MWA reservoirs. The magnitude of drawdown was demonstrated through the Corps' sensitivity analysis which considered the effects of maintaining either a 300 mgd or 500 mgd flowby. Either of these higher flowby levels would deplete reservoir storage throughout the MWA system. Because of the importance of the local reservoirs as recreation and fishery resources, any proposal to change the adopted 100 mgd minimum flowby value would have to balance the in-lake needs, human water supply needs, and estuary needs.

metropolitan washington
COUNCIL OF GOVERNMENTS

1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #23

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

TO: DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O.BOX 1715
BALTIMORE, MD 21203

DATE: May 2, 1983

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Depart of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

C-DC-83-16

FINAL DISPOSITION

☐ We have concluded review of the above item and have determined that its nature does not warrant metropolitan comments. A copy of this memorandum and any attachments should accompany your application to indicate that the Metropolitan Clearinghouse review has been completed.

☐ A copy of the above item has been sent to _____ for review and comment, with direct response to be made by _____. Copies of any local agency comments which you receive should also accompany your application to the Federal agency.

☒ We have concluded review of the above item and have determined that it is in general accord with the metropolitan planning process and COG's adopted policies. A copy of this memorandum and any attachments should accompany your application to indicate that the Metropolitan Clearinghouse review has been completed.

☐ We have concluded review of the above item and submit herewith, the attached Metropolitan Clearinghouse Review Comments. A copy of this memorandum and the attached comments should accompany your application when submitted to the Federal agency to indicate that the Metropolitan Clearinghouse review has been completed.

EXECUTIVE DIRECTOR

WE APPRECIATE YOUR COOPERATION

Clearinghouse review comments will be valid for a period of two years from the date of this A-95 Metropolitan Clearinghouse Memorandum. All projects not submitted to the Federal funding agency within that period must be resubmitted to the Clearinghouse for update of the review comments before formal application is made to the Federal Government.

Metropolitan Washington Council of Governments
1875 EYE Street N.W.
Washington, D.C. 20006

MEMORANDUM

April 8, 1983

TO: Local A-95 Coordinators
Washington Metropolitan Area

FROM: Robert T. Grow
Senior Regional Planner
Department of Community and Economic Resources

SUBJECT: COG Review Number 83-02-009
Metropolitan Washington Area
Water Supply Study, Draft Final Report

The above-noted project recently distributed for review contains 9 Appendicies (A-I) consisting of over 1000 pages. Due to the large size of this document and associated reproduction costs, only the main report which provides a summary of the project was sent to you for review. If you are interested in receiving a copy of any portion of the appendixies we will be glad to assist. If you have questions on the document itself you may call Mr. Noel Beegle of the U.S. Army Corps of Engineers in Baltimore at (301) 962-2668 or 962-4710.

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: Ms. Elizabeth Reveal
Director, Office of Budget
District Building
14th & E Streets, NW
Washington, DC 20004

DC-060-83

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army
Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☐ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature _____

Organization Office of the Budget 4/13/83

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: Mr. Larry J. Brown
County Manager
Arlington County
County Courthouse
1400 N. Courthouse Road
Arlington, VA 22201

COUNTY, VA. APR

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army
Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondance should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☒ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature _____

Organization Arlington County

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: [illegible]
CITY [illegible]
CITY OF FAIRFAX
CITY HALL
10455 [illegible]
FAIRFAX, VA. 22030

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army
Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

91 - X - 1

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☐ We do not wish to comment on the above item.

☒ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature Jon Elliston

Organization City of Fairfax, Va.

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: [illegible]
CITY [illegible]
CITY OF FALLS CHURCH
CITY HALL
300 Park Avenue
Falls Church, Va. 22046

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army
Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☑ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature _____

Organization _____

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

TO: MR ALVIN J NICHOLS
CITY ADMINISTRATOR
CITY OF TAKOMA PARK
MUNICIPAL BLDG
7500 MAPLE AVE
TAKOMA PARK MD 20012

DATE: April 6, 1983

CITY OF TAKOMA PARK
APR 8 1983
TAKOMA PARK, MD

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study

COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☒ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature [signature] Director of Public Works

Organization City of Takoma Park

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

---

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

TO: [illegible] DAILY
CITY [illegible]
CITY OF GAITHERSBURG
CITY HALL
31 SOUTH [illegible] AVENUE
GAITHERSBURG, MARYLAND 20760

DATE: April 6, 1983

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study

COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☒ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature [signature]

Organization City of Gaithersburg, Maryland

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County
Alexandria • Rome • College Park • Fairfax City • Falls Church • Gaithersburg • Greenbelt • Rockville • Takoma Park

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

TO: MR. LEON F. SHORE
CITY ADMINISTRATOR
CITY OF COLLEGE PARK
ADMINISTRATION BUILDING
4500 KNOX ROAD
COLLEGE PARK, MARYLAND 20740

DATE: April 6, 1983

RECEIVED APR 8 1983 City of College Park

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study

COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☑ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature [signature]

Organization City of College Park

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

C-X-20

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

TO: MR. G. CHARLES [illegible]
CITY MANAGER
CITY OF [illegible]
CITY HALL
2614 KENHILL DRIVE
[illegible], MD. 20715

DATE: April 6, 1983

CITY OF [illegible]

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study

COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☐ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature _____

Organization _____

District of Columbia • Arlington County • Fairfax County • Loudoun County • Montgomery County • Prince George's County • Prince William County

metropolitan washington

COUNCIL OF GOVERNMENTS

1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22 L 83 02267

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: MR. KENNETH V. DUNCAN
CHIEF ADMINISTRATIVE OFFICER
PRINCE GEORGE'S COUNTY
COUNTY ADMINISTRATION BUILDING
14741 GOV. ODEN BOWIE DRIVE
UPPER MARLBORO, MARYLAND 20870

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army
Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reacned by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☐ We do not wish to comment on the above item.

☑ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review. (See attachment)

☐ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature ✓ JOHN WESLEY WHITE

Chief Administrative Officer

Organization Prince George's County

Prince George's County Comments
Metropolitan Washington Area Water Supply Study
COG No. 83-02-009

My staff has reviewed the document and has concurred with the Report's tentative recommendations that:

(1) in light of the recent action taken by the local jurisdictions in the metropolitan Washington area which substantially eliminated the projected water supply shortages in this area until at least the year 2030, no further action at this time is required by the Corps of Engineers to satisfy the metropolitan Washington area water supply needs; and

(2) the Report be transmitted to U.S. Congress as an information document.

metropolitan washington
COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W., Suite 200, Washington, D.C. 20006 223-6800

COG #22

A-95 METROPOLITAN CLEARINGHOUSE MEMORANDUM

DATE: April 6, 1983

TO: [illegible]

SUBJECT: PROJECT NOTIFICATION AND REVIEW FOR

PROJECT: Metropolitan Washington Area Water Supply Study COG NO.: 83-02-009

APPLICANT: Corps of Engineers--Dept of the Army Baltimore District

The project title, COG number, and applicant's name should be used in all correspondence with COG concerning this project. Correspondence should be addressed to Mr. Walter A. Scheiber, Executive Director. The staff may be reached by telephone at 223-6800.

PROJECT NOTIFICATION

☐ The above item was received on _____ and has been referred to appropriate local governmental agencies for their review and comment. This review will be conducted as expeditiously as possible.

☒ A copy of the above item is enclosed for your review and comment, in accordance with OMB Circular A-95 requirements. Your review should focus on this item's compatibility with the plans, programs and objectives of your organization. You may indicate your interest in or comments concerning this item by returning this sheet to the Metropolitan Clearinghouse by April 20, 1983.

RESPONSE TO CLEARINGHOUSE

☐ We do not wish to comment on the above item.

☐ We have reviewed the above item, find it in conformance with local plans, programs and objectives, and recommend a favorable Metropolitan Clearinghouse review.

☒ We are interested in the above item and wish to make the following comments: (Use attachment)

☐ We desire an extension of time until _____ for further consideration of this item (subject to certain restraints imposed by the OMB Circular).

☐ We have further interest and/or questions concerning the above item and wish the Clearinghouse to set up a conference with the applicant.

Signature [signature]

Organization Montgomery County Government

Montgomery County Government

Charles W. Gilchrist
County Executive
(301) 279-1284
TTY 279-1085

April 29, 1983

Mr. William E. Treischman, Jr., Chief
Planning Division
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Treischman:

This letter is in response to your letter of March 18, 1983 requesting comments on the Draft Metropolitan Washington Water Supply Study. The information and discussions that originated from the early-action study phase of the Corps study were indeed useful to local governments and water supply agencies and contributed to the formulation and signing of the Regional Water Supply Agreements of 1982. The Corps draft study confirms earlier findings that the region's water supply problems should be solved at least through the year 2030, a real accomplishment.

My staff reviewed the draft water supply study in detail. They have indicated to me that in the sections of the study dealing with sensitivity analysis and reallocation of Bloomington Lake storage, the effects on reservoir storage of 300 MGD and 500 MGD flow-bys for the Potomac River were discussed. The County concurred with and continues to support the 100 MGD flow-by recommended by the State of Maryland and adopted by the parties to the Low Flow Allocation Agreement because the reported effects were minimal and short lived. Furthermore, according to the State's Environmental Flow-By Study, the free flowing river below Little Falls Dam that is subject to the flow-by is a relatively low productivity portion of the Potomac River fishery within Montgomery County.

The Regional Water Supply Agreements provide that reservoirs in Montgomery County (Triadelphia, Rocky Gorge and Little Seneca) will be used during a drought to augment municipal water supplies. The Patuxent reservoirs have well established fisheries, and Little Seneca Lake is expected to have a very productive fishery. As your analysis indicates, Potomac flow-bys of 300 and 500 MGD have a dramatic effect on how quickly reservoir storage can be depleted. It is our concern that while higher flow-bys could produce some marginal benefits to the Potomac fishery, they could seriously harm the reservoir fisheries.

If increased Potomac flow-bys truly become an issue in the future, I would recommend that a comprehensive evaluation of the effects and benefits to all involved water bodies be undertaken. At the present time, I would

C-X-22

not support consideration of higher Potomac flow-bys unless it could be demonstrated that the County's reservoir fisheries would not be stressed unnecessarily. I strongly support reservoir drawdowns for drought relief as provided for in the Water Supply Agreements but am understandably interested in fully utilizing the recreational potential of the impoundments as well as the Potomac River at other times.

I agree with the two principal recommendations of the draft Metropolitan Washington Water Supply Study, that no further action is needed by the Corps, and that the study should be transmitted to Congress. I would appreciate a copy of the final study that will be sent to Congress and the operating rules that have been established for Bloomington Dam. Thank you for the opportunity to comment on the study.

Sincerely,

Charles W. Gilchrist

Charles W. Gilchrist
County Executive

CWG:jm

cc: Tom Andrews, Director
Water Resources Administration

James J. Corbalis, Jr., Director
Fairfax County Water Authority

Paul Eastman, Executive Director
Interstate Commission on the Potomac River Basin

David L. Scull, President
Montgomery County Council

Andrew N. Vislosky, Chairman
Washington Suburban Sanitary Commission

Jerry Hays
Washington Aqueduct Division

C.M.-23

NO RESPONSE NECESSARY

COMMONWEALTH of VIRGINIA

Department of Planning and Budget

STUART W. CONNOCK
DIRECTOR

POST OFFICE BOX 1422
RICHMOND 23211
(804) 786-7455

MEMORANDUM

TO: William E. Trieschman, Jr.

FROM: State A-95 Review Officer, Lynn K. Eades *Lynn K Eades*

DATE: May 6, 1983

SUBJECT: Project Notification and Review
Applicant: Department of the Army

Project: Metropolitan Washington Area Water Supply Study

Clearinghouse Control Number (SAI): VA830422-04000000005

The State Clearinghouse has reviewed the notification of intent/application for the above project.

As a result of the review, it has been determined that the proposed project is in accord with State plans, programs and objectives as of this date. A copy of this form and any attachments must be attached to your application.

If you have any questions, please contact me at (804)786-1688.

COMMENT: No Comment.

NOTE: *THE ORIGINAL OF THIS FORM MUST BE FORWARDED TO THE APPLICANT.*

(FORM LETTER II)

NO RESPONSE NECESSARY

COMMONWEALTH OF VIRGINIA

COUNTY OF LOUDOUN

OFFICE OF COUNTY ADMINISTRATOR
18 NORTH KING STREET
LEESBURG, VIRGINIA 22075

PHILIP A. BOLEN
County Administrator

A. R. Sharp, Jr.
Deputy County Administrator

TELEPHONE 777-0200

May 13, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Re: Metropolitan Washington Area Water Supply Study

Dear Mr. Trieschman:

In response to your letter of March 28, 1983, concerning the Draft Metropolitan Washington Area Water Supply Study, Loudoun regards impoundment sites within the County that have been designated as potentially feasible for use as future sources of water supply (Appendix F, Table F-24, pp. 111-112) to be significant County resources. For the past 15 years, the County has officially opposed proposed impoundment sites for use by other agencies or jurisdictions, as indicated in the attached resolution adopted in 1974. Loudoun is aware that its sources of clean, potable water may be desired to supply the requirements of other jurisdictions, but at the same time, the County is currently exploring several methods of reserving future water supply sites through its comprehensive planning process, such as density transfer and leasing of easements.

In summary, Loudoun County is still firmly opposed to the desionation of future water supply impoundment sites within its borders by federal, state, regional or other local government bodies or agencies. Any change in this position would not take place without active involvement by the County's citizens, elected officials and staff.

If you have any questions or need additional information, please contact my office or John Dugan, Director of Planning, Zoning and Community Development at 471-6050.

Sincerely,

Philip A. Bolen
County Administrator

PAB/shj

Attachment

cc: Ken Shelton, General Manager, Sanitation Authority
Edward Finnegan, County Attorney
Metropolitan Washington Council of Governments (A-95 Review Referral)
Mr. James Corbalis, Engineer Director, Fairfax County Water Authority

COMMONWEALTH OF VIRGINIA

COUNTY OF LOUDOUN

BOARD OF SUPERVISORS
18 EAST MARKET STREET
LEESBURG, VIRGINIA 22075

TELEPHONE 777-0200
Extension 89

At a regular meeting of the Board of Supervisors of Loudoun County, Virginia, held in the Meeting Room of the School Board Annex, 30 West North Street, Leesburg, Virginia, on Tuesday, September 3, 1974 at 10:00 a.m.

PRESENT: William C. Crossman, Jr., Chairman
Paul J. Walstad - Arrived at 11:05 a.m.
James E. Arnold
James F. Brownell
John A. Costello
Henry C. Stowers
Frank Raflo

IN RE: FUTURE WATER SUPPLY ALTERNATIVES FOR THE WASHINGTON, D. C. METROPOLITAN AREA

Upon motion of Mr. Arnold, the following resolution was passed unanimously:

R E S O L U T I O N

WHEREAS, on June 4, 1974, the Fairfax County Water Authority, through James J. Corbalis, Jr., its Engineer-Director, presented to the Loudoun County Board of Supervisors the report of Black and Veatch, consulting engineers of Kansas City, Missouri, under contract to the Fairfax County Water Authority, the Government of the District of Columbia and the Washington Suburban Sanitary Commission, to analyze future water supply alternatives for the Washington, D. C. metropolitan area; and

WHEREAS, the primary recommendation of this report was the construction of a dam and impoundment on either Catoctin Creek or Goose Creek in Loudoun County, Virginia; and

WHEREAS, upon a study of this report by the Loudoun County Board of Supervisors and other officials and citizens of Loudoun County, the Board of Supervisors of Loudoun County, Virginia, has concluded that the Black and Veatch and/or Corps of Engineers proposed dam and impoundment on either Catoctin Creek or Goose Creek in Loudoun County is totally unacceptable to Loudoun County. Its effect on Loudoun County would be disastrous in that:

William C. Crossman, Jr., Chairman, Mercer District
James F. Brownell, Blue Ridge District
John Costello, Broad Run District
James E. Arnold, Catoctin District
Henry Stowers, Dulles District
Frank Raflo, Leesburg District
Paul J. Walstad, Sterling District

1. It would totally destroy thousands of acres of valuable and needed farmland in the County.
2. It would completely inundate one of the most historic villages in Loudoun County, would partially inundate another, would totally destroy two of Loudoun's three remaining historic mills, and would obliterate permanently innumerable historic monuments dating from Colonial and Revolutionary days.
3. It would cause severe ecological disruption far beyond the limits of the impoundment itself.
4. It would destroy the uniquely beautiful valleys of the creek and its tributaries with attendant destruction of wildlife.
5. It would remove valuable land and improvements from the Loudoun County tax base to an extent incompatible with our existing government standards.
6. The impoundment and attendant disruption of land use in Loudoun County would be contrary to the Comprehensive Plan for Loudoun County, adopted by the Board of Supervisors of Loudoun County under the provisions of Chapter 11, Article 4, Section 15.1-446 et seq. of the Code of Virginia, 1950, as amended, and would be contrary to Loudoun County objectives for orderly growth.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of Loudoun County, Virginia, go on record as unequivocally opposed to the construction of a dam and impoundment in Loudoun County, Virginia, on Catoctin Creek or Goose Creek as proposed in the April, 1974 Black and Veatch Study and the April, 1974 Corps of Engineers Report relating to an alternate water supply study for the metropolitan area; and

BE IT FURTHER RESOLVED, that a copy of this resolution be sent to the Board of Supervisors of Fairfax County, Virginia, the Fairfax County Water Authority, the Government of the District of Columbia, the Washington Suburban Sanitary Commission, the Honorable Mills E. Godwin, Governor of the Commonwealth of Virginia, United States Senator Harry F. Byrd, Jr., United States Senator William L. Scott, Congressman Joel T. Broyhill, State Senator Charles L. Waddell, Delegate Kenneth B. Rollins, Delegate Stanley A. Owens and Delegate William R. Murphy, Congressman Stanford E. Parris, State Senator Adelard L. Brault, State Senator Olive L. DuVal II, State Senator Joseph V. Gartlan, Jr., State Senator Omer L. Hirst, Delegate Warren E. Barry, Delegate Vincent F. Callahan, Jr., Delegate James H. Dillard, Delegate Wyatt B. Durrette, Jr., Delegate Robert E. Harris, Delegate Dorothy S. McDiarmid, Delegate Thomas J. Rothrock, Delegate James R. Tate, Delegate Raymond E. Vickery, Delegate Carrington Williams.

. . . . . .

C-X-25

Voting on the motion: Messrs. Crossman, Walstad, Arnold, Rafio, Brownell, Costello and Stowers - Yes; No - No.

A COPY TESTE:

Philip A. Bolen
County Administrator

RESPONSE

Reservoirs offer opportunities for a variety of uses such as flood control and recreation in addition to providing water supply storage. Although reservoir development has been strongly opposed in Loudoun County as well as throughout the Potomac River Basin, it was important to consider reservoirs as a possible alternative along with other potential long range water supply measures (groundwater, interconnections, estuary use, pricing, conservation, etc.). Meaningful comparisons could then be made. These comparisons indicated that reservoir storage remains as one of the least expensive and most reliable methods of furnishing large volumes of high quality water. If and when additional water supply sources are needed in the MWA, reservoir storage should definitely be considered. At that time, active involvement of the concerned and affected public would be undertaken. It is important to note, however, that the series of contracts and agreements signed in July 1982 are projected to satisfy the water supply needs of the MWA through at least the year 2030 with the construction of only one additional reservoir (Little Seneca Lake in Montgomery County, Maryland).

C-X-27

MARYLAND
DEPARTMENT OF STATE PLANNING
301 W PRESTON STREET
BALTIMORE, MARYLAND 21201-2365

HARRY HUGHES
GOVERNOR

CONSTANCE LIEDER
SECRETARY

May 18, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
PO Box 1715
Baltimore, MD 21203

SUBJECT: PROJECT NOTIFICATION AND REVIEW

Applicant: Department of the Army - Balto. District Corps of Engineers

Project: Draft - Metro. Washington Area Water Supply Study

State Clearinghouse Control Number: 83-3-437

Dear Mr. Trieschman:

The State Clearinghouse has reviewed the above study. Acting under Article 88C of the Annotated Code of Maryland and Federal Executive Order 12372, the State Clearinghouse received comments from the following:

Department of Natural Resources, Department of Economic and Community Development, Office for Environment Programs, Department of Transportation, University of Maryland Center for Environmental and Estuarine Studies, Washington Metro. Council of Governments, Tri-County Council for Southern Maryland, and Frederick County noted that the study is not inconsistent with their plans and programs.

The Maryland Historical Trust comments (copy enclosed) recommended in earlier correspondence that no additional archeological investigations be performed at the Seneca Lake site. The Trust also noted that they would like the opportunity to review any proposed projects that the Corps select for implementation in the future even though the study recommends that the Corps of Engineers take no action at this time.

Department of Natural Resources advised (copy attached) that some inaccuracies were found on Page A-101, items 8 and 9. This section indicated that the Water Resources Administration has responsibility for licensing of well drillers, issuance of well drilling permits and comprehensive pollution control enforcement powers. As of July 1980, these three activities were transferred to the Office of Environmental Programs, Department of Health and Mental Hygiene. Pollution control oriented activities that remain within the Water Resources Administration includes erosion and sediment control, oil spill control, and enforcement and stormwater management.

Charles County was afforded the opportunity to review and comment on the project; however, the County has not responded to inquiries as of this date. Should the County submit comments at a later date, they will be forwarded to the applicant.

TELEPHONE 301 383 7875
OFFICE OF STATE CLEARINGHOUSE

As a result of the review, it has been determined that the proposed study is not inconsistent with State plans, programs, and objectives as of this date.

Sincerely,

Guy W. Hager
Director, State Clearinghouse

GWH:SB:bfd

cc: Lowell Frederick
Clyde Pyers
Herbert Sachs
Max Eisenberg
Stephanie O'Hara
Dennis Taylor
Charles Chinault
Gary Hodge
James Shaw
Walter Scheiber
Comprehensive

Att.

Date: April 27, 1983

RECEIVED
MAY -2 1983

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

SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: Department of the Army - Balto. District Corps of Engineers

Project: Draft-Metro. Washington Area Water Supply Study

State Clearinghouse Control Number: 83-3-437

CHECK ONE

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

1. The project is not inconsistent with this agency's plans, programs or objectives and where applicable, with the State approved Coastal Zone Management Program. ___

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

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

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

Signature: Karen P. Adler

Title: for the DIRECTOR

Agency: WATER RESOURCES ADMINISTRATION

Address: TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

Herbert M. Sachs

State Clearinghouse
THOMAS C. ANDREWS
DIRECTOR

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401-9974
(301) 269-3846

April 27, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District
Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

The Maryland Water Resources Administration has reviewed the Draft Metropolitan Washington Area Water Supply Study. The study was found to be thorough, well-organized and of the highest quality. The main report and its accompanying appendices provide a wealth of information that will contribute significantly to an improved understanding of water supply management in the Washington, D.C. area as well as in the entire Potomac River Basin.

A careful review of Appendix A has revealed some inaccuracies in need of correction. Under a discussion of state agency authorities on page A-101, items 8 and 9 indicate that the Maryland Water Resources Administration has responsibility for the licensing of well drillers and the issuance of well drilling permits, as well as comprehensive pollution control enforcement powers. Effective July 1980, the well drilling permit and licensing program and most pollution control activities were transferred to the Department of Health and Mental Hygiene, Office of Environmental Programs. Pollution control oriented activities that remain within the Water Resources Administration include; erosion and sediment control, oil spill control and enforcement, and stormwater management (see attached organization chart).

C-X-30

Thank you for providing the Water Resources Administration with an opportunity to review and comment on the draft study. We have enjoyed working with your very professional staff over the years on Potomac River and Washington, D.C. area water supply problems and look forward to the same close working relationship in the future. If I can provide you with any clarification of the above comments, please do not hesitate to contact me.

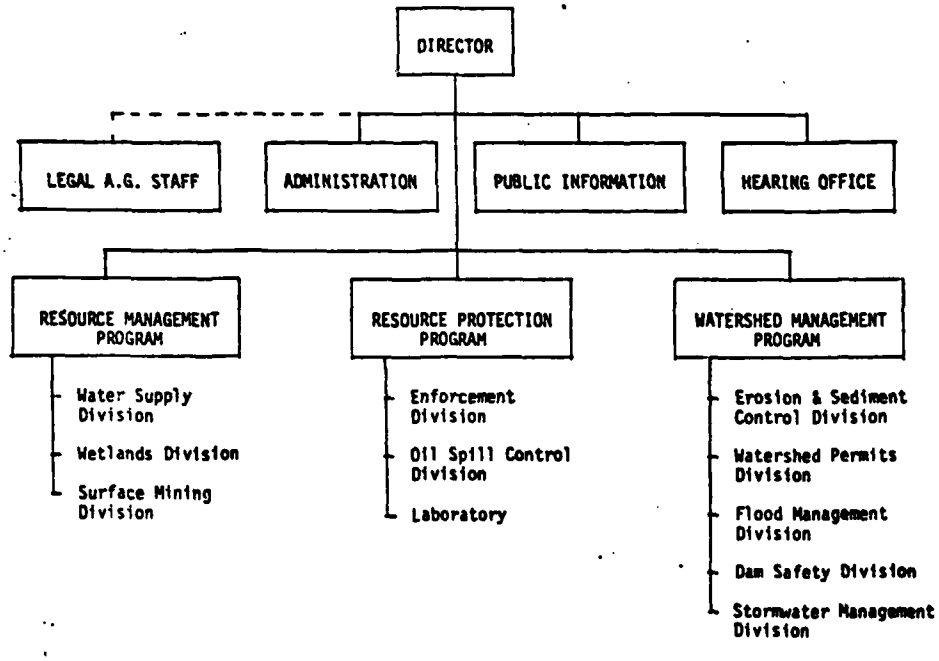
Sincerely,

Thomas C. Andrews
Director

TCA:sao
Attachment
cc: State Clearinghouse

MARYLAND DEPARTMENT OF NATURAL RESOURCES

WATER RESOURCES ADMINISTRATION



Date: 5/3

RECEIVED
MAY -5 1983

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

SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: Department of the Army - Balto. District Corps of Engineers

Project: Draft-Metro. Washington Area Water Supply Study

State Clearinghouse Control Number: 83-3-437

CHECK ONE

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

1. The project is not inconsistent with this agency's plans, programs or objectives and where applicable, with the State approved Coastal Zone Management Program. ___

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

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

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

Signature: Lowell W Frederick

Title: ___

Agency: DECD

Address: 2525 Riva Rd

Maryland Historical Trust

April 29, 1983

Mr. Samuel Baker
State Clearinghouse
Department of State Planning
301 W. Preston Street
Baltimore, Maryland 21201

Re: State Clearinghouse No. 83-3-437
Draft-Metro. Washington Area Water Supply Study

Dear Mr. Baker:

We have completed our review of the Metropolitan Washington Area Water Supply Study (MWAWSS). We have no objection to this preliminary assessment of water supply needs and the various potential alternatives for meeting these needs. The major undertaking proposed for Maryland is the Little Seneca Lake project which we have reviewed previously. A copy of our comments on that particular project are attached. Although the study recommends that the Corps of Engineers take no action at this time, we would like the opportunity to review any proposed projects that the Corps does select for implementation in the future.

If you have any questions, please call Kim Kimlin at 269-2438.

Sincerely,

George J. Andreve

George J. Andreve
Environmental Review
Administrator

GJA/KEK/bjs

Enclosure

cc: Mr. Lowell Frederick
Mr. Samuel Baker
Ms. Eileen McGuckian
Ms. Anita Hall

Shaw House 21 State Circle, Annapolis, Maryland 21401 (301)269-2212, 269-2438
Department of Economic and Community Development

Maryland Historical Trust

October 29, 1980

Mr. Byron James Benton
Environmental Analyst
Washington Surburban Sanitary Commission
4017 Hamilton Street
Hyattsville, Maryland 20781

RE: Archaeological Reconnaissance of the Little Seneca Lake, Montgomery County, Maryland

Dear Mr. Benton:

This letter is written confirmation of our concurrence with the findings of the above referenced report. As the Waters Mill site will not be affected by the proposed lake, additional archaeological investigations at the site are not recommended. The location of the site should be made known to the contracting engineers and the site avoided during construction activities. The prehistoric site has insufficient density integrity, and diversity of artifacts to contribute significantly to knowledge and so additional investigations are not recommended. The four houses to be removed all date to the turn of the 19th century and are not architecturally or archaeologically significant. Therefore, additional investigations are not recommended. Should sites unexpectantly be found during construction, please contact Dayne Clark of this office for consultation.

Thank you for your support in readily funding this compliance study.

Sincerely,

Amy Miller
Deputy State Historic Preservation Officer

AM/DC/ca

cc: June Evans
Tyler Bastian
Robert C. Spalding
Mr. Hilton Kelly

C-IX-32

Maryland Historical Trust

RECEIVED
MAY -4 1983

April 29, 1983

Mr. Samuel Baker
State Clearinghouse
Department of State Planning
301 W. Preston Street
Baltimore, Maryland 21201

Re: State Clearinghouse No. 83-3-437
Draft-Metro. Washington Area Water Supply Study

Dear Mr. Baker:

We have completed our review of the Metropolitan Washington Area Water Supply Study (MWAWSS). We have no objection to this preliminary assessment of water supply needs and the various potential alternatives for meeting these needs. The major undertaking proposed for Maryland is the Little Seneca Lake project which we have reviewed previously. A copy of our comments on that particular project are attached. Although the study recommends that the Corps of Engineers take no action at this time, we would like the opportunity to review any proposed projects that the Corps does select for implementation in the future.

If you have any questions, please call Kim Kimlin at 269-2438.

Sincerely,

George J. Andreve

George J. Andreve
Environmental Review
Administrator

GJA/KEK/bjs

Enclosure

cc: Mr. Lowell Frederick
Mr. Samuel Baker
Ms. Eileen McGuckian
Ms. Anita Hall

Shaw House, 21 State Circle, Annapolis, Maryland 21401 (301)269-2212, 269-2438
Department of Economic and Community Development

Maryland Historical Trust

October 29, 1980

Mr. Byron James Benton
Environmental Analyst
Washington Surburban Sanitary Commission
4017 Hamilton Street
Hyattsville, Maryland 20781

RE: Archaeological Reconnaissance of the Little Seneca Lake, Montgomery County, Maryland

Dear Mr. Benton:

This letter is written confirmation of our concurrence with the findings of the above referenced report. As the Waters Mill site will not be affected by the proposed lake, additional archaeological investigations at the site are not recommended. The location of the site should be made known to the contracting engineers and the site avoided during construction activities. The prehistoric site has insufficient density, integrity, and diversity of artifacts to contribute significantly to knowledge and so additional investigations are not recommended. The f houses to be removed all date to the turn of the 19th century and are architecturally or archaeologically significant. Therefore, additional investigations are not recommended. Should sites unexpectantly be fo during construction, please contact Wayne Clark of this office for con sultation.

Thank you for your support in readily funding this compliance s

Sincerely,

Nancy Miller

Nancy Miller
Deputy State Historic
Preservation Officer

NM/AAC/ca

cc: June Evans
Tyler Bastian
Robert C. Brandberg
Ms. Eileen McGuckian

NO RESPONSE NECESSARY

State House 21 State Circle Annapolis Maryland 21401 (301)269-2212 269-2438
Department of Economic and Community Development

Charles A. Funn, Chairman
Arlington County
Hon. Nancy K. Falck, Vice-Chairman
Fairfax County
Joseph B. Wisniewski, Treasurer
Fairfax County
John W. Epling
Executive Director

Northern Virginia Planning District Commission



7630 Little River Turnpike • Annandale, Virginia 22003-2678 • (703) 642-0700

COMMISSIONERS:
Hon. Charles A. Bos
Leesburg
Hon. Eileen M. Barnes
Prince William County
Hon. Thomas M. Davis III
Fairfax County
Hon. Sandra L. Duckworth
Fairfax County
Hon. Nancy K. Falck
Fairfax County
Charles A. Funn
Arlington County
Hon. Maurice Gerson
Manassas
Brenda Z. Greene
Fairfax County
Hon. Dorothy Grotos
Arlington County
Hon. John F. Herrity
Fairfax County
Hon. G. Robert Maitland
Manassas Park
William C. McLeod
Prince William County
James J. Miller
Alexandria
Hon. Audrey Moore
Fairfax County
C. M. Moyer, Jr.
Manassas
Gene Murphy
Manassas Park
Vance Myers
Fairfax City
Hon. Martha V. Pennino
Fairfax County
James H. Pickford
Fairfax County
Brian Power
Loudoun County
Lonnie C. Rich
Alexandria
Charles F. Robinson, Jr.
Fairfax County
Hon. Thomas D. Rust
Herndon
Joseph R. Stowers
Fairfax County
Hon. Edward B. Strait
Falls Church
Hiro Sutton
Falls Church
Hon. Betty Tatum
Loudoun County
Hon. Patricia Ticer
Alexandria
Hon. Donald E. Upchurch
Vienna
Margaret Vanderhye
Fairfax County
Hon. Mary Margaret Whipple
Arlington County
Hon. Donald L. White
Prince William County
Hon. Lee H. Wigren
Fairfax City
John T. Williamson, Jr.
Arlington County
Joseph B. Wisniewski
Fairfax County
As of February 1, 1983

May 23, 1983

Ms. Lynn K. Eades
State A-95 Review Officer
Dept. of Planning and Budget
P. O. Box 1422
Richmond, Virginia 23219

Dear Ms. Eades:

The Northern Virginia Planning District Commission (NVPDC) has reviewed the application described below and has determined that the application is not inconsistent with regional plans and policies and recommends favorable action by the grantor agency.

Your cooperation in the intergovernmental review process is appreciated.

Sincerely yours,

John W. Epling
Executive Director

SUBJECT: A-95 Review by Regional Clearinghouse
Project Title: Metro. Washington Area Water Supply Study
Applicant: Dept. of the Army, Baltimore, Md.
SAI Number: VA830422-04000000005
NVPDC Staff Contact: Alan Cavacas

cc: William E. Trieschman, Jr., Chief, Planning Div., Dept. of the Army, Baltimore District Corps of Engineers

NO RESPONSE NECESSARY

MARYLAND
DEPARTMENT OF STATE PLANNING
301 W. PRESTON STREET
BALTIMORE, MARYLAND 21201-2365

HARRY HUGHES
GOVERNOR

CONSTANCE LIEDER
SECRETARY

June 1, 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

RE: State Clearinghouse Project #83-3-437
Draft-Metropolitan Washington Area Water Supply Study

Dear Mr. Trieschman:

Subsequent to the Clearinghouse review summation letter of May 18th concerning above reference, the State Clearinghouse has received the enclosed comments from Charles County.

Charles County noted that the study designated the county as peripheral and susceptible to development pressures. Therefore, it is important that resources not be exploited by other jurisdictions which would deprive Charles County of water to meet these pressures. Charles County also indicated that they have no objections to the location of a wellfield site in the eastern part of the County provided the water extracted from these wells is for use by County residents and industry. The County recommended that before any proposed action is taken in regard to this study each affected jurisdiction be allowed the opportunity to submit additional comments.

Your attention to these comments is greatly appreciated.

Sincerely,

for Guy W. Hager
Director, State Clearinghouse

GWH:cs
Enclosure
c: Christopher Chanault

TELEPHONE 301 383 7875
OFFICE OF STATE CLEARINGHOUSE

Date: May 25, 1983

DEPT. OF STATE PLANNING
RECEIVED
MAY 26 1983

REVIEWED
ANSWERED

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

SUBJECT: PROJECT SUMMARY NOTIFICATION REVIEW

Applicant: Department of the Army - Balto. District Corps of Engineers

Project: Draft-Metro. Washington Area Water Supply Study

State Clearinghouse Control Number: 83-3-437

CHECK ONE

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

1. The project is not inconsistent with this agency's plans, programs or objectives and where applicable, with the State approved Coastal Zone Management Program. ___

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

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

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

Signature: [signature]

Title: County Administrator

Agency: Charles County

Address: P. O. Box B, Courthouse
La Plata, Md. 20646

*See attached comments

DEPT. OF STATE PLANNING
RECEIVED
REVIEWED
ANSWERED

1. We will be greatly concerned if other than Charles County jurisdictions extract groundwater to such an extent that groundwater is not available for use by Charles County residents.

   (a) Recognizing that Charles County is designated by the study as a peripheral county susceptible to development pressures, it is important that resources not be exploited by other jurisdictions depriving Charles County of water to meet these pressures.

   (b) No objections to the location of a wellfield site in the eastern portion of Charles County provided the water extracted from these wells is for use by Charles County residents and industry.

2. The County government is conducting a water supply study to address water needs for the northern portion of the County.

3. We disagree with the assertion that Charles County is not suitable for a reservoir, the only jurisdiction in the study area so designated. The use of reservoirs is being explored in the County's water supply study.

4. We are concerned that a greater burden was placed on the Atlantic Coastal Plain of Southern Maryland for the location of groundwater due to the State's withdrawing from the study of the Hagerstown Valley of Western Maryland because of strong local opposition. Recognizing that the study further notes Charles County, which is in Southern Maryland, as expecting to have development pressure occur it would be preferable not to target Southern Maryland for the extraction of groundwater.

5. We strongly recommend that before any action is taken with regard to this study that each affected jurisdiction be allowed the opportunity to submit additional comments. The current comment process will not suffice in that no action is recommended in the plan; therefore, comments may not be as significant as they would be if other action was proposed. A later comment period will allow for comments to be current should action with regard to the study be proposed.

RESPONSE

1) The United States Geological Survey's investigation of ground water resources in the Coastal Plain of Maryland was performed to assess the potential availability of water from this source. It should be recognized that the State of Maryland presently prohibits the export of groundwater from the Coastal Plain. Development of such ground water resources in Charles County for use by areas outside the Coastal Plain should be initiated only after extensive field testing and a determination that Charles County's future needs can be satisfied.

2) Detailed studies of reservoir sites in Charles County were not undertaken because the County's topography and runoff characteristics would severely limit the development of large-scale storage projects. Small reservoirs, however, may be feasible for individual communities.

NATIONAL CAPITAL PLANNING COMMISSION
WASHINGTON, D.C. 20576

NCPC File No. 1815

METROPOLITAN WASHINGTON AREA
WATER SUPPLY STUDY
DRAFT REPORT

Report to the U. S. Army Corps of Engineers

May 5, 1983

The Commission:

1. again commends the U. S. Army Corps of Engineers, Baltimore District, for the preparation of a study that thoroughly identified and examined the water supply problems in the Potomac River Basin and which helped to bring about the institutional arrangements and agreements that, along with certain limited structural plans already implemented or in progress, now appear to satisfy water supply needs for the major utilities in the Metropolitan Washington Area to the year 2030; and

2. directs its staff to continue to work with Federal agencies and installations in the National Capital Region to insure that appropriate measures are being taken in the preparation of master and project plans to conserve water supplies in the region.

* * *

BACKGROUND AND STAFF EVALUATION

Description of Study

The Metropolitan Washington Area (MWA) Water Supply Study has been prepared in compliance with the Water Resources Development Act of 1974, which directs the Chief of Engineers to make a complete investigation of the water resource needs of the MWA. The study area includes the jurisdictions within the National Capital Region and Charles County, Maryland. Within this area there are 25 independent water supply systems, but of these systems, three furnish approximately 96 percent of the total water treatment capacity. These three systems are Washington Aqueduct Division (WAD), operated by the Corps of Engineers, which serves the District of Columbia, Arlington

NATIONAL CAPITAL PLANNING COMMISSION
WASHINGTON, D.C. 20576

In Reply Refer To:
NCPC File No. 1815

JUN 1 · 1983

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Baltimore District
Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

The National Capital Planning Commission, at its meeting on May 5, 1983, approved the enclosed report to the U. S. Army Corps of Engineers on the Metropolitan Washington Area Water Supply Study - Draft Report.

Sincerely,

Reginald W. Griffith

Reginald W. Griffith
Executive Director

Enclosure

County, Falls Church, and part of Fairfax County northwest of Arlington County; Washington Suburban Sanitary Commission (WSSC), which serves Montgomery and Prince George's County; and Fairfax County Water Authority (FCWA), which serves Fairfax County, Alexandria, and part of Prince William County. These suppliers obtain their water from one or more of three sources, including: Potomac River (WAD, WSSC, and FCWA), Patuxent River (WSSC), and Occoquan Creek (FCWA). A fourth system, the city of Rockville, although relatively small, is, like WAD, totally dependent on the Potomac River. The Potomac furnishes approximately 70 percent of the area water supply.

The study has been conducted in two phases. Phase I, which was the subject of an August 1979 Progress Report, presented plans to meet the needs of the four Potomac River users (WAD, WSSC, FCWA, and Rockville) to the year 2030. The Baltimore District focused on these users and the areas they serve first, because they supply the majority of water in the MWA and have the greatest impact on available water supplies. Phase II of the study addresses the water needs of the remaining areas in the MWA, which include part of Prince William County, Loudoun County, Charles County, and the City of Fairfax. The second phase also explores long-range water supply alternatives, including groundwater, wastewater reuse, use of the Potomac estuary, storage, conservation, pricing, and raw water and finished water interconnections.

The first phase of the study investigated in detail five alternatives to meet area water needs until 2030. These five alternatives had evolved from an original list of 18 alternatives. Most of the alternatives involved some structural improvements, primarily raw water interconnections involving pipelines several miles in length. The first phase study concluded that future water supply shortages were not nearly as severe as had been projected prior to the start of the study. It concluded that the various alternatives studied could provide adequate water supply for the region well into the 21st century but did not endorse a specific alternative.

Since the study was initiated, particularly since the August 1979 Progress Report, the various water supply agencies and other non-Federal interests concerned with water supply needs have made several achievements that have significantly improved the water supply situation. Their efforts were aided to a large degree by the Corps of Engineers study. The more important achievements during this period included the following: adoption of the Potomac Low Flow Allocation Agreement in 1978; construction of a FCWA Potomac River intake and enlargement of the WSSC Potomac River intake, both in 1980; completion of the flowby study in 1981 by the State of Maryland; construction of a FCWA Potomac treatment plant in 1982; signing of a contract by the MWA water utilities in 1982 to purchase all of the water supply storage in Bloomington Lake; an agreement in 1982 to cooperatively manage all water supply sources on a regional basis for the benefit of all users; and initiation of the construction of the Little Seneca Lake project in 1982.

According to the draft final report, these accomplishments significantly altered the magnitude of the MWA water supply problem, and the cumulative effect of the actions was to substantially eliminate projected shortages until at least the year 2030. Therefore, the Corps considers the final report as an information document for use by the non-Federal decision makers responsible for area water supply rather than an authorization document which recommends specific Federal actions.

The conclusions of the Corps are based on a projected increase in water demand within the MWA from 440 million gallons per day (mgd) in 1980 to about 680 mgd in 2030. Seasonal summer peak use is projected at the much higher rate of 970 mgd by 2030. These projections are based on an assumed conservation factor of approximately 11 percent. The study also assumes a minimum "environmental flowby" target flow into the Potomac estuary of 100 mgd, with a 300 mgd flow target for the reach of the Potomac between Great Falls and Little Falls. These flowby targets were developed by the State of Maryland since the August 1979 Progress Report and were subsequently adopted by the signatories to the Potomac Low Flow Allocation Agreement.

Although the draft final report concluded that no shortages are projected within the MWA to the year 2030, the Corps of Engineers did report on various parts of the study and sub-studies which relate to the water supply problem definition, management of the existing water system, important planning issues, and alternatives for future water supply planning. Since the Corps determined that it was no longer necessary to develop specific long-range "plans" to meet needs through the year 2030, the long-range planning measures considered in the final report were studied and developed in less than "feasibility scope." Only preliminary costs and impacts were generated to enable general comparative evaluation.

The long-range planning measures in the study included local and Upper Potomac Basin reservoirs, as well as modifications to existing reservoirs; changes in the regulation of Bloomington Lake releases; and other measures, noted above, such as wastewater reuse, raw and finished water connections, use of water from the Potomac Estuary (as now being tested in the Potomac Estuary Pilot Water Treatment Plant), and pricing. The study concludes that these alternatives generally have very limited application for the immediate future because they are not cost effective, have potentially significant adverse environmental impacts, are socially unacceptable, are not currently feasible from an engineering standpoint, or contain a combination of these drawbacks. Furthermore, with the steps already taken and the predictions of no water shortages, there is now no pressing need for any of the "structural plans." Should changes in the future necessitate additional water supply programs, the Corps considers the work accomplished to date on alternative "plans" as an appropriate starting point for more detailed investigations.

In addition to investigating "plans" for the entire MWA, the final report also contains a study of needs of the outlying communities that make up a small percentage of the MWA water supply needs. The report concludes that these areas face potential shortages well before the major utilities in the MWA. The areas covered in this study include Charles County, central and western Prince William County, Loudoun County, and the City of Fairfax. The demand for water supply in these outlying areas is expected to grow much faster than in the rest of the MWA, although the share of the total regional demand will still remain quite small. The outlying service area had a 1980 demand of 21 mgd, which is projected to increase to 107 mgd by 2030. The study evaluates certain alternatives for the smaller systems in these areas to maximize use of existing resources, including water conservation, water pricing, and interconnections and purchasing from neighboring water supply systems. The study also evaluates new water supply development measures for the outlying areas, including additional reservoirs (one has been

proposed for several years on Cedar Run near Quantico in Prince William County), groundwater, water treatment plant expansions, use of the Potomac Estuary, wastewater reclamation, and pumpover from the Potomac River. The study concludes that the most likely future sources for outlying communities are groundwater development and small reservoirs.

Previous Commission Action

At its meeting on November 1, 1979, the National Capital Planning Commission, in comments to the Baltimore District, U. S. Army Corps of Engineers on the Metropolitan Washington Area Water Supply Study for the Potomac River Users-Draft Report:

1. commended the Baltimore District for the preparation of a study that thoroughly identifies and examines the water supply problems in the Potomac River Basin and examines a number of water supply alternatives that appear to be feasible to serve the short- and intermediate-range needs of the Metropolitan Washington Area (MWA);

2. *endorsed the concept*, as represented by the alternative plans in the study, of meeting the short- and intermediate-range projected water supply needs of the most urban portions of the MWA through a combination of intergovenmental management arrangements, conservation, and capital improvements projects, such as Little Seneca Lake and/or raw water interconnections between the Washington Suburban Sanitary Commission (WSSCC) facilities on the Potomac and Patuxent Rivers or the Fairfax County Water Authority (FCWA) facilities on the Potomac River and Occoquan Creek;

3. recommended that the Baltimore District reassess its findings and alternative plans, adjusting for the increased deficit of water supply to the year 2030 that would be represented by any additional Potomac River flow-by requirements, if the determination, now underway, of the flow-by level necessary to protect the Potomac River environment, as well as flow-by requirements for the Patuxent River and Occoquan Creek, significantly change the assumptions in the study report;

4. requested that the Commission be included in the Federal-Interstate-State-Regional Advisory Committee (FISRAC) or any similar committee that is established to advise the Baltimore District in the preparation of Phase II of the study; and

5. noted that Round 2 of the Metropolitan Washington Council of Government's Cooperative Forecasts of the population in the National Capital Region are 6.6 percent lower than the Round I forecasts used in the study, resulting in some reduction in demand from the levels incorporated in the study.

In view of the significant Federal interests in assuring an adequate water supply for the Federal establishment in the National Capital Region and for the area that must be supplied by the Washington Aqueduct Division (WAD), a Federal agency, under legislative mandate, the Commission recommended that the water supply and distribution agencies and jurisdictions in the area covered by the Phase I study report:

1. cooperate in establishing intergovernmental arrangements at the regional level necessary to assure adequate water supply for all parts of the MWA covered in the report; and

2. select a plan for the provision of an adequate water supply that is based on the concept outlined in the study and provides for high levels of cost-benefit efficiency while distributing costs among users as equitably as possible.

The Commission urged Federal agencies with installations in the National Capital Region to:

1. complete preparation of their Water Supply Emergency Plans for the MWA as soon as possible, where such plans have not been prepared or completed;

2. prepare year-round conservation plans for their installations and facilities in the MWA that will contribute to the regional goal of a 10 percent reduction in demand through conservation proposed in the study by the Baltimore District; and

3. incorporate water conservation and demand reduction features in all new construction, renovation, and rehabilitation projects in the MWA, indicating such features in plans submitted for Commission review pursuant to the National Capital Planning Act of 1952, as amended.

Reponse to Commission Action

The draft final report responds in several positive ways to the comments made by the Commission on the Corp's August 1979 Progress Report. The flowby requirements for the Potomac River were addressed in detail in a State of Maryland study, and, as noted, the Low Flow Allocation Agreement signatories adopted the targets outlined in the State's study. The U. S. Fish and Wildlife Service and others have suggested that higher flowby rates than those recommended by the State may be necessary to protect and maintain the aquatic resources in the lower riverine and upper estuarine portions of the Potomac. Therefore, the Corps study analyzed two levels of flow into the estuary above the 100 mgd recommended by the State. The Corps found that a 300 mgd flowby target would cause only small shortages in the year 2030 under the conditions of the worst drought on record (1930-31) but that a 500 mgd flowby target into the estuary would lead to large shortages.

Following the commission's earlier comments the Commission was invited to participate in FISRAC, and a member of the staff was designated and has participated in FISRAC activities. The final report uses the most recent COG cooperative forecasts, leading to some of the adjustment in predictions.

As noted, the most important theme that has evolved in the final report is the conclusion that the cooperative arrangements among the utilities in the region have, to a large degree, resulted in the conclusion that no shortages are likely by 2030 and that no major structural "plans" need be undertaken during this period.

Most of the Federal installations in the region have Water Supply Emergency Plans. Many agencies are reflecting growing sensitivity to the need for water conservation. This is an area, however, in which additional effort by the Commission and its staff in encouraging and fostering additional conservation measures is needed. In particular, efforts should continue to be made in the Commission's reviews of master and project plans to insure that special efforts are being made by Federal agencies to promote water conservation.

Conformance with Comprehensive Plan

The draft final report of the MWA Water Supply Study does not include any proposals or recommendations that appear to be inconsistent with the Comprehensive Plan for the National Capital.

Environmental Impacts

Because the plan recommends cooperative water supply arrangements to maximize flexibility in the use of existing water supply sources rather than structural solutions and plans, there are no direct environmental impacts. The thrust of the study and its conclusions is that structural solutions can and should be avoided at least to the year 2030, except for the possible need for additional wells and small reservoirs in the outlying service areas.

Coordinating Committee

The study was reviewed by the Coordinating Committee on April 19, 1983, in summary form and forwarded to the Commission with the statement that it has been coordinated with the agencies represented. In particular, the D. C. Department of Environmental Services representative expressed the strong endorsement and support of that agency for the study.

Federal Interests

The Federal government is a major water consumer in the MWA. The Corps of Engineers estimates that the Federal government consumed 38.9 mgd in 1976. This was equivalent to 9.2 percent of the region's total water consumption at that time. The Federal government consumed 38.2 percent of Prince William County's total consumption in 1976, 14.1 percent of the Washington Aqueduct's consumption, 5.8 percent of the Fairfax County Water Authority's consumption, and 3.5 percent of the Washington Suburban Sanitary Commission's total consumption. However, 70.8 percent of the water consumed by the Federal government in 1976 was in the Washington Aqueduct service area. As a major water consumer, the Federal government is interested in assuring an adequate available supply of water to meet its existing and future needs throughout the MWA.

The Federal government is a major supplier of water to a large portion of the MWA. The Washington Aqueduct Division, U. S. Army Corps of Engineers, provided 195.2 mgd to local water supply distributors in its service area in 1976. This was equivalent to 46.4 percent of the MWA's total water consumption at that time. Although the WAD's relative share of the total water consumption in the MWA is likely to decrease with anticipated growth

in other service areas, the Federal government will still provide a substantial share of the future water supply in the area. Although WAD was originally established to serve the Federal government, it now has a legislative requirement to supply the District of Columbia and authority to supply other parts of the MWA as well.

There is also a significant level of Federal interest in the quality of the Potomac River environment, as well as the environments in the Patuxent River and Occoquan Creek areas. These rivers are integral parts of the natural environment of the area and have a great impact on the quality of life of the Nation's Capital.

Evaluation of Study

As the Commission noted at the time of the review of the August 1978 Progress Report, the Baltimore District has prepared an informative and useful study that carefully documents the water supply problems and needs in the MWA and suggests solutions to the supply problems. The effects of the early report in helping to foster the intergovernmental arrangements that followed clearly confirm the earlier judgement about the quality and value of the Corp's studies. The physical improvements that have been made since the start of the study in the mid 1970s and the related agreements have resulted in a situation in which more massive and costly "structural plans" are no longer considered necessary in the planning period to the year 2030. The Baltimore District should again be commended for the excellence of its study and for the significant results that it produced.

The staff has not identified any additional issues that appear to warrant comments or recommendations to the Corps of Engineers. As noted in the review of the progress report, the Commission should take a lead role in promoting water conservation among the Federal agencies in the region. The staff believes the Commission should work with such agencies to encourage preparation of conservation plans that will help to achieve the 11 percent overall demand reduction envisioned in the Corps study. As part of their conservation plans, Federal Agencies should incorporate conservation and demand reduction features in all new construction and in renovation and rehabilitation projects. Retrofitting of such features in all facilities should be encouraged. With the guidance of the Commission, the staff hopes to aid Federal agencies in their water conservation planning through coordination on both master plans and project plans in preparation.

NO RESPONSE NECESSARY

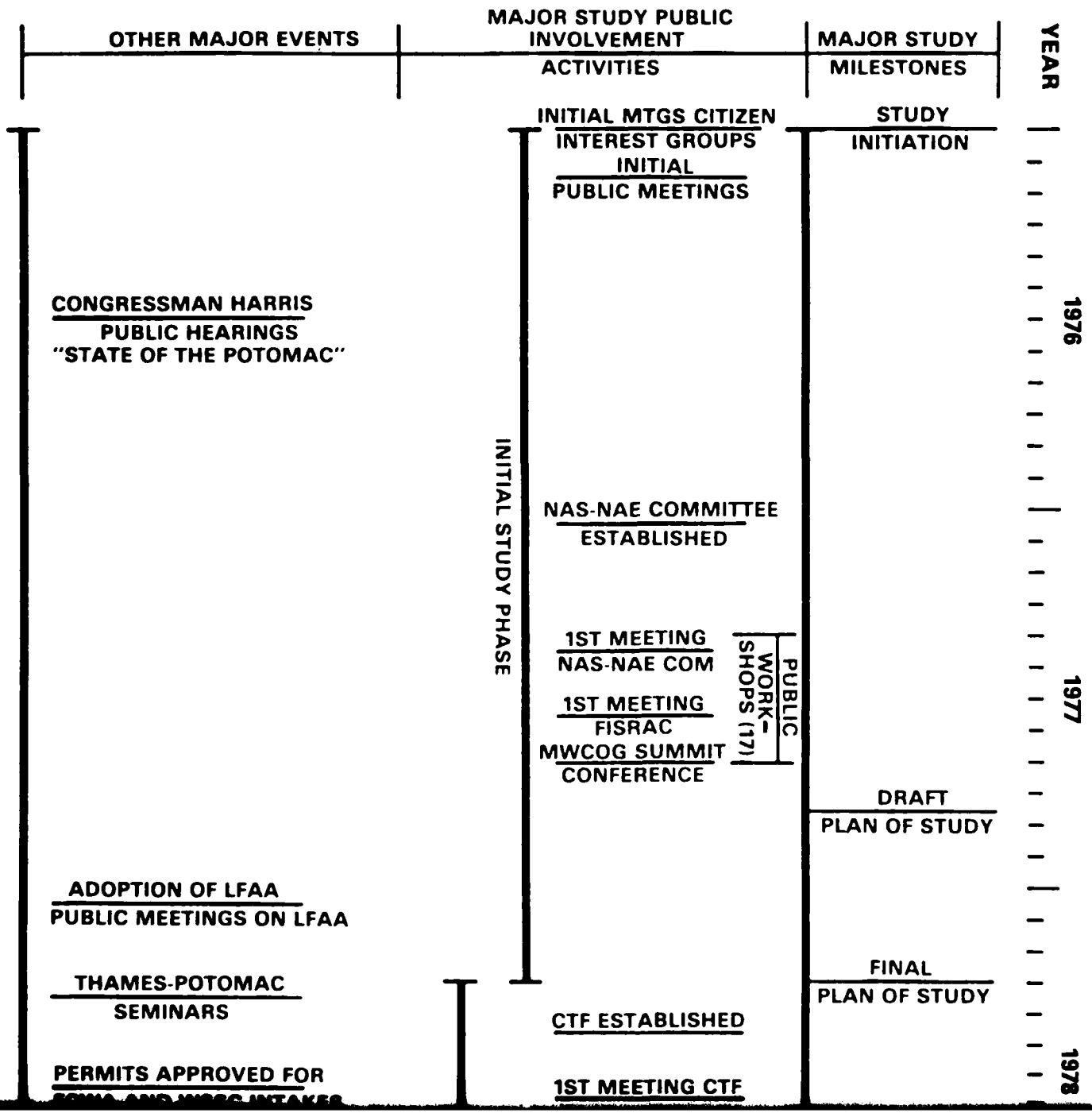

OTHER MAJOR EVENTS
MAJOR STUDY PUBLIC INVOLVEMENT ACTIVITIES
MAJOR STUDY MILESTONES
YEAR
INITIAL MTGS CITIZEN INTEREST GROUPS
INITIAL PUBLIC MEETINGS
STUDY INITIATION
CONGRESSMAN HARRIS PUBLIC HEARINGS "STATE OF THE POTOMAC"
1976
INITIAL STUDY PHASE
NAS-NAE COMMITTEE ESTABLISHED
1ST MEETING NAS-NAE COM
1ST MEETING FISRAC
MWCOG SUMMIT CONFERENCE
PUBLIC WORK-SHOPS (17)
1977
DRAFT PLAN OF STUDY
ADOPTION OF LFAA
PUBLIC MEETINGS ON LFAA
THAMES-POTOMAC SEMINARS
FINAL PLAN OF STUDY
CTF ESTABLISHED
PERMITS APPROVED FOR
1ST MEETING CTF
1978

PLATE C-1
METROPOLITAN WASHINGTON AREA
WATER SUPPLY STUDY
SEQUENCE OF SIGNIFICANT EVENTS

REA

NTS

1981 1982 1983

STAGE II REPORT
BLOOMINGTON REFORM.

DRAFT REPORT

FINAL REPORT
DIVISION ENGINEER PUBLIC NOTICE

CONTINUING CTF MEETINGS

WATER FORUM NOTE #9

LONG RANGE PLANNING PHASE

MEETING SIGNATORIES
LFAA

MEETING SIGNATORIES
LFAA
BLOOMINGTON PROJECT
OPERATIONAL

FINAL ENVIRONMENTAL
FLOW-BY REPORT
PUBLISHED

WMWSTF ADOPTION OF
INSTITUTIONAL AGREEMENTS
MEETING SIGNATORIES
LFAA

EXECUTION OF WMWSTF
INSTITUTIONAL
AGREEMENTS

NOTE: A more detailed listing of public involvement related activities may be found in Annexes C-II, C-IV, and C-VI.

3

END 11-83