



REPORT ON GAO WATER PROGRAM SYMPOSIUM

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REPORTS



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

September 27, 1977

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

Mr. Henry Eschwege, Director
Community and Economic Development
Division

Dear Mr. Eschwege:

This is our report on the Water Program Symposium held by our Division in May 1977.

The GAO Symposium was held in conjunction with the 1977 National Conference on Water. By attending the National Conference first, the GAO staff had a unique opportunity to hear public debate on the important water management issues facing our Nation. The information obtained at the Conference augmented the Symposium proceedings and sharpened the GAO staff members' water issues and problems perspective.

This report includes a discussion of the 1977 National Conference on water proceedings, the GAO Symposium Panel Reports on the Water Program Plan Lines-of-Effort, a summary of the participants' views on the Conference-Symposium format, and a listing of their suggestions for future audit work.

In response to questionnaires, the Symposium participants stated that the meeting was beneficial and productive, and that such meetings should be held periodically. While the format and structure of future symposia was subject to discussion, the use of this medium as a valuable management tool was not. In view of the participants' endorsement of the Symposium concept and in recognition of its value in carrying out issue area program plans, we believe that the Community and Economic Development Division should continue encouraging meetings between the Washington and regional staff for each of the Division's issue areas.

We would like to thank the Washington and regional office staff members for their enthusiastic participation in the Symposium. Their comments and suggestions for future audit work are greatly appreciated and will be considered in revising the Water Program Plan.

Harold Pichney CED
Harold Pichney
Assistant Director--Coordinator
of Water Programs

Max Hirschhorn CED
Max Hirschhorn
Deputy Director

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CHAPTER 1

1977 NATIONAL CONFERENCE ON WATER

WATER MANAGEMENT: PROBLEMS AND OPPORTUNITIES

May 23-25, 1977

CHASE PARK PLAZA HOTEL, ST. LOUIS, MISSOURI

NATIONAL CONFERENCE OBJECTIVES:

- To identify and assess major management problems and constraints in current water resources programs
- To evaluate various alternative management approaches and their implications
- To offer administrative and legislative recommendations to strengthen water management programs

While the conference was sponsored by the United States Water Resources Council, it was essentially planned by national interest groups. The workshop programs were organized and led by four organizations:

Universities Council on Water Resources
League of Women Voters of the United States
Water Resources Congress
Interstate Conference on Water Problems

As a result, the conference was not Federal agency-oriented and provided the attendees an opportunity to hear the views of a broad range of governmental and non-governmental interests represented in the workshop panels.

On the first day, the critical water programs and the water assessment process was examined in workshops entitled: Energy and Water; Urbanization; Environmental; Water Allocations and Priorities; and Process and Criteria. On the second day, the conference was concerned with examining, in response to the water problems, policy and program alternatives for organizing, financing and implementing water resources management in workshops entitled: Planning, Water Programs, Regulations, and Intergovernmental and Private Responsibilities.

At the conference, Secretary of the Interior, Cecil D. Andrus, said that the President, in his environmental message to the Congress, set the stage for a national water policy to emphasize conservation, reduce waste of tax dollars, minimize environmental costs, insure safety, and coordinate Federal, State, and local programs so they do not work at cross purposes. Addressing the conference, Secretary Andrus listed nine points which he said must be faced in putting together a comprehensive national water policy:

- Sunset legislation should automatically deauthorize water projects which have been authorized for a number of years.
- Increased cost sharing by the States and non-Federal entities.
- Cooperative efforts between the States and Federal Government must be undertaken to eliminate laws, rules, and institutions which hamper integrated water management.
- All Federal programs should seek new methods of encouraging water conservation.
- Quantification of reserved rights for Indian reservations and Federal lands is essential to rational planning.
- Safety of water projects cannot be taken for granted.
- Waste water reuse, artificial ground water recharge, minimum streamflows, and safe drinking water are primary objectives.
- The 1973 principles and standards for planning water resource projects should be modified and serve as the framework for the water policy review and proposals.
- The primary goal is conservation and more efficient use of water.

The Secretary stated that water too often has been misallocated, misused, and wasted and that it will not be easy but it is essential that a new policy be instituted.

On the third day in response to President Carter's message to the conference delegates welcoming their initiatives and recommendations, the conference concluded with reports from the

workshops with emphasis on policy alternatives which should be considered by the administration as it seeks to develop a comprehensive national water policy.

The letter sending the workshop reports to the President pointed out that many of the issues which emerged in the conference related to the themes in the President's message and Secretary Andrus' address. They included water allocation, the need for water conservation, and equitable financing of water resource projects. Also, the letter recognized that the demand on water resources is steadily increasing but that the nation's financial resources to deal with the water-management problems are limited. The conference underscored that there are conflicts of opinions on the approach to the use and management of water resources. Social values associated with water management, the roles that different levels of government should play, and the sharing of costs were among the major unresolved conflicts discussed.

In summary, the conference concluded that the answers to the water problems facing the nation would not come easily. The conference provided an excellent opportunity to begin the review of our national water policy, and identified the key problems and the range of policy alternatives available for dealing with those problems. It is interesting to note that the National Conference proceedings confirmed the significance and priorities of the water issues and problems discussed in the Water Program Plan. Also, most of the issues to be covered under the President's Water Resources Policy Reform Study are addressed in the Water Program Plan priority lines-of-effort.

CHAPTER 2

PURPOSE OF GAO SYMPOSIUM

In recent years effective water resources planning, development, and management has become a paramount national priority. Man has come to realize that no resource is as fundamentally necessary to life itself as is water. Water is life's indispensable cornerstone. The delicate balance between life and death, growth and retardation, productivity and barrenness is hinged upon the presence or absence of this simple yet vital commodity. Without water, our world could not sustain life.

Previously, man perceived water as an inexhaustible and unlimited resource. Settlements, towns, and cities arose along the shores of free-flowing streams and rivers. Industries too flourished and prospered near abundant water supplies. Municipal, industrial, and agricultural water demands skyrocketed while untapped, available water supplies rapidly decreased. It seems that only now--in the midst of a national drought crisis--has our nation awakened to the unfolding dilemma: water is an exhaustible and limited resource.

Recognizing its responsibility to address this national issue, GAO developed a Water Program Plan which was released in April of this year. The Plan discussed existing and emerging water issues, reviewed past GAO water audit activities and issued reports, and established priority lines-of-effort and specific future assignments within each area. With the issuance of the Water Program Plan, the Office scheduled a Symposium to discuss and sharpen the water area focus. The Symposium was held in conjunction with the 1977 National Conference on Water.

Its purpose was to:

- familiarize the professional staff with the Water Program Plan.
- discuss existing and evolving trends and problems in the water resources area.
- develop audit work proposals for the issue area.
- provide an open forum for discussing and exchanging ideas, concepts, and knowledge on a central theme.

The agenda of the GAO Symposium and the names of the participants are included in Appendix I. Based on information obtained from both the National Conference on Water and the Symposium forum discussions, each panel prepared a report. These reports are included in the next chapter. The views of the participants concerning the Symposium are summarized in another chapter.

CHAPTER 3

SYMPOSIUM PANEL REPORTS ON LINES-OF-EFFORT

Each GAO Symposium participant was assigned to one of five panels; four of the panels discussed the Program Plan priority lines-of-effort. The fifth panel discussed the nonpriority lines-of-effort. The panels were to assess the validity of the respective lines-of-effort and determine their applicability to current water issues and problems. The panel reports provide the initial data for modifying the Water Program Plan.

PANEL REPORT FOR LINE-OF-EFFORT #1

ARE EXISTING WATER RESOURCE PLANS AND PROGRAMS ADEQUATE
TO MEET THE COMPETING DEMANDS FOR WATER USES?

The GAO panel for Line-of-Effort (LOE) Number 1 agrees that the LOE is pertinent and will probably remain the most important LOE for a long time. Several factors buttress this belief:

- Competing demands for water will continue indefinitely. Past demands and competition will never be totally resolved, and new demands and priorities will emerge.
- Water project proposals and other water-related actions will continue surfacing. Antecedent to any decisionmaking, adequate programs and plans must be developed.
- Water project funds will continue to be limited. To determine relative project priority and need, the demand for project assessment studies will be great.

The panel wishes to emphasize several points regarding this LOE:

- (1) Since the LOE is so broad, no individual GAO assignment can or should be undertaken to assess the entire area. Rather, the Office should analyze various planning components such as information bases, responsibility and other planning ingredients.
- (2) Planning aspects are inherently very broad and reflect a wide spectrum of perspectives. To evaluate such diverse planning, GAO assignments will require substantial resource investments.
- (3) In view of and coupled with these factors, GAO management should recognize that since the issues addressed by this LOE are frequently broad and not well defined, substantial GAO resource investment will not automatically ensure that end products will contain precise issue solutions.

There is unanimous panel agreement that the conference workshops and discussion directly addressed this LOE and reinforced its significance and timeliness. In most workshops, the following were mentioned as problems:

--Mismatch of funds versus needs and priorities.

This included lack of funds for agencies responsible for planning. States/basins with the greatest need are not receiving priority funding. Conversely, some research funds are not being used (i.e., EPA did not use \$10 million in research funds under Public Law 92-523, the Safe Drinking Water Act.

--Lack of adequate planning information.

Points mentioned were (1) need for better U.S. Geological Survey data on storm runoff and groundwater, (2) standards for sediment pollution tolerance, and (3) need to define "zero discharge" in Public Law 92-500. Many workshops emphasized a crucial need to share planning information, such as through a clearinghouse.

--Imbalance between structural and non-structural solutions to water problems.

--Federal, State, and local planning organizations were hindered by inadequate funding, cooperation problems, and a lack of expertise. Also, some planning was broad-based while other planning was narrow in its focus.

--Our country needs a national water policy. Almost ceaseless debate occurred concerning what priority components such a policy should contain.

Finally, we believe that the planning program assignments and relative priorities are generally in line with our understanding of national water issues. Further, we believe that the following should be addressed by specific GAO assignments:

--The need for a national water policy. Is there one? Is one needed? Who should carry it out? What should it include?

--Lack of water program coordination among Federal agencies and between Federal, State, and local organizations. Duplication of effort is apparent, and inadequate data interchange is obvious.

--Progress of Federal agencies in using non-structural means to maximize water resource use.

--Analysis of planning mechanisms to establish priority needs and to resolve conflicts among competing needs. For example, are there clear authorities to place water for energy needs in the proper perspective? If water for energy is a priority need, can and will it be given funding priority?

--Relationship of water planning to land-use planning.

These issues often conflict, and there are questions concerning how this conflict can be reconciled.

Panel Members

Carl Bannerman, CED - Moderator
James Mikelson, Denver
Richard Gannon, Los Angeles

Noel Lance, Los Angeles
Lindsey Harwood, Norfolk

PANEL REPORT FOR LINE-OF-EFFORT #2

DO WATER AGENCIES AND INDUSTRY HAVE EFFECTIVE WATER
CONSERVATION AND REUSE PROGRAMS WHICH REDUCE DEMAND
AND MAKE MORE EFFICIENT USE OF WATER SUPPLIES?

Because of the Western States' drought crisis and the emerging national concern over our nation's decreasing water resources, the question of water conservation has risen to a prominent position in water resources discussions. The following is a summary of how the National Conference on Water related to GAO's Water Program Plan line-of-effort concerning conservation.

Conference attendees generally recognized the need for water conservation. We noted that Conference discussion focused on the need for and impact of conservation measures on the drought crisis. In addition, the Secretary of the Interior, Cecil D. Andrus, presented eight specific water policy reform recommendations at the conference, several of which involved water conservation. According to Secretary Andrus, water conservation reform is long overdue. During the proceedings, State representatives reported that past Federal assistance had been directed toward structural programs for managing water resources. These same representatives stated also that additional programs were needed to address non-structural water management aspects as well.

The conference discussions emphasized certain key factors which underscore the need for effective water conservation programs.

- The demand for water in our nation is outracing available supplies.
- The Administration is attempting to deemphasize the use of structural means for augmenting our nation's water supplies.
- There is a void of Federal non-structural assistance programs.

All of these factors and Secretary Andrus' emphasis on water conservation illustrate the importance of our LOE on water conservation and reuse.

Our panel agrees that water conservation and reuse are valuable water management tools. However, the panel also believes that GAO must avoid blindly "jumping on the conservation bandwagon" because conservation activities may have negative as well as positive impacts which must be addressed. For example, conservation efforts in some communities have decreased water flows through sewage treatment facilities; as a result, these facilities have been unable to function properly. It is our opinion that all water conservation reviews must recognize and assess the potential for adverse consequences as well as the benefits gained. This panel concluded that GAO's impact in the area can be considerable and can provide valuable assistance to the Congress if our reviews proceed from such a perspective.

We believe that water reuse may be a solution to some of the current and future water needs of our country and should be considered as a potential audit assignment topic. The use and acceptance of this activity, however, depends upon the adequacy of total available supplies to meet existing, projected, and possibly unforeseen needs. For example, because of the high cost of fully treating wastewater, such water has been used primarily to displace some current water uses which do not require high quality water.

Major categories of water to be evaluated for reuse include municipal wastewater, industrial process water, cooling water discharges, and agricultural wastewater. Major reuse applications to be evaluated include groundwater recharge, industrial process and cooling water, energy conservation, irrigation, recreation, and possibly domestic potable supply.

Wastewater reuse is one of the few water conservation areas not reviewed by GAO. Because of its potential importance, wastewater reuse should be given emphasis during the current GAO water conservation overview.

Panel Members

Jeff Heil, CED - Moderator
Donley Johnson, Chicago
James Van Blarcom, New York

Philippe Darcy, San Francisco
Robert McLoughlin, Washington
Joseph Kegel, Seattle

PANEL REPORT FOR LINE-OF-EFFORT #3

HOW CAN THE CONSTRAINTS OF WATER LAWS AND RIGHTS ON
MEETING PRIORITY WATER NEEDS BE EFFECTIVELY RESOLVED?

Water laws and rights comprise the basic criteria for allocating water supplies among competing water demands. Encompassing codified State systems, Federal and State doctrines, and court decrees, water laws and rights establish the basis for public and private water ownership and water quantity management and control. Both the State and the Federal governments share authority and jurisdiction in the area, but their respective responsibilities have not been clearly established. The result has been competition, conflict, and controversy.

Accelerating demands for scarce water supplies in the Western States are causing increasing concern about the adequacy of existing water laws. Laws originally developed to encourage settlement of the West do not seem suited for solving today's and tomorrow's issues. A new mechanism may be needed to keep pace with the rapidly changing resource supply and demand situation.

GAO's Water Program Plan addresses the question of water laws and rights under line-of-effort #3. The proceedings of both the National Conference on Water and GAO's Water Symposium reinforced the GAO plan to give this area priority audit consideration. Time and again, National Conference participants expressed concern over water laws and rights problems, particularly the (1) uncertainties surrounding Federal Reserved Rights and Indian Reserved Rights, (2) the need to protect in-stream social and economic values in water, and (3) the adequacy of State water laws and regulations.

The current GAO water laws and rights assignment marks the initial office thrust into this realm. While it would be premature at this time to assess the impact of the assignment, it is the GAO discussion panel's belief that such an audit is both opportune and worthwhile. Preliminary non-GAO observations have tended to be quite favorable toward the assignment; and in view of the concerns voiced at the National Conference on Water, we believe that the Water Program Plan LOE concerning water laws and rights is appropriately attuned to existing water resource issues and dilemmas.

Panel Members

Harold Pichney, CED -Moderator
Walter Choruby, Seattle
Earl Ogolin, St. Louis

James Mansheim, San Francisco
Robert Hartz, CED

PANEL REPORT FOR LINE-OF-EFFORT #4

DO FEDERAL AGENCIES' BENEFIT-COST ANALYSES FULLY AND
REALISTICALLY CONSIDER THE BENEFICIAL AND
ADVERSE EFFECTS OF WATER RESOURCE PROJECTS?

The panel considered the priority line-of-effort, "Do Federal agencies' benefit-cost analyses fully and realistically consider the beneficial and adverse effects of water resource projects?" in light of presentations and debate at the 1977 National Water Conference.

Cost-benefit analyses, per se, were not prominently discussed at the National Conference, but the worthiness of water resource projects, which benefit-cost analyses purport to show, was an underlying theme. The conference brought together those who strongly support structural solutions to water problems and those just as strongly opposed. Those who support projects have relied heavily on cost-benefit analyses to make their case in public and legislative forums. However, despite the exactness with which the results are displayed, they contain many arguable assumptions, inexact data, and are based on a narrow set of values.

The past decade has seen an increase in organized opposition to water resource projects. The opposition is splintered into many groups according to their special interest. Spokespersons for some groups at the conference emphasized the environmental threat of water resource projects; others, the wastefulness of water encouraged by Federal subsidization; and, still others, the wastefulness of the nation's economic resources devoted to the projects. The Administration's spokesman at the conference, Secretary Andrus, touched upon these points of opposition and the threat, among others, of unchecked project construction to Federal fiscal reform.

What contribution can GAO make with respect to agencies' cost-benefit analyses, which have become institutionalized in the project authorization process? In the "Water Program Plan" (April 1977), GAO established two high-priority assignments:

1. Survey of methodology and practices of various agencies for making benefit-cost analyses of proposed multi-purpose reservoir projects and impact on the benefit-cost ratios.

2. Survey of selected operating multi-purpose water resource projects to determine whether they are still serving realistic needs or whether project benefits can be enhanced.

Our panel concurred that the conference reinforced cost-benefit analyses as a high priority line-of-effort and the need for the two high-priority surveys included in the Plan. In any issue, such as construction of water resource projects, that has become highly polarized, there is great value in an objective and balanced analysis that GAO is capable of providing. This can be accomplished by reviewing the underlying assumptions used in agency-prepared analyses to determine their current validity, reviewing the validity of the data used, and reviewing its adherence to Principles and Standards prescribed by the U.S. Water Resources Council. The scope of our oversight should permit us to confirm or reject, depending upon the evidence, the often-expressed opinion in the public sector that agencies' opportunities to manipulate cost-benefit analyses to justify projects, serving primarily narrow public interest and bureaucratic interests, is virtually unchecked.

Our oversight should also provide us an opportunity to consider whether non-structural alternatives to water resource projects have been adequately considered, a need often expressed at the conference. Even though a proposed project might be proven cost beneficial under the cost-benefit methodology used, there may be more environmentally acceptable and less costly alternatives for accomplishing essentially the same goal. Examples may be more extensive use of ground-water supplies rather than impounding surface water, or using zoning restrictions to limit development in the flood plain rather than allowing development and then attempting to protect it through flood control works.

Panel Members

Charles Riche, CED - Moderator	Kenneth Luecke, Kansas City
Ernest Candilora, Dallas	James Meissner, Denver
Charles Chappell, Atlanta	James Silvati, Cincinnati

PANEL REPORT FOR NON-PRIORITY LINES-OF-EFFORT #5-9

The GAO Water Program Plan includes five non-priority lines-of-effort which reflect emerging or existing water issues of importance but not of immediate urgency when the plan was prepared and when compared to the priority lines-of-effort. These LOEs range from the question of conjunctive water use to water supply and water quality program coordination and are as follows:

- LOE 5 -- Are water supply and water quality programs being effectively coordinated?
- LOE 6 -- Are water research programs making progress in developing technology and in finding new ways to increase the nation's water supply?
- LOE 7 -- Is conjunctive use of surface water with other sources adequately considered in meeting water needs?
- LOE 8 -- What are the problems impacting on the timely efficient, and economical construction of water resource projects?
- LOE 9 -- Are cost-sharing requirements of Federal and federally assisted water resources projects and programs viable today; what are the considerations and issues?

The panel members concluded that the Water Program non-priority LOE entitled "Are water supply and water quality programs being effectively coordinated?" should become a priority line-of-effort. Also, the LOE title should read "Are water supply and water quality programs being effectively integrated?" (emphasis added). Based on the National Conference discussions, we believe that integrating water supply and water quality programs will become increasingly important as municipalities and industrial firms "clean up" their water because of the Federal Water Pollution Control Act Amendments of 1972. Two key questions relate to this clean-up effort: (1) is it feasible to reuse treated municipal and industrial waste water; and (2) what use should be made of cleaned-up waterways?

In the first case, this panel believes that it is a waste of natural resources to permit treated municipal waste water to flow to the oceans. Since there is apparently no Federal policy governing this issue, municipal waste-water reuse

has lagged as an alternative water supply producing activity. Industrial water reuse, conversely, requires individual firms to achieve higher and higher treatment levels based on technology yet without regard to water conservation. As an alternative, a Federal policy should be established to promote industrial waste water reuse for alleviating the tremendous industrial water demand. Regarding the second question, there does not appear to be a Federal policy directing our nation's use of cleaned-up waterways. However, in view of the increasing competition for a diminishing resource supply, this issue must be addressed.

The panel also agrees that line-of effort #9 entitled "Are cost-sharing requirements of Federal and federally assisted water resources projects and programs viable today: What are the considerations and issues?" should be moved up to #6 on the Water Program Plan LOE list. Also, water quality cost-sharing arrangements should be analyzed for comparative purposes. This line-of-effort would have to be closely coordinated with the CED-EPA audit site. Work undertaken under the #6 LOE entitled "Are water research programs making progress in developing technology and in finding new ways to increase the Nation's water supply?" should be performed during ongoing program reviews. The panel believes that existing GAO staff expertise can be more effectively used by integrating research and development program analysis with other agency program evaluations.

Panel Members

Richard Woods, CED - Moderator
John Gellner, Detroit
Clifton Kuchinski, Boston

Joseph Faley, OPP
Roy Kirk, CED
Jack Arnold, Norfolk

CHAPTER 4

SUMMARY OF SYMPOSIUM PARTICIPANTS' VIEWS

The following is a summary of replies received from Symposium participants concerning the Symposium's objectives, suggestions for improving future symposia, and future audit work in the Water Program area. These responses were obtained from a questionnaire provided to all Symposium participants.

Question 1: Do you believe the Conference-Symposium achieved its objectives of:

- (a) informing GAO staff of water resources problems and issues and water management approaches and alternatives? If not, please discuss.
- (b) familiarizing GAO staff with the Water Issue Area Program Plan and its purposes?
- (c) providing the background and a forum to discuss our current and future audit work as well as to consider additional lines-of-effort and future assignments? If not, please discuss.

Answer:

- (a) Most of the attendees stated that the Conference/Symposium succeeded in informing them of water resources problems and issues and water management approaches and alternatives. Negative responses tended to focus on the format and program of the National Conference on Water.
- (b) A near consensus of participants stated that the Symposium was a viable vehicle for providing Water Program Plan orientation. Many also said that periodic symposia of this nature would be extremely beneficial to both field and headquarters staff; through such gatherings, water program personnel could (1) exchange ideas and relate developments of interest in the water area and (2) could help mold the Water Program Plan into a dynamic and continuously evolving document.

- (c) Again, the responses were almost unanimously positive; most felt that the Water Program Plan discussion forum was the key to Symposium success. However, many Symposium participants felt that more time should have been allotted for discussing existing and future water assignments, program plan lines-of-effort, and the priority status of these lines-of-effort

Question 2:

Do you believe a GAO piggyback symposium on a national conference, rather than a GAO-sponsored symposium alone, is a more desirable arrangement to become informed of national problems, their implications, and proposals and ideas to address such matters? If not, please discuss.

Answer:

The majority of respondents indicated that the "piggyback" concept was beneficial. However, several concerns were voiced; first by allying GAO's activity with a national conference, GAO sacrifices control over the conference content and proceedings. What transpires at the conference may or may not be useful to GAO. Second, past GAO-sponsored symposiums have been successful; by exerting more direct control over symposium development, it is much easier to tailor both content and proceedings.

Question 3:

In what specific ways do you believe future symposia could be improved? (Consider format, location, etc.)

Answer:

In responding to this question, attendee comments and suggestions tended to focus on the symposium format and timeframe. Overall, the Symposium participants indicated that future symposia should be more formally structured, should have a somewhat longer duration, and should include water resource experts as speakers. The most frequent suggestions were:

--Specific job assignment and panel discussion time should be increased.

- The symposium should emphasize major problems and issues which are currently developing.
- If piggybacking with a national conference, the symposium site should not be different than the conference site.
- If the symposium occurs alone, the location should be neutral and easily accessible to both field and headquarters representatives.
- Water resources experts should be brought in as speakers to discuss topical areas.

CHAPTER 5

PARTICIPANTS' SUGGESTIONS FOR FUTURE AUDIT WORK

At the Symposium's conclusion, each participant was asked to suggest several future audit assignments for the water program area. Following is a listing of the participants' proposals. Many proposals directly relate to existing Program Plan lines-of-effort and assignments. These suggestions will be considered not only for updating and modifying the existing Program Plan, but also for setting the direction of future Office water area audit activity. The proposed audit assignments are as follows:

- Compare structural and non-structural methods for obtaining water conservation.
- Perform a case study of past water development projects to assess benefits actually realized from the projects versus the benefits originally proposed.
- Evaluate distribution of project benefits: who receive them, who should receive them, and are the benefits consistent with existing public policy?
- Develop an overview of potential alternatives to dam construction including conservation, recycling and reuse, off-stream storage, and desalinization, etc.
- Assess the need for a water planning and use decision-making system to avoid crisis management.
- Survey the water needs problems and issues in the lower Mississippi River Valley.
- Study the potential of water reuse as an alternative water supply and conservation medium.
- Evaluate desalinization as a practical/potential method for augmenting existing water supplies.
- Interbasin transfers: are they needed and can they be practicably developed?
- Basin-wide water resources planning and management: is it needed and is it done?

- Assess the benefit/cost ratio for utility, effectiveness, and its contribution to water resources planning and mangement.
- Discuss, explain, and evaluate the implications of the safe yield concept.
- Northeast Water Supply Study (NEWS): its objectives, its accomplishments, and its problems.
- Evaluate potential State/Federal duplication in issuing permits under the Section 404 permit program.
- Need for a water conservation studies and data clearinghouse.
- The Federal/State/local water use planning structure: can it be made more effective?
- Case study of conjunctive water use and its implications.
- How effectively do various Federal water planning and research agencies communicate among themselves and beyond?
- The extent to which Government subsidy and incentives can and/or do promote and encourage water conservation on Federal projects.
- A national water policy: can it be realistically achieved and is it needed?
- Progress made on military installations and in military activities for achieving water conservation.
- Existing water resource inventories: are they adequate for planning purposes?
- Analysis of mechanisms available to resolve competition for water among competing municipalities.
- Explore the economic and technical feasibility of augmenting water supplies in the major Southwest River Basins through interbasin water transfers.
- Problems in providing adequate water supplies to rural communities.

- Review the problems associated with providing quality surface water to Mexico and Mexican pumping of groundwater along the U.S.-Mexican border.
- Evaluate water-saving measures implemented by private industry.
- Assess the efficiency of city water distribution systems.
- Evaluate research and development activities and compare and contrast techniques for enhancing water use efficiency.

GAO SYMPOSIUM AGENDAWATER ISSUE AREAWednesday, May 25, 1977

2:00 p.m. Opening remarks by Max Hirschhorn

2:15 p.m. to Line-of-Effort #1
4:15 p.m. Panel: Carl Bannerman, CED - Moderator
 James Mikelson, Denver
 Richard Gannon, Los Angeles
 Noel Lance, Los Angeles
 Lindsey Harwood, Norfolk

3:15 p.m. to Line-of-Effort #2
4:15 p.m. Panel: Jeff Heil, CED - Moderator
 Donley Johnson, Chicago
 James Van Blarcom, New York
 Philippe Darcy, San Francisco
 Robert McLoughlin, Washington
 Joseph Kegel, Seattle

4:15 p.m. to BREAK
4:30 p.m.

4:30 p.m. to Line-of-Effort #3
5:15 p.m. Panel: Harold Pichney, CED - Moderator
 Robert Hartz, CED
 Walter Choruby, Seattle
 James Mansheim, San Francisco
 Earl Ogolin, St. Louis

5:15 p.m. to Line-of-Effort #4
6:00 p.m. Panel: Charles Riche, CED - Moderator
 James Silvati, Cincinnati
 Ernest Candilora, Dallas
 Kenneth Luecke, Kansas City
 James Meissner, Denver
 Charles Chappell, Atlanta

Thursday, May 26, 1977

- 8:30 a.m. to
9:45 a.m. Lines-of-Effort #5 through #9
 Panel: Richard J. Woods, CED
 - Moderator
 John Gellner, Detroit
 Clifton Kuchinski, Boston
 Joseph Faley, OPP
 Roy Kirk, CED
 Jack Arnold, Norfolk
- 9:45 a.m. to
11:30 a.m. Individual panel discussions and write-
 ups of conclusions reached. (Each
 panel will meet separately.)
- 11:30 a.m. to
12:30 p.m. Panel presentation of summaries and
 conclusions (About 5 to 10 minutes for
 a representative from each panel)

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