THE U.S. GEOLOGICAL SURVEY FEDERAL-STATE COOPERATIVE WATER RESOURCES PROGRAM

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CONTENTS

FIGURES

TABLES

THE U.S. GEOLOGICAL SURVEY FEDERAL-STATE COOPERATIVE WATER RESOURCES PROGRAM

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SUMMARY AND CONCLUSIONS

The U.S. Geological Survey's Federal-State Cooperative Water Resources Program has served the Nation for more than 80 years. As the largest major component of the Survey's total water-resources investigations program, it represents not just a linkage but a working partnership with State and local interests. The program has grown and has changed with time. Today the program is a composite of activities covered by agreements involving about 750 cooperators with jurisdiction in all the States and several of the territories, wherever there are water problems. Through this network of contacts with the "real" world of water conservation, development, and use, the Survey's Water Resources Division has been able to anticipate and to respond to changing priorities. Thus, the work is diversified, problem oriented, and strongly interdisciplinary. For example, the activities listed in a recent sampling of a few State programs include: collection of long-term multipurpose data (surface water, ground water, and water quality); special interpretive studies of the physical, chemical, and biological characteristics of water resources; and appraisals for environmental impact analysis, energy development, coastal-zone management, subsurface waste storage, waste utilization, land-use planning, flood-plain management, and flood-warning systems.

Details of programs (50-50 matching) are negotiated at State or local level by representatives of the Survey and representatives of the cooperating agencies. Implementation is under Survey direction and by Survey staff, principally, but there is an accountability for performance to the State and local partners. Mutual trust based on years of satisfactory collaboration has minimized the paperwork usually associated with cost-shared programs, and to formalize the arrangement, a simple one-page agreement generally is used. The Nation's ability to cope with new and challenging problems in water management rests largely on data and surveys made over the preceding years in the Cooperative Program. In the early days, when there was little recognition of it as a national problem, for example, ground water—so important to the community, the farm, and the home—was investigated almost entirely within the Cooperative Program. Today, the potential for pollution of ground water is receiving national attention, for, once contaminated, ground water may be ruined as a resource and may become instead a danger to health. The matter of underground storage of waste was recognized by the Cooperative Program as a problem of grave concern long before it assumed its present national prominence. The source of most knowledge of ground water now being used by concerned national agencies was first evolved as part of the program. Similarly, water-resources information from many of the reports that have stemmed from the program are used in preparing assessments for energy development. As another example, flood-plain management (including flood-plain zoning and flood insurance) is a relatively new concept in the national scene for abating flood damages. The procedures and data on which flood-plain management programs depend have their origin in the Survey's cooperative efforts with State and local agencies.

Advantages from the administrative arrangement accrue to both Federal and State sides. Most evident is the cost-sharing that approximately doubles the activity that might be afforded by each. Additionally, what is in effect a pooling of manpower in the relatively small field of

hydrology provides advantages of scale for recruiting, training, and career opportunity; for supportive activities such as laboratories and research; and for mobility to meet new needs where and as they develop. Cost-sharing and decentralization increase the responsiveness of the program to grass-roots needs and provide early indication of emerging local problems that often become national problems. Unified management provides common standards nationwide and uniformly reliable and comparable output, and it assures the availablity of that output to the public.

Probably any cost-sharing ratio other than 50-50, 0-100, or 100-0 would not be stable under the varying programmatic, technologic, and institutional stresses which characterize the Cooperative Program. Unquestionably, a program composed of independently planned, financed, and managed Federal, State, and local segments would cost the Nation more and leave the needs of many data users unsatisfied. To an extent impossible to predict, a reduction in the Federal share would doubtless lead to a reduction of non-Federal offerings and, as never before, questions of equity would be raised in relation to fiscal control, personnel managment, and program planning. Funds diverted from the Cooperative Program would be used by some but not all non-Federal interests to develop increased self-sufficiency. Thus, some activities of mutual interest would be discontinued and others would be focused more narrowly on short-term local problems.

Perhaps the most important point of all in evaluating the existing Federal-State Cooperative Water Resources Program and in determining whether any change is desirable is the uncertainty about needs in the future. This Nation—along with most other nations—is in the midst of highly significant changes, the only certain factor being the continuity of basic human needs on an ascending scale. Water is one of the most valuable resources, and failure to assess it correctly could result in failure to use it intelligently, with far-reaching disastrous effects. Because the availability of water of suitable quality is a fundamental limiting factor in an expanding economy, a comprehensive and forward-looking data-collection operation is imperative for planning the best development and use of the Nation's water resources. The job is too large to be supported at either Federal or State level alone; on the other hand, the jointly planned and funded Cooperative Program provides budget-makers with the most convincing assurance that the work is designed to meet both national and local needs.

Clearly, the need for water data and hydrologic investigations and research will be great in the 1980's. The Federal-State Cooperative Program is one proven way to fund the development of this information such that both the Federal and State interests are equally represented. The Cooperative Program also will go on serving important needs of the water-resources community at large, in addition to those of the agencies that are directly working together. From the national point of view, the main objective of the Federal-State Cooperative Program will continue to be providing facts relevant to problems before the problems become national crises, to match resources to the required work, and to assure availability of information nationally to all users. From the State and local point of view, the objective will be to assure impartiality, skill, and continuity in the maintenance of an adequate water-data base. The Cooperative Program has successfully satisfied both objectives in the past and should continue to do so in the future.

INTRODUCTION

The U.S. Geological Survey's Federal-State Cooperative Program is a partnership for water-resources investigations

between the U.S. Geological Survey and State and local agencies. The principal objectives are: (1) to collect, on a systematic basis, data needed for the continuing determination and evaluation of the quantity, quality, and use of the Nation's water resources, and (2) to conduct analytical and interpretive appraisals describing the availability and the physical, chemical, and biological characteristics of surface and ground water.

The program is the foundation of much of the water-resources management and planning activity in the country. In addition, it serves as an early-warning system for the detection of emerging water problems. Figure 1 shows the location of the principal offices of the Geological Survey's Water Resources Division.

BACKGROUND

What is the Cooperative Program?

The program is deeply rooted in the concept that Federal, State, and local governments have mutual interests in evaluating, planning, developing, conserving, and managing the Nation's water resources. In fiscal year 1981, almost 750 State and local agencies have cooperative water resources programs with the Geological Survey. By and large, the program is funded on a 50-50 matching basis; the total funding in 1981 amounts to more than $80 million. One of its unique characteristics is that, because the Survey performs most of the work on behalf of the cooperating agencies, the program leads to a uniform and comparable national information base for the entire water community.

How did the program develop?

The U.S. Geological Survey was established on March 3, 1879, and charged with responsibility for classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain. In 1888, Congress authorized the Geological Survey to determine irrigable lands and sites appropriate for reservoirs and canals. Out of this grew the Geological Survey's streamgaging network, eventually leading to its nationwide progam of water-resources investigations.

The first cooperative water-resource investigation was started with the State of Kansas in 1895. In 1905, Congress identified funds specifically for cooperative studies, and this marked the official beginning of the program. In the early years of the Cooperative Program, the ratio of matching funds depended on the local fiscal situation. In some circumstances, the Geological Survey contributed more than the cooperator, and in others the reverse was true. But the general rule was that the State or local agency contributed more than half the cost of each investigation. Congress gave formal recognition to the Federal-State partnership in an act of February 27, 1928, which limited the Federal contribution to cooperative water resources studies to 50 percent.

What guidelines relate to work undertaken in this program?

The document used for authorization of a cooperative water-resources program is a simple, one-page Joint-Funding Agreement. The agreement provides that the planned work is subject to the availability of funds, which are to cover only the cost of necessary field and office work directly related to the program. Excluded are general administrative or accounting work by either party and costs of publication of the results. A few other basic stipulations provide for payment of expenses, direction of the work, open inspection of operations, and termination of the agreement upon 60 days written notice. The agreement also describes how the original records resulting from the work shall be stored, and grants publication rights to either or both parties.

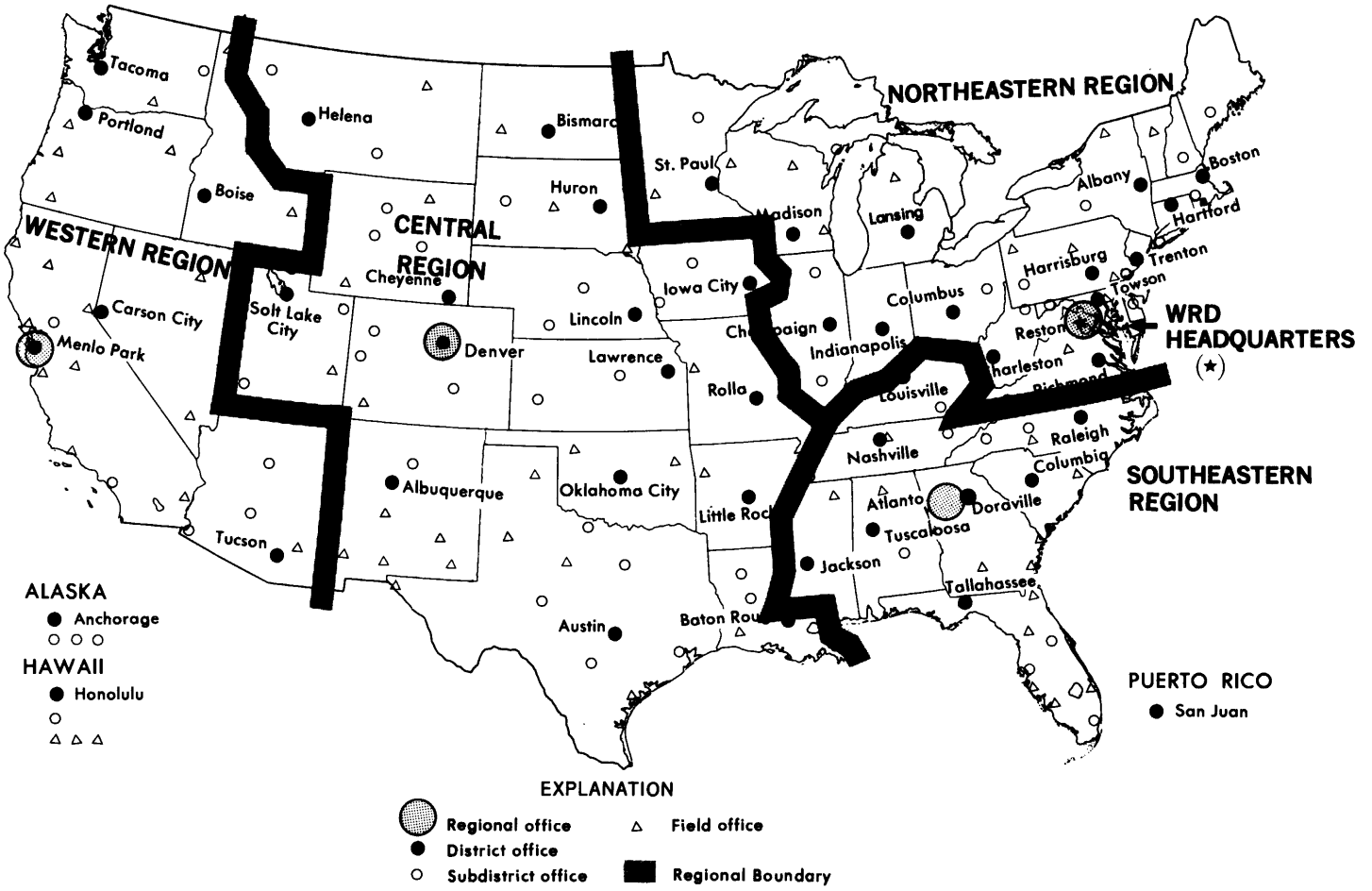

Figure 1.--Location of principal offices of the U.S. Geological Survey's Water Resources Division. Cities named are those where regional and district offices are located.

In addition to the specifications of the Joint-Funding Agreement, the Survey adheres carefully to a few general guidelines:

- -- Agreements may be entered into only to the extent of the amount of funds specifically appropriated by the Congress for the Cooperative Program. Thus, the annual appropriation sets a ceiling on the Survey's Federal cooperative matching funds.

- -- Agreements are entered into with the State and local agencies when it is feasible and mutually advantageous to both parties, but only when cooperating agencies are proponents of the work.

- -- Considerable effort is expended to prevent duplication of programs or investigations carried out by other sponsorship.

- -- Work proposals are thoroughly screened to assure that resources are applied to matters considered to be of high priority. At the same time, the Survey's policy is not to undertake proposed activities which are largely within the sphere of the private sector.

CURRENT STATUS

How does the program compare with other water-resources investigations of the Geological Survey?

The Cooperative Program has been a significant continuing part of the Geological Survey's water-resources investigations for the past 50 years. Figure 2 shows the dollar amounts and relative sizes of the major sources of Water Resources Division program funding in fiscal year 1981, which totals almost $190 million.

Table 1 shows that the Cooperative Program has grown from $2.4 million in 1945 to $82.9 million in 1980; it now makes up 44 percent of the Survey's total water-resources program.

Table 1.--Cooperative Program funding for selected years, 1945-1980.

Fiscal Year	Total Cooperative Program funding (millions of dollars)
1945	$ 2.40
1950	5.80
1955	7.93
1960	14.49
1965	22.87
1970	34.58
1975	55.56
1980	82.90

What kinds of work are included in the program?

The Cooperative Program consists of a mixture of diverse activities. In fiscal year 1981, it encompasses about 830 investigations in cooperation with some 750 agencies. Work is carried out by Water Resources Division personnel assigned to offices in every State, as well as in Guam and Puerto Rico.

For many years, the Geological Survey has been recognized as the principal Federal agency responsible for the collection of hydrologic data needed for the planning, development, use, and management of the Nation's water resources. Specifically, the data are the foundation necessary for conducting analytical and interpretive water-resources appraisals describing the occurrence and availability, and the physical, chemical, and biological characteristics of surface and ground water. The data are likewise required for

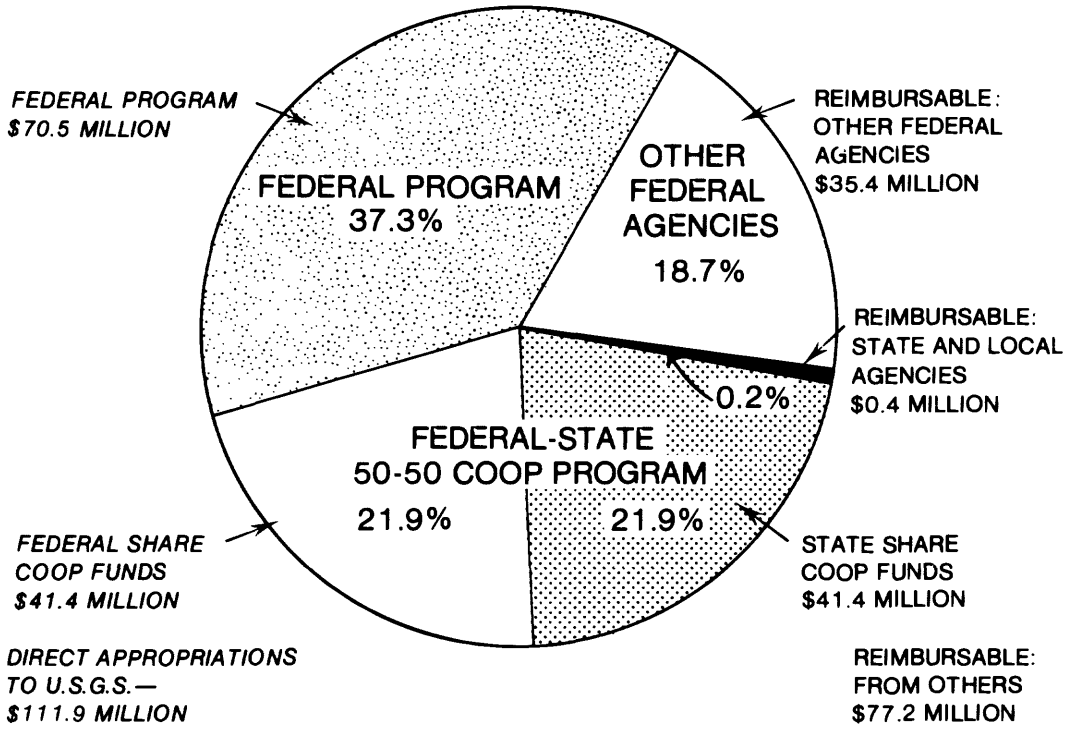

Figure 2.--The fiscal year 1981 budget for the Geological Survey's Water Resources Division.

research in hydraulics, hydrology, and related fields (1) to improve the investigative and measurement techniques, and (2) to predict responses of hydrologic systems to stress, either natural or manmade. Thus, the cooperative water-data collection effort is the cornerstone of the work of the Geological Survey's Water Resources Division.

The Geological Survey maintains a nationwide system of streamgaging stations, ground-water observations wells, and locations for sampling quality of both surface and ground waters. The operation of data-collection stations is a continuing activity. Although some data-collecting stations are operated for many years, a few are discontinued each year when their purpose has been served. New stations are installed as demanded by changing needs and priorities. The hydrologic data are published annually in a series of reports, in general on a State-by-State basis (U.S. Geological Survey, 1980).

The Federal-State Cooperative Program provides for more than half the water-resources data-collection activities of the Geological Survey. Table 2 shows the percentage of the national data-collection effort conducted by the Survey in total and the percentage of the national effort conducted by the Cooperative Program. Also shown by categories are the number of stations where data are collected by the USGS.

The water-resources appraisals and research conducted in the Cooperative Program likewise have broad-based applications to national needs.

- - Areal water-resources appraisals which range from small basin or county to statewide or regional in size) define, characterize, and evaluate the extent and availability of the water resources. These investigations usually are accomplished in 1 to 3 years and result in one or more published reports.

- - Special analytical and interpretive studies address existing and forseeable hydrologic conditions and problems, are somewhat more specific in nature and cover a smaller area than areal appraisals, and sometimes involve applied research. They may require from a few months to 2 to 3 years and result in reports, data, and information leading to the solution of problems or to more complete utilization of the Nation's water resources.

- - Investigations specifically identified as part of the coal hydrology thrust in the Federal-State Cooperative Program began in 1976, and in fiscal year 1981, 79 studies were conducted in 29 States. These studies include areal hydrologic studies of surface and ground water, small watershed investigations, water-quality studies in mined areas, effects of deep mining on ground water, underground effects of mine collapse on water resources, hydrology of coal mine lakes, and effects of subsurface mining on saltwater migration.

- - A water-use data program was started in fiscal year 1978 to provide for the comprehensive and systematic collection, storage, analysis, and dissemination of water-use data and information throughout the United States. Statistics on domestic, industrial, and agricultural water use are required to plan, manage, and develop the

Table 2.--Hydrologic data-collection activities of the U.S. Geological Survey.

	Total national data-collection effort	Proportion, in percent, of the national data-collection effort represented by:	
Type of Station	Number of Sites	USGS Total Effort	USGS Effort in Cooperative Program
Surface-water quantity	17,000	80	50
Surface-water quality	12,000	40	30
Ground-water quality	30,000	70	50

Nation's water resources and to provide information necessary to identify and resolve critical water problems relating to water quality, residuals, environmental impacts, energy development, and resource allocations. The program is designed and managed by the Geological Survey, and the system is being developed in stages in cooperation with State and Federal agencies. The collection of data at the field level is done by State or local agency personnel.

What types of cooperating agencies participate?

The diversity of cooperators is as great as that of the work. Table 3 shows the number of State, county, municipal and other governmental entities that executed agreements in fiscal year 1980. Not identified are the additional non-Federal agencies that participated in planning and funding the projects covered by the formal agreements. Agreements with State agencies constitue about three-tenths of the total; agreements with counties, cities and others comprise about two-tenths each. The "other" category includes interstate compact organizations, conservation districts, water-supply districts, sanitary districts, drainage districts, flood-control districts, and similar organizations.

What is the national interest in this program?

Primarily because water, like food and air, is a vital resource, there is sufficient universal interest to enable the U.S. Geological Survey to carry out its water resources mission in partnership with other public agencies. The data and results of investigations are a reservoir of information available to all. In effect, through the pooling of support, the Survey is able to carry out its mission to the mutual benefit of common interests at all levels of community and at substantial savings.

For more than 80 years the Cooperative Program has served the interests of its Federal, State, and local sponsors. Their mutual satisfaction with the program and their endorsement of the underlying partnership concept has been demonstrated through appropriations by Congress and by State and local government entities.

The national interest is clearly associated with the Federal Government's constitutional responsiblity in interstate commerce and national welfare—in both the immediate and the long view. Federal law and policy have recognized a national interest in the conservation and efficient utilization of the Nation's natural resources. Health and safety, national defense, economic welfare, and environmental quality are all recognized as public responsibilities of more than local concern—and all are related in some way to water. In general, national interests transcend Federal as well as State and local interests when the "common good" is of regional or national significance.

The national interest embraces all facets of the data base of the Cooperative Program, especially those data which are relevant to potential and emerging long-term problems and those having interstate, regional, or international significance. The data base also furnishes much of the information required to carry out Federal-agency missions, interstate and international compacts, Federal law and court decrees, Congressionally mandated studies, regional and national assessments and planning activities.

Hydrologic and hydraulic research, hydrologic-systems modeling, instrumentation research and technique development, water-data storage and retrieval systems development, exploratory studies related to high-priority national issues

Table 3.--Kinds of agencies that executed Joint Funding Agreements in fiscal year 1930.

	NUMBER OF COOPERATORS					
	State	County	Municipal	Other	Indian	Total
Alabama	2	1	-	-	-	3
Alaska	5	-	4	2	-	11
Arizona	4	2	3	5	-	14
Arkansas	4	-	-	-	-	4
California	12	36	7	28	2	85
Colorado	5	6	9	23	-	43
Connecticut	1	-	2	7	-	10
Delaware	2	1	-	-	-	3
D. C.	1	-	-	-	-	1
Florida	6	23	22	14	-	65
Georgia	2	4	4	1	-	11
Hawaii	4	2	-	-	-	6
American Samoa	1	-	-	-	-	1
Guam	1	-	-	-	-	1
Northern Marianas	1	-	-	-	-	1
Trust Territories	1	-	-	-	-	1
Idaho	6	-	-	-	-	6
Illinois	3	4	1	3	-	11
Indiana	4	-	7	2	-	13
Iowa	5	1	12	2	-	20
Kansas	5	-	1	3	-	9
Kentucky	4	-	1	-	-	5
Louisiana	4	-	-	1	-	5
Maine	4	-	-	2	-	6
Maryland	5	7	-	2	-	14
Massachusetts	5	1	-	-	-	6
Michigan	3	11	15	2	-	31
Minnesota	6	-	3	3	-	12
Mississippi	3	2	1	2	-	8
Missouri	3	1	1	1	-	6
Montana	7	-	-	-	-	7
Nebraska	4	-	-	5	-	9
Nevada	3	3	1	-	-	7
New Hampshire	1	-	-	-	-	1
New Jersey	3	4	3	2	-	12
New Mexico	4	-	2	4	-	10
New York	9	12	6	6	-	33
North Carolina	3	-	6	-	-	9
North Dakota	3	1	-	-	-	4
Ohio	4	2	2	1	-	9
Oklahoma	4	-	9	3	1	17
Oregon	5	6	10	3	2	26
Pennsylvania	4	4	3	4	-	15
Puerto Rico	11	-	-	-	-	11
Virgin Islands	3	-	-	-	-	3
Rhode Island	2	-	1	-	-	3
South Carolina	6	-	3	-	-	9
South Dakota	3	2	2	-	-	7
Tennessee	4	3	4	-	-	11
Texas	1	12	21	25	-	59
Utah	1	1	-	1	-	3
Vermont	1	-	1	-	-	2
Virginia	3	-	4	1	-	8
Washington	6	13	6	-	7	32
West Virginia	3	1	2	-	-	6
Wisconsin	4	3	4	1	1	13
Wyoming	7	-	-	1	-	8
Total	221	169	183	160	13	746

(e.g., waste disposal, energy development, environmental protection) are program activities of national import because of their widespread applicability, great expense, and dependence on the Geological Survey's reservoir of highly specialized technical talent.

Notwithstanding the difficulty of relating the interests of Federal, State, and local governments to water-data needs, worth, and cost, it is evident that the Cooperative Program complements and supplements activities of national interest and significance which can be undertaken exclusively with Federal funds. The enormity and complexity of the task of appraising the Nation's water resources preclude accomplishing the task by Federal efforts alone. Similarly, State and local agencies working independently cannot always relate to the larger regional aspects of the hydrologic system.

The commonality of interest in the program is demonstrated by the dependence of other Federal agencies on the information produced. Included are Interior agencies such as Bureau of Land Management, Bureau of Reclamation, Office of Surface Mining, Bureau of Mines, National Park Service, Bureau of Indian Affairs, other Departments such as Army, Agriculture, State, Energy, Transportation, and other agencies such as the Environmental Protection Agency and the National Oceanic and Atmospheric Administration (NOAA). As a specific example, the National Weather Service of NOAA utilizes flow and stage information from some 2,600 U.S. Geological Survey-operated gaging stations for their river- and flood-forecasting systems. Funds for the support of these stations are derived from the Survey's Cooperative Program (40 percent); Federal Program (10 percent); and other Federal agencies (30 percent); the remaining 20 percent is derived from various combinations of these sources.

How is information from the program made available to users?

In addition to reporting on work accomplishments to cooperating agencies, the Survey disseminates water data and the results of investigations and research through reports, maps, computerized information services, and other forms of public releases.

Information collected from hydrologic-data sites is stored in the Survey's National Water Data Storage and Retrieval System (WATSTORE), and is available on request. These data can be retrieved in machine readable form or as computer-printed tables or graphs, statistical analyses, and digital plots.

The National Water Data Exchange (NAWDEX) is a confederation of Federal and non-Federal water-oriented organizations working together to improve access to water data. This is one of many examples of the close and vital linkage between the Cooperative and Federal Programs. The offices listed in the appendix can provide local assistance in obtaining data from WATSTORE and in identifying other sources of information through NAWDEX.

Hydrologic data are published in an annual series of reports on a State-by-State basis, and interpretive and analytical material is published in a wide variety of media. Many of these reports are listed in Survey catalogs of publications, and information on others published by cooperating agenices or outside journals can be given by the offices listed in the appendix.

PROGRAM PLANNING AND OPERATION

How is the relevancy of the program to current issues assured?

Relevancy is assured in two ways: program priorities are reviewed and updated

on a continuing basis, and the widespread, highly trained work force maintains close track of emerging issues.

Of considerable significance is the role that the Cooperative Program plays in emergency situations. During the drought of 1976-77, the Water Resources Division was able to gather information with which the Congress and the Executive Branch could monitor events. When the drought began to affect west-coast water supplies, Congress and the Executive Branch received requests for emergency assistance. Because it was difficult to evaluate these requests, the White House established a task force of agencies to monitor the drought situation and to brief White House and Congressional Committee staffs on developments. The Water Resources Division provided the task force with daily reports on streamflow, reservoir storage, and other vital information associated with the drought. The Congress and the White House made use of these reports to allocate emergency funds. The Division's rapid response and assistance would not have been possible without the data accumulated by the Cooperative Program.

A more recent example of rapid response capability was shown after the eruption at Mount St. Helens on May 18, 1980. For many years, the Survey has collected hyrologic data from stations in the vicinity of the volcano. Moreover, for several months before the major eruption, Survey field offices increased the number of stations and the sampling frequency for water-quality throughout the State of Washington. When the major eruption occurred, the Survey was well prepared to begin immediate studies of the effect of ash falls on water quality, the effect of mudflows and other deposits on river flow, and the measurement of other types of hydrologic data. As in the drought studies, new data-collection programs in the northwest would not have been possible had not a sizable network of stations and a cadre of experienced personnel already been present as part of the Cooperative Program. Perhaps more important, the program provided good hydrologic records before the event so that the preeruption hydrologic conditions were well established as a basis for determining the effects of the eruptions.

How are priorities identified and communicated throughout the organization?

Federal priorities for the Cooperative Program are identified by the USGS regional and headquarters staffs for local offices of the Geological Survey at least 6 months before the beginning of each new fiscal year so that local offices and the local cooperators have time for planning. The priorities are based on national needs that have been identified by the President and Administration advisors, by the Congress, by the Department of the Interior, and by other Federal agencies, and from input that Geological Survey headquarters has received from cooperating agencies through its local offices.

The priorities for the 1982 fiscal year were identified in January 1981. A comparison of the 1975 and 1982 program priorities (table 4) reflects changes in perspectives of both national and State problems and the continuing change in focus of the Cooperative Program in response to emerging problems and needs.

The process of project selection in the Cooperative Program is a mutual effort in which the Geological Survey represents national interests, including the needs of other Federal agencies, and the cooperator represents State and local interests. The result is a balanced program that involves careful evaluation of needs, priorities, and resources. The procedure is outlined below.

Mutual Development - U.S. Geological Survey and cooperators explore tentative program directions and develop program

Table 4--Comparison of Cooperative Program priorities in fiscal years 1975 and 1982.

FY 1975	FY 1982
Principal Priorities	
Energy	Quality of ground and surface water
Land-and water-use planning	Effects of hazardous wastes on ground-water systems
Environmental quality	Acid precipitation
Indian affairs	Water use
	Hydrologic aspects of energy-related matters, especially coal mining and synfuel development
	Support of National Stream Quality Accounting Network stations
	Indian water rights
Additional areas of emphasis	
Predictive hydrology--modeling to evaluate consequences of alternative actions	Hydrology of lakes, reservoirs wetlands, and tidal reaches of streams
Water-use data	Hydrologic hazards - landslides, hydrologic impacts of volcanic and seismic activity, and floods
	Drought studies

thrusts consistent with local and national existing, emerging, and foreseeable needs. This is a continuing process, both formal and informal, that covers the current year and 2 to 5 years ahead.

Preliminary Planning - Local input is blended at regional and headquarters levels of the Geological Survey to identify future program direction. Plans are made accordingly to emphasize priority activities for budget allocations.

National Perspectives - Information on national needs and priorities, as well as on anticipated budget constraints, is transmitted to local offices of the Geological Survey. Local views of problems of widespread significance are obtained through the continuing dialogue with cooperators.

Guidelines - Guidelines for the broad allocation of matching funds and for project approval are established at Geological Survey headquarters in consultation with the regional offices. These are communicated to the local offices before the final annual Joint-Funding Agreements are approved.

Project Review and Program Adoption - Proposals for new projects requested by cooperators are screened and then reviewed in detail at regional level—and, when appropriate, at headquarters. Multiyear projects are scrutinized annually. The program for each State is adapted to fit the annual budget allocation.

Changing Priorities - Through its contacts with State, regional and local agencies, the Federal-State Cooperative Program has been able to anticipate and respond to changing priorities. Continuing review of program priorities may result in focusing attention on emerging problems or gearing reports to new audiences or needs. This process can lead to project extension, redirection of emphasis, or reduction of effort as work progresses.The changing of priorities in the face of fixed or limited budget and manpower ceiling usually means that some projects must be terminated in order that others of higher priority may be started.

The character of the Cooperative Program does not change dramatically from year to year, primarily because more than three-fourths of the projects are of a multi-year or continuing nature. Usually, sudden redirection or early termination of such projects is technically and administratively infeasible. The investment in a multi-year project can be wholly lost if it is prematurely terminated. Data gaps in a chronological record can never be replaced and may seriously diminish the value of the record.

Immediate response to changing needs or priorities also is impeded because program formulation and budgeting are sequential steps which are begun at least a year in advance of project implementation by both Federal and non-Federal participants. The resulting delay is not without merit. It tends to trim the peak off transient concerns and to assuage the differences in priorities at various levels of government.

Current and emerging priorities and thrusts must be freely and openly discussed with cooperators. In order that the program be a true partnership, the national priorities must weigh equally with work proposed in the individual States. Most of the national priorities are compatible with priorities of the State cooperators, and therefore program development can be carried out with a minimum of concessions on either side.

Are Federal funds sufficient to match cooperator proposals?

For the past 25 years, annual cooperator offerings for matching in the Cooperative Program have exceeded available funds on the Federal side. Some years this shortage has amounted to more than $10 million, and there is no way to tell how much

the offerings have been curtailed because of consistently insufficient Federal appropriations. The Survey responds to this shortage by making every effort to undertake only work of the highest priority with the funds available, but clearly some extremely important activities have suffered. At times, cooperators have offered unmatched funds for programs that otherwise would be foregone or deferred, and occasionally cooperators have developed inhouse capabilities to carry on the work. Although some of these alternatives may be more expensive than participation in the Cooperative Program, they indicate the significance of the work to the State and local agenices.

The cooperator's contribution to the Cooperative Program may be a transfer of funds or in the form of direct expenditures. "Direct Expenditure" refers to that part of the non-Federal contribution to the mutually agreed upon work for which dollar-value credit is given by the Survey for services rendered by the cooperator. Under the 50-50 matching requirement, the non-Federal contribution or cooperator's share is the sum of payment for services rendered by the Survey and credit allowed for evaluated services rendered by the cooperator.

Direct expenditures by the cooperator for personnel and other services or supplies may be recognized by the Survey as part of the non-Federal contribution, provided that such expenditures are: (1) For clearly defined parts and dollar amounts of specific cooperator investigations, projects, or work units mutually planned by and acceptable to the Survey and the cooperating agency; (2) For work of high priority that is relevant to the Cooperative Program; (3) Limited to an amount or level that would not reduce the effectiveness in maintaining technical competence and operational efficiency within the offices of the Geological Survey; (4) For work that is operationally under the direction of or subject to periodic review by the Survey representative in charge; and (5) Adequately documented to satisfy Federal accounting regulations.

How does the Survey assign personnel to Cooperative Program activities?

As the partner that directs and performs most of the work, the Survey has developed considerable technical competence in hydrology and in the operation of hydrologic information systems. A pool of specialized talent can be concentrated and put to work on short notice in virtually any part of the Nation. Nationwide uniformity, standardization, and quality control are other significant results of the Survey's lead role in directing and performing the work of this program.

About 30 to 40 percent of the Water Resources Divison's personnel (roughly in proportion to the percentage of total funding) are assigned to Cooperative Program activities. However, technical and professional employees are often engaged in various work elements, each of which may be supported by a combination of the three principal funding sources—Cooperative, Federal, and other Federal agency Programs.

Has the program contributed to the advancement of science?

Perhaps most important to those working with water policy is the fact that the Cooperative Program is "policy relevant," in that most projects provide interpretive hydrologic information necessary for developing guidelines for making decisions or for formulating plans. (U.S. Geological Survey, 1981) Most projects are responding to a recognized problem or are working to define a potential problem, as shown by the following examples:

- Ground-water management in the High Plains of Colorado—regulation of ground-water

pumping. (Colorado State Circular 34-1976.)

- Hydrology of the Piceance Creek Basin, Colorado—simulation of the effects of oil shale development. (Professional Paper 908-1974.)

- Ground-water model of the closed basin area of the San Luis Valley, Colorado—lead to interstate compact. (Colorado State Circular 29-1975.)

- Water-resources investigations of the Cook Inlet Hydrologic Unit, Alaska—land-use planning, waste emplacement, and supply development.

- Evaluation of the Edwards Limestone Aquifer, Texas—the study created interest in drafting legislation dealing with the protection of aquifers which are the only source of public water supply.

- Beaver Creek Study, Kentucky—pioneering work on the environmental impacts of surface mining. Surface mining laws and regulations based on this study. (Professional Paper 427-A, B, C; 1963, 1964, 1970.)

- Indianapolis Ground-water Study--controversy over water-supply availability and need for Highland Reservoir. The study appears to have saved the taxpayers more than $100 million.

- Highway Bridge Studies—to avoid over and under design of bridges. Studies have saved taxpayers millions of dollars in construction.

The program directly contributes to earth science knowledge by fostering the advancement of hydrologic science and by providing a major part of the Survey's water data base. As illustrated in table 5, many major advancements in groundwater science have been made within the Cooperative Program.

Finally, the Cooperative Program is a source of stability and strength for the total water-resources investigations program of the Geological Survey. Without the extensive and detailed knowledge of the hydrology of each State that has been accumulated over the years, the Geological Survey's goal of providing the Nation needed water information would be impossible.

Table 5.—Major advancements in hydrology supported by the Cooperative Program.

1890's	G. K. Gilbert, N. H. Darton, W. D. Johnson: Qualitative description of major aquifers; established geology as the cornerstone of groundwater hydrology.
1899-1930's	C. S. Slichter: Applied the mathematics of potential theory of groundwater flow and devised methods for measuring ratio of ground-water movement.
	W. C. Mendenhall: Developed quantitative technique for appraisal of groundwater resource.
	O. E. Meinzer and V. C. Fishel: Experimentally established

	the validity of Darcy's law for low ground-water gradients and introduced the Thiem equation for steady-state analysis of aquifer tests.
1920's	F. W. Clarke: Compiled Data of Geochemistry, which was instrumental in guiding geochemical research and data collection through the next two decades.
1923	O. E. Meinzer: The classic paper, The Occurrence of Ground-water in the United States, With a Discussion of Principles, established ground-water hydrology as a scientific discipline.
1935	C. V. Theis: Developed a mathematical equation describing the nonsteady flow of ground water to a well and opened the door to the modern era of quantitative ground-water hydrology.
1940's	C. E. Jacob: Developed the physical foundation of the ground-water flow equations and extended mathematical basis for analyzing aquifer-test data.
	B. R. Colby: Advancement of use of Oden Theory as a standard technique for determining particle-size distribution of fluvial sediment.
	P. C. Benedict: Development and advancement of the standardization of suspended-sediment samplers.
	G. E. Ferguson: Development and use of crest-stage gages for peak-stage measurement.
1945-1950's	H. B. Kinnison, B. R. Colby, R. W. Carter, T. Dalrymple, W. B. Langbein, M. A. Benson: Development of techniques for the regionalization of flood-frequency information.
1950's	H. E. Skibitzke, R. R. Bennett, R. W. Stallman: Introduced the use of numerical methods to analyze ground-water flow and develop concepts and techniques of simulating ground-water systems with 2- and 3-dimensional electrical networks.
	R. W. Carter and C. E. Kindsvater: Development of contracted-opening

	methods of flow measurement.
	J. S. Gatewood,T. W. Robinson, B. R. Colby, J. D. Hem, L. C. Halpenney: Documented water use by phreatophytes.
	H. Wires, G. F. Smoot, and others: Development of the bubble gage for the measurement of stage.
	B. R. Colby and C. H. Hembree: Development of Modified Einstein Theory for computing total sediment discharge.
	B. R. Colby: Developement of Visual-Accumulation-Tube analytical method for determining particle-size distribution of fluvial sediment.
	J. D. Hem: Developed simultaneously with other researchers Eh-pH stability field concepts, systematized several thermodynamic relations for solid-dissolved phase interactions of several minerals, and techniques for similar interpretation of other minerals.
1950-1960's	J. F. Poland, G. E. Davis, B. E. Lofgren: Investigated and described the mechanical deformation (subsidence) of earth material caused by the withdrawal of water by wells.
	B. R. Colby and D. R. Dawdy: Documented the influence of stream-bed forms on stage-discharge relation.
1950-1970's	W. B. Langbein, D. O. Moore, R. E. Hedman, H. C. Riggs: Developed techniques for relating channel and flow characteristics.
1960's	N. J. Luszczynski, H. H. Cooper, Jr., F. A. Kohout: Developed variable density concepts and applications to salt-water intrusion in coastal aquifers.
	D. R. Dawdy: Advancement of rainfall-runoff modeling.
	G. F. Smoot: Development of the moving-boat method of flow measurement.
1960-1970's	J. D. Bredehoeft, G. Pinder, P. C. Trescott: Developed and encouraged the use of computer-based numerical models of complex

ground-water flow systems.

N. C. Matalas, C. H. Hardison, R. W. Carter, M. E. Moss: Development of methods for stream-flow network design.

J. F. Wilson, Jr., F. A. Kilpatrick, N. Yotsukura, E. D. Cobb: Development of time-of-travel techniques for the transport and diffusion of solutes in river estuaries.

N. Yotsukura and W. Sayre: Development of stream-mixing concepts.

Does cooperation with non-Federal agencies lessen somewhat the credibility and impartiality of the information produced?

In many respects the Geological Survey's cooperative water-resources program is unique among Federal programs. Certainly it is not a grant-in-aid program in the sense often associated with Federal assistance. Neither is it a regulatory or enforcement program, nor is it a planning or construction program. Because it is different, it is not easily classified. It provides both funds and services to carry out a scientific information service which is directly related to water-resources conservation, development, and management responsiblities appropriate to all levels of government. It shares with non-Federal cooperators both the cost and the responsibility for the design and management of a national water-data system. It performs and supports research and disseminates the results of its investigations. It provides advisory services but it does not arbitrate nor does it take adversary positions with respect to governmental policy or action. As a result of these and other characteristics, it has acquired a record of scientific objectivity.

Viewed from today's perspective of environmental concerns, technologic change, resource depletion, and population stress, the national water-data base derived from the Cooperative Program is the foundation for most decisions involving water and water-related resources. The program's success in anticipating and responding to changing priorities and emergencies stems directly from its effective blending of Federal, State, and local inputs. Its reputation for objectivity is especially significant in assessing the environmental impact of water-resource developments and control measures.

Hardly a day passes that newspapers do not project a sharp controversy about some aspect of water resources and the water environment, its quantity and its quality, its amenity value, or its destructiveness. Hardly a public official, whether local or Federal, or whether legal, administrative, judicial, legislative, or fiscal, does not face some vexing uncertainties about the environment. The U.S. Geological Survey, acting in its impartial capacity, serves in a third-party role in controversies between bureaus of the Department of the Interior, of which it is a part, and between the Department and other Federal agencies; between the Federal Government and the States or municipal governments; between a Federal agency and private citizens; or between a State and its citizens. It serves in that impartial capacity as advisor to legislatures, and to the courts in public issues (where it often serves both sides in legal contests), and provides advisory services and data in international and interstate controversies.

Water issues often arouse intense public feelings. In such situations, the impartial fact-finder can be a harmonizing influence, which allows the adversaries to

concentrate on the policy issues. The simple fact that the Federal, State and local agencies of government in the forefront of public controversy continue to support the Cooperative Program financially in this era of revenue sharing and Federal subsidy is prime evidence that the program meets the criteria of impartiality.

PERSPECTIVES ON PROGRAM DIRECTION

What are expected to be the areas of emphasis for the program in 1980's?

The energy and food production problems facing the United States during the 1980's certainly will have a common focus on water as principal resource and as a critical part of the environment. Contaminants in ground water have long-lasting and widespread effects and are causing grave concerns regarding the protection of this resource. Coal and oil-shale development are expected to exert an increasing demand on local and regional water supplies, and concern continues for environmental protection in areas affected by the industries involved. Possible geographic shifts in agricultural activity, in part to make available additional water for energy production processes, would doubtless heighten demands for water supply in other parts of the Nation. Futhermore, the dilemma regarding storage of high-level and low-level nuclear wastes, the occasional presence of toxic substances in water supplies, the widespread degradation of ground-water quality, and the growing acid precipitation problem in the United States all strongly emphasize the need for a better understanding of our water resources.

Increased demands for non-mining industrial, irrigation, and municipal supplies, as well as additonal water requirements for mining and processing of coal, metals, and oil shale, and synthetic fuel development will affect both the quantity and quality of ground and surface water. Urban development will continue as the Nation's population increases, and will greatly alter the quality of water as rainfall and snowmelt from urban areas enter streams or percolate to aquifers. Changes in atmospheric composition resulting from the burning of coal will affect water quality because of particulate fallout. Already, evidence of this effect is seen in acid precipitation, especially in the northeastern United States. The continuing development of areas around lakes and wetlands will result in increases of nutrients in these water bodies followed by excessive algae production. This increased use of water resources will require careful management, conservation, and decisions that are based on comprehensive scientific data. Local needs and local problems must be coordinated with regional and national needs and problems.

Fortunately, awareness and documentation of this need may never have been greater in our Nation than it is today. For example:

- - The U.S. Office of Technology Assessment (1979) identified as the number one priority in the United States the necessity for technology as related to national water supply and demand. The report stated:

  "Projected demands for water for coal gasification, liquefaction, and mining; for cooling towers; and for irrigation exceed the projected supply in some States. Some alternative water supply technologies that merit study include surface water development, such as impoundments, groundwater extraction; and interchangeable ground and surface water systems. Others include conservation aimed at major water users, waste-water recycling, desalination, under-sea aqueducts, and

iceberg towing. All of these systems have social, economic, or environmental impacts that must be assessed."

—The U.S. General Accounting Office (1979) has written:

"As our Nation approaches the 21st century its population growth and industrial development as well as changing water use priorities are placing new demands on our water resources and are leading to increasing water shortages and competition for the limited supply.

How bad a picture do we face? No one knows for sure. Fortunately, there is now a growing awareness that water resources are limited and seriously polluted and that ways must be found to augment the water supply and achieve the greatest use from existing resources."

How have cooperators responded to the chronic shortfall of Federal matching funds?

Cooperators have responded to the Federal shortfall in different ways. Some have offered unmatched funds. Within limitations made worse by manpower ceilings, projects of reduced scope have been carried on without Federal matching funds. Other cooperators have contracted for services outside the cooperative program, or they have augmented their own staffs to perform the work. These are appropriate solutions when the activity is predominantly of local interest. An activity of regional or national interest would lack the coordination and technical direction of the cooperative program.

Also, some cooperators have responded to the shortage of Federal matching funds by dropping or deferring proposed projects. This is the worst possible alternative when the work has national significance. The fact that the shortfall has not increased at a rate proportional to growth in overall environmental program expenditures suggests that the cooperators have curtailed their offerings in anticipation of insufficient Federal matching funds. The State and local input to the program planning process is unquestionably inhibited by this restraint. With both the non-Federal cooperators and the Survey pressed to emphasize agency-oriented priorities, some elements of the national water data base which are truly of mutual interest have doubtless suffered.

The amount of cooperators' unmatched funds varies from State to State and from time to time. In general, unmatched funds are offered for investigations that are of paramount importance to the cooperator or for urgently needed investigations that qualify for Federal matching but cannot be matched because of insufficient Federal funds.

Wide diversities exist in the desire, ability, and capability of cooperators to perform work that the Survey is unable to undertake. The most significant factors may be the source of the cooperating agency's funds, the agency's primary water resources mission, its principal applications of water data, and the existing level of experience in data collection and interpretation activities. Some cooperators are fully competent to take on virtually all types of hydrologic work; others have no interest in, or prospects for, performing such work inhouse.

Furthermore, guiding the program toward greater functional participation by cooperating agencies has some drawbacks:

(a) Some outside sources presently lack sufficient trained personnel, necessary equipment, and quality-control mechanisms to carry on the activities at a significant scale; (b) The high degree of

decentralization that would take place and the resulting lack of access to data, research expertise, current technological developments, and coordinative functions also are serious deterrents. The comprehensive water-data networks maintained by the Survey are designed to obtain information to meet the requirements of a broad range of Federal, State, local agencies, and private organizations. The Survey's research activities likewise are supportive of the entire water community; (c) The Geological Survey serves in an unbiased, third party, scientific investigative role in the field of water resources. The need for an objective investigator and evaluator of the Nation's water resources seems to be increasing.

Have funding ratios other than 50-50 been considered?

Implicit in preceding references to shortages of Federal matching funds is the assumption that the cooperative program is based on a universal 50-50 matching ratio. If it were only a matter of definition, shortages could be reduced or even changed to surpluses simply by changing the ratio. However, for the Survey's cooperative water-resources program, the legal limitation is that which (in the language of all Appropriations Acts since 1929) prohibits the Federal share from exceeding 50 percent.

The success of the program throughout this period is often attributed to the "partnership-of-equals" principle inherent in the 50-50 ratio. Nonetheless, for various reasons at various times, different funding ratios have been suggested as a basis for matching. Most if not all of the suggested alternatives can be covered in the four broad categories discussed below:

1. Ratio is constant with time and uniform for all cooperators; program is negotiated to make the funding ratio equal to the ratio of Federal to non-Federal benefits; magnitude of the program is limited by the funds available.

This category includes but is not limited to the pattern of the 50-50 ratio used for the Survey's water-resources program. Because it features an unchanging ratio, it has special advantages in program planning and budgeting. A constant ratio is least sensitive to the long lead times that are needed to respond to data needs and budget constraints and forestalls many difficult problems associated with subjective views of relative need, ability to pay, and equity. It conveys a spirit of equal opportunity, responsibility, and stability, and encourages long-range planning. However, a constant ratio implies an unchanging relationship between Federal and non-Federal interests. A constant ratio along with unchanging Federal appropriations inhibits program growth. The record shows that cooperators will not continue indefinitely to increase their offerings of unmatched funds.

2. Ratio is variable with time and uniform for all cooperators; ratio for any year is based on estimates of offerings and/or Federal appropriations; programs are negotiated to match funding ratio.

This formula has been suggested on occasion as a means of fitting the matching ratio to the funds available. In view of the long history of Federal shortfall, it is patently a device for including a large share of non-Federal offerings under the umbrella of the Cooperative Program. The result would be a lowering of the Federal to non-Federal matching ratio. This reasoning assumes that all cooperators and all projects have shared proportionately in the history of excess non-Federal offerings. On the contrary, some vital projects are already constrained under the 50-50 formula by limited non-Federal funding capability. Lowering the Federal share, therefore, would probably lead to a reduction in project activity because cooperators, many of whom are accustomed to even more than 50 percent matching under other Federal programs, are unlikely to respond favorably to this

alternative. A key factor would be the fear that a positive response would result in a further lowering of Federal contributions.

3. Ratio is variable with time and variable with topical content of each program; Federal share is determined on the basis of Federal priorities; magnitude of the program is limited by the funds available.

Because the topical content of the agreements with some 750 cooperators varies for many different reasons, the matching ratios would vary greatly among cooperators, in one region as well as in different regions. This fact in itself would create problems because of differences of view regarding national and local interests and subjectively derived Federal priorities. The problem could be alleviated by a procedure for determining national priorities with the assistance of an external consulting board, but the spirit of partnership inherent in the present arrangement would be adversely affected. It is even possible that a diversion of cooperator support away from projects with lower Federal priority would result in a lower level of activity over the full spectrum of information required for the national water-data base. This trend presumably could be countered with a diversion of Federal funds from the Cooperative Program to the Federal Program. Less easily handled would be the instabilities resulting from enhanced sensitivity to priorities which change irregularly with time at both the Federal and local levels. All consequences considered, it is not at all certain that ratios keyed to topical priorities would result in a more efficient use of Federal funds to achieve Federal objectives.

4. Ratio is variable with time and variable among cooperators; time variation is based on estimates of funds available; variation among cooperators is based on demographic or economic criteria.

In principle at least, a matching ratio that considers the cooperator's ability to pay would overcome one of the major weaknesses of the second alternative described above. Presumably, this could be accomplished with criteria based on population, average income, industrial activity, etc. The gap between presumption and fact is nonetheless awesome, and in view of other weaknesses which this alternative shares with the second alternative, demographic-economic criteria have not been considered in detail.

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U.S. Geological Survey, 1981, Yearbook, Fiscal Year 1980: p. 74, 75.

U.S. Office of Technology Assessment, 1979, OTA Priorities 1979: U.S. Office of Technology Assessment, Washington, D.C., 49 p.

APPENDIX

Inquiries about water-resources information for a particular State should be referred to the U.S. Geological Survey, Water Resources Division, at the appropriate address, as shown below. Questions regarding multi-state programs or policy matters should be addressed to one of the regional offices shown.

ALABAMA
P.O. Box V, Oil & Gas Board Bldg.,
University, AL 35486

ALASKA
733 W. 4th Ave. Suite 400
Anchorage, AK 99501

ARIZONA
Federal Building
301 West Congress Street, FB-44
Tuscon, AZ 85701

ARKANSAS
Federal Office Building Room 2301
700 West Capitol Avenue
Little Rock, AR 72201

CALIFORNIA
855 Oak Grove Avenue
Menlo Park, CA 94025

COLORADO
Box 25046, Mail Stop 415
Denver Federal Center, Bldg.53
Lakewood, CO 80225

CONNECTICUT
135 High Street, Room 235
Hartford, CT 06103

DELAWARE
See "MARYLAND" listing

DISTRICT OF COLUMBIA
See "MARYLAND" Listing

FLORIDA
325 John Knox Road Suite F-240
Tallahassee, FL 32303

GEORGIA
6481 Peachtree Industrial Blvd, Suite B
Doraville, GA 30360

HAWAII
P.O. Box 50166
300 Ala Moana Boulevard, Room 6610
Honolulu, HI 96850

IDAHO
Room 365, 550 W. Fort St.
Boise, ID 83724

ILLINOIS
Champaign City Bank Plaza
102 E. Main St. 4th Floor
Champaign, IL 61801

INDIANA
1819 North Meridian Street
Indianapolis, IN 46202

IOWA
P.O. Box 1230, Federal Bldg.
Room 269, 400 South Clinton Street
Iowa City, IA 52244

KANSAS
1950 Avenue A - Campus West
University of Kansas
Lawrence, KS 66045

KENTUCKY
Federal Building, Room 572
600 Federal Place
Louisville, KY 40202

LOUISIANA
P.O. Box 66492, 6554 Florida Boulevard
Baton Rouge, LA 70896

MAINE
See "MASSACHUSETTS listing

MARYLAND
Carroll Building, Room 208
8600 LaSalle Road
Towson, MD 21204

MASSACHUSETTS
150 Causeway Street, Suite 1001
Boston, MA 02114

MICHIGAN
6520 Mercantile Way, Suite 5
Lansing, MI 48910

MINNESOTA
Post Office Bldg., Rm. 702
St. Paul, MN 55101

MISSISSIPPI
Fed. Office Bldg. Suite 710
100 West Capitol Street
Jackson, MS 39201

MISSOURI
1400 Independence Road, Mail Stop 200
Rolla, MO 65401

MONTANA
Drawer 10076
Helena, MT 59626

NEBRASKA
Federal Building and U.S. Courthouse,
Rm. 406, 100 Centennial Mall North
Lincoln, NE 68508

NEVADA

Federal Building, Rm. 229
705 North Plaza Street
Carson City, NV 89701

NEW HAMPSHIRE

See "MASSACHUSETTS" listing

NEW JERSEY

430 Federal Building
402 E. State Street
Trenton, NJ 08608

NEW MEXICO

P.O. Box 26659,
Western Bank Bldg.
505 Marquette, NW
Albuquerque, NM 87125

NEW YORK
P.O. Box 1350, 236 U.S. Post Office and
Courthouse Bldg.
Albany, NY 12201

NORTH CAROLINA
P.O. Box 2857, Century Sta.
Post Office Bldg, Rm 436
Raleigh, NC 27602

NORTH DAKOTA
821 East Interstate Ave.
Bismarck, ND 58501

OHIO
975 West Third Avenue
Columbus, OH 43212

OKLAHOMA
215 Dean A. McGee St.,
Rm. 521
Oklahoma City, OK 73102

OREGON
P.O. Box 3202
830 Northeast Holladay St.
Portland, OR 97208

PENNSYLVANIA
P.O. Box 1107, Federal Bldg.
4th Floor, 228 Walnut St.
Harrisburg, PA 17108

PUERTO RICO
G.P.O. Box 4424, Building 652
Ft. Buchanan
San Juan, PR 00936

RHODE ISLAND
See "MASSACHUSETTS" listing

SOUTH CAROLINA
Strom Thurmond Fed. Bldg., Suite 658
1835 Assembly Street
Columbia, SC 29201

SOUTH DAKOTA
200 Fourth Street, SW,
Federal Bldg., 317
Huron, SD 57350

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Federal Bldg. & U.S. Courthouse,
Rm. A-413
Nashville, TN 37203

TEXAS
Federal Bldg., Rm. 649
300 East Eighth Street
Austin, TX 78701

UTAH

Administrative Bldg., Rm 1016
1745 West 1700 South
Salt Lake City, UT 84109

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VIRGINIA

200 West Grace St., Rm. 304
Richmond, VA 23220

WASHINGTON
1201 Pacific Ave., Suite 600
Tacoma, WA 98402

WEST VIRGINIA
Federal Bldg., & U.S. Courthouse,
Rm. 3017, 500 Quarrier Street, East
Charleston, WV 25301

WISCONSIN
1815 University Ave.
Madison, WI 53706

WYOMING

P.O. Box 1125
J.C. O'Mahoney Fed. Cntr.,
Room 5017, 2120 Capitol Avenue
Cheyenne, WY 82001

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