U.S.G.S. WATER RESOURCES RESEARCH
PROGRAM PROPOSALS

In response to the request for proposals for fiscal year 1989 Water Resources Research Program, Section 105 of Public Law 98-242, 120 public and private institutions submitted 260 proposals requesting over $28,673,000 in federal funds (see Table 1).

Table 1.
USGS Water Resources Research Proposals:
Analysis of Federal Funds Requested

Federal Funds Requested ($):	Number of Proposals	Percent
0 - 9,999	2	0.8
10,000 - 49,999	20	7.7
50,000 - 69,999	52	20.0
70,000 - 129,999	45	17.3
130,000 - 159,999	46	17.7
160,000 - 189,999	40	15.4
190,000 - 199,999	52	20.0
200,000 - 670,000	3	1.1

Total Number of Proposals = 260
Total Federal Funds Requested = $28,673,840
Mean = $110,284
Median = $111,000
Standard Dev.= 60,050
Minimum Requested = $7,000
Maximum Requested = $669,524

This is a substantial increase in the number of institutions, proposals, and funds requested during the FY 1988 program. Sixty-six public and private institutions participated last year by sending in 238 proposals. Table 2 presents the institutions submitting proposals for FY 1989. The University of Arizona submitted the most proposals (14), followed closely by North Carolina State University and the University of Florida (9 proposals each). The top 28 institutions (Table 2) submitted over 50 percent of the proposals in 1989. These institutions were located in 47 states indicating that the interest and need for water resources research is widespread.

Table 2.
Top USGS Water Resources Research Proposals:
By Institution

Institution	Number of Proposals
University of Arizona	14
North Carolina State University	9
University of Florida	9
University of Maryland	8
Oklahoma State University	7
New Mexico State University	6
University of California	6
University of Minnesota	6
University of Texas - Austin	6
Utah State University	6
Louisiana State University	5
Pennsylvania State University	S
University of Oklahoma	5
Colorado State University	4
Massachusetts Institute of Technology	4
Southern Illinois University - Carbondale	4
University of Hawaii	4
University of Virginia	4
Virginia Polytechnic Institute	4
Texas A & M University	4
University of Alaska	3
University of Arkansas	3
University of Colorado - Boulder	3
University of Delaware	3
Cornell University	3
University of Illinois	3
University of Massachusetts	3
University of Wyoming	3

* all other institutions submitted 2 or 1 proposals.

However, even though more institutions participated this year over last, the USGS reported that the federal funding would remain the same at approximately $4.3 million. This is not encouraging when the Nation's water resources problems are becomming more urgent. Table 3 presents the proposals submitted by state. The top 14 states submitted over 58 percent of the proposals. Texas submitted 19 proposals, Arizona 15, followed closely by Illinois and Oklahoma with 12 proposals each.

Table 3.
USGS Water Resources Research Proposals:
By State

State	Number of Proposals
Texas	19
Arizona	15
Illinois	12
Oklahoma	12
Pennsylvania	11
California	10
Florida	10
Maryland	10
Massachusetts	10
North Carolina	10
Colorado	9
Virginia	9
Louisiana	8
New Mexico	7
Georgia	6
Minnesota	6
New York	6
Tennessee	6
Utah	6
Arkansas	5
Michigan	5
New Jersey	5
Ohio	5
Hawaii	4
Oregon	4
South Carolina	4
Alabama	3
Alaska	3
Delaware	3
Missouri	3
Wisconsin	3
Wyoming	3
Idaho	3
Indiana	2
Kansas	2
Kentucky	2
Nebraska	2
Nevada	2
South Dakota	2
Washington	2
District of Columbia (DC)	2
Connecticut	1
New Hampshire	1
North Dakota	1
Puerto Rico	1
Rhode Island	1

Types of Research

The research proposals were organized into four major disciplines: (1) biological sciences; (2) engineering sciences; (3) physical sciences; and (4) social sciences. Table 4 presents the distribution of the four major disciplines and the amount of federal funds requested. The physical sciences had the largest mean request at *$115,472,* while the social sciences had the lowest mean at $94,967.

Table 4
Federal Funds by Discipline

Discipline	Number of Proposals	Percent	Requested Funds	Mean Funds
Physical Sciences	149	57.3	$17,205,328	$115,472
Engineering Sciences	47	18.1	$ 5,074,778	$107,974
Social Sciences	36	13.8	$ 3,418,812	$ 94,967
Biological Sciences	28	10.8	$ 2,975,000	$106,250

Total Number of proposals = 260
Total Federal Funds Requested $28,673,840

Each discipline was further classified into subdisciplines (see Table *5).* As with last year, the overwhelming majority of the proposals came from the physical sciences. However, only 25 proposals *(9.5* percent) dealing with climate variability and the hydrologic cycle were submitted. Last year, 27 proposals (11.3 percent) were submitted from this subdiscipline. In addition, there was no increase in the number of proposals from the social sciences (actually representing a one percent decrease from last year). This is suprising since so many of our critical water resource problems are related to institutional and managment issues.

One wonders why? Are there fewer qualified researchers in the area of water management and policy? Or is the USGS perceived as favoring research in the physical and biological sciences? Nevertheless, it is astonishing that in the light of the nature of the Nation's water resource problems which cry out for research in the socioeconomic

and institutional sector, less than 15 percent of the proposals are from the social sciences! The USGS might consider giving the highest priority to proposals which address issues directly relating to the socioeconomic, legal, and institutional importance of water resources planning and management.

Table *5*.
USGS Water Resources Research Proposals: Analysis by Discipline

Discipline	No.of Proposals	%of Total
BIOLOGICAL SCIENCES	28	10.7
Ecology/Wildlife	8	3.1
Microbiology	4	1.5
Plant/Soil Science	2	0.8
Zoology/Physiology	7	2.7
Public Health	7	2.7
ENGINEERING SCIENCES	47	18.1
Agricultural Engineering	15	5.8
Civil/Urban Engineering	15	5.8
Environmental/Sanitary	17	63
PHYSICAL SCIENCES	149	57.3
Chemistry/Geochemistry	24	9.2
Water/Groundwater Quality	77	29.6
Groundwater Hydrology	19	73
Climate/Hydrologic Processes	25	9.6
Geomorphology/Fluvial	4	1.5
SOCIAL SCIENCES	36	13.8
Institutional/Policy Anal.	13	5.0
Economics/Planning	20	7.7
Issue-Specific Management	3	1.1

Total Number of Proposals =260

Table 6 presents the proposals by the focus of their research. This focus was whether the proposal was dealing with water resources research or just simply water research. Over 88 percent of the proposals were dealing with water resources research issues, rather than just water research.

Table 6
USGS Water Resources Research Proposals: Analysis by Research

Research Classification	Bio. Sdi.	Engr. Sd.	Phys. Sd.	Sodial Sdi.	Total	%
Type of Research						
Water Research	8	3	20	0	31	11.9
Water Resources Research	20	44	129	36	229	88.1
Area of Research Impact						
National	20	40	107	25	192	73.8
Regional	7	2	22	11	42	16.2
Local	1	*5*	20	0	26	10.0
Total	28	47	149	36	260	

The Water Resources Research Program clearly calls for research involving any aspect relating to water resources problems, not research simply involving water. The Program also states that proposals with a national or regional scope will be given top priority in the selection process. About 73 percent of the proposals were of a national scope, while 10 percent were local.

Conclusions

As with last year, there seems to be a striking imbalance between what is proposed and what is needed. The federal involvement (by way of financial support) in water resources research is pitifully inadequate, while the need for research is at an all time high. Without an enormous increase in federal financial support, the Nation's water resource problems will continue to take their toll.