

**RESEARCH, DEVELOPMENT, AND  
DEMONSTRATION PROJECTS**

**1970 GRANT AND CONTRACT AWARDS**

**RESEARCH GRANTS**

**RESEARCH CONTRACTS**

**DEMONSTRATION GRANTS**

**STORM AND COMBINED SEWER GRANTS**

**STORM AND COMBINED SEWER CONTRACTS**

**ADVANCED WASTE TREATMENT GRANTS**

**ADVANCED WASTE TREATMENT CONTRACTS**

**INDUSTRIAL WASTE TREATMENT GRANTS**

**INDUSTRIAL WASTE TREATMENT CONTRACTS**



**ENVIRONMENTAL PROTECTION AGENCY**

**Water Quality Office**

**Office of Research and Development**

**Washington, D.C. 20242**

RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECTS

FISCAL YEAR 1970

GRANT AND CONTRACT AWARDS

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DEMONSTRATION GRANTS  
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STORM AND COMBINED SEWER GRANTS  
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ENVIRONMENTAL PROTECTION AGENCY  
WATER QUALITY OFFICE  
OFFICE OF RESEARCH AND DEVELOPMENT  
WASHINGTON, D.C. 20242

## F O R W A R D

Sections 5 and 6 of the Federal Water Pollution Control Act, Public Law 660, as amended, authorized the award of grants and contracts for research, development, and demonstration projects. Five types of projects are available.

Research Grants and Contracts are awarded to public or private agencies, institutions, and to individuals to assist in supporting basic and applied research projects relating to the causes, control, and prevention of water pollution. They support projects directed toward the discovery, and development of new information and technology in the chemical, physical, biological, and social sciences, in engineering, and in administrative aspects related to:

1. Identification of pollutants
2. Fate and persistence of pollutants
3. Effects of pollutants on water uses
4. Treatment processes
5. Non-treatment methods of pollution control
6. Ultimate disposal of pollutants

Demonstration Grants are awarded to public or private agencies, institutions, and to individuals to assist in investigations and studies of an applied nature and to develop and demonstrate the feasibility of new methods related to the causes, control, and prevention of water pollution. They are designed to evaluate the application of research findings, and to expedite incorporation of new knowledge into routine pollution control practice.

Storm and Combined Sewer Grants are awarded to states and interstate agencies, municipalities and intermunicipal agencies, whereas Storm and Combined Sewer Contracts are awarded to public or private agencies, institutions, and to individuals. Both grants and contracts are designed to assist projects which will develop and/or will demonstrate a new or improved method of controlling the discharge into any waters of untreated or inadequately treated sewage or other wastes from sewers which carry storm water or both storm water and sewage or other wastes.

Advanced Waste Treatment Grants are awarded to states and interstate agencies, municipalities, and intermunicipal agencies, whereas Advanced Waste Treatment Contracts are awarded to public and private agencies, institutions, and to individuals. These projects are designed to assist in the development and/or demonstration of advanced waste treatment and water purification methods (including the temporary use of new or improved chemical additives which provide substantial immediate improvements in existing treatment processes), or new or improved methods of joint treatment systems for municipal and industrial wastes.

Industrial Waste Treatment Grants and Contracts are awarded to public and private agencies, institutions, and to individuals to support research and demonstration projects for the prevention of pollution of waters by industry, including, but not limited to, treatment of industrial waters.

To obtain details concerning the above awards and to request forms for the submission of applications, write to:

Project Coordination  
Office of Research and Development  
Water Quality Office  
Environmental Protection Agency  
Washington, D.C. 20242

DISCRIMINATION PROHIBITED:

Title VI of the Civil Rights Act of 1964 states:

"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance." Therefore, this office will be operated in compliance with this law.

RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECTS

FISCAL YEAR 1970 GRANT AND CONTRACT AWRDS

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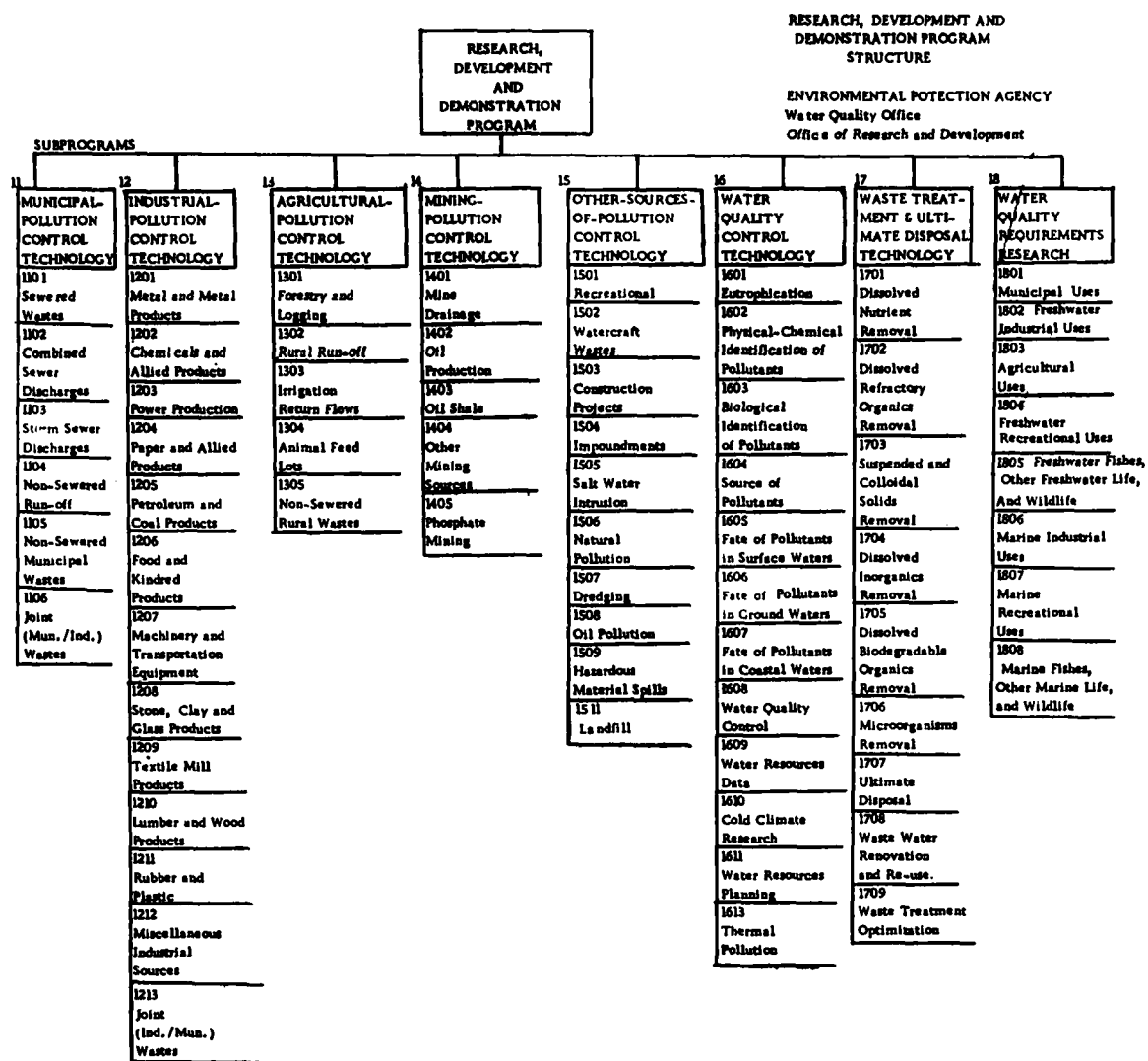
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## RESEARCH, DEVELOPMENT, AND DEMONSTRATION PROJECTS

## SUMMARY OF AWARDS

FISCAL YEAR 1970

<u>Conventional Budget Elements</u>	<u>Projects Awarded</u>	<u>Amount Awarded</u>
Research Grants	176	\$ 6,476,939.55
Demonstration Grants	53	\$ 2,321,680.60
Research Contracts	75	\$ 4,805,526.00
Storm & Combined Sewer Grants (6A1)	9	\$ 3,319,610.00
Storm & Combined Sewer Contracts (6A1)	18	\$ 1,239,437.50
Advanced Waste Treatment Grants (6A2)	16	\$ 4,678,181.00
Advanced Waste Treatment Contracts (6A2)	12	\$ 2,611,614.96
Industrial Waste Treatment Grants (6B)	60	\$ 8,362,770.51
Industrial Waste Treatment Contracts (6B)	36	\$ 2,006,075.50
 <u>ALL PROJECTS</u>	 455	 \$35,821,835.62



**RESEARCH, DEVELOPMENT AND DEMONSTRATION PROJECTS**

**FISCAL YEAR 1970**

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
<b>MUNICIPAL-POLLUTION CONTROL TECHNOLOGY</b>								
11010 - Grants	\$ 33,264.00	\$ 43,250.00		\$2,323,976.00		\$ 2,400,490.00	9	25
Contracts				1,128,516.96		<u>1,128,516.96</u>	<u>2</u>	<u>4</u>
						3,529,006.96	11	29
11020 - Grants		80,134.00	\$3,038,410.00			3,118,544.00	10	34
Contracts			957,327.50			<u>957,327.50</u>	<u>14</u>	<u>27</u>
						4,075,871.50	24	61
11030 - Grants		19,102.00				19,102.00	1	3
Contracts			283,310.00			<u>283,310.00</u>	<u>4</u>	<u>6</u>
						302,412.00	5	9
11040 - Grants								1
Contracts								<u>1</u>
								2
11050 - Grants								<u>1</u>
								1
11060 - Grants				809,256.00	\$ 16,890.00	826,146.00	3	18
Contracts				54,850.00		<u>54,850.00</u>	<u>1</u>	<u>1</u>
						880,996.00	4	19
<b>INDUSTRIAL-POLLUTION CONTROL TECHNOLOGY</b>								
12010 - Grants	27,086.00	10,065.00			180,168.13	217,319.13	7	17
Contracts	68,060.00				1,500.00	<u>69,560.00</u>	<u>1</u>	<u>1</u>
						286,879.13	8	18



Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
12020 - Grants Contracts	66,143.00	32,539.00			1,476,868.00	1,575,550.00	9	17 <u>2</u> 19
						<u>1,575,550.00</u>	<u>9</u>	
12040 - Grants Contracts	106,396.00	15,415.00			1,183,169.00	1,304,980.00	10	22 <u>1</u> 23
						<u>1,304,980.00</u>	<u>10</u>	
12050 - Grants Contracts	15,349.00	34,998.60			176,677.00	227,024.60	4	9 <u>1</u> 10
						<u>227,024.60</u>	<u>4</u>	
12060 - Grants	17,538.00				2,166,326.00	2,183,864.00	12	34
						<u>2,183,864.00</u>	<u>12</u>	<u>34</u>
12070 - Grants								<u>1</u> 1
12080 - Grants					1,500.00	1,500.00	1	1
						<u>1,500.00</u>	<u>1</u>	<u>1</u>
12090 - Grants Contracts	67,372.00	47,500.00			209,428.00	324,300.00	5	9 <u>1</u> 10
						<u>324,300.00</u>	<u>5</u>	
12100 - Grants	20,633.00				170,000.00	190,633.00	2	3
						<u>190,633.00</u>	<u>2</u>	<u>3</u>
12120 - Grants Contracts		25,900.00			323,938.00	349,838.00	5	9
					33,897.00	<u>33,897.00</u>	<u>1</u>	<u>1</u>
						<u>383,735.00</u>	<u>6</u>	<u>10</u>
12130 - Grants				873,072.00	88,161.00	961,233.00	3	3
						<u>961,233.00</u>	<u>3</u>	<u>3</u>

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
AGRICULTURAL-POLLUTION CONTROL TECHNOLOGY								
13010 - Grants	37,552.00					<u>37,552.00</u>	<u>1</u>	<u>1</u>
						37,552.00	1	1
13020 - Grants	154,964.00					<u>154,964.00</u>	<u>3</u>	<u>4</u>
						154,964.00	3	4
13030 - Grants	335,732.00	440,826.00				776,558.00	5	8
Contracts	220,000.00					<u>220,000.00</u>	<u>2</u>	<u>2</u>
						996,558.00	7	10
13040 - Grants	60,470.00				490,748.00	551,218.00	9	16
Contracts	76,000.00				75,000.00	<u>151,000.00</u>	<u>2</u>	<u>2</u>
						702,218.00	11	18
MINING-POLLUTION CONTROL TECHNOLOGY								
14010 - Grants	167,969.23	42,247.00			1,266,617.38	1,476,833.61	15	31
Contracts	218,244.00				350,678.50	<u>568,922.50</u>	<u>13</u>	<u>20</u>
						2,045,756.11	28	51
14020 - Grants	29,835.00					29,835.00	1	1
Contracts						<u>29,835.00</u>	<u>1</u>	<u>1</u>
								2
14030 - Grants								<u>1</u>
								1
14040 - Grants	21,340.00					21,340.00	1	1
Contracts					45,603.00	<u>45,603.00</u>	<u>1</u>	<u>1</u>
						66,943.00	2	2
14050 - Grants					153,854.00	<u>153,854.00</u>	<u>1</u>	<u>1</u>
						153,854.00	1	1

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
OTHER-SOURCES-OF-POLLUTION CONTROL TECHNOLOGY								
15010 - Grants		24,180.00				<u>24,180.00</u> 24,180.00	<u>1</u> 1	<u>1</u> 1
15020 - Grants	26,104.00					26,104.00	1	1
Contracts	61,392.00					<u>61,392.00</u> 87,496.00	<u>1</u> 2	<u>3</u> 4
15030 - Grants			280,000.00			<u>280,000.00</u> 280,000.00	<u>1</u> 1	<u>1</u> 1
15040 - Grants		10,209.00				<u>10,209.00</u> 10,209.00	<u>1</u> 1	<u>1</u> 1
15050 - Grants								<u>1</u> 1
15060 - Grants								<u>1</u> 1
15070 - Grants	1,000.00					<u>1,000.00</u> 1,000.00	<u>1</u> 1	<u>1</u> 1
15080 - Grants	135,000.00	2,000.00			368,508.00	505,508.08	6	10
Contracts	56,747.00				1,473,438.00	<u>1,530,185.00</u> 2,035,693.00	<u>24</u> 30	<u>32</u> 42
WATER QUALITY CONTROL TECHNOLOGY								
16010 - Grants	763,459.00	24,525.00				787,984.00	18	37
Contracts	96,983.00					<u>96,983.00</u> 884,967.00	<u>3</u> 21	<u>5</u> 42
16020 - Grants	220,029.00	105,695.00				325,724.00	13	18
Contracts	295,229.00					<u>295,229.00</u> 620,953.00	<u>8</u> 21	<u>10</u> 28

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
16030 - Grants Contracts	317,659.00					317,659.00	7	14
						<u>317,659.00</u>	<u>7</u>	<u>14</u>
16040 - Grants Contracts	29,489.00 203,074.00					29,489.00 203,074.00	1 2	2 2
						<u>232,563.00</u>	<u>3</u>	<u>4</u>
16050 - Grants Contracts	205,438.00 15,200.00	249,969.00				455,407.00 15,200.00	16 1	25 3
						<u>470,607.00</u>	<u>17</u>	<u>28</u>
16060 - Grants Contracts	19,205.00 92,973.00	91,307.00				110,512.00 92,973.00	3 2	13 3
						<u>203,485.00</u>	<u>5</u>	<u>16</u>
16070 - Grants Contracts	207,032.00					207,032.00	5	10
						<u>207,032.00</u>	<u>5</u>	<u>14</u>
16080 - Grants Contracts	302,021.00 359,039.00	123,564.00				425,585.00 359,039.00	13 2	13 4
						<u>784,624.00</u>	<u>15</u>	<u>17</u>
16090 - Grants Contracts	123,305.00 151,268.00	306,671.00			45,815.00	475,791.00 151,268.00	9 4	22 6
						<u>627,059.00</u>	<u>13</u>	<u>28</u>
16100 - Grants	169,061.00	71,080.00				240,141.00	4	4
						<u>240,141.00</u>	<u>4</u>	<u>4</u>
16130 - Grants Contracts	251,856.00 253,312.00	158,224.00			70,062.00	410,080.00 323,374.00	8 7	9 11
						<u>733,454.00</u>	<u>15</u>	<u>20</u>

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
WASTE TREATMENT & ULTIMATE DISPOSAL TECHNOLOGY								
17010 - Grants	162,006.00	39,800.00				201,806.00	5	20
Contracts	408,993.00			87,856.00		496,849.00	7	20
						698,655.00	12	40
17020 - Grants	94,775.00					94,775.00	3	8
Contracts	282,856.00					282,856.00	4	12
						377,631.00	7	20
17030 - Grants	76,136.00			98,100.00		174,236.00	3	12
Contracts	315,700.00					315,700.00	4	7
						489,936.00	7	19
17040 - Grants	22,708.00					22,708.00	1	2
Contracts	271,333.00			285,973.00		557,306.00	5	11
						580,014.00	6	13
17050 - Grants	177,540.32	38,410.00		127,178.00		343,128.32	10	21
Contracts	181,467.00			208,714.00		390,181.00	5	12
						733,309.32	15	33
17060 - Grants	72,587.00					72,587.00	2	5
Contracts								1
						72,587.00	2	6
17070 - Grants	239,329.00			118,799.00		358,128.00	7	15
Contracts	147,925.00			311,187.00		459,112.00	6	12
						817,240.00	13	27
17080 - Grants	17,439.00	147,706.00		327,800.00		492,945.00	5	13
Contracts	29,992.00			347,308.00		377,300.00	2	4
						870,245.00	7	17
17090 - Grants	111,187.00	102,900.00				214,087.00	6	8
Contracts	79,555.00			187,210.00		266,765.00	4	12
						480,852.00	10	20

Program Elements	Section 5 Research	Section 5 Demonstration	Section 6A1	Section 6A2	Section 6B	Total FY 1970 Awards Amount	No.	Active Projects In FY 1970
WATER QUALITY REQUIREMENTS RESEARCH								
18010 - Grants								1
Contracts								$\frac{1}{2}$
18020 - Grants								1
Contracts								$\frac{1}{2}$
18040 - Grants	45,207.00					45,207.00	2	2
Contracts	78,875.00					78,875.00	1	1
						124,082.00	3	3
18050 - Grants	1,555,559.00	33,464.00				1,589,023.00	44	75
Contracts	811,474.00					811,474.00	9	13
						2,400,497.00	53	88
Total - Grants	6,476,939.55	2,321,680.60	3,319,610.00	4,678,181.00	8,362,770.51	25,159,181.66	313	638
Total - Contracts	4,805,526.00		1,239,437.50	2,611,614.96	2,006,075.50	10,662,653.96	142	263
Grand Total	\$11,282,465.55	\$2,321,680.60	\$4,559,047.50	\$7,289,795.96	\$10,368,846.01	\$35,821,835.62	455	901

## RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAM

## 1100 - MUNICIPAL-POLLUTION CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1101 - Sewered Wastes</u>			
Section 5 Research Grant			
Johns Hopkins University 34th and Charles Street Baltimore, Maryland	Fluid Friction in the Presence of Non-rigid Boundaries	11010DUZ	33,264.00
Section 5 Demonstration Grant			
Muskegon County Dept. of Public Works County Building Muskegon, Michigan	Engineering Feasibility Demon- stration Study - Muskegon MI Wastewater Treatment Irrigation System	11010FMY	43,250.00
University of Michigan Ann Arbor, Michigan	Application of Programmed Learning to Water Chemistry	11010DWY	_____*
Section 6A2 Advanced Waste Treatment Grant			
City of Port Arthur P.O. Box 1089 Port Arthur, Texas	Sewer System Oxygenation for Corrosion & Odor Control	11010DYO	36,266.00
City of San Antonio Dept. of Public Works City Hall San Antonio, Texas	Demonstration of Virus Removal from Municipal Sewage	11010EGZ	423,750.00
Jefferson Parish, Louisiana Dept. of Sanitation 600 Helois Street Metairie, Louisiana	Study Involving Aeration to Freshen Sewage & Retard Bacterial Activity in Long Sewers	11010ELP	24,000.00
City of Grand Rapids Michigan 1300 Market Avenue, S.W. Grand Rapids, Michigan	The Use of Iron Salts & Organic Polyelectrolytes for Removal of Phosphorus from Municipal Sewage	11010ENK	355,634.00
County Sanitation District No. 2 of Los Angeles County 2020 Beverly Boulevard Los Angeles, California	Basic Research on Sulfide Occurrence & Control in Sewage Collection Systems	11010ENX	187,950.00
Sewerage Commission of the City of Milwaukee P.O. Box 2079 Milwaukee, Wisconsin	Phosphorous Removal with Pickle Liquor in a 115 MGD Activated Sludge Plant	11010FLQ	46,376.00

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
New York City, Dept. of Water Resources Bureau of Water Pollution Control New York, New York	Demonstration of the Pure Oxygen Aeration Process to Up- grade Existing Waste Treatment Plants	11010GEV1	250,000.00
Cuyahoga County Board of Commissioners Cleveland, Ohio	Chemical Clarification & Carbon Filt. & Adsorption as Second Treatment Plants, Cuyahoga County, Ohio	11010DAB	_____*
Manville Borough of Manville, New Jersey	New Process to Improve Quality of Trickling Filter Effluent	11010DJC	_____*
Lake County, Ohio Painesville, Ohio	Porteous Process for Heat Treatment of Sludge	11010DKI	_____*
Metropolitan Sanitary District of Greater Chicago Chicago, Illinois	Land Reclamation Through Use of Digested Sewage Sludge Phase 2	11010DPW	_____*
Port Arthur City of Port Arthur, Texas	Chemical and Biological Testing and Evaluation of Control Hydrogen	11010DYO	_____*
Metropolitan Sanitary District of Greater Chicago Chicago, Illinois	Performance Analysis of 15 MGD Dicrostrainer for Tertiary Treatment	11010EBW	_____*
Pewaukee Village of Pewaukee, Wisconsin	Demonstrate the Allischalmers Donau Waste Treatment Plant	11010EBX	_____
Richardson, City of Richardson, Texas	A Demonstration on Enhancement of Effluent From a Trickling Filter	11010EGL	_____*
Lake County of Painesville, Ohio	Water Pollution Abatement Program for Mentor Lake County, Ohio	11010EGO	_____*
Austin, City of Austin, Texas	Design Guides for Selective Wastewater Treatment Processes	11010ESQ	_____*
Milwaukee, City of, Sewage Commission Milwaukee, Wisconsin	Development of a System for Conditioning and Dewatering Sludge by Freezing	11010EVE	_____*
Metro Sanitation District of Greater Chicago Chicago, Illinois	Hanover Tertiary Plant Studies	11010EZJ	_____*
Metropolitan St. Louis Sewer District St. Louis, Missouri	Evaluation of Odor Control by Covering a Sludge Thickener	11010EZQ	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.



LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
San Antonio River Authority San Antonio, Texas	Contact Stabilization Operating Parameters	11010EZT	_____*
Hollywood, City of Hollywood, Florida	Aerobic Digestion of Sewage Sludge with Effluent Disposal by an Ocean Outfall	11010FAC	_____*

Section 6A2 Advanced Waste Treatment Contract

District of Columbia Dept. of Sanitary Engineering Washington, D.C.	Performance of Special Studies and Investigations Relating to Waste Treatment	11010EYM1	1,072,616.96
Union Carbide Corp. Linde Division P.O. Box 44 Tonawanda, New York	System for Aeration Process Using Pure Oxygen	11010FRN	55,900.00
University of North Carolina Chapel Hill, North Carolina	Improving Trickling Filter Based Treatment System	11010DGA	_____*
Koenig, Louis Research San Antonio, Texas	Operations Research and Logistics for Advanced Waste Treatment Research	11010DNT	_____*

1102 Combined Sewer Discharges

Section 5 Research Grant

Lehigh University Bethlehem, Pennsylvania	Transport of Solid Suspension in Conduits	11020EKD	_____*
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Section 5 Demonstration Grant

Tulane University New Orleans, Louisiana	Bedding and Infiltration Studies of Sanitary Sewers in the Gulf Coast Area	11022DEI	23,538.00
University of Cincinnati Cincinnati, Ohio	Urban Runoff Characteristics	11024DQU	56,596.00

Section 6A1 Storm and Combined Sewer Grant

Board of County Commissioners, Montgomery County, Ohio Kettering, Ohio	Determination of Ground Water Infiltration and the Effects	11020DHQ	_____*
Buffalo, City of Buffalo, New York	Program for Preventing and Eliminating Oil Pollution of the Buffalo River through Combined Sewers and Other Means	11020DJG	_____*
San Francisco, City & County San Francisco, California	Treatment of Combined Sewer Overflows by the Dissolved Air Flotation	11020DXC	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Akron, City of Akron, Ohio	Underground Storage Tank	11020DXH	_____*
South St. Paul Sewage Disposal Commission South St. Paul, Minnesota	Efficiency and Economy of Polymeric Sewage Clarification	11020EKK	_____*
Chicago, Illinois	Lawrence Avenue Underflow System	11020EMD	_____*
Cleveland, City of Cleveland, Ohio	A Program for Demonstrating Combined Sewer Overflow Control Techniques for Water Quality Improvement and Beach Protection	11020EZW	_____*
Columbus, City of Columbus, Ohio	Modification of Whittier Street Storm Stand-by Tanks	11020FAL	_____*
Shelbyville, City of Shelbyville, Illinois	Sewage Treatment Facilities for City of Shelbyville	11020FAM	_____*
Borough of New Providence New Providence, New Jersey	Utilization of High Trickling Filters for Treatment of Combined Sewer Overflows	11020FAN	_____*
New York, City of New York, New York	Characterization of Those Parameters that Measure the Effects of Combined Overflows	11020FAO	_____*
Minneapolis-St. Paul Sanitary District St. Paul, Minnesota	Dispatching System for Control of Combined Sewer Losses	11020FAQ	_____*
New Orleans, Sewage and Water Board of New Orleans, Louisiana	Chlorination and Hypochlorin- ation of Polluted Storm Water Pumpage	11020FAS	_____*
Milwaukee, City of Milwaukee, Wisconsin	Humboldt Avenue Overflow Detention and Chlorination Facility	11020FAU	_____*
East Chicago Sanitary District East Chicago, Indiana	East Chicago Treatment Lagoon	11020FAV	_____*
Dallas, City of Dallas, Texas	Storm Water Treatment Facility	11020FAW	_____*
Detroit, City of Detroit, Michigan	System Monitoring and Remote Control	11020FAX	_____*
New York, City of New York, New York	Installation and Evaluation of a Unique Flow Regulating Device Called Ponsar Regulator	11020FDP	_____*

\*Active in FY 1970    Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Springfield Sanitary District Springfield, Illinois	Evaluation of a Stabilization Pond for Treatment of Combined Sewer Overflows	3-ILL-1	_____*
City of Richmond City Hall Richmond, Virginia	Stream Pollution Abatement by Supplemental Pumping	11022FLV	282,022.00
New York State Dept. of Health Albany, New York	Pressure Sewer System Demonstration	11022DQI	_____*
Dallas, City of Dallas, Texas	Bachman Creek Sewer Overflow Pollution Reduction	11022DZU	_____*
City of Kenosha 100 51st Place Kenosha, Wisconsin	Demonstration Project of Biological Adsorption of Pollutants from Combined Storm Water Runoff and Sanitary Sewage	11023EKC	547,500.00
City of Rohnert Park 435 Southwest Boulevard Rohnert Park, California	Treatment of Peak Wet Weather Wastewater flows and Rate Control of all Wastewater Discharges to Interceptor Sewers	11023DSX	299,500.00
Metropolitan District Commission 20 Somerset Street Boston, Massachusetts	The Somerville Marginal Conduit Including Pretreatment Facilities	11023DME	452,000.00
City of Dallas City Hall, Main & Harwood Dallas, Texas	Storm Watt Facilities	11023FAW	264,610.00
City of Mony Clemens One Crocker Boulevard Mount Clemens, Michigan	A Combined Sewage Collection and Treatment Facilities	11023FAR	131,739.00
City of Racine 730 Washington Avenue Racine, Wisconsin	Screening Dissolution Treatment as an Alternate to Combined Sewer Separation	11023FWS1	1,046,039.00
City of Chippewa Falls Chippewa Falls, Wisconsin	Surface Storage for Combined Sewer Overflow Abatement	11023FIY	15,000.00
Metropolitan District Commission Boston, Massachusetts	The Construction of a Storm Detention and Chlorination Station	11023FAT	_____*
Section 6A1 Storm and Combined Sewer Contract			
American Storage, Inc. 5150 Lawrence Place Hyattsville, Maryland	Pilot Plant Underwater Storage Facility	11020DWF	360.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Publication Costs Washington, D.C.	Municipal Pollution Control Technology	11020	5,522.50
American Standard Co. Melpar, Inc. Division 7700 Arlington Blvd. Falls Church, Virginia	Construction of a Facility to Demonstrate Offshore Under- water Temporary Storage of Storm Overflow From a Combined Sewer	11020DPP	13,147.00
Franklin Institute Research Laboratories The Benjamin Franklin Parkway Philadelphia, Pennsylvania	Continuous Survey of the Lit- erature Related to Storm and Combined Sewers	11020FJE	17,303.00
Henningson, Durham and Richardson 3555 Farnam Street Omaha, Nebraska	Develop and Demonstrate a Method for Assessing the Extent of Pollution from Storm Water Runoff in an Urban Area	11020FEJ	21,250.00
Metcalf & Eddy, Inc. 1029 Corporation Way Palo Alto, California	Engineering Investigation of the East Bay Municipal Utilities District of the San Francisco Bay Area	11020EQG	44,800.00
FMC Corp. Central Engineering Lab. Santa Clara, California	Evaluation of Periodic Flushing System for Combined Sewer Cleansing	11020DNO	84,308.00
Black, Crow & Eidsness Atlanta, Georgia	An Engineering Investigation of Combined Sewer Problems of Atlanta, Georgia	11020DLB	_____*
Battelle Memorial Institute Richland, Washington	Development, Demonstration, and Evaluation of Physical Chemical Treatment	11020DSQ	_____*
American Radiator & Standard Sanitary Corp. American Standard Research Division New Brunswick, New Jersey	A Suspended Solids Monitor	11020DZB	_____*
Karl R. Rohrer Assoc., Inc. Akron, Ohio	Construction of a Facility to Demonstrate Off-shore Underwater Temporary Storage of Storm Overflow from a Combined Sewer	11020DZC	_____*
American Process Equipment Corp. Los Angeles, California	Fabrication and Evaluation of an Ultrasonic System for Treating Sewage	11020DZF	_____*
Karl R. Rohrer Assoc., Inc. Akron, Ohio	Design Construction and Operation of a Pilot Facility to Demonstrate Off-shore Underwater Temporary Storage of Storm Overflow	11020ECV	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Rex Chainbelt Inc. Milwaukee, Wisconsin	Development and Demonstration of a Combined Sewer Overflow Treatment System Utilizing New Concepts of Screening and Chemical Oxidation	11020FDC	_____*
Roy F. Weston, Inc. West Chester, Pennsylvania	Develop and Demonstrate a Method for Assessing the Extent of Pollution from Storm Water Runoff in an Urban Area	11022EXF	6,011.00
Seattle, Municipality of Metropolitan Seattle, Washington	Duwamish River Elliot Bay Storm Water Control System	11022ELK	_____*
Hydrotechnic Corp. 641 Lexington Avenue New York, New York	Study of High Rate Filtration for Treating Combined Sewage and Storm Overflow	11023EYI	252,874.00
Hercules, Inc. 910 Market Street Wilmington, Delaware	Development of a Flocculation Flotation Model	11023EYC	110,291.00
Roy F. Weston, Inc. 1426 Lewis Lane Wester Chester, Pennsylvania	Preliminary Engineering Investigation Kingman Lake Recreational Area	11023FIX	137,750.00
Rex Chainbelt, Inc. Technical Center Milwaukee, Wisconsin	Investigation of Series Screening as a Treatment Process for Combined Sewer Overflows	11023FDC	157,333.00
Ionics, Inc. Watertown, Massachusetts	Hypochlorination to Sterilize Storm Sewer Outfalls	11023DAA	_____*
Southwest Research Institute 8500 Culebra Road San Antonio, Texas	Investigating and Evaluating Coatings and Additives for Large Diameter Concrete Sewer Pipe	11024EQE	50,735.00
The Western Co. Research Division 2201 North Waterview Pkwy Richardson, Texas	Nutrient Removal from Agricultural Wastewaters	11024FLY	52,643.00
University of Florida Dept. of Environmental En. Gainesville, Florida	Storm Water Pollution Control Management	11024EBJ	3,000.00
Metcalf & Eddy Engineers Palo Alto, California	A Proposal to Study the Means of Controlling Pollution Resulting from Combined Sewer Overflows & Surface & Stormwater Runoff	11024DOC	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Water Resources Engr. Inc. Walnut Creek, California	Optimization of Storm Water Pollution Control	11024EBI	_____ *
Aerojet-General Corp. El Monte, California	Role of Solids in Combined Sewage Pollution	11024FKJ	_____ *
Aerojet-General Corp. El Monte, California	A Method for Assessing the Extent of Pollution from Storm Water	11024FKM	_____ *
Section 6A2 Advanced Waste Treatment Grant			
Somersworth, City of Somersworth, New Hampshire	Somersworth Combined Sewage Overflow Treatment Project	11020FAP	_____ *
<u>1103 Storm Sewer Discharges</u>			
Section 5 Demonstration Grant			
University of Illinois Urbana, Illinois	Development of the RRL Method of Storm Sewer Design	11030FLN	19,102.00
Section 6A1 Storm and Combined Sewer Grant			
South St. Paul, City of South St. Paul, Minnesota	Temporary Detention of Storm and Combined Sewage in Natural Underground	11030DSL	_____ *
La Salle, City of La Salle, Illinois	Construction & Technical Evaluation of the Various Aspects of an Aluminum Storm Sewer System	11032DTI	_____ *
Section 6A1 Storm and Combined Sewer Contract			
Bowles Engr., Corp. Silver Spring, Maryland	Fluidic Interceptor Study	11030DGZ	1,972.00
Hittman Assoc., Inc. Baltimore, Maryland	System Study, Design and Evaluation of Local Storage, Treatment, and Reuse	11030DNK	_____ *
Dow Chemical Co. Midland, Michigan	Demonstration and Evaluation of Polymeric Additives in Treatment of Storm Sewer Overflow	11030FDB	_____ *
U.S. Research Co. San Mateo, California	Determination, Development and Evaluation of Methods, Techniques, Materials, and Devices for the Effective Street Surface Refuse and Soil Removal	11034FUJ	234,985.00
Economic Systems Corp. A Subsidiary of AVCO Corp. 1025 Connecticut Avenue, N.W. Washington, D.C.	Develop the Relation Between Land Use Practices and Incidence of Pollution in Urban Storm Water	11034FKL	4,981.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of Minnesota Morrill Hall Minneapolis, Minnesota	Flow in Long Vertical Conduits with Reference to Design of Storm Water Dropshafts	11034FLU	41,372.00
<u>1104 - Non-Sewered Runoff</u>			
Section 5 Research Grant			
University of Michigan Ann Arbor, Michigan	Rainfall Runoff Relations on Urban and Rural Areas	11040DRS	_____*
Section 6A1 Storm and Combined Sewer Contract			
Dow Chemical Co. Midland, Michigan	Rock Creek Park Clarification Project	11040DMX	_____*
<u>1105 - Non-Sewered Municipal Wastes</u>			
Section 5 Demonstration Grant			
Grandview Lake Lot Owners Assoc. Columbus, Indiana	Econ. Resid. Press, Sewage System with no Effluent	11050DEU	_____*
<u>1106 - Joint (Mun./Ind.) Wastes</u>			
Section 6A2 Advanced Waste Treatment Grant			
City of Painesville Painesville, Ohio	Advanced Waste Treatment at Painesville, Ohio	11060EGB	684,500.00
City of Grand Forks Grand Forks, North Dakota	Controlled Treatment of Com- bined Potato Processing Mu- nicipal Wastes by Anaerobic Fer- mentation, Aerobic Stabilization Process	11060DJB	124,756.00
Harriman Utility Board Harriman, Tennessee	Treatment of Combined Sewage & Neutral Sulfite Semichem Pump & Paper Mill Wastes by High Rate Biolo- gical Filtration & Extended Aeration	11060DBF	_____*
Tualatin, City of Tualatin, Oregon	Tertiary Treatment of Combined Domestic & Indus- trial Wastes	11060DLF	_____*
Macon, City of Macon, Georgia	Pilot Study of Treatment of Combined Mun. & Ind. Wastes in Selected Primary & Bio. Secondary Facilities for the Reduction of Waste Materials Discharged	11060DPD	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Delaware River Basin Commission Trenton, New Jersey	Deepwater Pilot Plant-Engi- neering and Interceptor Feasibility Study	11060DRO	_____ *
Village of Walton Walton, New York	Dynamic Process Development for Biological Treatment of Whey Bearing Wastes	11060DUJ	_____ *
Board of Public Works Fort Wayne, Indiana	Demonstration of Phosphate Removal & Other Wastewater Treatment	11060DXX	_____ *
Green Bay Metropolitan Sewerage District Green Bay, Wisconsin	Combined Industrial & Municipal Waste Treatment	11060EDX	_____ *
Jacksonville, City of Jacksonville, Arkansas	Demonstration of Facility for the Biological Treatment of a Complex Chlorophenolic Waste	11060EGK	_____ *
Hagerstown, City of Hagerstown, Maryland	A Proposal for Pretreatment of Combined Industrial & Municipal Wastewaters	11060EJD	_____ *
Dallas, City of Dallas, Texas	Combined Treatment of Domestic and Industrial Wastes by the Completely Aerobic Aeration Method	11060EZR	_____ *
Cedar Rapids, City of Cedar Rapids, Iowa	Fly Ash Filter Aid of Sewage Solids Dewatering and Disposal	11060EZX	_____ *
Onondaga County Syracuse, New York	A Demonstration of Joint Municipal & Industrial Waste Treatment in the Onondaga Water Shed	11060FAE	_____ *
Section 6A2 Advanced Waste Treatment Contract			
Rex Chainbelt, Inc. Technical Center West Milwaukee, Wisconsin	Evaluation of the Effects of Carbon to Nitrogen Ratio of Activated Sludge on its Sub- sidence, Thickening, and Dewatering Characteristics	11060DSE	54,850.00
Section 6B Industrial Waste Treatment Grant			
City of Gainesville Gainesville, Florida	Development and Application for Water and Waste Treatment of MgCO <sub>3</sub> Recovered from Lime Soda Softening Sludges	11060ESW	16,890.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Grand Forks, City of Grand Forks, North Dakota	Controlled Treatment of Combined Potato Processing Municipal Wastes by an Aerobic Fermentation Aerobic Stabilization	11060DJB	_____ *
Stockton, City of Stockton, California	Upstream Packing House Waste Treatment Demonstration, City of Stockton	11060DRT	_____ *
Aerojet General Corp. El Monte, California	Demonstration of Industrial Water Renovation Plant at Odessa, Texas	11060FAJ	_____ *

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## 1200 INDUSTRIAL-POLLUTION CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1201 - Metal and Metal Products</u>			
Section 5 Research Grant			
Clarkson College of Technology Potsdam, New York	Metal Removal Recovery from Polluted Water by Complexation with Linear Polyelectrolytes	12010DHP	27,086.00
University of Utah Salt Lake City, Utah	Depression of Pyrite without the Use of Cyanide	12010DIM	_____*
Section 5 Demonstration Grant			
University of Waterloo Waterloo, Ontario	Detoxication of Cyanide Wastes by Electrooxidation	12010DOT	10,065.00
Section 5 Research Contract			
Battelle Memorial Institute Columbus Laboratories 505 King Avenue Columbus, Ohio	A Review of Water Pollution Control Practices & Problems in the Nonferrous Metal Industries	12010FPK	68,060.00
Section 6B Industrial Waste Treatment Grant			
The Fitzsimons Steel Co., Inc. P.O. Box 1469 1623 Wilson Avenue Youngstown, Ohio	Recovery of Sulfuric Acid & Ferrous Sulfate from Waste Pickle Liquor	12010FNM	39,056.50
Alabama Water Improvement Commission State Office Building Montgomery, Alabama	Electromembrane Process for Regenerating Acid from Spent Pickle Liquor	12010EQF	20,000.00
Metal Finishers' Foundation 248 Lorrain Avenue Upper Montclair, New Jersey	An Investigation of Techniques for the Removal of Chromium from Electro Plating Wastes	12010EIE	19,698.63
Weirton Steel Division National Steel Corp. Box 431 Weirton, West Virginia	Combined Steel Mill & Municipal Wastewaters Treatment	12010DTQ	95,918.00
The Beaton & Corbin Mfg. Co. 328 N. Main Street Southington, Connecticut	Chemical Treatment of Plating Waste for Elimination of Chromium, Nickel, & Metal Ions	12010DMF	5,495.00
RAI Research Corp. Long Island City, New York	Treatment of Cyanide Rinse Waters by Electrodialysis	12010DES	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
E & I Steel Corp. Denver, Colorado	Research Study of Coal Preparation Plant & by Product Coke Plant Effluent	12010DNE	_____ *
Volve Brass & Copper Co. Kenilworth, New Jersey	Treatment Recovery, & Reuse of Copper Wire Mill Pickling Wastes	12010DPF	_____ *
Interlake Steel Corp. Chicago, Illinois	Pollution Control of Blast Furnace Gas Washer through Recirculation	12010DRE	_____ *
American Electroplaters Society East Orange, New Jersey	Study of Reverse Osmosis for Treating Metal Finishing Effluent	12010DRH	_____ *
S.K. Williams Co. Milwaukee, Wisconsin	Electroplating Waste Treatment & Water Reuse	12010DSA	_____ *
Armco Steel Corp. Middletown, Ohio	Treatment of Acid Rinse Water	12010DUL	_____ *
American Iron and Steel Institute New York, New York	Biological Removal of Carbon and Nitrogen Compounds from Coke Plant	12010EDY	_____ *
Chemical Separation Corp. Oak Ridge, Tennessee	Acid Pickle Liquor Waste Treatment Utilizing Advanced Ion Exchange Techniques	WPRD 41-01-68	_____ *

Section 6B Industrial Waste Treatment Contract

Publication Costs	Industrial Pollution Control Technology	12010EZV	1,500.00
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1202 - Chemicals and Allied Products

Section 5 Research Grant

Manufacturing Chemists Assoc., Inc. 1825 Conn. Avenue N.W. Washington, D.C.	The Effects of Chlorination on Treated Organic Chemicals	12020EXG	42,000.00
The University of Texas Austin, Texas	Characteristics & Pollutational Problems of Pesticide Manufacturing	12020FYE	24,143.00

Section 5 Demonstration Grant

Dept. of Commerce & Industry State of Louisiana P.O. Box 44185 Baton Rouge, Louisiana	Concentration & Removal of Industrial Wastes by Dialysis	12020EMI	32,539.00
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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Research Contract			
Cyrus Wm. Rice & Co. Pittsburg, Pennsylvania	Cost Effectiveness Study of Industrial Waste Water Treatment	14-12-435	_____*
Section 6B Industrial Waste Treatment Grant			
Armour Industrial Chemical Chicago, Illinois	Armour Industrial Chemical Company Secondary Wastewater Treatment	12020EFW	210,500.00
Union Carbide Corp. Chemical and Plastics Operations Division P.O. Box 1421 Church Street Station New York, New York	Identification & Control of Petrochemical Pollutants Inhibiting Anaerobic Treatment Processes	12020FER	46,936.00
Geigy Chemical Co. P.O. Box 2055 Edgewood Station Providence, Rhode Island	Geigy Chemical Wastes Treat- ment Facility	12020FOH	393,600.00
Mineral Pigments Corp. Murkirk, Maryland	Ion Exchange Effluent Treat- ment Unit	12020ERM	115,967.00
Celanese Corp. of America 522 Fifth Avenue New York, New York	Anaerobic/Aerobic Chemical Waste Treatment	12020EPH	395,340.00
Geological Survey of Alabama State & Gas Board University, Alabama	Treatment & Disposal of Complex Chemical Wastes	12020EGC	314,525.00
Union Carbide Corp. Bound Brook, New Jersey	Anerobic Treatment of Synthetic Organic Waters	12020DIS	_____*
B.F. Goodrich Co. Cleveland, Ohio	Waste Treatment Facilities for Polyvinyl Chloride Manufacturing Plant	12020DJI	_____*
Lakeway Chemicals, Inc. Muskegon, Michigan	Demonstration Project for Prevention of Pollution of Water by Chlorides	12020DJJ	_____*
Louisiana, State of Baton Rouge, Louisiana	Evaluation of Polymeric Materials for the Treatment & Recovery of Petrochemical Wastes	12020DQC	_____*
Dow Chemical Co. Midland, Michigan	Demonstration & Reuse of Organically Contaminated Brines from Chemical Process Industries	12020EAS	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
E.I. DuPont DeNemours & Co. Wilmington, Delaware	Ocean Disposal of Industrial Wastes	12020EAW	_____*
Dow Chemical Co. Midland, Michigan	Treatment of Wastewaters Resulting from the Production of Polyhydric Organic	12020EEQ	_____*
Farmers Chemical Assoc. Inc. Harrison, Tennessee	Removal of Nitrogenous Com- pounds from a Fertilizer Plant Effluent Using Modified Operation of Conventional Waste Treatment Systems	12020EGM	_____*
Section 6B Industrial Waste Treatment Contract			
Cyrus WM. Rice and Co. Pittsburgh, Pennsylvania	Organic Chemical Waste Treatability Cost State-of-the- Art	12020EJI	_____*
<u>1204 - Paper and Allied Products</u>			
Section 5 Research Grant			
Oregon State University Forest Products Dept. Corvallis, Oregon	Lignin Sulfonates in Pulp Mill Effluents	12040GAC	3,331.00
University of Washington Seattle, Washington	Stream Stripping of Kraft Mill Effluent Streams	12040EXQ	35,046.00
The Research Foundation of the State University New York P.O. Box 7126 Albany, New York	Composition of Residues from Pulp Bleaching Treatments	12040ESD	3,358.00
Montana State University Bozeman, Montana	Color and Mineral Removal from Kraft Bleach Wastes	12040DBD	34,000.00
University of Washington Seattle, Washington	Studies of Low Molecular Weight Lignin Sulfonates	12040DEH	30,661.00
Oregon State University Corvallis, Oregon	Pulp Mill Effluent Disposal	12040EBY	_____*
University of Washington Seattle, Washington	Pollution Abatement by Fiber Modification	12040EFC	_____*
Section 5 Demonstration Grant			
Oregon State University Corvallis, Oregon	Slime Growth Evaluation of Treated Pulp Mill Wastes	12040DLQ	15,415.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Research Contract			
Electro-optical Systems, Inc. Pasadena, California	Plasma Arc Processing of Sulfite Waste Liquors	14-12-162	_____*
Section 6B Industrial Waste Treatment Grant			
Esleeck Manufacturing Co. and Strathmore Paper Co. Turners Falls, Massachusetts	Treatment Plant Flocculation and Microscreening of Whitewater	12040FDE	252,345.00
S.D. Warren Co. A Div. of Scott Paper Co. 89 Cumberland Street Westbrook, Maine	Sludge Disposal and Material Recovery System for Manufacturers of Coated and/or Filled Papers	12040FES	45,058.00
Weyerhaeuser Co. Longview, Washington	Stream Stripping and Pectification of Kraft Pulp Mill Condensates and Black Liquors for Pollution Control and Product Recovery	12040FKS	128,733.00
Green Bay Packaging, Inc. P.O. Box 1107 Green Bay, Wisconsin	Closure of Water Use Loop in NSSC Pulp and Paper Board Mill Utilizing R-O as a Unit Operation	12040FUB	757,033.00
Institute of Paper Chemistry Appleton, Wisconsin	Chemical & Physical Nature of Color Bodies in Kraft Mill Effluents	12040DKD	_____*
Continental Can Co., Inc. Hodge, Louisiana	Color Removal & Fibrous Sludge Process for the Kraft Paper Industry	12040DRY	_____*
International Paper Co. New York, New York	Evaluation & Demonstration of the Massive Line Process for the Removal of Color from Kraft Pulp Mill Wastes	12040DYD	_____*
Georgia Kraft Co. Rome, Georgia	Treatment of Selected Kraft Mill Wastes in Cooling Towers for Reduction of BOD and Heat Discharged to Receiving Streams	12040EEK	_____*
Pulp Manufacturers Research League, Inc. Appleton, Wisconsin	Development of Reverse Osmosis for In-plant Treatment of Dilute Pulping Industry Waste	12040EEL	_____*
St. Regis Paper Co. West Nyack, New York	The Production and Use of Activated Carbon for Water Renovation in Kraft Pulp and Paper Mills	12040EJU	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Crown Zellerback Corp. San Francisco, California	Economic Optimization of Secondary Treatment and Deter- mination of Load to Control Biological Growths in a Stream	12040ELW	_____ *
Mead Corp. Chillicothe, Ohio	Evaluation of Role of High Rate Trickling Filters and Aeration Devices Separately and in Combination for the Advanced Biological Treatment	12040EMY	_____ *
Interstate Paper Corp. New York, New York	Chemical Coagulation Color Removal System for Kraft Mill Effluent	12040ENC	_____ *
Crown Zellerback Corp. San Francisco, California	A Demonstration Plant Evaluation of Four Methods for Pulp and Paper Wastes	12040ESV	_____ *
<u>1205 - Petroleum and Coal Products</u>			
Section 5 Research Grant			
President and Fellows of Harvard College Office of Research Contracts Cambridge, Massachusetts	Oil Dispersion Coalescence by Porous Soil Contact	12050DXR	15,349.00
Texas A&M Research Foundation College Station, Texas	Metal Ion-catalyzed Oxidation of Phenol and Aromatic Amines	12050DIT	_____ *
University of Oklahoma Norman, Oklahoma	State of the Evaluation on Petroleum & Coal Wastes	12050DKP	_____ *
Section 5 Demonstration Grant			
Illinois Institute of Technology Chicago, Illinois	Efficiency of Fibrous Bed Coalescers	12050DRC	34,998.60
Section 6B Industrial Waste Treatment Grant			
Shell Oil Co. P.O. Box 100 Deer Park, Texas	Demonstration of Oily Waste Disposal by Soil Cultivation Process	12050EZG	70,000.00
Archer Daniels Midland Co. 4666 Faries Parkway Decatur, Illinois	ADM Company Wastewater Treat- ment	12050FDK	106,677.00
American Oil Co. Chicago, Illinois	Treatment of Refinery Effluent by a Unique Combination of Biological Chemical Processes	12050DML	_____ *

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
American Petroleum Institute New York, New York	Improved Capabilities of Biological Systems to Assimilate Oil	12050DSH	_____*
American Oil Co. Whiting, Indiana	Fluid-Bed Incineration of Petroleum Refinery Wastes	12050EKT	_____*
Section 6B Industrial Waste Treatment Contract			
Engineering-Science, Inc. Arcadia, California	The Characteristics & Pollution Problems Associated With Petrochemical Wastes	12050DMT	_____*
<u>1206 Food and Kindred Products</u>			
Section 5 Research Grant			
National Cannery Assoc. 1950 Sixth Street Berkeley, California	Dry Caustic Peeling of Tree Fruit to Reduce Liquid Waste Volume & Strength	12060FQE	17,538.00
Beet Sugar Development Foundation Fort Collins, Colorado	State-of-the-Art, Sugarbeet Processing Waste Treatment	12060DSI	_____*
Oregon State University Corvallis, Oregon	Water Pollution Abatement in the United States Seafoods Industry; the State-of-the-Art	12060ECF	_____*
National Cannery Assoc. Washington, D.C.	Production and Disposal Practices for Liquid Wastes from Canning and Freezing Fruits and Vegetables	12060EDK	_____*
Ohio State University Research Foundation Columbus, Ohio	State-of-the-Art of Dairy Plant Wastes and Waste Treat- ment Systems	12060EGU	_____*
Section 5 Demonstration Grant			
Melbourne Water Science Institute, Water Science Lab. Victoria, Australia	Cannery Waste Treatment by Lagoons and Oxidation Ditches	12060EHS	_____*
University of Puerto Rico Rio Piedras, Puerto Rico	Disposal of Rum Distillery Wastes	12060FDR	_____*
Beet Sugar Development Foundation Fort Collins, Colorado	Anaerobic - Aerobic Sugar Beet Waste Treatment	WPD 93-04-68	_____*
Section 6B Industrial Waste Treatment Grant			
Illinois Packing Co. 911 West 37th Place Chicago, Illinois	A Method of Manure Disposal for a Beef Packing Operation	12060EOF	93,400.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Widmer's Wine Cellers, Inc. Naples, New York	Winery Wastewater Character- ization & Treatment	12060EUZ	148,900.00
Beefland International, Inc. Council Bluffs, Iowa	Elimination of Water Pollution by Packing House Animal Paunch and Blood	12060FDS	161,398.00
Ebinger Baking Co. Melville Industrial Park Maxess Road Melville, New York	Acid Emulsion Breaking Activated Sludge for Bakery Waste	12060FJK	129,729.00
American Distilling Co. South Front Street Pekin, Illinois	Activated Sludge Bio Disc Treatment of Distillery Wastes	12060FLL	384,588.00
Iowa Beef Packers, Inc. Dakota City, Nebraska	Evaluation of the Rotating Biological Surface System on Meat Packing Wastes	12060FMF	195,751.00
Crowley's Milk Co, Inc. 145 Conklin Avenue Binghamton, New York	Development & Demonstration of an Ultrafiltration Plant for the Abatement of Pollution from Cottage Cheese Whey	12060DXF	495,856.00
National Canners Assoc. Research Foundation 1133 20th Street Washington, D.C.	Reduction of Salt Content of Food Processing Liquid Waste Effluent	12060DXL	64,382.00
Green Giant Co. LeSueur, Minnesota	Piloy Plant Installation for Use of Fungi Imperfecti on Vegetable Wastes	12060EDZ	49,742.00
Western Potato Service, Inc. P.O. Box 1391 Highway #2, West Grand Forks, North Dakota	Full Scale Demonstration and Evaluation of Potato Dry and Wet Caustic Peeling Processes	12060EIG	396,574.00
Kent Cheese Co. 1931 N. 15th Avenue Melrose Park, Illinois	Kent Cheese Co. - Waste Treat- ment Facility	12060EKQ	46,006.00
R.A.I. Research Corp. Long Island City, New York	Improvement of Treatment of Food Industry Waste	12060ESY	_____*
Dairy Research & Development Corp. New York, New York	Elimination of Pollution by & Utilization of Protein Concentrates Dried Whey from Milk Residues of Cheese Making	12060DEQ	_____*
Farmbest, Inc., Denison, Iowa	Waste Treatment Facility	12060DFF	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Corn Products Co. Corporate Engineering Argo, Illinois	Treatment of Wastes from the Wet-milling Industry	12060DPE	_____ *
Swift and Co. Oak Brook, Illinois	Removal & Recovery of Fatty Materials from Edible Fat and Oil Refinery	12060DQV	_____ *
University of Oklahoma Research Institute Norman, Oklahoma	Demonstration of a Full Scale Waste Treatment System for a Cannery	12060DSB	_____ *
National Canners Assoc. Washington, D.C.	Evaluation of Controlled Temperature and Forced Aeration in Trickling Filters Treatment of Food Canning Wastewaters	12060EAE	_____ *
Cotton Producers Assoc. Golden Kist Poultry Div. Atlanta, Georgia	Water and Waste Management in Poultry Processing	12060EGV	_____ *
National Canners Assoc. Washington, D.C.	Reconditioning and Reuse of Food Processing Brines	12060EHU	_____ *
R.T. French Co. Rochester, New York	Aerobic Secondary Treatment of Potato Processing Waste	12060EHV	_____ *
John Morrell and Co. Ottumwa, Iowa	Aerobic Treatment of Packing- house Wastes	12060EUB	_____ *
Winter Garden Citrus Products Cooperative Winter Garden, Florida	Lime Treatment and Inplant Reuse of an Activated Sludge Plant Effluent in the Citrus Processing Industry	12060EZY	_____ *
Beet Sugar Development Foundation Fort Collins, Colorado	Concentration of Sugar Beet Wastes for Economic Treatment with Biological Systems	12060FAK	_____ *
The Coca Cola Company Foods Division Leesburg and Auburndale, Florida	Removal of Organics and Nutrients from Citrus Processing Plant Wastes	WPRD 38-01-67	_____ *
National Canners Assoc. Washington, D.C.	Dry Caustic Peeling of Tree Fruit to Reduce Liquid Waste Volume and Strength	12060FQE	_____ *

#### 1207 Machinery and Transportation Equipment

##### Section 5 Demonstration Grant

Johns Hopkins University Baltimore, Maryland	Management of Recycled Waste- Process Water Ponds	WPD 117-03-68	_____ *
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\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1208 - Stone, Clay and Glass Products</u>			
Section 6B Industrial Waste Treatment Grant			
Johns-Manville Products Corp. Manville, New Jersey	Experimental Closed Water System to Eliminate Wastewater Discharge	12080EZF	1,500.00
<u>1209 Textile Mill Products</u>			
Section 5 Research Grant			
Textile Chemisty Dept. School of Textiles North Carolina State University Raleigh, North Carolina	Water Pollution Through Recovery of Desizing Wastes	12090EOE	35,833.00
Dept. of Textiles School of IM & TS Clemson University Clemson, South Carolina	A Study of Photochemical Degradation of Commercial Dyes	12090EOX	31,539.00
Clemson University Clemson, South Carolina	Survey of the State-of-the- Art of Textile Waste Treatment	12090ECS	_____*
North Carolina State University Raleigh, North Carolina	Textile Based Water Pollution Information Study	12090ECU	_____*
Section 5 Demonstration Grant			
American Assoc. of Textile Chemists and Colorists P.O. Box 12215 Research Triangle Park, North Carolina	A Study of Gamma Induced Oxidation of Textile Effluents	12090FWD	47,500.00
Section 6B Industrial Waste Treatment Grant			
Holliston Mills, Inc. 111 Lenox Street Norwood, Massachusetts	Treatment of Cotton Textile Waste by Enzymes & High Rate Trickling Filter System	12090EGW	144,741.00
Palisades Industries, Inc. 2 Columbia Street Peace Dale, Rhode Island	Demonstration of a New Process for the Treatment of High Pollutant Concentration Textile and Finishing Waste	12090EQO	64,687.00
Masland and Sons Carlisle, Pennsylvania	Demonstration of a New Process for the Treatment of Textile Dyeing and Finishing Waste	12090DWM	_____*
Fiber Industries, Inc. Charlotte, North Carolina	Reuse of Plant Effluent and Cooling Water Blowdown as Process Water	12090EUX	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6B Industrial Waste Treatment Contract			
American Enka Corp. Enka, North Carolina	Zinc Precipitation and Recovery Plant	12090ESG	_____*
<u>1210 Lumber and Wood Products</u>			
Section 5 Research Grant			
Oregon State University Corvallis, Oregon	Influence of Log Rafting on Water Quality	12100EBG	20,633.00
Section 6B Industrial Waste Treatment Grant			
Hood Industries, Inc. 490 E. Woodrow Wilson Jackson, Mississippi	Treatment of Wood Preserving Waste by Chemical and Biological Methods	12100FSI	170,000.00
Klamath Plywood Corp. Klamath, Oregon	Aerobic Secondary Treatment of Plywood Glue Wastes	12100EZU	_____*
<u>1212 Miscellaneous Industrial Sources</u>			
Section 5 Demonstration Grant			
Rensselaer Polytechnic Institute Troy, New York	Removal of Syndents and Re- clamation of Laundry Wastes	12120DOD	910.00
American Water Works Assoc. Research Foundation 2 Park Avenue New York, New York	Information Resource for Water Pollution Control in the Water Utility Industry	12120EUR	24,990.00
University of Virginia Charlottesville, Virginia	An Anaerobic Aerobic Lagoon for Treating Vegetable Tannins	12120DIK	_____*
University of Cincinnati Cincinnati, Ohio	Treatment of Total Wastes from a Sole Leather Tannery	WPD 185-02-68	_____*
Section 6B Industrial Waste Treatment Grant			
Blueside Co. 800 North Atlantic Avenue Kansas City, Missouri	Removal and Recovery of Sulfide from Tannery Wastes	12120EPC	110,950.00
Berkey Film Processing of New England 260 Lunenburg Street Fitchburg, Massachusetts	Treatment of Complex Cyanide Compounds for Reuse or Disposals	12120ERF	114,415.00
Ohio Department of Natural Resources Ohio Dept. Building Columbus, Ohio	Fluidized-bed Incineration of Selected Carbonaceous Indust- rial Wastes	12120FYF	98,573.00

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
S.B. Foot Tanning Co. Red Wing, Minnesota	Aerobic Biological Treatment Sludge Dewatering & Disposal & Effluent Reuse for a Side Leather Tannery	12120DSG	_____*
Caldwell Lace Leather Co. Auburn, Kentucky	Complete Treatment of Tannery Industrial Waste for Chrome Tanning, Alum Tanning and Vegetable Tanning	12120EFM	_____*

Section 6B Industrial Waste Treatment Contract

Datagraphics, Inc. 4790 William Flynn Highway Allison Park, Pennsylvania	Analysis of a Computerized System for Determining Priorities for Expenditures in Industrial Waste Treat- ment and Control Research, Development, and Demonstration on a National Basis	12120FLX	33,897.00
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1213 Joint (Ind./Mun.) Wastes

Section 6A2 Advanced Waste Treatment Grant

Dept. of Administration State of Vermont Montpelier, Vermont	Vermont Cheese Industry Pollution Abatement	12130ENF	823,120.00
City of Kodiak Box 685 Kodiak, Alaska	Pollution Abatement & By-Pro- duct Recovery in Shellfish and Fisheries Processing	12130FJQ	49,952.00

Section 6B Industrial Waste Treatment Grant

City of Brooksville City Hall Brooksville, Florida	Aerobic Anaerobic Pre- treatment of Citrus Wastes	12130FAY	88,161.00
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\*Active in FY 1970 Supported by funds awarded in previous years.

## 1300 AGRICULTURAL-POLLUTION CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1301 Forestry and Logging</u>			
Section 5 Research Grant			
Oregon State University Corvallis, Oregon	Studies on Effects of Watershed Practices on Streams	13010EGA	37,552.00
<u>1302 Rural Runoff</u>			
Section 5 Research Grant			
North Carolina State University Raleigh, North Carolina	Role of Animal Wastes in Agricultural Land Runoff	13020DGK	41,941.00
Alabama Agricultural and Mechanical College Normal, Alabama	Nutrient Inputs to Streams from Fertilizers	13020DWH	35,783.00
South Dakota State University Brookings, South Dakota	Quantification of Pollutants in Agricultural Runoff	13020DTV	77,240.00
Cornell University Ithaca, New York	Agricultural Contributions to Nutrients in Water	13020DPB	_____*
<u>1303 Irrigation Return Flows</u>			
Section 5 Research Grant			
Center for Water Resources Research Desert Research Institute Reno, Nevada	Effects of Water Management on Quality of Ground Water and Surface Recharge	13030EOB	127,470.00
Utah State University Logan, Utah	Quality of Irrigation Return Flow	13030FDJ	208,262.00
Water Pollution & Bureau of Reclamation Washington, D.C.	Cooperative Herbicide Monitoring Study in Irrigation Systems	13030DRQ	_____*
Bureau of Reclamation Dept. of the Interior Washington, D.C.	Effect of Irrigation Return Flows on Water Quality	13030EII	_____*
Section 5 Demonstration Grant			
State of California Dept. of Water Resources P.O. Box 388 Sacramento, California	Nutrient Removal From Agricultural Wastewaters	13030ELY	64,000.00

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Texas A & M University Agricultural & Extension Center Lubbock, Texas	Effects of Furrow, Sprinkler, & Subirrigation Methods on Potential Pollution by Nitrates & other Solutes	13030EZM	300,773.00
Colorado State University Agricultural Engineering Department Fort Collins, Colorado	Grand Valley Salinity Control Demonstration on Project	13030DOA	76,053.00
Section 5 Research Contract			
Dept. of the Interior Bureau of Reclamation Denver, Colorado	Prediction of Mineral Quality of Return Flow Water from Irrigated Land	13030EII	150,000.00
Dept. of the Interior Bureau of Reclamation Denver, Colorado	Monitoring Herbicide Residues in Irrigated Systems	13030DRQ	70,000.00
Section 6B Industrial Waste Treatment Grant			
American Association for the Advancement of Science	For Support of the 1969 International Conference on Arid Lands in a Changing World	13030DYY	_____*
<u>1304 - Animal Feedlots</u>			
Section 5 Research Grant			
Iowa State University Ames, Iowa	Conference on the Role of Agriculture in Clean Water	13040EYX	5,500.00
Iowa State University Dept. of Agricultural Engineering Ames, Iowa	Abstract Service on Animal Waste Technical Literature	13040FUU	21,280.00
Oklahoma State University Dept. of Agricultural Engineering Stillwater, Oklahoma	Evaluation of Beef Feedlot Waste Management Alternatives	13040FXG	33,690.00
Texas Technological College Lubbock, Texas	Characteristics of Wastes from Southwestern Cattle Feedlots	13040DEM	_____*
Michigan State University East Lansing, Michigan	Closed System Waste Management for Livestock	13040DKP	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Cornell University Ithaca, New York	Tertiary Treatment of Animal Wastewater	13040DPA	_____*
Section 5 Demonstration Grant			
Washington State University Pullman, Washington	Anaerobic-Aerobic Lagoon Treatment of Dairy Manure Wastes	13040DFN	_____*
University of Kansas Lawrence, Kansas	Cattle Feedlot Wastewater Treatment	13040DWS	_____*
Section 5 Research Contract			
Agricultural Research Service U.S. Dept. of Agriculture Washington, D.C.	Pollution Abatement from Cattle Feedlot in Northeastern Colorado and Eastern Nebraska	13040DPS	76,000.00
Section 6B Industrial Waste Treatment Grant			
Ohio State University 2073 Neil Avenue Columbus, Ohio	Automated System for Water Pollution Control from An Animal Production	13040EOL	50,575.00
Iowa State University Ames, Iowa	Demonstration of a Recirculating Swine Waste Treatment System Using an RBC	13040ERR	163,299.00
Union Stockyards Co West Fargo, North Dakota	Waste Treatment Facilities Demonstration Union Stockyards Company	13040FTX	53,572.00
Mr. Lee R. Schuster Schuster Farms Gower, Missouri	Demonstration of a Waste Treatment system for Confined Hog Raising Operations	13040EVM	78,300.00
Meat Producers, Inc. Melissa, Texas	Soil Treatment of Cattle Feed- lots Runoff	13040FWB	16,300.00
Dairy Farm H.L. Mills, Brooklawn Route 1 Hagerstown, Maryland	Development and Demonstration of Methods for Treatment of Dairy Farm Wastewaters	13040ELI	128,702.00
Kansas State University Agricultural Engineering Manhattan, Kansas	Demonstration and Development of Facilities for the Treat- ment and Ultimate Disposal of Cattle Feedlot Wastes	13040DAT	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.



LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Cornell University College of Agriculture Ithaca, New York	Animal Waste Management Demonstration of Feasible Handling and Treatment Processes	13040DDG	_____ *
Section 6B Industrial Waste Treatment Contract			
Midwest Research Institute 425 Volker Boulevard Kansas City, Missouri	The Disposal of Cattle Feedlot Wastes by Pyrolysis	13040EGH	75,000.00

\*Active in FY 1970 - Supported by funds awarded in previous years.

## 1400 MINING-POLLUTION CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1401 Mine Drainage</u>			
Section 5 Research Grant			
University of Minnesota Mines Experiment Station, Minneapolis, Minnesota	Flocculation and Clarification of Mineral Suspensions	14010DRB	11,484.00
Mellon Institute Carnegie-Mellon University Pittsburgh, Pennsylvania	Acid Mine Drainage Pilot Plant Evaluation	14010DKN	17,401.00
University of Utah Salt Lake City, Utah	Removal of Dissolved Contam- inants from Mine Drainage	14010FKX	20,246.00
Carnegie-Mellon University Pittsburgh, Pennsylvania	Evaluation of Pyritic Oxidation by Nuclear Methods	14010FII	35,672.00
West Virginia University Morgantown, West Virginia	Mining Operations for the Reduction of Harmful Drainage from Underground Coal Mines	14010FKK	83,166.23
Syracuse University Syracuse, New York	Inorganic Sulfur Oxidation by Iron-Oxidizing Bacteria	14010DAY	_____*
Harvard University Cambridge, Massachusetts	Microbial Mediation in Generation of Acid Mine Wastes	14010DTC	_____*
Ohio State University Research Foundation Columbus, Ohio	Acid Mine Drainage An Analysis of the State-of-the- Art	14010FPR	_____*
Section 5 Demonstration Grant			
University of Maryland Baltimore, Maryland	An Analysis of the Legal Problems in Reclamation of Mines in Appalachia	14010FZU	42,247.00
Section 5 Research Contract			
NUS Corporation Cyrus Wm. Rice Division Manor Oak Two 1910 Cochran Road Pittsburgh, Pennsylvania	Continuation of Laboratory Investigation of the Effect of Various Gas Atmospheres on the Oxidation of Coal Mine Pypites	14010ECC	53,601.00
Culligan, Inc. 440 South McLean Elgin, Illinois	Acid Mine Drainage Treatment by Ion Exchange	14010FNJ	88,483.00

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Bechtel Corp. 50 Beale Street San Francisco, California	Technical Feasibility and Analysis of Costs and Effectiveness of Bulk Transport of Sewage Treatment Plant Sludge and Dredging Spoils	14010EMS	2,350.00
NUS Corporation Cyrus Wm. Rice Division Manor Oak Two 1910 Cochran Road Pittsburgh, Pennsylvania	Study of the Conversion of Pyrites by Oxidation in Chlorinated Solvents	14010FMM	73,810.00
NUS Corporation Cyrus Wm. Rice Division Manor Oak Two 1910 Cochran Road Pittsburgh, Pennsylvania	Use of Inert Gases to Eliminate Acid Pollution from Abandoned Mines	14010DJL	_____*
Ohio State University Research Foundation Columbus, Ohio	Pilot Scale Study of Acid Mine Drainage	14010EXA	_____*
Section 6B Industrial Waste Treatment Grant			
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Evaluation of Lime-Soda Ash Treatment of Neutralized Mine Drainage	14010ELB	78,930.00
Black, Sivalis, & Bryson Pittsburgh, Pennsylvania	Coal Refuse Binder	14010FOA	13,226.00
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Abatement of Acid Mine Drainage Pollution by Reverse Osmosis	14010FQR	48,741.00
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Trough Creek Limestone Barrier Installation and Evaluation	14010FWW	28,160.00
Dept. of Mines and Mineral Industries Harrisburg, Pennsylvania	Recovery of Iron in a more Dense Form from Coal Mine Drainage	14010EJT	57,186.50
Hi-Hills Ranch, Inc. Greensboro Star Route Waynesburg, Pennsylvania	Disposal of Sludge from Acid Mine Drainage Treatment Plants	14Q10EHZ	189,500.00
West Virginia University Morgantown, West Virginia	The Thickening and Dewatering of Precipitates from the Lime Stone Treatment of Mine Drainage	14010FJX	69,956.88
Island Creek Coal Co. Holden, West Virginia	A Demonstration of a New Mining to Prevent the Formation of Mine Acid in an Active Deep Coal Mine, Phase I & II	14010DZM	637,417.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Use of Gel Material for Sealing Deep Mine Openings	14010EKW	143,500.00
Peabody Coal Co. St. Louis, Missouri	Lime Limestone Neutralization of Acid-Mine Drainage	14010DAX	_____ *
Truax-Traer Coal Co. Chicago, Illinois	Demonstration of Control of Acid Drainage from Coal Mine Refuse Piles & Slurry Areas	14010DDH	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Neutralization & Precoat Filtration of Concentrated Sludges from Mine Waters	14010DII	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Preliminary Study & Report on Feasibility of the Purifi- cation of Acid Mine Water by a Partial Freezing Process	14010DRZ	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Evaluation of Pollution Abate- ment Procedures in the State Park, Butler County, Pa	14010DSC	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Catawissa Creek Mine Drainage Pollution Abatement Project	14010DSD	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Develop and Test an In-Situ Technique for the Injection of a Mixture or Slurry of Various Neutralizing and Filler Materials into an Abandon Mine	14010EFJ	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Use of Latex as a Soil Sealant to Control Acid Mine Waste Drainage	14010EFK	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Study of the Use of Inert Gas to Eliminate Acid Pollution from Abandoned Deep Mines	14010EFL	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Construction of Mine Water Treatment Plant at Hollywood, Pennsylvania	14010EFN	_____ *
Commonwealth of Pennsylvania Harrisburg, Pennsylvania	Detection and Location of Concealed Abandoned Under- ground Mines and Associated Drainage by Geochemical Techniques	14010EHN	_____ *
West Virginia University Morgantown, Virginia	Mine Spoil Potentials for Water Quality and Controlled Erosion	14010EJE	_____ *
Continental Oil Co. Ponca City, Oklahoma	Microbiological Removal of Iron from Mine Drainage Water	14010ENW	_____ *

\*Active in FY 1970 Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6B Industrial Waste Treatment Contract			
U.S. Atomic Energy Commission Upton, Long Island, New York	Treatment of Acid Mine Drainage by Ozone Oxidation	14010FMH	20,000.00
Black, Sivalls & Bryson Inc. Pittsburgh, Pennsylvania	Treatment of Acid Mine Drainage Sulfur and Iron Recovery	14010DYI	18,202.00
Horizons, Inc. Division of Horizons Research Cleveland, Ohio	Treatment of Acid Mine Drainage Study	14010FUI	88,008.00
Resource Engineering Assoc. Environmental Research and Applications, Inc. Wilton, Connecticut	A Study of the Effect of Soluble Iron Upon Municipal Waste Treatment Facilities	14010FBZ	21,740.00
NUS Corporation Cyrus Wm. Rice Division Manor Oak Two 1910 Cochran Road Pittsburgh, Pennsylvania	Feasibility Manual for Mine Drainage	14010FLW	40,909.00
Publication Costs	Mining-Pollution Control Technology	14010	3,912.50
Halliburton Co. Duncon, Oklahoma	Research, Development, & Field Testing of Mine Water Pollution	14010DMO	6,829.00
Tyco Laboratories, Inc. Waltham, Massachusetts	Developing an Electrochemical Treatment of Acid Mine Waters	14010FNQ	81,160.00
Ohio State University Research Foundation Columbus, Ohio	Developing a Pyritic System and a Mathematical Model	14010EAH	68,918.00
Gulf General Atomics, Inc. San Diego, California	Acid Mine Waste Treatment Utilizing a Reverse Osmosis Pilot Plant	14010DYG	1,000.00
Horizons, Inc. Division of Engineering & Development Cleveland, Ohio	Acid Mine Drainage	14010DEE	_____*
Tyco Laboratories, Inc. Waltham, Massachusetts	Silicate Treatment of Acid Mine Waters	14010DLI	_____*
Ruble and Kaple, Inc. Duluth, Minnesota	Preliminary Design of Acid Mine Drainage Pilot Facility	14010DQY	_____*
Catalytic Construction Co. Philadelphia, Pennsylvania	Treatment of Acid Mine Drainage	14010DYH	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Black, Swalls, & Bryson, Inc. Pittsburg, Pennsylvania	Acid Mine Drainage Treatment	14010DYI	_____*
<u>1402 Oil Production</u>			
Section 5 Research Contract			
University of Oklahoma Research Institute Norman, Oklahoma	Brine Disposal Treatment Practice Relating to the Oil Production Industry	14020FVW	29,835.00
Section 6B Industrial Waste Treatment Grant			
West Central Texas Municipal Water District Abilene, Texas	North Fork Alluvial Decontamination Project	14020EHW	_____*
<u>1403 Oil Shale</u>			
Section 5 Research Grant			
Colorado State University Fort Collins, Colorado	Evaluation of Potential Water Pollution From Spent and/or Burned Oil	14030EDB	_____*
<u>1404 Other Mining Sources</u>			
Section 5 Research Grant			
Colorado Seminary, University of Denver University Park Denver, Colorado	Abatement of Mine Drainage Pollution From Mines of the Rocky Mountains	14040FZC	21,340.00
Section 6B Industrial Waste Treatment Contract			
Michigan Technological University Houghton, Michigan	Storage and Disposal of Wastes Resulting from the Concentration of Low Grade Iron Ore	14040FVD	45,603.00
<u>1405 Phosphate Mining</u>			
Section 6B Industrial Waste Treatment Grant			
International Minerals and Chemical Corp. 5401 Old Orchard Road Skokie, Illinois	Utilization of Phosphate Slimes	14050EPU	153,854.00

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## 1500 - OTHER-SOURCES-OF-POLLUTION CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1501 - Recreational</u>			
Section 5 Demonstration Grant			
National Pollution Control Foundation New York City, New York	Pollution Control of Bathing Beaches by use of a Pneumatic Curtain	15010DSZ	24,180.00
<u>1502 Watercraft Wastes</u>			
Section 5 Research Grant			
Rensselaer Polytechnic Institute Troy, New York	Control of Pollution from outboard Engine Exhaust	15020ENN	26,104.00
Section 5 Research Contract			
General Electric Co 3198 Chestnut Street Philadelphia, Pennsylvania	Treatment of Watercraft wastes from small Vessels to Shore Treatment Facilities	15020DHG	61,392.00
Uniroyal Co New York, New York	Treatment of Watercraft Wastes	15020DGR	_____*
General Electric Co Philadelphia, Pennsylvania	Treatment of Watercraft Wastes	15020DHG	_____*
<u>1503 - Construction Projects</u>			
Section 6A1 Storm and Combined Sewer Grant			
State of Maryland Dept of Water Resources State Office Building Annapolis, Maryland	Demonstration and Quantitative Evaluation of Storm Water Erosion Pollution and Sediment Control Practices in a Developing Urban Area	15030FMZ	280,000.00
<u>1504 - Impoundments</u>			
Section 5 Demonstration Grant			
Water Resources Center University of California Los Angeles, California	Management of Water Quality in Stratified Reservoirs	15040EJZ	10,209.00
<u>1505 - Salt Water Intrusion</u>			
Section 5 Demonstration Grant			
Arkansas Soil and Water Conservation Commission Little Rock, Arkansas	Rehabilitation of Brine-Polluted Aquifer	15050DLN	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1506 - Natural Pollution</u>			
Section 5 Research Grant			
University of Arizona Tucson, Arizona	Limnological Effect of Organic Watershed Litter	15060DRR	_____*
<u>1507 Dredging</u>			
Section 5 Research Grant			
University of Washington Seattle, Washington	Conference on Dredging and Environmental Quality	15070GDK	1,000.00
<u>1508 Oil Pollution</u>			
Section 5 Research Grant			
Massachusetts Institute of Technology 77 Massachusetts Avenue Cambridge, Massachusetts	Containment and Collection of Oil in Protected Waters	15080ESL	135,000.00
Columbia University in the City of New York New York, New York	Molecular Interactions at the Oil-Water Interface and Formation of Micro-emulsions	15080EMP	_____*
Section 5 Demonstration Grant			
Virginia Institute of Marine Science Gloucester Point, Virginia	Sediment Composition Detection of the Effects and Fate of Waste and Discharges Disposed of in Offshore and other Waters	15080FJO	2,000.00
Florida State University Dept. of Oceanography Tallahassee, Florida	A Proposal to Study Petroleum Microorganisms for Pollution Control	15080EHF	_____*
Section 5 Research Contract			
New Mexico State University Physical Science Lab. Box 3548 Las Cruces, New Mexico	Recovery of Floating Oil Utilizing Certain Aspects of Gravity Weir, Rotating Belt and Vacuum Suction	15080FWO	56,547.00
Underwater Storage, Inc. Silver, Schwartz Ltd. Joint Venture 1028 Connecticut Avenue, N.W. Washington, D.C.	Treatment of Watercraft Wastes	15080DHE	200.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6B Industrial Waste Treatment Grant			
Main Port Authority 40 Commercial Street Portland, Maine	Test and Evaluate Mechanical and Prematic Barriers to Contain Spilled Oil and means for Removing the Contained Oil in Harbors and Adjacent Waters	15080DOZ	1,375.00
City of New York Fire Department New York, New York	Comprehensive Oil Spill Control Program for New York Harbor and Immediate Waters	15080FVP	324,452.00
Woods Hole Oceanographic Institution Woods Hole, Massachusetts	Biological Recovery Following an Oil Spill	15080FMW	31,404.00
Microwave Sensor Systems 8050 E. Florence Avenue Downey, California	Oil Pollution Detection by Microwave Radiometry	15080FOP	11,277.00
National Oil Reclaiming Corp. Bayonne, New Jersey	Demonstration of the Complete Conversion of Crankcase Waste Oil into Useful Products without Producing Pollutant Materials	15080DBO	_____*
Cleveland, City of Cleveland, Ohio	Oil Spillage Control	15080EHP	_____*
Section 6B Industrial Waste Treatment Contract			
Alpine Grophysical Associates, Inc. Oak Street Norwood, New Jersey	Documentation of Breton Sound Oil Pollution Incident	15080FTU	24,393.00
American Process Equipment Corp. 10826 Venice Boulevard Culver City, California	Hydrocyclonic Oil and Sea Water Separation System	15080EUU	78,870.00
The Garrett Corp. Airesearch Division 9851-9951 Sepulveda Boulevard Los Angeles, California	Developing a System for the Removal of Oil Wastes from Various Water Surfaces	15080DJP	45,224.00
URS Research Co 1811 Tronsdale Drive Burlingame, California	The Evaluation of Selected Earth Moving Equipment on Beach Restoration Operations	15080EOS	172,488.00
Dr. Charles E. Behlke University of Alaska College, Alaska	North Slope Oil Pollution Control Study	15080ESN	17,360.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Pacific N.W. Laboratories A Division of Battelle Memorial Institute Richland, Washington	Documentation of Clean-up Experience Following the Oil Spill Disaster at Santa Barbara California	15080EAG	2,000.00
American Standard, Inc. Melpar Division 7700 Arlington Boulevard Falls Church, Virginia	Restoration of Beaches Contaminated by Oil	15080EOT	296,109.00
New England Aquarium Central Wharf Boston, Massachusetts	Testing Oil Dispersant Toxicity and Emulsion Efficiency	15080FXB	11,200.00
Rex Chainbelt, Inc. 4701 West Greenfield Avenue West Milwaukee, Wisconsin	Development of a Concept for a Belt-Type Skimming Device for Recovering Floating Oil From Water Surfaces	15080GBJ	166,434.00
URS Research Co. 155 Bovet Road San Mateo, California	The Evaluation of Selected Earth Moving Equipment on Beach Restoration Operations	15080EOS	6,776.00
Pacific N.W. Laboratories Division of Battelle Memorial Institute Richland, Washington	Concept Development of a Hydraulic Skimmer System for Recovery of Floating Oil	15080FWP	86,035.00
Atlantic Research Corp, A Division of the Susquehanna Corp. Missile Systems Division Costa Mesa, California	Recovery Rotating Disk Type Skimmer	15080FWN	68,906.00
JBF Scientific Corp. Lakeside Office Park Wakefield, Massachusetts	Development of a Submerged Hydrodynamic Oil Concentration for the Recovery of Floating Oil	15080FWL	143,800.00
Syracuse University Research Corp. Merrill Lane University Heights Syracuse, New York	Testing Oil Dispersant Toxicity and Emulsion Efficiency	15080FXA	14,723.00
University of Miami School of Marine and Atmospheric Sciences 10 Rickenbacker Causeway Miami, Florida	Testing Oil Dispersant Toxicity and Emulsion Efficiency	15080GAU	10,117.00
Pacific Engineering Lab. 657 Howard Street San Francisco, California	Testing Oil Despersant Toxicity and Emulsion Efficiency	15080GAV	17,198.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Pacific N.W. Laboratories A Division of Battelle Memorial Institute Richland, Washington	A Study of Spillage of Hazardous Polluting Substances	15080FOZ	50,000.00
Consultec Incorporated Division of NUS Corp. 2351 Research Boulevard Rockville, Maryland	Concept for Recovery of Floating Oil	15080FWM	31,400.00
TRW Incorporated One Space Park Redondo Beach, California	Oil Water Separation Device	15080FTJ	38,100.00
The Garrett Corp. Airesearch Division 9851-9951 Sepulveda Boulevard Los Angeles, California	Developing a System of Removing Oil Wastes from Various Water Surfaces	15080DJP	73,695.00
Reynolds Submarine Services Corporation 615 S.W. Second Avenue Miami, Florida	Voraxial Oil Collection System Development Program	15080EZK	73,510.00
Ecological Research Corp. Hanover, New Hampshire	Design a Mobile Washing System	15080FIG	43,100.00
Pacific N.W. Laboratories A Division of Battelle Memorial Institute Richland, Washington	Research on Treatment of Oil Wastes	15080DJM	_____*
Western Company Richardson, Texas	Treatment of Oil Wastes	15080DJN	_____*
Garrett Corp. Los Angeles, California	Oil Water Separation System for Treatment of Oil Wastes	15080DJP	_____*
Aerojet General Corp. Environmental Systems Division El Monte, California	Feasibility Analysis of Incinerator Systems for Restoration of Oil Contaminated Beaches	15080DXE	_____*
University of California Santa Barbara, California	A Preliminary Study of Oil Spill Damage in the Intertidal Regions of Santa Barbara and Ventura Counties, California	15080DZR	_____*
University of Michigan Ann Arbor, Michigan	Multi-Spectrum Scanning to Determine Oil Slick Fate	15080EAF	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of California Santa Barbara, California	Proposal to Study the Abundance Composition of Deep and Shallow Water, Macro-plankton and Littoral Fish Populations in and about the Santa Barbara Area	15080EAL	_____ *
University of California La Jolla, California	Management and Treatment of Waterfowl Trapped in Oil Polluted Waters	15080EBZ	_____ *

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## 1600 - WATER QUALITY CONTROL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1601</u> <u>Eutrophication</u>			
Section 5 Research Grant			
President and Fellows of Harvard College 1350 Massachusetts Avenue Cambridge, Massachusetts	Phosphate Exchange With Sediments	16010DSJ	27,000.00
University of Minnesota Minneapolis, Minnesota	Effect of Sewage Effluents on Algae in Shagawa Lake	16010DEG	21,185.00
University of Florida Gainesville, Florida	Chemistry of Nitrogen in Natural Waters	16010DCK	30,381.00
The Regents of the University of California Campus Research Office 118 California Hall Berkeley, California	Provisional Algal Assay Procedures	16010DQB	52,451.00
University of North Dakota Grand Forks, North Dakota	Nutrient Dynamics in an Artificially Enriched Lake	16010DFI	16,472.00
Oregon State University Corvallis, Oregon	Sediment Water Bacteria Interactions in Eutrophication	16010EBB	27,194.00
Rensselaer Polytechnic Institute Troy, New York	Organic Nutrient Factors Effecting Algal Growth	16010DHN	33,733.00
City of Detroit Lakes Minnesota Engineering Dept. Detroit Lakes, Minnesota	Nutrient Control Projects	16010EMA	32,300.00
University of California Irvine, California	Effect of Phosphorous Removal Processes on Algal Growth	16010EJH	25,485.00
Institute of Ecology College of Agricultural Environmental Sciences University of California Davis, California	Limnology of Lake Tahoe Emphazing Water Quality	16010DBU	91,891.00
University of Florida Gainesville, Florida	Eutrophication Workshop Southeast	16010ERK	4,395.00
Colorado State University Fort Collins, Colorado	Refractory Organic Matter on Index of Eutrophication	16010EQA	21,704.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of North Carolina School of Public Health Dept. of Envir, Sci, & Engr. Chapel Hill, North Carolina	Provisional Algal Assay Procedure	16010DQT	44,788.00
University of Wisconsin Madison, Wisconsin	Nutrient Control Projects	16010EHR	308,740.00
University of Texas Austin, Texas	Investigation of Texas Soil Algae	16010DBR	13,446.00
Michigan State University Institute of Water Research 334 Natural Resources Bldg East Lansing, Michigan	Reversal of Eutrophication Through Artificial Aeration of Lakes	16010EXE	12,294.00
University of Alaska College, Alaska	Dynamics of the Nitrogen Cycle in Lakes	16010DDS	_____*
University of Michigan Dept. of Environmental & Industrial Health Ann Arbor, Michigan	An In-Situ Evaluation of Nutrient Effects in Lakes	16010DEJ	_____*
Stanford University Stanford, California	Algal Degradation in Waterways	16010DLJ	_____*
Washington State University Pullman, Washington	Flushing of Small Shallow Lakes	16010DMG	_____*
University of California Berkeley, California	Provisional Algal Assay Procedures	16010DQB	_____*
University of Florida Gainesville, Florida	Primary Production & Decom- position in Estuarine Water	16010DTK	_____*
University of Minnesota Minneapolis, Minnesota	Community Analysis in the Littoral Zone of Lakes	16010DXG	_____*
Warf Institute Inc. Madison, Wisconsin	The Carbon Dioxide System and Eutrophication	16010DXV	_____*
University of California Berkeley, California	Eutrophication-Biostimulation Assessment Workshop	16010DZI	_____*
University of Toronto Toronto, Canada	The Role of Sludge Worms in Promoting Eutrophication	16010ECQ	_____*
Florida Atlantic University Boca Raton, Florida	Biological Control of Aquatic Vegetation	16010EKY	_____*
University of Connecticut Storrs, Connecticut	Utilization of Organic Compounds by Algae	16010ELC	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Rensselaer Polytechnic Institute Troy, New York	Metal Ion Complexing in Lake Waters	16010ELE	_____*
Section 5 Demonstration Grant			
Lake Herman Development Association 524 S.W. 4th Street Madison, South Dakota	Silt Removal From a Lake Bottom	16010ELF	15,600.00
Missouri Dept. of Conservation Fisheries Research 601 Busniness Loop 70 West Columbia, Missouri	Control of Undesirable Aquatic Vegetation in Late Taneycome, Missouri	16010FBS	8,925.00
Lake Tahoe Area Council South Lake Tahoe, California	Eutrophication of Surface Waters - Lake Tahoe (Indiana Creek Reservoir)	16010DNY	_____*
University of Florida Gainesville, Florida	Eutrophication Factors in North Central Florida Lakes	16010DON	_____*
Lake Tahoe Area Council South Lake Tahoe, California	Eutrophication of Surface Waters Lake Tahoe	16010DSW	_____*
General Beadle State College Science & Math. Madison, South Dakota	A Study to Evaluate the Effect of Silt & Silt Removal in a Northern Prairy Lake	16010DZK	_____*
University of California La Jolla, California	Eutrophication in Coastal Waters' Nitrogen as a Controlling Factor	16010EHC	_____*
University of California Berkeley, California	The Removal of Algae from Natural Bodies of Water	16010EKS	_____*
Section 5 Research Contract			
Dow Chemical Co. Midland, Michigan	Develop a Selective Algaecide to Control Nuisance Algal Growth	16010EDJ	64,883.00
U.S. Geological Survey Water Resources Division P.O. Box 3202 Portland, Oregon	Limnological Study of Waldo Lake by U.S. Geological Survey Personnel	16010EHY	9,700.00
U.S. Geological Survey St. Paul, Minnesota	Hydrologic Assistance in Con- nection with the Lake Sallie Eutrophication Research Project near Detroit Lakes, Minnesota	16010FMI	22,400.00
Syracuse University Syracuse, New York	Use of Algal Viruses to Control Eutrophication	16010DCB	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Battelle Northwest Richland, Washington	An Investigation of the Release of Phosphorus from Lake Sediments & Suspended Solids as a Function of Phosphorus Forms & Envir.	16010DUA	_____*
<u>1602 - Physical-Chemical Identification of Pollutants</u>			
Section 5 Research Grant			
Kansas State University Manhattan, Kansas	Ligand Exchange Reagents	16020FID	1,030.00
Oceanic Institute Makapuu Point Waimanalo, Hawaii	Investigation of Microlayer Collection for Pollution Measurement	16020ELV	11,840.00
California Institute of Technology Pasadena, California	The Chemistry of Manganese in Natural Waters	16020DFZ	4,013.00
Southwest Research Institute P.O. Drawer 28510 San Antonio, Texas	Development of Sample Prep- aration Methods for Analysis of Marine Organisms	16020EGG	48,300.00
University of Florida Gainesville, Florida	Chemical Indicators of Fecal Pollution	16020EVG	34,223.00
University of Michigan 3014 Admin. Bldg. Ann Arbor, Michigan	Technological Assessment of Remote Sensing	16020FOY	35,554.00
University of Wisconsin 750 University Avenue Madison, Wisconsin	Artificial Substrate Samplers as Indicators of Water Quality	16020FDH	4,780.00
University of Georgia Athens, Georgia	Fluorescent Probes in the De- velopment of New Analytical Methods for Water Pollution	16020EAO	28,192.00
The Research Foundation of State University of New York P.O. Box 7126 Albany, New York	Detection and Monitoring of Water Pollutants with Ion Selective Electrodes	16020FTB	48,848.00
Assoc. in Community Medicine Given Bldg. University of Vermont Burlington, Vermont	DDT in Snow Fallen at High Altitude Since 1950	16020GAG	3,250.00
University of Washington Seattle, Washington	Chemical Characteristics of Organic Color in Water	16020DKW	_____*
Woods Hole Oceanographic Institution Woods Hole, Massachusetts	A Membrane Salinometer for Monitoring Estuaries	16020DXT	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of Georgia Dept. of Entomology Athens, Georgia	Fluorescent Probes in the Development of New Analytical Methods for Water Pollution	16020EAD	_____*
Kenyon, College Gambier, Ohio	A Study of Selected Specific Ion Electrodes	16020EIN	_____*
University of Michigan Ann Arbor, Michigan	Detection, Identification, and Determination of Oils, Tars and Slimes by Reflectance Spectroscopy	16020ELH	_____*
Section 5 Demonstration Grant			
Resources Technology Corp. 18066 Upper Bay Road Houston, Texas	Fluid Product Pipeline Leak Detection from an Airborn Plat- form for Ground Water Pollution Control	16020FQT	47,119.00
Iowa State University Engr. Research Institute Ames, Iowa	Demonstrating the Electrolysis BOD Measuring Method	16020DUN	35,176.00
Kansas City, Missouri Dept. City Hall Kansas City, Missouri	Organics Causing Taste or Odor in the Missouri River	16020DUB	23,400.00
Section 5 Research Contract			
U.S. Atomic Energy Comm. P.O. Box E Oak Ridge, Tennessee	Individual Refractory Organics in Polluted Water by High Resolution Ion Exchange Chromatography	16020EGY	89,500.00
Nereus Corp. Boston Neck Road Narragansett, Rhode Island	Planning and Design of a Narragansett Bay Synoptic Water Quality Monitoring System	16020EYP	23,805.00
Battelle Memorial Institute Columbus Laboratories 505 King Avenue Columbus, Ohio	Technical Assistance in the Development and Operation of the Center of Competence in Analytical Methopology	16020FSO	58,495.00
Ocean Data Equipment Corp. 883 Waterman Avenue East Providence, Rhode Island	Development and Evaluation of an In-Situ Subsurface Test Platform with Marine Sensors	16020EZL	44,988.00
Arthur D. Little, Inc. Acorn Park Cambridge, Massachusetts	Developing a Method of Separ- ating the Soluble Organic Components in Wastewaters on the Basis of Molecular Size and Weight	16020FEN	29,341.00
Rocketdyne, A Division of North American Rockwell Corp. 6633 Canoga Avenue Canoga Park, California	Development of a Specific Method for Detecting Trace Quantities of H <sub>2</sub> S in Aqueous Solutions	16020EXB	20,993.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Aerojet General Corp. 9200 East Flair Drive El Monte, California	Total Organic Carbon Instrumentation Program	16020ERD	19,619.00
General Dynamics Corp. P.O. Box 2566 Orlando, Florida	Study of Ways and Means to Provide Data Logging and Analysis as an Addition to Existing Water Monitor Telemeters	16020FJG	8,488.00
Rocketdyne Canoga Park, California	Development of Molecular Hydrogen Cyanide Detector	16020DRG	_____*
Rocketdyne Canoga Park, California	Prographic Characterization of Municipal Wastes	16020EEW	_____*
<u>1603 Biological Identification of Pollutants</u>			
Section 5 Research Grant			
Baylor College of Medicine 1200 Moursund Avenue Houston, Texas	Viruses in Surface Waters Development and Application of New Concentration Method	16030GBD	127,429.00
University of Massachusetts Amherst, Massachusetts	Fluorescent Antibody Methods for Determination of Fecal Streptococci	16030DVB	27,436.00
Texas Research Foundation P.O. Box 43 Renner, Texas	Aquatic Plants of Polluted Waters in Southwestern United States	16030DNL	34,734.00
San Diego Dept. of Public Health 1600 Pacific Highway San Diego, California	Quantitative Virologic Studies of Sewage	16030DWW	34,208.00
Winona State College Winona, Minnesota	Mayfly Distribution as a Water Quality Index	16030DQH	10,170.00
Lahey Clinic Foundation, Inc. Research Division Brooks Hospital Brookline, Massachusetts	Assay of Toxic Pollutants by Fish Blood Aberration	16030EIB	25,616.00
Gulf South Research Institute 8000 GSRI Avenue Baton Rouge, Louisiana	A Feasibility Study of Ultra- Filtration and Electrophoretic Dialysis for Recovery of Viruses and Other Waters	16030EOV	58,066.00
Israel Institute of Technology Technion City, Haifa Israel	Coliphages as Virus-Indicators in Water and Wastewater	16030DQN	_____*
University of Detroit Detroit, Michigan	Indicator-Pathogen Density Relationships in Tributary Streams	16030DTY	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Syracuse University Syracuse, New York	Recovery of Water-Transmitted Viruses from Filter Surfaces	16030ECJ	_____*
Harvard University Cambridge, Massachusetts	Lysis of Escherichia Coli by Marine Microorganisms	16030EEI	_____*
University of Minnesota St. Paul, Minnesota	A Tissue Enzyme Assay for Chlorinated Hydrocarbon Insecticides	16030ELZ	_____*
Section 5 Demonstration Grant			
North Texas State University Denton, Texas	Rapid Identification of Microbial Populations in Water	16030DPY	_____*
Massachusetts Health Research Institute Boston, Massachusetts	Massachusetts Pesticide Monitoring Study	16030EJW	_____*
Section 5 Research Contract			
Cordis Corp. Miami, Florida	A Sensitive Continuous Water Monitoring System	16030ENR	_____*
<u>1604 Source of Pollutants</u>			
Section 5 Research Grant			
University of Connecticut Storrs, Connecticut	Characterization of Taste and Odor in Water Supplies	16040DGH	29,489.00
University of Oklahoma Norman, Oklahoma	Evaluation of Dispersed Pollutional Load	16040DBX	_____*
Section 5 Research Contract			
Rocketdyne, A Division of North American Rockwell Corp. 6633 Canoga Avenue Canoga Park, California	Applications of Pyrographic Methodology	16040EXD	160,000.00
Aerojet General Corp. 9200 East Flair Drive El Monte, California	Investigation of Means for the Controlled Self-Destruction of Pesticides	16040ELO	43,074.00
<u>1605 - Fate of Pollution in Surface Water</u>			
Section 5 Research Grant			
University of Georgia Athens, Georgia	Enteric Bacterial Degradation of Stream Detritus	16050EQS	20,766.00
Georgia Institute of Technology Atlanta, Georgia	Symposium Presentation of Research Findings on the Regeneration Capacity of Streams and Estuaries	16050FOR	11,560.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
The Board of Trustees of The University of Illinois Illinois Natural History Survey 175 Natural Research Bldg. Urban, Illinois	The Fate of Select Pesticides in the Aquatic Environment	16050EHH	39,065.00
University of Maryland College Park, Maryland	Oxygenation Kinetics of Reduced Sulfur Species	16050ENA	15,986.00
Manhattan College Bronx, New York	Dynamic Water Quality Fore- casting and Management	16050DDK	35,271.00
Engineering and Industrial Experiment Station University of Florida Gainesville, Florida	Deposition of Fine Sediments in Turbulent Flows	16050ERS	32,895.00
The Research Foundation of the State University of New York P.O. Box 7126 Albany, New York	Operations Research in Water Quality Management	16050DJK	4,641.00
University of Washington Seattle, Washington	Biological Models of Fresh- water Communities	16050DXM	45,254.00
Washington State University Pullman, Washington	Occurrence of Pesticides in Aquatic Environments	16050DBS	_____*
New Mexico State University Las Cruces, New Mexico	Effects of Channel Geometry on Stream Reaeration	16050DCS	_____*
University of Waterloo Waterloo, Ontario, Canada	Big Eddies and Mixing Processes in the Great Lakes	16050DIL	_____*
University of Iowa Iowa City, Iowa	Dispersion of Water Pollutants in Curvilinear Flows	16050DOP	_____*
University of Illinois Urbana, Illinois	Oxygen Relationships in Small Streams	16050DTJ	_____*
University of Michigan Ann Arbor, Michigan	The Role of Silica in Water Quality Control	16050DUW	_____*
Clemson University Clemson, South Carolina	Simulation of Respiration in Microbial Slime Films	16050DXB	_____*
Georgia Institute of Technology Atlanta, Georgia	Characterization of Stream Reaeration Capacity	16050EDT	_____*
University of California Davis, California	A Quick Biochemical Oxygen Demand Test	16050EMF	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Demonstration Grant			
Illinois Dept. of Public Health 503 State Office Bldg. Springfield, Illinois	Pesticide Monitoring Program Lake Michigan and Tributaries in Illinois	16050ESP	40,000.00
Dept. of Water Resources State Office Bldg. Annapolis, Maryland	Tracer Measurement of Stream Regeneration Patuxent River	16050EUP	16,710.00
Bureau of Water Management Michigan Dept. of Natural Resources Mason Bldg. Lansing, Michigan	Pesticide Monitoring of Aquatic Environment, Michigan Portion of the Great Lakes Basin	16050EPV	40,000.00
Indiana Stream Pollution Control Board Indiana State Board of Health 1330 West Michigan Street Indianapolis, Indiana	Great Lakes Pesticide Mon- itoring Program	16050EYS	39,997.00
City of San Diego City Administration Bldg. San Diego, California	Sewage Odor Control by Liquid Gas Extraction	16050DEX	45,781.00
Vanderbilt University Nashville, Tennessee	Turbulent Diffusion and Reaeration in Natural Rivers	16050EIO	12,149.00
Wisconsin Dept. of Natural Resources Division of Environmental Protection Room 450 Madison, Wisconsin	Evaluation of Pesticide Sources and Levels Tributary to Lake Michigan and Superior	16050EYV	40,000.00
Minnesota Pollution Control Agency 717 Delaware Street SW Minneapolis, Minnesota	Pesticides Inputs and Levels in Minnesota Waters of Lake Superior Basin	16050EYT	15,332.00
Section 5 Research Contract			
Battelle Memorial Institute 505 King Avenue Columbus, Ohio	Development of Multidi- rectional Turbulence Probe	16050DOW	15,200.00
Grumman Aircraft Engr. Corp. Bethpage, Long Island New York	Immobilized Enzyme Systems Enhancement of Biological Waste Treatment Processes	16050DXN	_____*
Electro-Nucleonics, Inc. Fairfield, New Jersey	Zonal Ultracentrifuge Systems	16050EFY	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1606 Fate of Pollutants in Ground Waters</u>			
Section 5 Research Grant			
University of California Riverside, California	Forty-year Fertilizer Effectson NO3 in Ground Water	1606DOE	19,205.00
Washington State University Pulluman, Washington	Clay Mineral Stability and Water Composition	1606DCK	_____ *
California Institute of Technology Pasadena, California	Mycological Phenomena in Sewage Spreading Basins	1606DGU	_____ *
Stanford University Stanford, California	Radial Flow of Soil Moisture	1605DIN	_____ *
Purdue University Lafayette, Indiana	Dispersion During Flow in Heterogeneous Porous Media	1606DLL	_____ *
Boyce Thompson Institute for Plant Research, Inc Yonkers, New York	Interaction of Herbicides and Soil Microorganisms	1606DMP	_____ *
Utah State University College of Engineering Logan, Utah	Bacterial Adsorption on Soils	1606EBD	_____ *
Massachusetts Institute of Technology Cambridge, Massachusetts	Movement and Mixing of Water Injected into Aquifers	1606EIS	_____ *
Massachusetts Institute of Technology Cambridge, Massachusetts	Effects of Density Stratifi- cation on Aquifer Mixing	1606ELJ	_____ *
Section 5 Demonstration Grant			
The Pennsylvania State University, Institute of Research on Land and Water Resources University Park, Pennsylvania	Renovation of Sewage Effluent for Reuse as a Water Resource	1606DYJ	41,307.00
Eastern Municipal District 24550 San Jacinto Street P.O. Box 858 Hement, California	Reutilization of Wastewater Recycled Through Ground Water	1606DDZ	50,000.00
Texas Technological College Lubbock, Texas	Potential Pollution of the Ogalla by Recharging Playa Lake Water	1606DCO	_____ *
Salt River Project Salt River Valley Water Users Association Phoenix, Arizona	Spreading Treated Sewage for Groundwater Recharge	1606DRV	_____ *

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Research Contract			
Fuhriman-Barton Assoc. 1445 Locust Lane Provo, Utah	Study on Groundwater Pollution Problems in the Southwestern United States	16060ERU	53,609.00
Texas Technological College Lubbock, Texas	Determining the Distribution of Nitrogen in the Groundwater Ion Below Feedlots in the Texas High Plains	16060EGS	39,364.00
General Electric Co. Pleasanton, California	Development of a New Technique for Bulk Water Tracing	16060EVC	_____*
<u>1607 - Fate of Pollutants in Coastal Waters</u>			
Section 5 Research Grant			
California Institute of Technology 1201 E. California Boulevard Pasadena, California	Dispersion in Hydrologic and Coastal Environment	16070DGY	92,072.00
Oregon State University Corvallis, Oregon	Tidal Flats in Estuarine Water Quality Analysis	16070DGO	39,591.00
Massachusetts Institute of Technology Cambridge, Massachusetts	Numerical Solution of Unsteady Dispersion in Estuaries	16070DGW	5,000.00
Oregon State University Corvallis, Oregon	Air Photo Analysis of Ocean Outfall Dispersion	16070ENS	39,124.00
Purdue Research Foundation Lafayette, Indiana	Turbulent Diffusion in Liquid Jets	16070DEP	31,245.00
Adelphi University Dept. of Biology Garden City, New York	Water Movement in a Lagoonal Estuary Measured by Modified Geomagnetic Electrokinetographs	16070DBN	_____*
University of Washington Seattle, Washington	Oxidation of Organic Matter in the Seabed	16070EKZ	_____*
Section 5 Demonstration Grant			
Florida Ocean Sciences Institute, Inc. Deerfield Beach, Florida	Demonstration of the Limitation and Effects of Waste Disposal on an Ocean Shelf	16070EFG	_____*
Franklin Institute Research Laboratories Philadelphia, Pennsylvania	An Industrial Wasteline System	16070EOI	_____*
Oregon State University Corvallis, Oregon	Ocean Disposal of Wastes on the Northwest Coast	16070EOK	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Research Contract			
Seattle University Seattle, Washington	Oxygen Uptake by Benthic Organisms in the Presence of Varying Degrees of Bottom Sludge Agitation & Various Temperatures & Salinities	16070DCD	_____*
National Academy of Sciences Washington, D.C.	A Study of the Management of Wastes in the Coastal Environment	16070DUF	_____*
Tractor, Inc. Austin, Texas	State-of-the-Art Report on Simulation of Pollution Problems and Controls in Estuaries	16070DZV	_____*
Oregon State University Corvallis, Oregon	Mathematical & Computer Services for the Analysis of Data & Design of Experiments of Certain FWPCA Programs	16070FDT	_____*

#### 1608 - Water Quality Control

##### Section 5 Research Grant

Limnatics Inc. 6132 West Fond Du Lac Avenue Milwaukee, Wisconsin	Pilot Studies in the Restoration of the Physical Environment of a Stream to Maintain a Clear Water Flora and Fauna	16080FTO	40,908.00
Academy of Natural Sciences of Philadelphia 19th and the Parkway Philadelphia, Pennsylvania	The Role of Trace Elements in the Management of Nuisance Growth	16080FQK	66,349.00
President and Fellows of Harvard College 1350 Massachusetts Avenue Cambridge, Massachusetts	Microbiology of Polluted Natural Waters	16080FLZ	3,000.00
Brigham Young University Provo, Utah	Lake Diking as a Water Pollution Management Tool	16080EVT	72,559.00
University of Maine Orono, Maine	Induced Air Mixing of Large Bodies of Polluted Water	16080DWP	20,232.00
The Pennsylvania State University University Park, Pennsylvania	Denitrification in Soil During Wastewater Disposal	16080EIT	31,423.00
Newark College of Engr. 323 High Street Newark, New Jersey	Effects of Fluid Properties on Stream Aeration	16080DAP	19,997.00
Center for Water Resources Research Desert Research Institute Reno, Nevada	Water Quality Regimen of Tahoe - Truckee System	16080DPC	47,553.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 5 Demonstration Grant			
Heidelberg College Tiffin, Ohio	Effects of Augmented Stream Flow on Water Quality	16080DFO	8,648.00
Washington State University Pullman, Washington	Correlated Studies of Van- couver Lake - Hydraulic Model Study	16080ERP	52,376.00
Rutgers, The State University Water Resources Research Institute New Brunswick, New Jersey	Oxygen Regeneration of Polluted Rivers	16080FYA	29,000.00
Washington State University Pullman, Washington	Correlated Studies of Van- couver Lake - Water Quality Prediction Study	16080ERQ	25,614.00
Rutgers, The State University of New Jersey New Brunswick, New Jersey	Oxygen Regeneration of Polluted Rivers	16080DUP	7,926.00
Section 5 Research Contract			
The Franklin Institute Research Laboratories Benjamin Franklin Parkway Philadelphia, Pennsylvania	Technical Highlights in Selected Areas of Water Pol- lution and It's Control	16080FBP	15,039.00
The Gillette Co. Research Institute 1413 Research Blvd. Rockville, Maryland	The Development of Phosphate- Free Heavy Detergents	16080FWE	344,000.00
Littleton Research Corp. Littleton, Massachusetts	Engineering-Economic Study for the Development of an Optimum Mechanical Aeration System for Quiet Rivers & Ponds	16080D00	_____*
Illinois Institute of Technology Chicago, Illinois	Development of Phosphate Free Home Laundry Detergents	16080DVF	_____*
<u>1609 - Water Resources Data</u>			
Section 5 Research Grant			
The Trustees of the University of Pennsylvania Office of Research Administration 3451 Walnut Street Philadelphia, Pennsylvania	Stream Quality Preservation Through Land Use Management Legal and Governmental Aspects	16090EDC	16,770.00
Georgetown University Washington, D.C.	Use of General Equilibrium in Water Resources Planning	16090FIO	21,165.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Alamo Area Council of Governments Water Quality Planning 422 3A Life Building San Antonio, Texas	Basin Management of Water Reuse	16090EAX	44,898.00
Leland Stanford, Jr, University Stanford, California	The Philosophy of Planning for Water Quality Management	16090DWX	40,472.00
Syracuse University Syracuse, New York	Allocation of Stream Pollution Carrying Capacity	16090DAJ	_____*
Water Pollution Control Federation Washington, D.C.	Research Supplement-Journal Water Pollution Control Federation	16090DQZ	_____*
Harvard University Cambridge, Massachusetts	Dynamic Planning Techniques for Pollution Abatement	16090DSS	_____*
Harvard University Cambridge, Massachusetts	The Economics of Water Supply and Quality	16090DTF	_____*
Regional Science Research Institute Philadelphia, Pennsylvania	Economic Evaluation of Stream Quality Preservation Through Land Use Management	16090DYX	_____*
University of California Western Management Science Institute Los Angeles, California	Multiple Techniques in Regional Treatment of Water Pollution Systems	16090EGQ	_____*
President and Fellows of Harvard College Cambridge, Massachusetts	Operations Research in Water Quality Management	16090EOZ	_____*
Virginia Polytechnic Institute Water Resources Research Center Blacksburg, Virginia	Water Rights Related to Water Quality Storage	16090FPW	_____*
University of California The Regents of Los Angeles, California	A Mathematical Model for Regional Treatment of Water Pollution Systems	16090FPX	_____*
Oregon State University Corvallis, Oregon	Economic Benefits from an Improvement in Water Quality	16090FPZ	_____*
Section 5 Demonstration Grant			
Colorado State University Fort Collins, Colorado	Data Acquisition System in Water Quality Management	16090FUO	48,909.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Michigan Water Resources Commission Stevens T. Mason Building Lansing, Michigan	Michigan Water Resources Information and Enforcement System	16090FSR	102,762.00
Ohio River Valley Water Sanitation Commission 414 Walnut Street Cincinnati, Ohio	Automated forecast Procedures for River Quality Management	16090DHX	85,000.00
Great Lakes Basin Commission 220 East Huron Street Ann Arbor, Michigan	Limnological Systems Analysis for the Great Lakes: Phase I Preliminary Model Design	16090FLJ	70,000.00
Commonwealth of Pennsylvania Dept. of Health Harrisburg, Pennsylvania	Pennsylvania Water Quality Management Information System	16090DRA	_____*
Utah State University Logan, Utah	Electronic Analog Simulation of the Salinity Flow System with the Upper Colorado River Basin	16090DVU	_____*
Delaware River Basin Commission Trenton, New Jersey	Interstate Regional Planning for Water Supply and Waste Disposal	16090FPP	_____*
Section 5 Research Contract			
Tracor, Inc. 6500 Tracor Lane Austin, Texas	The Applicability of Weather Station Data for Water Surface: Energy Budget Calculation	16090EXU	11,392.00
ABT Assoc., Inc. 55 Wheeler Street Cambridge, Massachusetts	Factors Affecting Success of Local Pollution Control Referenda	16090EXW	48,508.00
Peter S. Miller Stochastics, Inc. Westover Drive Blacksbury, Virginia	Stochastic Models for Water Quality Management	16090DUH	46,496.00
Electronic Assoc., Inc. 12260 Wilkins Avenue Rockville, Maryland	Improving Water Quality Data Management by use of the Hybrid Computer	16090FEP	44,872.00
Quirk, Lawler Matusky Engineers New York, New York	Request for Proposal Design of Waste Treatment Facilities by Computer	16090DIA	_____*
Technicomp, Inc. West Hempstead, New York	Design of Waste Treatment Facilities by Computer	16090ERJ	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6B Industrial Waste Treatment Grant			
Texas A & M Research Foundation College Station, Texas	Management of Industrial Waste Discharges in Complex Estuarine System	16090DQW	45,815.00
<u>1610 Cold Climate Research</u>			
Section 5 Research Grant			
University of Alaska College, Alaska	Waste Pollution Control in Cold Climates A Symposium	16100EXH	26,192.00
University of Alaska College, Alaska	Investigations on Possible Effects of Crude Oil on Aquatic Organisms	16100FWQ	82,916.00
Institute of Marine Science University of Alaska College, Alaska	Baseline Water Quality Study of the Alaska Arctic Estuarine Development	16100EOM	59,953.00
Section 5 Demonstration Grant			
Wagley, Inc. 430 7th Avenue Anchorage, Alaska	North Slope Application of Advanced Waste Treatment and Partial Water Reuse	16100FXJ	71,080.00
<u>1613 Thermal Pollution</u>			
Section 5 Research Grant			
Massachusetts Institute of Technology Cambridge, Massachusetts	Prediction and Control of Thermal Pollution	16130DJU	8,824.00
Purdue Research Foundation Lafayette, Indiana	Turbulent Bed Cooling Tower	16130EMQ	18,972.00
Vanderbilt University Nashville, Tennessee	Abstract Preparation for the Water Resources Scientific Information Center	16130FPE	35,354.00
Washington State University State of Washington Water Research Center Pullman, Washington	Hydrologic Research Assistance in Connection with the Project on Heat Transport and Behavior in the Mixing Zone	16130FLM	30,000.00
Oregon State University Corvallis, Oregon	Thermal Plume Dispersion	16130DGM	33,634.00
Vanderbilt University Nashville, Tennessee	Project for Concentrated Research and Training in the Hydrologic and Hydrolic Aspects of Water Pollution Control	16130FDQ	109,878.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Massachusetts Institute of Technology Cambridge, Massachusetts	Thermal Stratification and Reservoir Water Quality	16130DJH	15,194.00
Cornell University Ithaca, New York	Heat and Water Vapor Exchange Between Water Surface and Atmosphere	16130DIP	_____*
Section 5 Demonstration Grant			
Eugene Water and Electric Board P.O. Box 1112 Eugene, Oregon	Thermal Water Demonstration Project	16130EIK	158,224.00
Section 5 Research Contract			
Water Resources Engr. Inc. 1900 Olympic Blvd, Walnut Creek, California	Formulation of a General Mathematical Model for the Prediction of Thermal Changes in Impoundments	16130EXT	4,716.00
Cornell Aeronautical Lab. P.O. Box 235 Buffalo, New York	Research on the Physical Aspects of Thermal Pollution	16130DPU	71,857.00
United Aircraft Corp. East Hartford, Connecticut	Feasibility Study of Non-thermal Pollution Power Generating Systems	16130DNE	44,939.00
U.S. Geological Survey Denver, Colorado	Hydrologic Research Assistance in Connection with the Project on Heat Transport and Behavior in the Mixing Zone	16130FSM	6,800.00
R.W. Beck and Assoc. Analytical and Consulting Engineers 800 Western Federal Savings Building Denver, Colorado	Research on Non-Evaporative Cooling Towers for Thermal Electric Generating Plants	16130EES	125,000.00
Littleton Research & Engineering Corp. Littleton, Massachusetts	Economic-Engineering Study of Cooling Ponds	16130DFX	_____*
Dynatech Corp. Cambridge, Massachusetts	Survey and Economic Analysis of Alternate Methods for Cooling Condenser Discharge Water in Thermal Power Plants	16130DHS	_____*

\*Active in FY 1970 - Supported by funds awarded in previous years.

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Bollay E. Assoc., Inc. Bowler, Colorado	Theoretical Evaluation & Dev. of a Criteria to Determine in- adventent Weather Modification in the Vicinity of Cooling Towers	16130DNH	_____ *
Tetra Tech., Inc. Pasadena, California	Studies on the Effects of Waste Heat Discharge from Nuclear Power Plants into Large Bodies of Receiving Waters	16130DWO	_____ *

Section 6B Industrial Waste Treatment Contract

The Travelers Research Corp. 250 Constitution Plaza Hartford, Connecticut	Economic Analysis of Thermal Pollution Abatement Costs in the Electric Power Industry	16130ERN	60,000.00
R.W Beck and Assoc. Analytical and Consulting Engineers 800 Western Federal Savings Building Denver, Colorado	Research on Non-Evaporative Cooling Towers for Thermal Electric Generating Plants	16130EES	10,062.00

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## 1700 WASTE TREATMENT &amp; ULTIMATE DISPOSAL TECHNOLOGY

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1701 - Dissolved Nutrient Removal</u>			
Section 5 Research Grant			
Marquette University 615 North 11th Street Milwaukee, Wisconsin	Phosphorous Removal by Trickling Filter Slimes	17010DZG	33,385.00
Rutgers, The State University Dept. of Environmental Sciences New Brunswick, New Jersey	Rotating Biological Disc Wastewater Treatment Process Pilot Plant Evaluation	17010EBM	76,654.00
University of Minnesota Minneapolis, Minnesota	Nitrification & Denitrification of Wastewater	17010FMX	20,663.00
Stanford University Civil Engineering Dept. Stanford, California	Nitrification at Low Temper- atures	17010EPM	31,304.00
Northeastern University College of Liberal Arts Boston, Massachusetts	Colloid Flotation and Adsorbing Colloid Flotation	17010DBL	_____*
University of Arizona Tucson, Arizona	Mechanics of Biology Luxury Phosphate Uptake	17010DDQ	_____*
University of Texas Austin, Texas	Enzymatic Technique for Detection of Surplus Phosphorus Uptake by Activated Sludge	17010DUX	_____*
University of California Berkeley, California	Kinetics of Algal Systems in Waste Treatment	17010DZQ	_____*
North Carolina State University Raleigh, North Carolina	Water Treatment by Membrane Ultrafiltration	17010EDR	_____*
Section 5 Demonstration Grant			
Las Virgenes Municipal Water District 4232 Las Virgenes Road Calabasas, California	Tertiary Treatment with a Controlled Ecological System	17010FBH	39,800.00
Trenton, City of Trenton, Michigan	Phosphate Removal by Biological Process	17010DMR	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of Notre Dame Notre Dame, Indiana	Removal of Organic & Eutrophying Pollutants by Combined Chemical & Biological Treatment	17010DTG	_____*
Sewerage Commission of the City of Milwaukee Milwaukee, Wisconsin	Sewage Phosphorus Removal by an Activated Sludge Plant	17010DXD	_____*
University of Texas Medical Branch Galveston, Texas	Phosphorus Removal and Disposal from Municipal Wastewater	17010DXB	_____*
The Soap and Detergent Association New York, New York	Soluble Phosphate Removal in the Activated Sludge Process	17010EIP	_____*
Section 5 Research Contract			
Dow Chemical Co Midland, Michigan	Pilot Plant Study of Nitri- fication on Plastic Media	17010FSJ	185,569.00
Dow Chemical Co Midland, Michigan	Preliminary Experimental Investigation of Feasibility of Nitrate Removal from Wastewater Ion Exchange	17010EGR	63,461.00
FMC Corp. 1185 Colemand Avenue Santa Clara, California	Process to Remove Carbonaceous Nitrogenous & Phosphorous Materials from a Aerobic Digester Supernatant & Related Process Streams	17010FKA	18,032.00
City of Baltimore, Maryland Dept. of Public Works, Bureau of Engineering Baltimore, Maryland	Phosphate Study at the Back River Waste Treatment Plant Baltimore, Maryland	17010DFV	9,662.00
Process Research Incorp. 56 Rogers Street Cambridge, Massachusetts	Selective Nutrient Removal	17010FBJ	81,735.00
Atomics International P.O. Box 309 Canoga Park, California	A study of the Kinetics & Mechanism of Precipitation & Removal of Phosphates from Wastewater	17010EKI	50,534.00
Gulf South Research Institute Baton Rouge, Louisiana	Sewage Denitrification Requirements Using Methyl Alcohol	17010DHT	_____*
Aerojet-General Corp. El Monte, California	Laboratory Evaluation of a New Phosphate Removal Process	17010DJA	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Aerojet-General Corp. El Monte, California	Parametric Studies Nitri- fication-Denitrification	17010DRD	_____*
Lawrence K. Cecil, P.E. Tucson, Arizona	Biological Removal of Phosphates from Wastewaters by Luxury Uptake in Activated Sludge Treatment Plants	17010DRF	_____*
General Mills, Inc Minneapolis, Minnesota	A Proposed Study on the Feasibility of Liquid Ion Exchange for Extracting Phosphates from Secondary Effluents	17010EAP	_____*
Ionics, Incorp. Watertown, Massachusetts	Electro-oxidation of Ammonia in Sewage to Nitrogen	17010EED	_____*
Rocketdyne Division, N.A.R.C. Canoga Park, California	Development of a Chemical Denitrification Process	17010EEX	_____*
South Tahoe Public Utility District South Lake Tahoe, California	Nitrogen Removal Supple- menting Ammonia Stripping with Further Nitrogen Removal by Selective Ion Exchange and Breakpoint Chlorination	17010EEZ	_____*
Engineering Science, Inc. Arcadia, California	Studies on Removal of Carbon- aceous, Nitrogenous, and Phosphorus Materials from Concentrated Process Waste Streams	17010EVB	_____*
Tyco Laboratories Waltham, Massachusetts	Basic Salinogen Ion Exchange Resins for Selective Nitrate Removal from Potable and Effluent Waters	17010FKF	_____*
Section 6A2 Advanced Waste Treatment Grant			
Traverse City Traverse City, Michigan	Controlled Removal of Phos- phates Using Chemical & Biological Techniques in Secondary Treatment	17010DIX	_____*
Riverview, City of Riverview, Michigan	Full-Scale Evaluation of the use of Flow Equalization and a Chemical Additions to Primary Treatment to Improve the Performance of Trickling Filter Plants	17010DSN	_____*
Municipality of Metropolitan Seattle Seattle, Washington	Phosphate Removal in an Activated Sludge Facility	17010EDA	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
South Lake Tahoe Public Utility District South Lake Tahoe, California	Recovery and Reuse of Lime as a Coagulant in Tertiary Treatment and Nitrogen Removal from Tertiary Treated Effluent	17010ELQ	_____*
Detroit, City of Detroit, Michigan	Pilot Scale Study of Improved Phosphate Removal by Modified Activated Sludge Process	17010FAH	_____*
Section 6A2 Advanced Waste Treatment Contract			
Board of Supervisors Prince William County Courthouse Annex Manassas, Virginia	An Experimental Facility for Study of Improved Methods of Waste Removal	17010DYM	87,856.00
Baltimore, City of Dept. of Public Works Baltimore, Maryland	Phosphate Study at the Back Wastewater Treatment Plant	17010DFV	_____*
Pacific N.W. Laboratory A Division of Battelle Memorial Institute Richland, Washington	Demonstration of A Mobile Pilot Plant for Ammonia Removal from Wastewater by Selective Ion Exchange	17010ECZ	_____*
Pacific N.W. Laboratory A Division of Battelle Memorial Institute Richland, Washington	Research to Develop and Demonstrate a Mobile Pilot Plant for Removal of Soluble Phosphorus from Wastewaters by Absorption on Alumina	17010EER	_____*
<u>1702 Dissolved Refractory Organics Removal</u>			
Section 5 Research Grant			
Clarkson College of Technology Potsdam, New York	Radioisotope Tracer Study of Membrane Purification	17020DJT	14,775.00
The University of Michigan Ann Arbor, Michigan	Adsorption from Aqueous Solution	17020EPF	44,995.00
The Regents of the University of California Davis, California	Photochemical Methods for Purifying Water	17020EVQ	35,005.00
University of Colorado Boulder, Colorado	The Effect of Porous Structure on Carbon Actination	17020DDC	_____*
University of California Davis, California	Purifying Water in Photo- chemical Reactors	17020DDV	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Clarkson College of Technology Potsdam, New York	Photodegradation of Polymers in Aqueous Solution	17020DFG	_____*
Syracuse University Syracuse, New York	Carbon Column Operation in Waste Water Treatment	17020DZO	_____*
Section 5 Research Contract			
FMC Corp. Chemical Research & Development Center Princeton, New Jersey	Improvements in Granular Adsorption Processes	17020GDN	63,584.00
MSA Research Corp. Evans City, Pennsylvania	Laboratory Investigation of Regeneration of Spent Activated Carbon	17020DAO	29,585.00
U.S. Atomic Energy Commission P.O. Box E Oak Ridge, Tennessee	Removal of Powdered Carbon in Sewage Effluents by Cross-Flow Filtration	17020EKL	145,000.00
McDonnell Douglas Corp. 5301 Bolsa Avenue Huntington Beach, California	Electrochemical Regeneration of Spent Activated Carbon	17020EFD	44,687.00
Amicon Corp. Lexington, Massachusetts	Ultrafiltrate Dewatering of Spent Carbon from the Powdered Carbon Process	17020DBA	_____*
Midwest Research Institute Kansas City, Missouri	Advanced Study of Light- Catalyzed Chlorine Oxidation for Large-Scale Treatment of Wastewater	17020DUE	_____*
Arde, Inc. Paramus, New Jersey	Applicability of Ardox Catalysts to the Oxidation of Municipal sewage Effluents and of Wastes Produced During Manned Space Flight	17020DVK	_____*
Southern Illinois University Office of Research Projects Carbondale, Illinois	Feasibility of Applications of Supercatalysis in Wastewaters	17020ECT	_____*
Battelle Memorial Institute Columbus, Ohio	Development of a Fluidized- Bed Technique for the Regeneration of Powdered Activated Carbon	17020FBD	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6A2 Advanced Waste Treatment Grant			
East Chicago Sanitary District East Chicago, Indiana	Tertiary Treatment of Combined Storm Water, Sanitary Relief Discharges and Sewage Treatment Plant Effluent	17020EHI	_____*
Section 6A2 Advanced Waste Treatment Contract			
Aerojet General Corp. El Monte, California	New Membranes and Process Technology for the Renovation of Wastewater by Reverse Osmosis	17020DUD	_____*
Airco-Air Reduction Co. Murray Hill, New Jersey	Construction & Operation of a Pilot Plant for the Treatment of Secondary Effluent from Waste Treatment Plant with Ozone	17020DVC	_____*
North Star Research & Development Institute Minneapolis, Minnesota	New and Ultrathin Membranes for Municipal Wastewater Treatment by Reverse Osmosis	17020EFA	_____*
<u>1703 - Suspended and Colloidal Solids Removal</u>			
Section 5 Research Grant			
The Regents of the University of California Berkeley, California	Filtration Kinetics in Water and Wastewater	17030ECA	48,636.00
University of Minnesota Minneapolis, Minnesota	Removal of Colloidal Matter from Wastewater	17030DGQ	27,500.00
University of Cincinnati Cincinnati, Ohio	Foam Fractionation with Reflux	17030DHH	_____*
University of California Berkeley, California	Orthokinetic Flocculation of Heterodispersed Systems	17030DLX	_____*
University of Kentucky Lexington, Kentucky	Foam Separation Flotation of Colloid Organic Systems	17030DNA	_____*
Clarkson College of Technology Potsdam, New York	Flocculation of Colloids Suspended in Water	17030DOV	_____*
Harvard University Cambridge, Massachusetts	Chemical Aspects of Coagulation	17030EBE	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Lehigh University Bethlehem, Pennsylvania	Wastewater Purification	17030ECM	_____*
Iowa State University Ames, Iowa	Design Requirements for Municipal Diatomite Filters	17030FBG	_____*
Section 5 Research Contract			
Bowles Fluidics Corp. 9347 Fraser Street Silver Spring, Maryland	Development and Evaluation of a Fluidic Vortex Bubble Gener- ating Device for Application to Micro Flotation Type Sewage Treatment Processes	17030FEB	49,953.00
Research Tringle Institute P.O. Box 12194 Research Tringle Park North Carolina	An Experimental Fluidized Sludge Blanket Clarification as Applied to Sewage Treatment	17030EYA	81,168.00
Research Tringle Institute Research Tringle Park North Carolina	Experimental Investigation of a Continuous Filtration Process for Municipal Wastewaters	17030FWH	56,969.00
Engineering Science, Inc. 150 East Foothill Blvd. Arcadia, California	Evaluation Filtration for Wastewater Treatment Using a Mobile Pilot Plant	17030DHZ	127,610.00
Oak Ridge National Laboratory Oak Ridge, Tennessee	Application of Hyperfiltration with Dynamically-Formed Membranes to Treatment of Municipal Sewage Effluents	17030EOH	_____*
Standard Brands Chemical Industries, Inc. Dover, Delaware	Investigation of Amphipathic Water Soluble Polymers as Flocculants and Flotation Aids in Domestic Wastewater Treatment	17030FKD	_____*
Section 6A2 Advanced Waste Treatment Grant			
Jefferson Parish, Louisiana Dept. of Sanitation Metairie, Louisiana	Study of Upflow Filter for Tertiary Treatment	17030DMA	98,100.00
Greene County Greene County, Ohio	Improved Liquid-Solids Separation by use of an Aluminum Compound in Activated Sludge Treatment	17030EBH	_____*
San Jose, City of San Jose, California	BOD, Solids and Nutrient Removal from Secondary Effluent by Foam Fractionation	17030Ezs	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6A2 Advanced Waste Treatment Contract			
Eimco Corp. Salt Lake City, Utah	Physical-Chemical Treatment of Municipal Waste	17030EFB	_____*
<u>1704    Dissolved Inorganics Removal</u>			
Section 5 Research Grant			
Rex Chainbelt, Inc. Technical Center P.O. Box 2022 Milwaukee, Wisconsin	Feasibility Study of Using Reverse Osmosis to Concentrate Pre-Treated Domestic Sewage	17040EUE	22,708.00
Section 5 Research Contract			
Southern Research Institute 2000 9th Avenue South Birmingham, Alabama	Demineralization of Sewage Effluents by the Transport Depletion Process	17040EUN	39,992.00
Uniroyal, Inc. Research and Development Dept. Research Center Wayne, New Jersey	Feasibility of Regenerative Fibers for Water Pollution Control	17040DFC	57,851.00
Gulf General Atomics, Inc. P.O. Box 608 San Diego, California	Reverse Osmosis Study	17040EOR	173,490.00
Douglas Aircraft Co. Newport Beach, California	Use of Improved Membranes in Tertiary Treatment by Reverse Osmosis	17040DHR	_____*
Amicon Corp. Lexington, Massachusetts	Evaluation & Characterization of Low Pressure Membrane Ultrafiltration as a Technique for Removal & Identification of Macro-Solutes & Microsol	17040DMK	_____*
Gulf General Atomics, Inc. San Diego, California	Membrane Materials for Wastewater Reclamation by Reverse Osmosis	17040EFO	_____*
Aerojet General Corp. El Monte, California	Renovation of Municipal Waste Water by Reverse Osmosis Systems Laboratory Program Extension	17040EFQ	_____*
Santee County Water District Santee, California	Reclamation of Biologically, Mechanically, and Chemically Treated Wastewater for Potable Water Supply Uses, Etc.	17040FKG	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6A2 Advanced Waste Treatment Grant			
Eastern Municipal Water District Hemet, California	Reverse Osmosis in Ground Water Recharge Program	17040DSR	_____*
Section 6A2 Advanced Waste Treatment Contract			
Culligan, Inc. Industrial Systems Division 440 South McLean Elgin, Illinois	Wastewater Demineralization by Ion Exchange	17040EEE	189,373.00
Aerojet General Corp. El Monte, California	Renovation of Primary Sewage by Reverse Osmosis	17040EFQ	96,600.00
University of Florida Gainesville, Florida	Evaporation of Sewage Plant Effluent	17040DNM	_____*
<u>1705 - Dissolved Biodegradable Organics Removal</u>			
Section 5 Research Grant			
The Ohio State University Research Foundation Columbus, Ohio	Concentration of Chemicals by Floc Forming Organisms	17050DFJ	33,282.00
University of Wisconsin Madison, Wisconsin	Investigation of Zooglea Flocs	17050FSL	17,896.32
University of Michigan Ann Arbor, Michigan	Electrical Stimulation of Microbial Waste Treatment	17050DGJ	19,837.00
Texas A&M Research Foundation P.O. Box Faculty Exchange H College Station, Texas	The Molecular Nature of Organic Waste Removal Patterns	17050DUT	35,655.00
State of Minnesota Dept. of Iron Range Resources and Rehabilitation St. Paul, Minnesota	Treatment of Wastes Using Peat and Peat in Combination with Soil	17050EAN	44,380.00
Randolph-Macon Woman's College Lynchburg, Virginia	Isolation of Lytic Agents Related to Sphaerotilus	17050DHI	10,929.00
Pennsylvania State University Office of the Vice President for Research Old Main Building University Park, Pennsylvania	Bacterial Zooglea Formation	17050DBI	15,561.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Cornell University Ithaca, New York	Adaptation by Microbial Population	17050DFL	_____*
Oklahoma State University Stillwater, Oklahoma	Kinetics & Mechanism in Activated Sludge Processes	17050DFM	_____*
University of Kansas Lawrence, Kansas	Oxygen Combustion in Continuous Biological Culture	17050DJS	_____*
University of California Berkeley, California	UCB-ENG-2861--Transient Loading Effects in the Activated Sludge Process	17050DOE	_____*
University of Massachusetts Amherst, Massachusetts	Reverse Osmosis Treatment of Wastewaters	17050EHG	_____*
Section 5 Demonstration Grant			
Kansas State University Dept. of Civil Engineering Manhattan, Kansas	Pilot Plant Demonstration of a Lime Biological Treatment Phosphorous Removal System	17050DCC	16,635.00
University of Connecticut Storrs, Connecticut	Automatic Control of a Completely mixed Activated Sludge Reactor	17050EVF	21,775.00
University of Wyoming Laramie, Wyoming	Supplementary Aeration of Lagoons in Rigorous Climate Areas	17050DVD	_____*
Section 5 Research Contract			
Biospherics Research, Inc. Washington, D.C.	Continuation of Biomass Determination	17050EOY	57,023.00
Biospherics Research, Inc. Washington, D.C.	Continuation of Biomass Determination	17050EOY	64,069.00
Allis Chalmers Manufacturing Co. Research Division Box 512 Milwaukee, Wisconsin	Improved Methods of Condition- ing the Discharge Waters from Sewers both Storm Water and Sanitary Waste, Etc.	17050DAM	33,375.00
Union Carbide Corp. Linde Division P.O. Box 44 Tonawanda, New York	Investigation of High Purity Oxygenation of High Purity tional Activated Sludge Process	17050DNW	27,000.00
FMC Corp. Chem. Res. & Develop. Center Princeton, New Jersey	A Study and Investigation of Granular Carbon Treatment	17050DAL	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Roy F. Weston West Chester, Pennsylvania	Improved Engineering Application of the Two-Film Theory to Oxygen Transfer	17050DCU	_____ *
Dow Chemical Co. Midland, Michigan	Literature Search & Critical Analysis of Biological Trickling Filter Studies	17050DDY	_____ *
Midwest Research Institute Kansas City, Missouri	Oxygenation of Aqueous Bodies Using Liquid Oxygen- Loxination	17050EEY	_____ *
Infilco Products Tucson, Arizona	Powdered Carbon Treatment of Raw Sewage and Primary Effluent in Slurry Contractor Clarifiers	17050EGI	_____ *
Midwest Research Institute Kansas City, Missouri	Optimizing Lipid Biostabili- zation Processes	17050FIM	_____ *
Section 6A2 Advanced Waste Treatment Grant			
Water & Sewer Commission City of Freeport 230 West Stephenson Street Freeport, Illinois	Full Scale Parallel Activated Sludge Process Evaluation	17050ENM	127,178.00
City of Chino Chino, California	Reclamation of Wastewater by Controlled Biological Kinetics	17050DZE	_____ *
New York State Dept. of Health Albany, New York	High-Performance Bio- Treatment of Municipal Sewage	17050EDL	_____ *
San Buenaventura, City of San Buenaventura, California	Integrated Activated Sludge- Biological Filter Process	17050EEO	_____ *
Dept. of Sanitary Engineering Washington, D.C.	Primary and Secondary Treatment Pilot Plant	17050EJB	_____ *
D.C. Government of Sanitary Engineering Washington, D.C.	Use of Modified Activated Sludge Treatment to Achieve Nutrient Removal and to Provide Consistent Feed to Tertiary Treatment System	17050FAI	_____ *
Section 6A2 Advanced Waste Treatment Contract			
Union Carbide Corp. Linde Division P.O. Box 44 Tonawanda, New York	Investigation of the Use of High Purity Oxygenation in the Conventional Activated Sludge Process	17050DNW	208,714.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Roy F. Weston West Chester, Pennsylvania	Biological Treatment Pilot Plant & Sludge Disposal Facility	17050FPA	_____ *
<u>1706    Microorganisms Removal</u>			
Section 5 Research Grant			
The Board of Trustees of the University of Illinois Urbana, Illinois	New Microbial Indicators of Wastewater Chlorination Efficiency	17060EYZ	43,204.00
University of Illinois Urbana, Illinois	Disinfection of Sewage Effluents	17060DNU	29,383.00
University of Maine Orono, Maine	Effects of Chemical Ions on Virus Inactivation	17060DTO	_____ *
Section 5 Demonstration Grant			
Hebrew University Hadassah Medical School Jerusalem, Israel	The Detection and Inactivation of Enteric Viruses in Wastewater	17060EAM	_____ *
Section 5 Research Contract			
University of Cincinnati Cincinnati, Ohio	Chlorine Inactivation of Viruses in Wastewater	17060DDU	_____ *
Section 6A2 Advanced Waste Treatment Grant			
St. Michaels, Community of St. Michaels, Maryland	Controlled Treatment System	17060FAA	_____ *
<u>1707    Ultimate Disposal</u>			
Section 5 Research Grant			
Oklahoma State University of Agriculture and Applied Science Stillwater, Oklahoma	Aerobic Digestion of Organic Waste Sludge	17070DAU	47,008.00
University of Massachusetts Amherst, Massachusetts	Source Control of Water Treat- ment Waste Solids	17070DZS	60,177.00
New Mexico State University LaCruces, New Mexico	Brine Disposal Design Methodology for Advanced Waste Treatment	17070EHB	26,590.00
University of Illinois Urban, Illinois	Mechanisms of Sludge Thickening	17070DJR	4,360.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Southwest Missouri State College 901 South National Springfield, Missouri	Microbiology of Sludge DNA Analyses and Nitrogen Removal	17070DHO	16,560.00
University of Connecticut Storrs, Connecticut	Treatment Processes - Wastes Pumped from Septic Tanks	17070DKA	84,634.00
Manhattan College Bronx, New York	The Biochemistry of Anaerobic Digestion	17070DEK	_____*
University of Florida Gainesville, Florida	Studies on the Methanogenic Bacteria in Sludge	17070DJV	_____*
Syracuse University Syracuse, New York	Pipeline Flow of Solids - Liquid Suspensions	17070DUQ	_____*
Georgia Institute of Technology Engineering Experiment Station Atlanta, Georgia	Digestion of Sludges with Sodium Chloride and Sulfate	17070DYF	_____*
Section 5 Research Contract			
Aerojet General Corp. El Monte, California	Biological Methods of Sludge Dewatering	17070EVY	91,487.00
Foster D. Snell, Inc. Hanover Road Florham Park, New Jersey	Conditioning of Wastewater Sludge using SO <sub>2</sub> and Low Pressure System	17070FMJ	51,438.00
Foster D. Snell, Inc. Hanover Road Florham Park, New Jersey	Feasibility Investigation of Hydrolysis of Sludge Using Low Pressure Steam with SO <sub>2</sub> as a Hydrolytic & Utilization Studies of the resulting Hydrolysate	17070EKN	5,000.00
Resources Engineering Assoc. Inc. Stanford, Connecticut	Sludge Incineration Practice	17070DLV	_____*
Midwest Research Institute Kansas City, Missouri	Development of techniques for Estimating the Bacterial Population of Sewage Sludge	17070DRP	_____*
Monsanto Research Corp. Dayton, Ohio	Study of Utilization and Disposal of Lime Sludges Containing Phosphates	17070FBE	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Section 6A2 Advanced Waste Treatment Grant			
City of Belding City Hall Belding, Michigan	Spray Irrigation Sewage Oxidation Pond Effluent	17070FOC	118,799.00
City of Hamilton Hamilton, Ohio	Conversion of Existing Anaerobic Digesters to Heated Aerobic Digesters Full Scale	17070DIW	_____ *
City of River Falls River Falls, Wisconsin	Demonstration of Channel Aeration Process for Stabilization of Solids	17070DIZ	_____ *
Seattle, Municipality of Metropolitan Seattle, Washington	Park Development with Wet Digested Sludge	17070ENP	_____ *
District of Columbia Dept. of Sanitary Engineering Washington, D.C.	Sludge Treatment Pilot Plant	17070EOG	_____ *
Section 6A2 Advanced Waste Treatment Contract			
Ohio Agricultural Research and Development Center Wooster, Ohio	Availability, Performance, Characteristics, Cost, & Function- al Design of Equipment & Machinery for the Disposal of Sludge & Other Organic Wastes on Soils	17070EQX	22,179.00
Ohio Agricultural Research and Development Center Wooster, Ohio	Microbiology of Sewage Sludge Disposal in Soil	17070EQY	56,289.00
Engineering-Science, Inc. 150 East Foothill Blvd. Arcadia, California	Equipment Installation & Pilot Plant Operation at Morgantown, West Virginia	17070EPR	232,719.00
Rocketdyne Division North American Rockwell Corp. Canoga Park, California	Multiple Hearth Furnace Sewage Sludge Incineration	17070EBP	_____ *
Rand Development Corp. Cleveland, Ohio	Field Demonstration of Pipeline Transportation and Land Disposal Sludge Slurries	17070EFE	_____ *
Rocketdyne Division North American Rockwell Corp. Canoga Park, California	Investigation of Electro- Osmosis as a Technique for Sewage Sludge De-Watering	17070EHE	_____ *

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1708 Wastewater Renovation and Re-use</u>			
Section 5 Research Grant			
University of Colorado Civil Engineering Dept. Boulder, Colorado	Evaluation of Treatment for Urban Waste Water Re-use	17080DOI	17,439.00
Syracuse University Syracuse, New York	Mass Transfer Analysis in Reverse Osmosis Operation	17080DUU	_____*
Section 5 Demonstration Grant			
The Regents of the University of California Campus Research Office Berkeley, California	Chemical Processing of Primary Organic Waste Streams	17080DAR	57,706.00
Los Angeles County Board of Supervisors 500 West Temple Street Los Angeles, California	Water Reclamation Project for Antelope Valley	17080GCI	90.000.00
Section 5 Research Contract			
Texas Water Development Board P.O. Box 12386 Capitol Station Austin, Texas	A Study of Costs for Reusing Municipal Waste Return Flows in Selected Texas Cities	17080DIQ	29,992.00
Section 6A2 Advanced Waste Treatment Grant			
Central Contra Costa Sanitary District 1250 Springbrook Road Walnut Creek, California	Central Contra Costa County Water Renovation Project	17080FSF	322,250.00
City of Lompoc Dept. of Public Works 119 West Walnut Avenue Lompoc, California	Municipal Sewage Effluent Reclamation by Precolation with High Ground Water Conditions	17080DGC	5,550.00
Colorado Springs Colorado Springs, Colorado	Tertiary Treatment of Sewage Plant Effluent & Reuse-Power Plant Supply & Irrigation	17080DJF	_____*
Washington Suburban Sanitary Commission Hyattsville, Maryland	Model Advanced Waste Treatment Plant	17080DZY	_____*
Santee County Water District Santee, California	Renovation of Waste Effluent for Recreational and Potable Water Supply Uses	17080EDV	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Improvement District No. 1 Irvine Ranch Water District Irvine, California	Tertiary Sewage Treatment for Reuse	17080EDW	_____*
Dallas, City of Dallas City Water Utilities Dallas, Texas	Demonstration Project Dallas Water Reclamation Research Center	17080EKG	_____*
Colorado Springs, City of Colorado Springs, Colorado	Tertiary Treatment of Sewage Plant Effluent and Reuse, Pikes Peak	17080FAB	_____*
Nassau, County of Public Works Mineola, New York	Advanced Waste Treatment for Water Reclamation and Reuse by Injection	17080FAF	_____*
Section 6A2 Advanced Waste Treatment Contract			
Los Angeles County Sanitation District No. 2 2020 Beverly Blvd. Los Angeles, California	Pomona Research and Develop- ment Facility	17080EDE	347,308.00
Office of Saline Water U.S. Dept. of the Interior Washington, D.C.	Joint OSW WQO Study: The Economics of Combined Seawater Distillation	17080DPQ	_____*
Los Angeles County Board of Supervisors Los Angeles, California	Wastewater Reclamation Project for Antelope Valley	17080ESH	_____*
<u>1709 Waste Treatment Optimization</u>			
Section 5 Research Grant			
Kansas State University Manhattan, Kansas	Optimal Design of Waste Treat- ment Systems	17090ELL	34,592.00
Oklahoma State University College of Engineering Stillwater, Oklahoma	Biological Concepts for Design and Operation of the Activated Sludge Process	17090FQJ	31,481.00
Texas A&M Research Foundation Texas A&M University College Station, Texas	Tertiary Treatment by Carbon Filtration	17090DHA	20,894.00
University of Texas Austin, Texas	Center of Competence for Document Processing in the Area of Wastewater Treatment	17090EPW	24,220.00
Fourth International Conference on Water Pollution, U.S. of America National Committee Washington, D.C.	Fourth International Conference on Water Pollution Research	17090DDP	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
The Regents of the University of Michigan Ann Arbor, Michigan	Electrical Stimulation of Microbial Waste Treatment	17090DGJ	_____*
Section 5 Demonstration Grant			
Missouri Basin Engineering Health Council State Office Building Cheyenne, Wyoming	International Symposium and State-of-the-Art for Waste Treatment Lagoons	17090EHX	32,900.00
California Host Committee International Association on Water Pollution Research 635 Davis Hall University of California Berkeley, California	Fifth International Conference on Water Pollution Research	17090EQU	70,000.00
Section 5 Reserach Contract			
Process Reseach, Inc. 56 Rogers Street Cambridge, Massachusetts	Mathematical Model of the Electrodialysis Process for Advanced Waste Treatment	17090FTA	4,135.00
Bechtel Corp. Fifty Beale Street San Francisco, California	Determining The Cost Estimating Guidelines for Advanced Wastewater Treatment Systems	17090DRU	49,420.00
Ryckman, Edgerley, Tomlinson, and Associates 500 Coronet Building 225 South Meramec Avenue St. Louis, Missouri	Domestic Algae Lagoon Perform- ance and the State of Lagoon Technology	17090FDO	26,000.00
Black and Veatch Consulting Engineers Kansas City, Missouri	Establish Construction, Operating and Maintenance Cost for Unit Processes of Waste	17090DAN	_____*
IIT Research Institute Chicago, Illinois	Mathematical Model for Waste- water Treatment by "Ion Exchange"	17090DDX	_____*
American Public Works Ass. Chicago, Illinois	Computer Control of Sewage Treatment & Water Quality	17090DOY	_____*
Quirk, Lawler & Matusky Engineers New York, New York	Sludge Dewaterings by Centrifuge-Computerization of Process Design, Equipment Selection and Cost Estimation	17090DPX	_____*
IIT Research Institute Chicago, Illinois	Ammonia Stripping Mathematical Model for Wastewater Treatment	17090DRN	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
O'Brien & Gere Consulting Engineers & Land Surveyors Syracuse, New York	Effect of Flow Equalization on Conventional Treatment	17090EEV	_____ *
Los Angeles, City of Los Angeles, California	Characterization of the Activated Sludge Process at the Hyperion Treatment Plant	17090FJU	_____ *
Rex Chainbelt, Inc. Milwaukee, Wisconsin	A Mathematical Model for the Final Clarifier of an Activated Sludge Process	17090FJW	_____ *
Section 6A2 Advanced Waste Treatment Contract			
Engineering Science, Inc. 150 East Foothill Blvd. Arcadia, California	Test in Microscreening Equipment and Develop Math- ematical Model	17090EEM	187,210.00

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## 1800 - WATER QUALITY REQUIREMENTS RESEARCH

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1801 - Municipal Uses</u>			
Section 5 Research Grant			
University of Connecticut Storrs, Connecticut	Characterization of Taste and Odors in Water Supplies	18010DGH	_____*
Section 5 Research Contract			
Little, Arthur D. Inc. Cambridge, Massachusetts	Chemical Pollution of Fresh Water & Health	18010DPV	_____*
<u>1802 Freshwater Industrial Uses</u>			
Section 5 Research Grant			
Oregon State University Corvallis, Oregon	Impairment of the Flavor of Fish by Water Pollutants	18020DDM	_____*
Section 5 Research Contract			
Food and Drug Research Laboratories Maspeth, New York	Study to Ascertain Water Untreated - Requirements of American Industries	18020DUS	_____*
<u>1804 - Freshwater Recreational Uses</u>			
Section 5 Research Grant			
University of Wisconsin Madison, Wisconsin	Tissue Analysis for Nutrient Assay of Natural Waters	18040DGI	23,450.00
The Regents of the University of Michigan 3014 Administration Building Ann Arbor, Michigan	Swimmer's Itch - Intermediate Hosts, Distribution and Ecology	18040FIC	21,757.00
Section 5 Research Contract			
Aerojet - General Corp. El Monte, California	Investigation into Recreational Water Uses Phase II	18040DAZ	78,875.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
<u>1805 - Freshwater Fishes, Other Freshwater Life, and Wildlife</u>			
Section 5 Research Grant			
University of Idaho College of Forestry Moscow, Idaho	Pollution Effects of Adult Steelhead Migration	18050DMB	46,200.00
Ohio State University Research Foundation 1314 Kinnear Road Columbus, Ohio	Toxicity of Selected Metals To Conditioned Fish	18050FBK	55,789.00
Indiana University Foundation Box F Bloomington, Indiana	Acid Mines Pollution Effects on Lake Biology	18050EEC	22,430.00
University of Massachusetts Amherst, Massachusetts	Pesticide Effects on Larval Marine Fishes	18050DBT	6,840.00
University of Minnesota Department of Entomology St. Paul, Minnesota	Influence of Hydrogen Sulfide on Fish and Arthropods	18050DCG	83,013.00
University of Minnesota Minneapolis, Minnesota	Controlled Temperatures Regimes in Outdoor Experimental Ponds	18050EUI	25,138.00
University of Minnesota Minneapolis, Minnesota	Lake Superior Periphyton in Relation to Water Quality	18050DBM	30,025.00
University of New Hampshire Durham, New Hampshire	Environmental Requirements of Selected Estuarine Ciliated Protozoa	18050FBW	24,838.00
The Research Foundation of the State University of New York P.O. Box 7126 Albany, New York	Physiological Adaptation of two Species of fish, <i>fundulus</i> , <i>heteroclitus</i> & <i>salmo gairdneri</i> to Altered Water Quality Parameters	18050DRJ	35,824.00
University of Oklahoma Research Institute 1808 Newton Drive Norman, Oklahoma	Culture of Calanoid Copepods for use as Bioassay organisms	18050ELT	17,584.00
Academy of Natural Sciences of Philadelphia 19th and the Parkway Philadelphia, Pennsylvania	Studies on Immature Chironomidae of Eastern U.S.	18050DVS	20,060.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
California Institute of Technology 1201 E. California Boulevard Pasadena, California	Marine Waste Disposal & Sea Urchin Ecology	18050DNV	72,880.00
University of Georgia Athens, Georgia	Southeastern Aquatic Insects as Related to Water Quality	18050DFQ	23,061.00
College of Guam Division of Biosciences and Marine Studies P.O. Box EK Agana, Guam	A Study and Ecological Succession following Natural and Man-Induced Changes on a Tropical Reef	18050EUK	46,426.00
Graduate School of Public Health University of Pittsburgh Pittsburgh, Pennsylvania	Toxicity of Iron to Fish and Fish Organisms	18050DJF	47,826.00
Graduate School of Oceanography, University of Rhode Island Kingston, Rhode Island	Sensitivity of Benthic Microflora to Pollution Gradients	18050DXU	12,649.00
University of Washington Seattle, Washington	Water Quality Requirements and Effect of Water Pollution on Freshwater and Marine Organisms	18050EPZ	20,580.00
Fisheries Research Institute University of Washington Seattle, Washington	Responses of Fish to Environmental Stress	18050EBK	57,336.00
University of Miami Miami, Florida	Biologically Allowable Thermal Pollution Limits	18050DET	74,004.00
De Pauw University Greencastle, Indiana	The Effects of Inorganic Sediment on Stream Ecosystems	18050DWC	13,922.00
Oregon State University Corvallis, Oregon	Development of Dissolved Oxygen Criteria for Freshwater Fish	18050DJZ	38,552.00
State of Washington Dept. of Fisheries Olympia, Washington	Development of an In-Situ Marine Bioassay with Clams	18050DOJ	32,436.00
University of Rhode Island Kingston, Rhode Island	Chemical Responses by Marine Organisms to Stress II	18050DTX	31,871.00
Virginia Polytechnic Institute Blacksburg, Virginia	Stream Faunal Recovery after Strip-mine Reclamation	18050DOH	7,400.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Montana State University Bozeman, Montana	The Limnology of Yellowtail Reservoir and The Big Horn River	18050DBW	44,525.00
Dept. of Fisheries and Wildlife Oregon State University Corvallis, Oregon	Impairment of the Flavor of Fish by Water Pollution	18050DDM	28,890.00
University of the Pacific Stockton, California	Environmental Biology of Tomales Bay	18050DFP	34,815.00
Institute of Marine Science University of Alaska College, Alaska	Biological Effects of Heavy Metal Pollution	18050DLW	32,647.00
Michigan State University East Lansing, Michigan	Toxic Action of Water Soluble Pollutants on Freshwater Fish	18050DST	12,288.00
Oregon State University Corvallis, Oregon	Effects of Logging on Growth of Juvenile Coho Salmon	18050FKT	11,985.00
Dept. of Fisheries and Wildlife Oregon State University Corvallis, Oregon	Literature Research on Water Quality Requirements and Toxicology of Fishes	18050FQW	9,993.00
University of Miami Institute of Marine & Atmospheric Sciences Miami, Florida	The Biology of Tropical Bottom Invertebrates	18050DMV	46,524.00
University of Miami Rosenstiel School of Marine and Atmospheric Sciences Miami, Florida	Effects of Thermal Pollution on Biota of Biscayne Bay	18050DFU	107,562.00
Oregon State University Dept. of Microbiology Corvallis, Oregon	Relationship of Temperature to Diseases of Salmonid Fish	18050DIJ	48,259.00
Rosenstiel School of Marine and Atmospheric Sciences University of Miami Coral Gables, Florida	Ecology of Postlarval Fishes of Southern Biscayne Bay	18050DIU	77,030.00
Texas A&M Research Foundation College Station, Texas	Toxicity of Metals to Marine Phytoplankton Cultures	18050DUI	26,219.00
Texas A&M Research Foundation College Station, Texas	Heavy Metals and Locomotion in Fish	18050DWQ	68,142.00

LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Western Washington State College Bellingham, Washington	Effects of Pollutants on Submarine Plant Synecology	18050DXI	14,739.00
Pennsylvania State University University Park, Pennsylvania	Cytopathology in Fish Exposed to Stream Pollutants	18050DXJ	31,187.00
Colorado State University Fort Collins, Colorado	Effects of Chemical Variations in Aquatic Pollutants	18050DYC	29,827.00
Woods Hole Oceanographic Institution Woods Hole, Massachusetts	Interaction Between Organisms and Oil Pollution	18050EBN	56,583.00
Eastern New Mexico University Portales, New Mexico	The Chironomidae of California	18050EOA	27,660.00
University of Texas Austin, Texas	Investigation of Texas Soil Algae	18050DBR	_____*
University of California Davis, California	Limnology of Lake Tahoe Emphasizing Water Quality	18050DBU	_____*
University of Washington Seattle, Washington	Sublethal Amounts of Organic Insecticides and Fish	18050DBV	_____*
New York University City College New York, New York	Structure & Function of a New Sulfolipid	18050DCW	_____*
University of Georgia Dept. of Entomology Athens, Georgia	Studies on Southeastern Aquatic Insects	18050DFQ	_____*
Washington State University Pullman, Washington	The Biology & Chemistry of Sphaerotilus	18050DGL	_____*
Eastern New Mexico University Portales, New Mexico	Cytotaxonomy & Related Studies of Holarctic Midges	18050DHF	_____*
University of Washington Fisheries Research Institute Seattle, Washington	Estuarine Ecology Research	18050DHM	_____*
Iowa State University Ames, Iowa	Ecology of Diatoms in Hardwater Habitats	18050DIE	_____*
University of Michigan Ann Arbor, Michigan	A Detailed Study of Lake Michigan Plankton Diatoms	18050DKC	_____*
University of Alaska College, Alaska	Ecology & Nitrogen Cycle in a Marine Plant Community	18050DKX	_____*

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of Alaska Institute of Marine Science College, Alaska	Biological Effects of Heavy Metal Pollution	180 50DLW	_____ *
Pennsylvania State University University Park, Pennsylvania	Fish and Food Organisms in Mine Acid Waters of Pennsylvania	180 50DOG	_____ *
Virginia Polytechnic Institute Blacksburg, Virginia	Stream Faunal Recovery After Strip-Mine Reclamation	180 50DOH	_____ *
University of Texas Austin, Texas	Bactericidal Effects of Algae on Enteric Organisms	180 50DOL	_____ *
University of Wisconsin Madison, Wisconsin	Significance of Arthrobacter in Ecology of Water & Soil	180 50DPK	_____ *
Utah State University Logan, Utah	Food Requirements of Young Mountain Whitefish	180 50DPL	_____ *
Winona State College Winona, Minnesota	Mayflies and Caddisflies as Water Quality Indicators	180 50DQH	_____ *
University of Miami Miami, Florida	Effects of Pesticides on Marine Animals	180 50DRL	_____ *
Central State University Wilberforce, Ohio	Sublethal Influence of Pollutants on Fish Metabolism	180 50DWL	_____ *
Eastern Illinois University Dept. of Zoology Charleston, Illinois	Biological Survey of Streams of Coles County, Illinois	180 50DZZ	_____ *
Utah Division of Fish and Game Salt Lake City, Utah	Pollution as a Result of Fish Cultural Activities	180 50EDH	_____ *
Virginia Polytechnic Institute Blacksburg, Virginia	Effects of Toxicants Upon Fish Movement Patterns	180 50EDP	_____ *
Virginia Polytechnic Institute Blacksburg, Virginia	Toxicants and the EKG and Respiration of Fish	180 50EDQ	_____ *
University of Pacific Stockton, California	Environmental Biology of Tomales Bay	180 50DFP	_____ *

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
Academy of Natural Sciences of Philadelphia Philadelphia, Pennsylvania	Factors Affecting the Structure of Diatoms	18050DIY	_____*
Oregon State University Corvallis, Oregon	Development of Dissolved Oxygen Criteria for Freshwater Fish	18050DJZ	_____*
University of Miami Institute of Marine & Atmospheric Sciences Miami, Florida	The Biology of Tropical Bottom Invertebrates	18050DMV	_____*
Michigan State University Dept. of Physiology East Lansing, Michigan	Toxic Action of Water Soluble Pollutants of Freshwater Fish	18050DST	_____*
University of Rhode Island Kingston, Rhode Island	Chemical Responses by Marine Organisms to Stress	18050DTX	_____*
Section 5 Demonstration Grant			
University of Hawaii 2444 Dole Street Honolulu, Hawaii	Thermal Loading Effects on The Hawaiian Marine Biota	18050DDN	16,451.00
University of Michigan Dept. of Environmental Health Ann Arbor, Michigan	Field Studies of Pesticide Effects on Fishes	18050DLO	17,013.00
Texas Christian University Forth Worth, Texas	Effects of Selected Pollutants on Certain Game & Rough Fish	18050DBB	_____*
Section 5 Research Contract			
Smithsonian Tropical Research Institute P.O. Box 2072 Balboa, Canal Zone	Fundamental Analysis for Determining the Effects of Oil Pollution on the Ecology of a Tropical Shore	18050EFV	79,375.00
Westinghouse Electric Corp. Pittsburgh, Pennsylvania	Study of Effluent Effects on the Key West Desalination Plant	18050GBX	189,690.00
Smithsonian Institution Washington, D.C.	Preparation of Identification Manuals for Aquatic Invertebrates Important to Water Pollution Control	18050ELD	86,500.00
Aquatic Sciences, Inc. 2624 N.W. 2nd Avenue Boca Raton, Florida	A study of Acceptable Temperature Range for Selected Species of Fish	18050GAB	158,403.00

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LOCATION AND RECIPIENT	PROJECT TITLE	NUMBER	AMOUNT
University of Rhode Island Graduate School of Oceanography Kingston, Rhode Island	Collection and Establishment in Culture of Species and Strains of Marine Phytoplanktonic Organisms	18050GFG	162,664.00
Westinghouse Electric Corp. Pittsburgh, Pennsylvania	Study of the Key West Brine Out Fall	18050DAI	2,910.00
Dept. of the Interior Bureau of Commercial Fisheries Washington, D.C.	Columbia River Thermal Effects Study	18050DGF	50,000.00
Division of Fishery Research Bureau of Sport Fisheries and Wildlife Washington, D.C.	Fish Mercury Studies in the Great Lakes	18050GB0	38,330.00
University of Rhode Island Graduate School of Oceanography Kingston, Rhode Island	Establishment of the University of Rhode Island Phytoplankton Collection	18050POF	43,602.00
Aquatic Sciences, Inc. Boca Raton, Florida	Synergistic Effects of Sub- Lethal Pollution on the Develop. of Selected Warm- Temperate & Sub-Tropical Fishes & Crustaceans	18050DLR	_____*
University of Michigan Ann Arbor, Michigan	Copper Toxicity to Fishes in Natural Waters	18050EEP	_____*
University of Montana Missoula, Montana	Water Quality Requirements of Aquatic Insects	18050FLS	_____*
University of Michigan Ann Arbor, Michigan	Effects of Water Temperature and/or Dissolved Oxygen Requirements	18050FOG	_____*

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