

WATER POLLUTION CONTROL RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS

1968 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

TRAINING GRANTS

RESEARCH FELLOWSHIPS



**U.S. DEPARTMENT OF THE INTERIOR
Federal Water Pollution Control Administration
Office of Research and Development
Washington, D.C. 20242**

WATER POLLUTION CONTROL
RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS

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U. S. DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
OFFICE OF RESEARCH AND DEVELOPMENT
WASHINGTON, D. C. 20242

F O R W A R D

Section 5 and 6 of the Federal Water Pollution Control Act, Public Law 660, as amended, authorizes 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 and Contracts 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 improvement 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 wastes.

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
U. S. Department of the Interior
Federal Water Pollution Control Administration
Washington, D. C. 20242

Training Grants and Research Fellowships are authorized in Section 5 of the Federal Water Pollution Control Act, Public Law 660 as amended. The purposes of these grants are to encourage cooperation with, and to assist appropriate agencies, institutions, and individuals in the conduct of training relating to the causes, control and prevention of water pollution.

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

Division of Manpower and Training
Office of Operations
Training Grants Branch
U. S. Department of the Interior
Federal Water Pollution Control Administration
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, the Office of Research and Development of the Federal Water Pollution Control Administration, like every program or activity receiving financial assistance from the Department of the Interior, must be operated in compliance with this law.

WATER POLLUTION CONTROL
RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS
1968 GRANT AND CONTRACT AWARDS

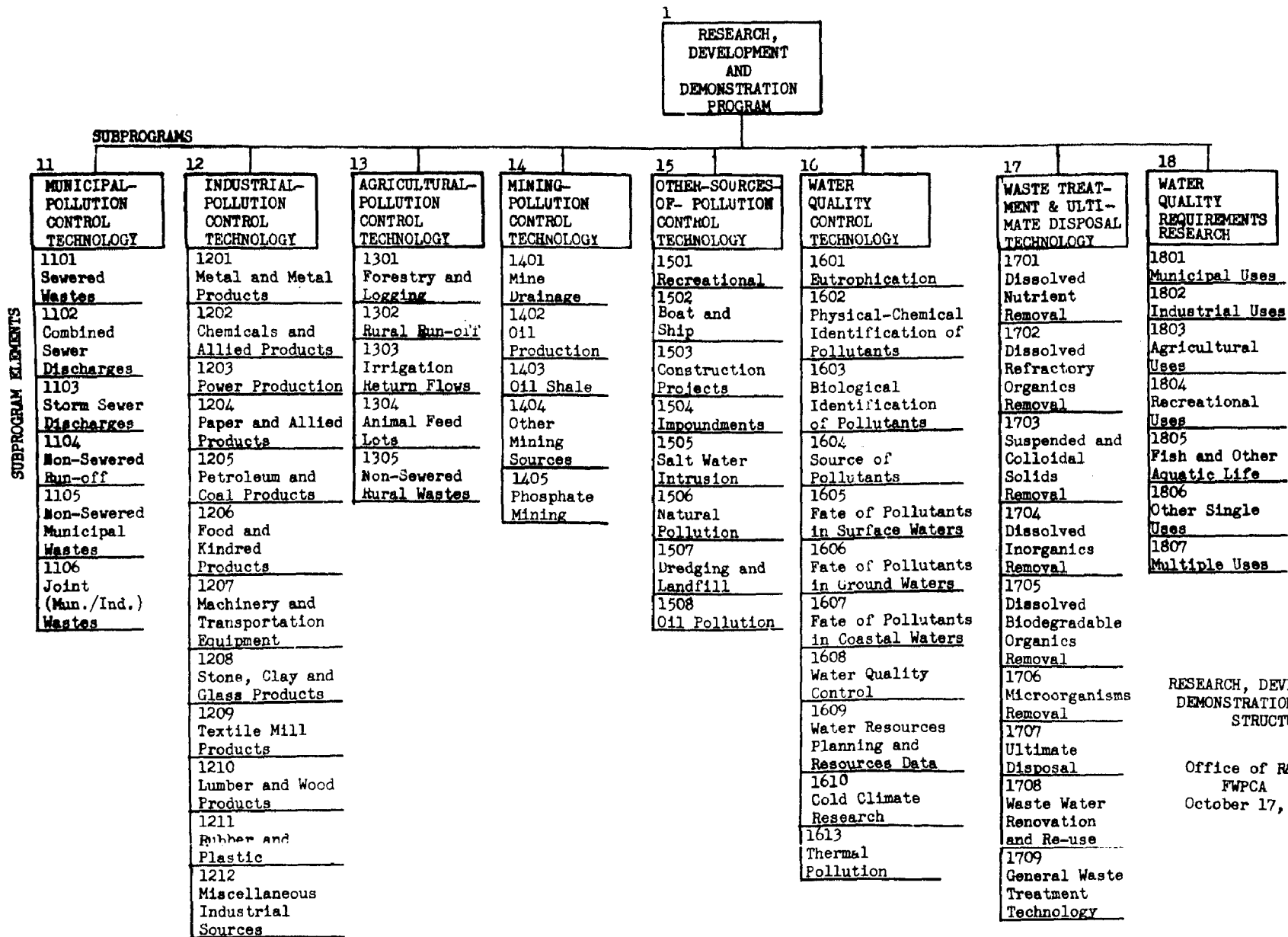
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WATER POLLUTION CONTROL
 RESEARCH, DEVELOPMENT, DEMONSTRATION, AND TRAINING PROJECTS
 SUMMARY OF AWARDS
 FISCAL YEAR 1968

| Projects | Projects Awarded | Amount Awarded |
|--------------------------------------|---------------------|-------------------|
| Research Grants | 212 | \$6,359,354 |
| Research Contracts | 64 | 4,259,212 |
| Demonstration Grants | 49 | 2,240,262 |
| Storm & Combined Sewer Grants | 6 | 3,530,992 |
| Storm & Combined Sewer Contracts | 24 | 5,275,059 |
| Advanced Waste Treatment Grants | 22 | 5,389,620 |
| Advanced Waste Treatment Contracts | 4 | 668,141 |
| Industrial Waste Treatment Grants | 34 | 7,311,581 |
| Industrial Waste Treatment Contracts | 2 | 335,847 |
| Training Grants | 84 | 3,364,997 |
| Research Fellowships | 113 | 632,991 |
| ALL PROJECTS | 614 | \$39,368,056 |



RESEARCH, DEVELOPMENT AND
DEMONSTRATION PROGRAM
STRUCTURE

Office of R&D
FWPCA
October 17, 1968

WATER POLLUTION CONTROL
RESEARCH GRANTS FISCAL YEAR 1968
SUMMARY OF GRANT AWARDS BY STATES

| State | Institutions and Agencies | Number Awarded | Amount Awarded |
|----------------------|------------------------------|-------------------|-------------------|
| Alabama | 1 | 2 | \$ 27,358 |
| Alaska | 1 | 4 | 129,629 |
| Arizona | 1 | 1 | 5,577 |
| Arkansas | 1 | 1 | 18,166 |
| California | 9 | 19 | 536,297 |
| Colorado | 1 | 1 | 30,779 |
| District of Columbia | 2 | 2 | 28,652 |
| Florida | 4 | 10 | 342,238 |
| Georgia | 2 | 3 | 135,590 |
| Illinois | 4 | 9 | 255,986 |
| Indiana | 2 | 3 | 59,555 |
| Iowa | 2 | 3 | 66,784 |
| Kansas | 3 | 4 | 66,107 |
| Kentucky | 1 | 1 | 16,682 |
| Maine | 2 | 3 | 82,095 |
| Maryland | 2 | 3 | 93,426 |
| Massachusetts | 5 | 12 | 390,375 |
| Michigan | 3 | 11 | 329,980 |
| Minnesota | 3 | 8 | 237,788 |
| Mississippi | 1 | 2 | 30,541 |
| Missouri | 1 | 3 | 85,087 |
| Montana | 2 | 2 | 43,440 |
| Nevada | 1 | 1 | 37,450 |
| New Hampshire | 1 | 1 | 39,397 |
| New Jersey | 1 | 1 | 101,806 |
| New Mexico | 2 | 2 | 46,065 |
| New York | 8 | 17 | 488,035 |
| North Carolina | 2 | 2 | 83,261 |
| Ohio | 5 | 8 | 164,592 |
| Oklahoma | 1 | 1 | 29,409 |
| Oregon | 1 | 12 | 378,440 |
| Pennsylvania | 6 | 9 | 343,405 |
| Rhode Island | 1 | 4 | 52,954 |
| South Carolina | 1 | 1 | 19,909 |
| Tennessee | 2 | 6 | 220,909 |
| Texas | 5 | 11 | 272,196 |
| Utah | 2 | 3 | 195,370 |
| Virginia | 1 | 2 | 59,154 |

WATER POLLUTION CONTROL

RESEARCH GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES (Cont'd)

| State | Institutions and Agencies | Number Awarded | Amount Awarded |
|----------------|------------------------------|-------------------|-------------------|
| Washington | 3 | 17 | \$ 523,139 |
| West Virginia | 1 | 1 | 3,068 |
| Wisconsin | 1 | 4 | 254,928 |
| <u>Foreign</u> | <u>2</u> | <u>2</u> | <u>33,735</u> |
| 41 States | 100 | 212 | \$ 6,359,354 |

Active Research Grants 1968

2 Foreign Countries
 32 States
 67 Institutions and Agencies
 112 Grants

WATER POLLUTION CONTROL

RESEARCH GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION ACT, AS AMENDED

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|---------------|-----------|--------|
| <u>ALABAMA</u> | | | | |
| <u>Auburn University</u> | | | | |
| <u>Auburn</u> | | | | |
| Funderburk, H. Hanly, Jr. Ph.D. Botany and Plant Pathology Dept. | Effect of Herbicides on an Aquatic Environment | WP-00636-04S1 | 1805 | \$ 937 |
| Funderburk, H. Hanly, Jr. Ph.D. Botany and Plant Pathology Dept. | Effect of Herbicides on an Aquatic Environment | WP-00636-05 | 1805 | 26,421 |
| <u>ALASKA</u> | | | | |
| <u>University of Alaska</u> | | | | |
| <u>College</u> | | | | |
| Birkholz, Norman J., Ph.D. Dept. of Chemistry and Chemical Engineering | Organic Compounds in Alaska Permafrost Groundwater | WP-01018-02 | 1606 | 18,964 |
| Button, D. K., Ph.D. Institute of Marine Science | Biological Effects of Heavy Metal Pollution | WP-01240-01 | 1805 | 29,607 |
| Dugdale, Vera A., Ph.D. Institute of Marine Science | Dynamics of the Nitrogen Cycle in Lakes | WP-00422-05S1 | 1601 | 4,950 |

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|-----------|-----------|
| <u>ALASKA</u> | | | | |
| <u>University of Alaska</u> <u>College</u> | | | | |
| Dugdale, Vera A., Ph.D. Institute of Marine Science | Dynamics of the Nitrogen Cycle in Lakes | WP-00422-06 | 1601 | \$ 46,272 |
| Goering, John J., Ph.D. Institute of Marine Science | Ecology and Nitrogen Cycle in a Marine Plant Community | WP-01246-01 | 1805 | 29,836 |
| <u>ARIZONA</u> | | | | |
| <u>University of Arizona</u> <u>Tucson</u> | | | | |
| Bier, Milan, Ph.D. Dept. of Agricultural Biochemistry | Water Purification by Large Scale Electrophoresis | WP-00783-03 | 1704 | _____* |
| McConnell, William J., Ph.D. Arizona Cooperative Fishery Unit | Limnological Effects of Organic Watershed Litter | WP-01015-02 | 1506 | 5,577 |
| <u>ARKANSAS</u> | | | | |
| <u>University of Arkansas</u> <u>Fayetteville</u> | | | | |
| Testerman, Maurice K., Ph.D. Graduate Institute of Technology | A Continuous Multiparameter Water Quality Monitor | WP-00044-07 | 1608 | 18,166 |

*Active in FY 1968-Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------|-----------|--------|
| <u>CALIFORNIA</u> | | | | |
| <u>California Institute of Technology</u> <u>Pasadena</u> | | | | |
| Brooks, Norman H., Ph.D. W. M. Keck Laboratory | Dispersion in Hydrologic and Coastal Environments | WP-01256-01 | 1607 | _____* |
| Brooks, Norman H., Ph.D. W. M. Keck Laboratory | Dynamics of Density-Strati- fied Ground Water Flow | WP-00680-03S1 | 1606 | _____* |
| McKee, Jack E., Ph.D. Dept. of Environmental Health | Mycological Phenomena in Sewage Spreading Basins | WP-00988-02 | 1606 | _____* |
| Morgan, James J., Ph.D. Div. of Engineering and Applied Science | The Chemistry of Manganese in Natural Waters | WP-00941-03 | 1602 | 37,297 |
| North, Wheeler J., Ph.D. W. M. Keck Laboratory | Marine Waste Disposal and Sea Urchin Ecology | WP-00697-04 | 1805 | 63,454 |
| <u>Los Angeles State College Foundation</u> <u>Los Angeles</u> | | | | |
| Anderson, Dean A., Ph.D. Dept. of Microbiology and Public Health | Bacteriology of Biodegradable Surfactants | WP-00961-03 | 1705 | 9,675 |
| <u>Ludwig Engineering and Science Research Foundation</u> <u>Arcadia</u> | | | | |
| Ludwig, Harvey F. President | Floc Strength and Filter- ability of Pre-Treated Water | WP-00813-02S1 | 1703 | 12,363 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|-----------|--------|
| <u>CALIFORNIA</u> | | | | |
| <u>Sacramento State College Foundation</u> <u>Sacramento</u> | | | | |
| Kerri, Kenneth D., Ph.D. School of Engineering | Complementary-Competitive Aspects of Water Storage | WP-01008-02 | 1609 | _____* |
| <u>San Diego County</u> <u>San Diego</u> | | | | |
| England, Beatrice L., A.B. San Diego Public Health Laboratory | Quantitative Virologic Studies of Sewage | WP-01198-01 | 1706 | _____* |
| <u>Stanford University</u> <u>Stanford</u> | | | | |
| Franzini, Joseph B., Ph.D. Dept. of Civil Engineering | Further Studies of Infiltra- tion | WP-00246-07 | 1606 | 28,988 |
| Linsley, Ray K., B.S. Civil Engineering Dept. | Effects of Water Pollution in San Francisco Bay | WP-01194-01 | 1608 | 944 |
| McCarty, Perry L., Sc.D. Dept. of Civil Engineering | Algal Degradation in Waterways | WP-01037-02 | 1601 | 25,950 |
| McCarty, Perry L., Sc.D. Dept. of Civil Engineering | Pesticides Distribution and Degradation in Waterways | WP-00715-03 | 1602 | _____* |
| <u>University of California</u> <u>Berkley</u> | | | | |
| Fuerstenau, Douglas W., Sc.D. Dept. of Mineral Technology | Adsorption of Alkylaryl Surfactants on Polar Solids | WP-00692-03 | 1702 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------------------------|--------------------|--------|
| <u>CALIFORNIA</u> | | | | |
| <u>University of California</u> <u>Berkley</u> | | | | |
| Goren, Simon L., D. Eng. Dept. of Chemical Engineering | Preparation of Monodisperse Emulsions | WP-01068-02 | 1702 | 22,057 |
| Jenkins, David I., Ph.D. Dept. of Civil Engineering | Transient Loading Effects in the Activated Sludge Process | WP-00787-04 | 1703, 1705 1706 | 36,834 |
| Kaufman, Warren J., Sc.D. Div. of Hydraulic & Sanitary Engineering | Orthokinetic Flocculation of Heterodispersed Systems | WP-00658-04 | 1703 | 30,235 |
| McGauhey, Percy H., M.S. Sanitary Engineering Research Laboratory | Soil Mantle as a Waste Water Treatment System | WP-00764-02S1 WP-00764-02S2 | 1709 | _____* |
| McGauhey, Percy H., M.S. Sanitary Engineering Research Laboratory | Economic Evaluation of Water Quality | WP-00597-05 | 1609 | 25,859 |
| Oswald, William J., Ph.D. Insitute of Engineering Research | Nutritional and Disease Transmitting Potential of Sewage Grown Algae | WP-00026-05S1 | 1701 | _____* |
| Oswald, William J., Ph.D. School of Public Health | Kinetics of Algal Systems in Waste Treatment | WP-00975-01A1 | 1701, 1705 | 461 |
| Oswald, William J., Ph.D. School of Public Health | Kinetics of Algal Systems in Waste Treatment | WP-00975-02 | 1701, 1705 | 42,558 |
| Pearson, Erman A., Sc.D. Div. of Hydraulic and Sanitary Engineering | Reaction Kinetics of Anaerobic Fermentation Systems | WP-00830-03 | 1707 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|------------------------------|-----------|-----------|
| <u>CALIFORNIA</u> | | | | |
| <u>University of California at Davis</u> | | | | |
| Biggar, James W., Ph.D. Dept. of Water Science and Engineering | Sorption and Movement of Polluted Water in Soil | WP-00081-07 | 1606 | \$ 27,707 |
| Goldman, Charles R., Ph.D. Dept. of Zoology | Limnology of Lake Tahoe Emphasizing Water Quality | WP-01188-01 | 1805 | _____* |
| Smith, Joe M., Sc.D. Dept. of Chemical Engineering | Photochemical Reaction in Water and Air Pollution | WP-00952-02 | 1702 | _____* |
| Watt, Kenneth E.F., Ph.D. Dept. of Zoology | Effects of Cover in Aquatic Predator-Prey Systems | WP-00929-02 | 1805 | _____* |
| <u>University of California at Irvine</u> | | | | |
| Scherfig, Jan W., Ph.D. | Effect of Phosphorus Removal Processes on Algal Growth | WP-01446-01 | 1601 | 24,596 |
| <u>University of California at Los Angeles</u> | | | | |
| Bush, Albert F., Ph.D. Dept. of Engineering | Tertiary Treatment in the Purification of Wastewater | WP-01321-01 | 1708 | 27,472 |
| Graves, Glenn W., Ph.D. Graduate School of Business | A Mathematical Model for Regional Treatment of Water Pollution Systems | WP-01210-02 | 1609 | 34,159 |
| <u>University of the Pacific Stockton</u> | | | | |
| Smith, Edmund H., Ph.D. Pacific Marine Station | Environmental Biology of Tomaes Bay | WP-01061-01SI WP-01061-02 | 1601 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|-------------|-----------|-----------|
| <u>CALIFORNIA</u> | | | | |
| <u>University of Southern California</u> <u>Los Angeles</u> | | | | |
| Foxworthy, James E., Ph.D. Allan Hancock Foundation | Eddy Diffusion and Bacterial Reduction in Waste Fields | WP-00931-03 | 1605 | \$ 45,457 |
| Tibby, Richard B., Ph.D. Allan Hancock Foundation | Ultraviolet Absorption in Coastal Waters | WP-00762-04 | 1607 | 40,231 |
| <u>COLORADO</u> | | | | |
| <u>Colorado State University</u> <u>Fort Collins</u> | | | | |
| Everhart, Harry W., Ph.D. Dept. of Fishery and Wildlife Biology | Effects of Chemical Variations in Aquatic Environments | WP-01398-01 | 1805 | 30,779 |
| Hanan, Joe, J., Ph.D. Dept. of Horticulture | Irrigation Regimes for Water Conservation | WP-00780-03 | 1303 | _____* |
| Simons, Daryl B., Ph.D. Engineering Research Center | XII IAHR Congress and International Hydrologic Symposium | WP-01123-01 | 1606 | _____* |
| <u>University of Colorado</u> <u>Boulder</u> | | | | |
| West, Ronald E., Ph.D. Dept. of Chemical Engineering | The Effect of Porous Structure on Carbon Activation | WP-00853-03 | 1702 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---------------|-----------|--------|
| <u>CONNECTICUT</u> | | | | |
| <u>University of Connecticut</u> <u>Storrs</u> | | | | |
| Collins, Ralph P., Ph.D. Department of Botany | Study of Microorganisms Inducing Tastes and Odors in Water | WP-00005-06 | 1801 | _____* |
| Trainer, Francis R., Ph.D. Dept. of Botany | A Study of <u>Scenedesmus</u> Species in Culture | WP-00850-03 | 1805 | _____* |
| <u>DISTRICT OF COLUMBIA</u> | | | | |
| <u>Individual</u> | | | | |
| Levine, Benjamin S., Ph.D. Washington | USSR Literature On Water Supply and Pollution Control | WP-00305-09 | 1608 | 10,725 |
| <u>The Catholic University of America</u> <u>Washington</u> | | | | |
| Bruck, Stephan D., Ph.D. Dept. of Chemical Engineering | Sorption Behavior of Organic Pyropolymers in Aqueous Solution | WP-01371-01A1 | 1702 | 17,927 |
| <u>Water Pollution Control Federation</u> <u>Washington</u> | | | | |
| Fuhrman, Ralph E., D. Eng. Executive Secretary | Research Supplement-Journal Water Pollution Control Federation | WP-01125-01A1 | 1609 | _____* |
| <u>FLORIDA</u> | | | | |
| <u>Individual</u> | | | | |
| Lackey, James B., Ph.D. Melrose | Taxonomy and Ecology of Inshore Marine Microbiota | WP-00901-04 | 1805 | 7,998 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|------------|-----------|
| <u>FLORIDA</u> | | | | |
| <u>Florida State University</u> <u>Tallahassee</u> | | | | |
| Menzies, Robert J., Ph.D. Dept. of Oceanography | Distribution of Life with Depth | WP-01327-01 | 1805 | \$ 38,790 |
| <u>University of Florida</u> <u>Gainesville</u> | | | | |
| Brezonik, Patrick L., M.S. Earle B. Phelps Laboratory | Chemistry of Nitrogen in Natural Waters | WP-01203-01 | 1601 | 32,582 |
| Calaway, Wilson T., B.S. Dept. of Entomology | Nematodes in Sewage Treatment and their Significance | WP-00508-05 | 1706 | _____* |
| Dean, Robert G., Sc.D. Dept. of Coastal and Oceanographic Engineering | Transversal Drifts in Bottom Profile | WP-00889-03 | 1607 | 24,853 |
| Putman, Hugh D., Ph.D. Phelps Laboratory for Bioenviron- mental Engineering Research | Primary Production and Decomposition in Estuarine Water | WP-00678-04 | 1601 | 29,640 |
| Pyatt, Edwin, E., Ph.D. Dept. of Bioenvironmental Engineering | A Model for Quantifying Flow Augmentation Benefits | WP-01050-02 | 1609 | 37,216 |
| Singley, John E., Ph.D. Dept. of Environmental Engineering | Stoichiometry and Mechanisms of Coagulation | WP-01261-01 | 1701, 1703 | _____* |
| Smith, Paul H., Ph.D. Dept. of Bacteriology | Studies on the Methogenic Bacteria in Sludge | WP-00198-08 | 1707 | 31,998 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------|-----------|----------|
| <u>FLORIDA</u> | | | | |
| <u>University of Miami</u> <u>Coral Gables</u> | | | | |
| Bader, Richard G., Ph.D. Institute of Marine Sciences | Effects of Thermal Pollution on Biota of Biscayne Bay | WP-01351-01A1 | 1613-1805 | \$64,312 |
| Lane, Charles E., Ph.D. Institute of Marine Sciences | Effects of Pesticides on Marine Animals | WP-01326-01 | 1805 | 39,599 |
| Moore, Hilary B., Ph.D. Institute of Marine Science | The Biology of the Infauna of a Tropical Soft Bottom Area | WP-00573-05 | 1805 | 35,250 |
| Wood, Edward, J.F., Sc.D. Institute of Marine Science | Periphyton of the Everglades an Unpolluted System | WP-00709-03 | 1805 | _____* |
| <u>GEORGIA</u> | | | | |
| <u>Georgia Institute of Technology</u> <u>Atlanta</u> | | | | |
| Carstens, Marion R., Ph.D. Hydraulics Laboratory | Diffusivity of Particles in a Turbulent Field | WP-00912-02 | 1703 | _____* |
| Gates, William E., Ph.D. School of Civil Engineering | Relative Merits of Activated Sludge Design Models | WP-01133-01 | 1705 | _____* |
| Ingols, Roberts S., Ph.D. Engineering Experiment Station | Digestion of Sludges with Sodium Chloride and Sulfate | WP-01375-01 | 1707 | 20,625 |

*Active In FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|------------|-----------|
| <u>GEORGIA</u> | | | | |
| <u>Georgia Institute of Technology</u> <u>Atlanta</u> | | | | |
| Tsivoglou, Ernest C., Ph.D. School of Civil Engineering | Characterization of Stream Reaeration Capacity | WP-01366-01 | 1605 | \$ 84,413 |
| <u>Georgia State College</u> <u>Atlanta</u> | | | | |
| Singley, John E. Dept. of Chemistry | Stoichiometry and Mechanisms of Coagulation | WP-00717-03 | 1701 | _____* |
| <u>University of Georgia</u> <u>Athens</u> | | | | |
| Hendricks, Charles W., Ph.D. Dept. of Microbiology | Enteric Bacterial Degradation of Stream Detritus | WP-01517-01 | 1605 | 30,552 |
| <u>ILLINOIS</u> | | | | |
| <u>Eastern Illinois University</u> <u>Charleston</u> | | | | |
| Durham, Leonard, Ph.D. Department of Zoology | Biological Survey of Streams of Coles County | WP-01114-02 | 1805 | 20,510 |
| Whitley, L. Stephen, Ph.D. Dept. of Zoology | The Systematics of the Tubificids of Illinois | WP-00937-02 | 1805 | _____* |
| <u>Illinois Institute of Technology</u> <u>Chicago</u> | | | | |
| Grieves, Robert B., Ph.D. Dept. of Civil Engineering | Foam Separation Flotation of Colloid Organic Systems | WP-00702-03 | 1702, 1703 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|-------------------|----------------------|-----------|
| <u>ILLINOIS</u> | | | | |
| <u>Illinois Institute of Technology</u> <u>Chicago</u> | | | | |
| Gurnhan, C. Fred, Ph.D. Dept. of Environmental Eng. | Use of Coagulation in the Flotation of Wastewater | WP-01268-01 | 1703 | \$ 29,188 |
| Kintner, Robert C., Ph.D. Dept. of Chemical Engineering | Effects of Surfactants on Fibrous Bed Coalescing | WP-01021-02 | 1702 | 28,560 |
| Martell, Arthur E., Ph.D. Dept. of Chemistry | Permanganate Oxidation of Phenols and Aromatic Amines | WP-00744-03 | 1702 | _____* |
| <u>Northwestern University</u> <u>Evanston</u> | | | | |
| Pipes, Wesley O., Ph.D. Dept. of Civil Engineering | Ecology of Sphaerotilus in Activated Sludge | WP-00588-04 | 1703 1705 1706 | 47,567 |
| <u>University of Illinois</u> <u>Urbana</u> | | | | |
| Austin, John H., Ph.D. Dept. of Civil Engineering | Oxygen Relationships in Small Streams | WP-01020-02 | 1605 | 52,582 |
| Austin, John H., Ph.D. Dept. of Civil Engineering | Oxygen Relationships in Small Streams | WP-01020-02S1(S)3 | 1605 | 4,425 |
| Dick, Richard I., Ph.D. Dept. of Civil Engineering | Mechanisms of Sludge Thickening | WP-01011-02 | 1707 | 29,092 |
| Engelbrecht, Richard S., Sc.D. Dept. of Civil Engineering | Factors Influencing Free-Living Nematodes in Water | WP-00047-06 | 1805 | _____* |
| Larson, Thurston E., Ph.D. Dept. of Chemistry | Corrosion and Tuberculation in Distribution Systems | WP-00132-12 | 1801 | 16,552 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|---------------|-----------|--------|
| <u>ILLINOIS</u> | | | | |
| <u>University of Illinois</u> <u>Urbana</u> | | | | |
| Quinn, John A., Ph.D. Dept. of Chemistry and Chemical Engineering | Mass Transfer through Interfaces | WP-00601-04 | 1704 | _____* |
| Sollo, Frank W., Jr., Ph.D. State Water Survey | Disinfection of Sewage Effluents | WP-01252-01 | 1706 | 27,510 |
| Speece, Richard E., Ph.D. Dept. of Civil Engineering | Controlling Factors in Methane Fermentation | WP-00394-04S1 | 1707 | _____* |
| <u>INDIANA</u> | | | | |
| <u>DePauw University</u> <u>Greencastle</u> | | | | |
| Gammon, James R., Ph.D. Dept. of Zoology | The Effects of Inorganic Sediment on Stream Ecosystems | WP-01044-02 | 1805 | 7,070 |
| <u>Purdue Research Foundation</u> <u>West Lafayette</u> | | | | |
| Greenkorn, Robert A., Ph.D. School of Chemical Engineering | Dispersion During Flow in Heterogeneous Porous Media | WP-01048-02 | 1606 | 16,408 |
| Kirsch, E. J., Ph.D. Dept. of Microbiology | Microbial Ecology and Interactions in Anaerobic Digestion | WP-00760-04 | 1707 | 36,077 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|-------------------------------|---------------|-----------|-----------|--------|
|-------------------------------|---------------|-----------|-----------|--------|

INDIANA

Purdue University Lafayette

| | | | | |
|---|--|-------------|------|--------|
| Bloodgood, Don E. Dept. of Civil Engineering | Foreign Engineers and Scientists to Purdue Industrial Waste Conference | WP-00861-02 | 1200 | _____* |
|---|--|-------------|------|--------|

IOWA

Iowa State University Ames

| | | | | |
|--|---|-------------|------|-------|
| Dodd, John D., Ph.D. Dept. of Botany and Plant Pathology | Ecology of Diatoms in Hard- water Habitats | WP-00221-08 | 1805 | 9,034 |
|--|---|-------------|------|-------|

| | | | | |
|---|--|-------------|------|--------|
| Morgan, Paul E. Dept. of Civil Engineering | Design Requirements for Municipal Diatomite Filters | WP-00196-08 | 1703 | 17,633 |
|---|--|-------------|------|--------|

University of Iowa Iowa City

| | | | | |
|--|---|-------------|------|--------|
| Macagno, Enzo O., Ph.D. Institute of Hydraulic Research | Dispersion of Water Pollutants in Curvilinear Flows | WP-01218-01 | 1605 | 40,117 |
|--|---|-------------|------|--------|

KANSAS

Kansas State Teachers College Emporia

| | | | | |
|---|--|-------------|------|--------|
| Prophet, Carl W., Ph.D. Dept. of Biology | Limnology of John Redmond Reservoir, Kansas | WP-00615-05 | 1805 | 10,218 |
|---|--|-------------|------|--------|

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|--------------------------|-----------|
| <u>KANSAS</u> | | | | |
| <u>Kansas State University</u> <u>Manhattan</u> | | | | |
| Fan Liang-Tseng, Ph.D. Dept. of Chemical Engineering | Optimal Design of Waste Treatment Systems | WP-01141-02 | 1709 | \$ 31,755 |
| Lambert, Jack L., Ph.D. Dept. of Chemistry | Determination of Ammonia | WP-00235-06 | 1602 | _____* |
| Lambert, Jack L., Ph.D. Department of Chemistry | Ligand Exchange Reagents | WP-00326-07 | 1602 | 9,794 |
| <u>University of Kansas</u> <u>Lawrence</u> | | | | |
| Loehr, Raymond C., Ph.D. Dept. of Civil Engineering | Aerobic Microbial Degradation of Lipids | WP-00341-05 | 1707 | _____* |
| O'Brien, Walter J., Sc.d. Environmental Health Laboratory | Oxygen Consumption in Continuous Biological Culture | WP-01023-02 | 1705 | 14,340 |
| <u>KENTUCKY</u> | | | | |
| <u>University of Kentucky</u> <u>Lexington</u> - (Research Foundation) | | | | |
| Grieves, Robert B., Ph.D. Dept. of Chemical Engineering | Foam Separation Flotation of Colloid Organic Systems | WP-01284-01 | 1702, 1703 1705, 1706 | 16,682 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--------------------------------|---------------|-----------|--------|
| <u>LOUISIANA</u> | | | | |
| <u>Louisiana State University</u> | | | | |
| <u>Baton Rouge</u> | | | | |
| West, Phillip W., Ph.D. | Sampling and Determining | WP-00788-02S1 | 1602 | _____* |
| Dept. of Chemistry | Traces of Silver in Waters | WP-00788-02S2 | | _____* |
| <u>MAINE</u> | | | | |
| <u>State of Maine</u> | | | | |
| <u>Dept. of Inland Fisheries and Game</u> | | | | |
| <u>Augusta</u> | | | | |
| Everhart, W. Harry, Ph.D. | Effects of Chemical Variations | WP-01145-01 | 1805 | _____* |
| Dept. of Zoology | in Aquatic Environments | | | |
| Rupp, Robert S., M.S. | Evolution of Allopatric | WP-00888-03 | 1805 | 21,088 |
| Dept. of Zoology | Populations | | | |
| <u>University of Maine</u> | | | | |
| <u>Orono</u> | | | | |
| Sproul, Otis J., Sc.D. | Effects of Chemical Ions | WP-00387-05 | 1706 | 36,646 |
| Dept. of Civil Engineering | on Virus Inactivation | | | |
| Zieminski, Stefan A., D.Sc. | Induced Air Mixing of | WP-01376-01 | 1608 | 24,361 |
| Dept. of Chemical Engineering | Large Bodies of Polluted | | | |
| | Water | | | |
| Zieminski, Stefan A., D.Sc. | Use of Chemical Additives | WP-00562-04 | 1705 | _____* |
| Dept. of Chemical Engineering | to Improve Aeration Rates | | | |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
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MARYLAND

The Johns Hopkins University Baltimore

| | | | | |
|---|--|---------------|------|-----------|
| Geyer, John C., Ph.D. Dept. of Environmental Science | Fluid Friction in the Presence Non-Rigid Boundaries | WP-01262-01 | 1604 | \$ 44,658 |
| Geyer, John C., Ph.D. Dept. of Environmental Science | Ground Water Storage Project | WP-00444-04S1 | 1606 | _____* |

University of Maryland College Park

| | | | | |
|--|---|-------------|------|--------|
| Birkner, Francis B., Ph.D. Dept. of Civil Engineering | Oxygenation Kinetics of Reduced Sulfur Species | WP-01265-01 | 1605 | 17,583 |
| Cookson, John T., Jr., Ph.D. Dept. of Civil Engineering | Virus Removal in Packed Beds by Mass Transfer | WP-00981-02 | 1706 | _____* |
| Schwiesow, William F. Shirver Laboratory | Disposal of Wastes from Swine Feeding Floors to Minimize Stream Pollution | WP-01399-01 | 1304 | 31,185 |

MASSACHUSETTS

Harvard University Boston

| | | | | |
|--|---|-------------|------|--------|
| Thomas, Harold A., Jr., Sc.D. School of Public Health | Transport and Fate of Pollutants in Soil | WP-00626-04 | 1606 | 24,139 |
|--|---|-------------|------|--------|

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|---------------|-----------|-----------|
| <u>MASSACHUSETTS</u> | | | | |
| <u>Harvard University</u> <u>Cambridge</u> | | | | |
| Dorfman, Robert Ph. D. Harvard Water Program | The Economics of Water Supply and Quality | WP-00919-03 | 1609 | \$ 37,183 |
| Mitchell, Ralph, Ph. D. Dept. of Water Resources and Sanitary Engineering | Degradation of Sewage and Soil Microorganisms | WP-00967-03 | 1606 | 19,083 |
| Stumm, Werner, Ph. D. Division of Engineering and Applied Physics | Phosphate Exchange with Sediments | WP-01230-01 | 1601 | 11,889 |
| Stumm, Werner, Ph. D. Division of Engineering and Applied Physics | Chemical Aspects of Coagulation | WP-00098-06 | 1701 | _____* |
| Stumm, Werner, Ph. D. Division of Engineering and Applied Physics | Inhibition and Repression in Substrate Utilization | WP-00621-03A1 | 1707 | _____* |
| Thomas, Harold A., Jr., Sc. D. Dept. of Environmental Science and Engineering | Operations Research in Water Quality Management | WP-00111-06 | 1609 | 110,735 |
| <u>Massachusetts Institute of Technology</u> <u>Cambridge</u> | | | | |
| Harleman, Donald R. F., Sc. D. Dept. of Civil Engineering | Thermal Stratification and Reservoir Water Quality | WP-01211-01 | 1613 | 27,047 |
| Harleman, Donald R. F., Sc. D. Dept. of Civil Engineering | Movement and Mixing of Water Injected into Aquifers | WP-01039-02 | 1606 | 24,649 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
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MASSACHUSETTS

Northeastern University
Boston

| | | | | |
|---|--|-------------|------|-----------|
| Goodman, Alvin S., Ph. D. Dept. of Civil Engineering | Data Collection Economics For Water Pollution Studies | WP-01090-02 | 1609 | \$ 10,014 |
|---|--|-------------|------|-----------|

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|--|--|-------------|--------------------------|-----------|
| Karger, Barry L., Ph. D. Dept. of Chemistry | Studies in Foam Separation and Related Techniques | WP-01129-02 | 1702, 1703 1705, 1706 | \$ 14,611 |
|--|--|-------------|--------------------------|-----------|

University of Massachusetts
Amherst

| | | | | |
|---|---|---------------|------|--------|
| Adrian, Donald D., Ph. D. Dept. of Civil Engineering | Source Control of Water Treatment Waste Solids | WP-01239-01S1 | 1707 | 13,244 |
|---|---|---------------|------|--------|

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|---|---|-------------|------|--------|
| Adrian, Donald D., Ph. D. Dept. of Civil Engineering | Source Control of Water Treatment Waste Solids | WP-01239-02 | 1707 | 53,054 |
|---|---|-------------|------|--------|

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|---|---|-------------|----------------------------------|--------|
| Skinde, Rolf T., Ph. D. Dept. of Civil Engineering | Reverse Osmosis Treatment of Wastewaters | WP-01408-01 | 1701, 1702 1703, 1704 1705 | 44,727 |
|---|---|-------------|----------------------------------|--------|

MICHIGAN

Michigan State University
East Lansing

| | | | | |
|---|--|-------------|------|--------|
| Fromm, Paul O., Ph. D. Dept. of Physiology | Toxic Action of Water Soluble Pollutants on Freshwater Fish | WP-00807-08 | 1805 | 11,106 |
|---|--|-------------|------|--------|

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|--|--|-------------|------|--------|
| Knight, Allen W., Ph. D. W. K. Kellogg Biological Station | The Biology and Physiology of Aquatic Insects | WP-01178-01 | 1805 | _____* |
|--|--|-------------|------|--------|

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|---------------|--------------------|-----------|
| <u>MICHIGAN</u> | | | | |
| <u>University of Detroit</u> <u>Detroit</u> | | | | |
| Smith, R. Jay, Ph. D. Dept. of Biology | Indicator-Pathogen Density Relationships in Tributary Streams | WP-01233-01 | 1603 | \$ 40,293 |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | | |
| Ayers, John C., Ph. D. Great Lakes Research Division | A Coherent Area Study of Southern Lake Michigan | WP-00311-04S1 | 1601 | 97,068 |
| Borchardt, Jack A., Ph. D. Dept. of Civil Engineering | Sand Filtration of Discrete Suspensions | WP-00329-06 | 1701, 1703 1706 | 8,945 |
| Borchardt, Jack A., Ph. D. Dept. of Civil Engineering | Organic Decomposition at Poised O-R Potential Level | WP-00333-06 | 1702 | 14,574 |
| Brater, Ernest F. Dept. of Civil Engineering | Rainfall-Runoff Relations on Urban and Rural Areas | WP-00834-03 | 1302 | _____* |
| Kramer, James R., Ph. D. Great Lakes Research Division | Mineral Water Chemistry, Great Lakes | WP-01303-01 | 1605 | 27,591 |
| Mancy, Khalil H. Ph. D. School of Public Health | Dissolved Oxygen Analysis in Natural and Waste Waters | WP-00886-03 | 1602 | 18,970 |
| Noble, Vincent E., Ph. D. Great Lakes Research Division | Vertical Current Structure in the Great Lakes | WP-01067-02 | 1605 | 24,078 |
| Schultz, Jerome S., Ph. D. Dept. of Chemical and Metallurgical Engineering | Electrical Stimulation of Microbial Waste Treatment | WP-01257-01 | 1709 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---------------|-----------|-----------|
| <u>MICHIGAN</u> | | | | |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | | |
| Stoermer, Eugene F., Ph. D. Great Lakes Research Division | A Detailed Study of Lake Michigan Plankton Diatoms | WP-01005-02 | 1805 | \$ 28,951 |
| Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering | Research Symposium on Adsorption from Aqueous Solution | WP-01132-01 | 1700 | _____* |
| Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering | Interactions of Silica with Iron and Aluminum | WP-00674-03 | 1703 | 16,260 |
| Weber, Walter J., Jr., Ph. D. Dept. of Civil Engineering | Adsorption from Aqueous Solution | WP-00706-04A1 | 1702,1705 | 42,144 |
| <u>MINNESOTA</u> | | | | |
| <u>Minnesota Engineering Dept.</u> <u>Detroit Lakes</u> | | | | |
| Larson, Winston C., B. S. Dept. of Engineering | Nutrient Control Project- Detroit Lakes, Minnesota | WP-01469-01 | 1601 | 68,100 |
| <u>University of Minnesota</u> <u>Minneapolis</u> | | | | |
| Johnson, Walter K., Ph. D. Dept. of Civil Engineering | Nitrification and Denitri- fication of Wastewater | WP-01028-02 | 1701,1705 | 32,216 |
| Maier, Walter J., Ph. D. Dept. of Civil Engineering | Removal of Colloidal Matter from Wastewater | WP-01219-01 | 1703 | 28,221 |
| Olson, Theodore A., Ph. D. School of Public Health | Benthonic Invertebrates as an Index of Water Quality | WP-00320-06 | 1805 | 30,236 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|-------------|-----------|------------|
| <u>MINNESOTA</u> | | | | |
| <u>University of Minnesota</u> <u>Minneapolis</u> | | | | |
| Olson, Theodore A., Ph.D. School of Public Health | Lake Superior Periphyton Relation to Water Quality | WP-00828-03 | 1608 | \$ _____ * |
| Shapiro, Joseph, Ph.D. Dept. of Geology and Geophysics | Inorganic-Organic Interactions in Natural Waters | WP-00771-04 | 1605 | 33,024 |
| Silberman, Edward, M.S. St. Anthony Falls Hydraulic Laboratory | The Role of Mixing in Maintaining Stratified Flow | WP-00913-03 | 1605 | 35,910 |
| Smith, Lloyd L., Jr., Ph.D. Dept. of Entomology, Wildlife and Fisheries | Effect of Paper Fiber Wastes on Fish Eggs and Juveniles | WP-00223-07 | 1805 | 183 |
| <u>Winona State College</u> <u>Winona</u> | | | | |
| Fremling, Calvin R., Ph.D. Department of Biology | Mayfly Distribution as a Water Quality Index | WP-00987-03 | 1805 | 9,898 |
| <u>MISSISSIPPI</u> | | | | |
| <u>Gulf Coast Research Laboratory</u> <u>Ocean Springs</u> | | | | |
| Abbott, Walter, Ph.D. Senior Marine Biologist | Nutrient Assimilation Rates Field Studies | WP-01030-01 | 1601 | 5,897 |
| Abbott, Walter, Ph.D. Senior Marine Biologist | Nutrient Assimilation Rates Field Studies | WP-01030-02 | 1601 | 24,644 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|-------------|-----------|-----------|
| <u>MISSOURI</u> | | | | |
| <u>University of Missouri</u> <u>Columbia</u> | | | | |
| Campbell, Robert S., Ph. D. Dept. of Zoology | Recovery from Acid Pollution in Four Strip-Mine Lakes | WP-00379-06 | 1401 | \$ 23,057 |
| Enns, Wilbur R., Ph. D. Dept. of Entomology | Insects Associated with Midwestern Oxidation Lagoons | WP-00718-03 | 1805 | _____* |
| Smith, George E., Ph. D. Dept. of Soils | Nitrates in Water Supplies | WP-00533-05 | 1801 | 29,084 |
| Venable, Raymond L., Ph. D. Dept. of Chemistry | Removal of Metal Ions by Flotation with Surfactants | WP-01235-01 | 1704 | 32,946 |
| <u>MONTANA</u> | | | | |
| <u>Montana State University</u> <u>Bozeman</u> | | | | |
| Berg, Lloyd, Ph. D. Dept. of Chemical Engineering | Terpenes From Sulfate Pulp Mill Waste Liquor | WP-00510-05 | 1204 | _____* |
| Wright, John C., Ph. D. Dept. of Botany and Microbiology | The Hydrobiology of the Madison Rivers and its Headwaters | WP-00125-06 | 1605 | 26,880 |
| Wright, John C., Ph. D. Dept. of Botany and Microbiology | The Limnology of Yellowtail Reservoir and the Big Horn River | WP-01172-01 | 1805 | _____* |
| <u>University of Montana</u> <u>Missoula</u> | | | | |
| Nakamura, Mitsuru, Ph. D. Dept. of Microbiology | Detection and Significance Enzootic Water Pollution | WP-00824-03 | 1603 | 16,560 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|------------------------------|-----------|-----------|
| <u>NEVADA</u> | | | | |
| <u>University of Nevada</u> <u>Reno</u> | | | | |
| Sharp, John V. A., Ph. D. Center for Water Resources Research Desert Research Institute | Water Quality Regimen of the Tahoe-Truckee System | WP-01458-01 | 1608 | \$ 37,450 |
| <u>NEW HAMPSHIRE</u> | | | | |
| <u>University of New Hampshire</u> <u>Durham, New Hampshire</u> | | | | |
| Slanetz, Lawrence W., Ph. D. Dept. of Microbiology | Enteric Bacteria and Viruses in Sewage, Water and Shellfish | WP-00009-12 | 1603 | 39,397 |
| <u>NEW JERSEY</u> | | | | |
| <u>Newark College of Engineering</u> <u>Newark</u> | | | | |
| Metzger, Ivan, Eng. Sc. D. Dept. of Civil Engineering | Effects of Fluid Properties on Stream Aeration | WP-01099-01 | 1608 | _____* |
| <u>Rutgers, The State University</u> <u>New Brunswick</u> | | | | |
| Finstein, Melvin S., Ph. D. Dept. of Environmental Sciences | Continuous Flow and Batch Cultures of Sphaerotilus | WP-00212-07 | 1707 | _____* |
| Moul, Edwin T., Ph. D. Dept. of Botany | Diatom Communities of the Raritan River System | WP-00949-02 WP-00949-02S1 | 1805 | _____* |
| Torpey, Wilbur N., M. CE. Dept. of Environmental Sciences | Removal of BOD and Nutrients by Biological Slimes | WP-01322-01 | 1701,1705 | 101,806 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|-----------|------------|
| <u>NEW JERSEY</u> | | | | |
| <u>Rutgers, The State University</u> <u>New Brunswick</u> | | | | |
| Trama, Francesco B. Dept. of Zoology | Impoundment Studies on the Raritan River, New Jersey | WP-00059-06 | 1504 | \$ _____ * |
| <u>NEW MEXICO</u> | | | | |
| <u>Eastern New Mexico University</u> <u>Portales</u> | | | | |
| Sublette, James E., Ph. D. Dept. of Biological Sciences | Cytotaxonomy and Related Studies of Holartic Midges | WP-00468-05 | 1805 | 17,956 |
| <u>New Mexico State University</u> <u>Las Cruces</u> | | | | |
| Speece, Richard E., Ph. D. Dept. of Civil Engineering | Controlling Factors in Methane Fermentation | WP-01001-03 | 1707 | 28,109 |
| <u>New Mexico State University</u> <u>University Park</u> | | | | |
| Clark, John W. Dept. of Civil Engineering | Continuous Monitoring of Some Organic Wastes | WP-00631-03 | 1602 | _____ * |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|-------------|-----------|-----------|
| <u>NEW YORK</u> | | | | |
| <u>American Water Works Association</u> <u>New York</u> | | | | |
| Faber, Harry A. Research Director | Disposal of Wastes from Water Treatment Plants | WP-01535-01 | 1707 | \$ 46,305 |
| <u>Boyce Thompson Institute for</u> <u>Plant Research, Inc.</u> <u>Yonkers</u> | | | | |
| Torgeson, Dewayne C., Ph. D. Program Director | Interaction of Herbicides and Soil Microorganisms | WP-00750-04 | 1606 | 45,698 |
| <u>City College Research Foundation</u> <u>New York</u> | | | | |
| Haines, Thomas H., Ph. D. Dept. of Chemistry | Structure and Function of a New Sulfolipid | WP-00675-04 | 1805 | _____* |
| <u>Clarkson College of Technology</u> <u>Potsdam</u> | | | | |
| Jellinek, Hans H. G., Ph. D. Dept. of Chemistry | Photodegradation of Polymers in Aqueous Solution | WP-00791-03 | 1702 | _____* |
| Matijevic, Egon, Ph. D. Dept. of Chemistry | Flocculation of Colloids Suspended in Water | WP-00815-03 | 1703 | _____* |
| Matijevic, Egon, Ph. D. Dept. of Chemistry | Second Workshop Seminar on Coagulation and Flocculation | WP-01131-01 | 1703 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|---------------|-----------|------------|
| <u>NEW YORK</u> | | | | |
| <u>Columbia University</u> <u>New York</u> | | | | |
| Linford, Henry B., Ph. D. Dept. of Chemical Engineering | Cationic Polymers as Flocculant Aids in Water | WP-00240-06 | 1703 | \$ _____ * |
| Littauer, Sebastin B. Dept. of Industrial and Management Engineering | Statistical Theory of Extreme Values and Their Application in Hydrology | WP-00457-05 | 1609 | _____ * |
| <u>Cornell University</u> <u>Ithaca</u> | | | | |
| Barlow, John P., Ph. D. Div. of Biological Sciences | Eutrophication of Tidal Waters | WP-00176-08S1 | 1601 | _____ * |
| | | WP-00176-09 | | _____ * |
| Dondero, Norman C., Ph. D. Dept. of Food Science | Adaptation by Microbial Populations | WP-01034-02 | 1705 | 22,067 |
| Graf, Walter H., Ph. D. School of Civil Engineering | The Transport of Solid Suspension in Conduits | WP-00838-02 | 1707 | _____ * |
| Liggett, James A., Ph. D. School of Civil Engineering | Mathematical Models of Hydrologic Systems | WP-00948-02 | 1609 | _____ * |
| <u>Manhattan College</u> <u>Bronx</u> | | | | |
| Jeris, John S., Sc. D. Dept. of Civil Engineering | The Biochemistry of Anaerobic Digestion | WP-00577-05 | 1707 | 27,417 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------|--------------------|------------|
| <u>NEW YORK</u> | | | | |
| <u>New York University</u> <u>Bronx</u> | | | | |
| Mehr, Emanuel, M. A. Dept. of Meteorology and Oceanography | Computer Simulation of Dye Dump Studies | WP-00662-03 | 1609 | \$ _____ * |
| Mehr, Emanuel, M. A. Geophysical Science Laboratory | Computer Simulation of Diffusion Studies | WP-01255-01 | 1607 | 17,162 |
| Schwartzberg, Henry G. Dept. of Chemical Engineering | The Spreading of Oil Films | WP-01342-01A1 | 1607 | 25,716 |
| <u>Polytechnic Institute of Brooklyn</u> <u>Brooklyn</u> | | | | |
| Bruins, Paul F., Ph. D. Dept. of Chemistry | Advance Waste Treatment by Ultrafiltration | WP-00620-03 | 1703 | _____ * |
| <u>Rensselaer Polytechnic Institute</u> <u>Troy</u> | | | | |
| Clesceri, Lenore S., Ph. D. Dept. of Civil Engineering | Oxygen Utilization in Concentrated Microbial Systems | WP-00876-03 | 1703, 1705 1706 | 28,440 |
| <u>Research Foundation of State</u> <u>University of New York</u> <u>Albany</u> | | | | |
| Dence, Carlton W., Ph. D. State University College of Forestry | Composition of Residues from Pulp Bleaching Treatments | WP-01038-02 | 1204 | 15,517 |
| LaLonde, Robert T., Ph. D. College of Forestry | Aquatic Plant Chemistry. Its Application to Pollution Control | WP-01258-01 | 1602 | 30,974 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------------------------|-----------|-----------|
| <u>NEW YORK</u> | | | | |
| <u>Research Foundation of State University of New York Albany</u> | | | | |
| Partheniades, Emanuel, Ph.D. Dept. of Civil Engineering | Deposition of Fine Sediments in Turbulent Flows | WP-01253-01 | 1605 | \$ 26,194 |
| Rumer, Ralph R., Jr., Sc. D. Dept. of Civil Engineering | Dynamic Model Study of Lake Erie | WP-00837-03 | 1605 | 22,409 |
| Storr, John F., Ph. D. Dept. of Biology | Ecology of Polluted and Nonpolluted Lake Communities | WP-01065-02 | 1603 | _____* |
| <u>Syracuse University Syracuse</u> | | | | |
| Jackson, Daniel F., Ph. D. Dept. of Civil Engineering | Investigation of Bloom- Producing Algae | WP-00782-03 | 1601 | _____* |
| Kramer, James R., Ph. D. Dept. of Geology | Mineral-Water Chemistry, Great Lakes | WP-00868-02 | 1608 | _____* |
| Li, Wen-Hsiung, Ph. D. Dept. of Civil Engineering | Transverse Dispersion of Contaminant in Groundwater | WP-00575-04 | 1606 | _____* |
| Lundgren, Donald G. Dept. of Bacteriology and Botany | Physiology and Culture of Iron Oxidizing Bacteria | WP-00548-05 WP-00548-05S1-A1 | 1401 | _____* |
| Nemerow, Nelson L., Ph. D. Dept. of Civil Engineering | Allocation of Stream Pollution Carrying Capacity | WP-01089-01 | 1608 | _____* |
| Rice, P. A., Ph. D. Dept. of Chemical Engineering and Metallurgy | Biological Treatment of Acid Mine Water | WP-01460-01 | 1401 | 47,238 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------|--|------------|
| <u>NEW YORK</u> | | | | |
| <u>Syracuse University</u> | | | | |
| <u>Syracuse</u> | | | | |
| Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy | A Study of the Aeration Process in Non-Newtonian Fluid | WP-00719-03 | 1705 | \$ _____ * |
| Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy | Atomization and Drop Size of Non-Newtonian Fluid | WP-00867-03 | 1707 | 18,480 |
| Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy | Mass Transfer Analysis in Reverse Osmosis Operation | WP-00968-02 | 1701, 1702 1703, 1704 1705, 1706 | 19,738 |
| Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy | Carbon Column Operation in Wastewater Treatment | WP-01007-01A2 | 1702, 1705 | 58,530 |
| Tien, Chi, Ph. D. Dept. of Chemical Engineering and Metallurgy | The Effect of Gas Bubble Motion on Fluid Mixing in Aeration Process | WP-00922-03 | 1705 | 18,100 |
| Turian, Raffi M., Ph. D. Dept. of Chemical Engineering and Metallurgy | Pipeline Flow of Solids- Liquid Suspensions | WP-01122-02 | 1707 | 18,050 |

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|--------------|--------|
| <u>NORTH CAROLINA</u> | | | | |
| <u>North Carolina State University</u> <u>Raleigh</u> | | | | |
| Horton, Donald B., Ph.D. Director, Pamlico Marine Lab | "Phosphate Mining Effluent in Estuarine Ecology | WP-00958-03 | 1805 | 63,045 |
| <u>University of North Carolina</u> <u>Chapel Hill</u> | | | | |
| Mah, Robert A., Ph.D. Dept. of Environmental Sciences and Engineering | Microbiology of Anaerobic Sludge | WP-00921-03 | 1707 | 20,216 |
| <u>OHIO</u> | | | | |
| <u>Case Institute of Technology</u> <u>Cleveland</u> | | | | |
| Sparks, Robert E., Ph.D. Division of Engineering | Emulsion Braking by Coalescence on Adsorbed Films | WP-00854-03 | 1702 | _____* |
| <u>Central State University</u> <u>Wilberforce</u> | | | | |
| O'Hara, James J., Ph.D. Dept. of Biology | Sublethal Influence of Pollutants on Fish Metabolism | WP-01281-01 | 1805 | 11,016 |
| <u>Kent State University</u> <u>Kent</u> | | | | |
| Gould, Edwin S., Ph.D. Dept. of Chemistry | Metal-Catalyzed Oxidations of Organic Contaminants | WP-01209-01 | 1702 1705 | 33,922 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|-------------------------|-----------|
| <u>OHIO</u> | | | | |
| <u>Kenyon College</u> <u>Gambier</u> | | | | |
| Pappenhagen, James M., Ph.D. Dept. of Chemistry | Determination of Ions in Wastes and Waters | WP-00137-13 | 1602 | 10,279 |
| <u>Ohio State University Research</u> <u>Columbus</u> | | | | |
| Dugan, Patrick R., Ph.D, Dept. of Microbiology | Concentration of Chemicals by Flocc Forming Organisms | WP-00713-03 | 1704 1705 | \$ 24,657 |
| Hanna, George P. Dept. of Civil Engineering | Acid Mine Drainage-An Analysis of the State of the Art | WP-01328-01 | 1401 | 28,811 |
| Smith, Edwin E., Ph.D. Dept. of Chemical Engineering | Study of Sulfide-to-Sulfate Reaction Mechanism | WP-00340-07 | 1401 | 24,934 |
| <u>University of Cincinnati</u> <u>Cincinnati</u> | | | | |
| Lemlich, Robert, Ph.D. Dept. of Chemical Engineering | Foam Fractionation with Reflux | WP-00161-09 | 1702,1703, 1705,1706 | 18,205 |
| Scarpino, Pasquale V., Ph.D. Dept. of Civil Engineering | Factors Influencing the Survival of Bacteria in Sea Water | WP-00844-03 | 1607 | _____* |
| Spoor, William A., Ph.D. Dept. of Biological Sciences | Fish Opercular Response to Environmental Variables | WP-01317-01 | 1805 | 12,768 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|------------------------------|--------|
| <u>OHIO</u> | | | | |
| <u>University of Toledo Research Fdn.</u> <u>Toledo</u> | | | | |
| Bennett, Gary F., Ph.D. Dept. of Chemical Engineering | Oxygen Transfer Rates Through Biological Slimes | WP-00822-02 | 1805 | _____* |
| <u>OKLAHOMA</u> | | | | |
| <u>Oklahoma State University</u> <u>Stillwater</u> | | | | |
| Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering | Kinetics and Mechanism in Activated Sludge Processes | WP-00325-06 | 1703,1705, \$ 29,409 1706 | |
| Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering | Metabolic Control Mechanisms in Biological Treatment | WP-00786-03 | 1709 | _____* |
| Gaudy, Anthony F., Jr., Ph.D. School of Civil Engineering | Response of Activated Sludge to Organic Shock Loads | WP-00075-06 | 1707 | _____* |
| <u>University of Oklahoma</u> <u>Norman</u> | | | | |
| Reid, George W., M.S. School of Civil Engineering | Evaluation of Dispersed Pollutional Load | WP-01193-01 | 1604 | _____* |
| <u>OREGON</u> | | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | | |
| Burgess, Fredrick J. Dept. of Civil Engineering | Airphoto Analysis of Ocean Outfall Dispersion | WP-01383-01 | 1607 | 52,432 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|-----------|--------|
| <u>OREGON</u> | | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | | |
| Burgess, Fredrick J. Dept. of Civil Engineering | Pulp Mill Effluent Disposal | WP-00524-05 | 1204 | 24,485 |
| Freed, Virgil H., Ph.D. Dept. of Agricultural Chemistry | Chemical Bruch Control: Biochemistry and Toxic Hazard | WP-00477-05 | 1604 | _____* |
| Goulding, Robert L., Ph.D. Dept. of Entomology | Macro-Fauna in Waste Stabilization Lagoons | WP-00923-03 | 1703,1705 | 13,158 |
| Krygier, James T., M.S. School of Forestry | Studies on Effects of Water- shed Practices on Streams | WP-00423-06 | 1301 | 81,273 |
| Neal, Victor T., Ph.D. | Physical Factors Affecting Oregon Coastal Pollution | WP-01380-01 | 1607 | 39,138 |
| Pacha, Robert E., Ph.D. Dept. of Microbiology | Sediment-Water-Bacteria Interaction in Eutrophication | WP-01389-01 | 1601 | 28,387 |
| Pacha, Robert E., Ph.D. Dept. of Microbiology | Studies on Aquatic Myxobacteria | WP-00925-03 | 1805 | 11,318 |
| Phinney, Harry K., Ph.D. Dept. of Botany and Plant Pathology | The Autecology of Some Blue- Green Plankton Algae | WP-00666-04 | 1601 | 18,623 |
| Schaumburg, Frank D. Dept. of Civil Engineering | Influence of Log Rafting on Water Quality | WP-01320-01 | 1210 | 24,174 |
| Schroeder, Herbert A., D.Sc. Forest Research Laboratory | Lignin Sulfonates in Pulp Mill Effluents | WP-00823-03 | 1204 | _____* |
| Seaders, John, M.S. Dept. of Civil Engineering | Factors Influencing Temperature and Stream Quality | WP-00684-04 | 1608 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---|-----------|--------|
| <u>OREGON</u> | | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | | |
| Slotta, Larry S., Ph.D. Dept. of Civil Engineering | Stratified Reservoir Currents | WP-00983-02 WP-00983-02S1 WP-00983-02S2 | 1605 | _____* |
| Stoevener, H. H., Ph.D. Dept. of Agricultural Economics | Economic Benefits from an Improvement in Water Quality | WP-01477-01 | 1609 | 30,639 |
| Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife | Dissolved Oxygen Requirements of Freshwater Fish | WP-00135-13 | 1805 | 22,883 |
| Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife | Ecological Studies of an Experimental Stream | WP-00157-10 | 1805 | 31,930 |
| <u>PENNSYLVANIA</u> | | | | |
| <u>Academy of Natural Sciences</u> <u>Philadelphia</u> | | | | |
| Patrick, Ruth, Ph.D. Dept. of Limnology | Factors Affecting the Structure of Diatom Communities | WP-00475-05 | 1805 | 86,535 |
| <u>Carnegie Institute of Technology</u> <u>Pittsburgh</u> | | | | |
| Bugliarello, George, Sc.D. Dept. of Civil Engineering | A Synthetic Computer Language for Sanitary Engineering | WP-00415-05 WP-00415-05S1 | 1609 | _____* |
| | | | | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|---------------|--------------|-----------|
| <u>PENNSYLVANIA</u> | | | | |
| <u>Drexel Institute of Technology</u> <u>Philadelphia</u> | | | | |
| Remson, Irwin, Ph.D. Dept. of Civil Engineering and Mechanics | Radial Flow of Soil Moisture | WP-00820-02 | 1606 | _____* |
| <u>Lehigh University</u> <u>Bethlehem</u> | | | | |
| Couglin, Robert W., Ph.D. Dept. of Chemical Engineering | Effect of Surface Groups on Adsorption of Pollutants | WP-00969-03 | 1702 1705 | 21,715 |
| Graf, Walter H., Ph.D. Fritz Engineering Laboratory | The Transport of Solid Suspension in Conduits | WP-01478-01 | 1707 | 15,535 |
| Parker, Basil W., Ph.D. Dept. of Biology | Thermal and Industrial Pollution: Delaware River | WP-00885-03 | 1613 | 24,830 |
| <u>Pennsylvania Military College</u> <u>Chester</u> | | | | |
| Wise, Donald L., Ph.D. Dept. of Engineering | Diffusion Coefficients of Gases in Liquids | WP-00671-02S1 | 1704 | _____* |
| <u>Pennsylvania State University</u> <u>University Park</u> | | | | |
| Anthony, Adam, Ph.D. Life Science Building | Cytopathology in Fish Exposed to Stream Pollutants | WP-01364-01 | 1805 | \$ 29,060 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|----------------------------|--------------|---------------|
| <u>PENNSYLVANIA</u> | | | | |
| <u>Regional Science Research Institute</u> <u>Philadelphia</u> | | | | |
| Coughlin, Robert E., Ph.D. Regional Science Research Inst. | Economic Evaluation of Stream Quality Preservation through Urban Land Use Management | WP-01394-01A1 | 1608 | 34,699 |
| Isard, Walter President | Economics of Water Quality for a Regional System | WP-00938-03 | 1608 | 64,749 |
| <u>University of Pennsylvania</u> <u>Philadelphia</u> | | | | |
| Strong, Ann Louise, LLB. Dept. of City and Regional Planning | Stream Quality Preservation Through Urban Land Use Management: Legal and Governmental Aspects | WP-01393-01A1 | 1608 | 44,831 |
| <u>University of Pittsburgh</u> <u>Pittsburgh</u> | | | | |
| Cummins, Kenneth W., Ph.D. Dept. of Biology | The Microdistribution of Stream Benthos | WP-00525-05 | 1805 | 21,451 |
| <u>RHODE ISLAND</u> | | | | |
| <u>University of Rhode Island</u> <u>Kingston</u> | | | | |
| Conover, John T., Ph.D. Graduate School of Oceanography | The Effects of Pollution on Benthic Marine Plant Communities | WP-00755-03 | 1805 | _____* |
| Jeffries, Harry P., Ph.D. Graduate School of Oceanography | Chemical Responses by Marine Organisms to Stress | WP-00858-02 WP-00858-03 | 1805 1805 | 774 30,945 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|----------------------|--------|
| <u>RHODE ISLAND</u> | | | | |
| <u>University of Rhode Island</u> <u>Kingston</u> | | | | |
| Marshall, Nelson, Ph.D. Graduate School of Oceanography | Sensitivity of Benthic Microflora to Pollution Gradients | WP-01220-01 | 1805 | 748 |
| Marshall, Nelson, Ph.D. Graduate School of Oceanography | Sensitivity of Benthic Microflora to Pollution Gradients | WP-01220-02 | 1805 | 20,487 |
| <u>SOUTH CAROLINA</u> | | | | |
| <u>Clemson University</u> <u>Clemson</u> | | | | |
| Andrews, John F., Ph.D. Environmental Systems Engineering | Kinetics of Biological Filters | WP-01181-02 | 1703 1705 1706 | 19,909 |
| Barlage, William B., Jr., Ph.D. Dept. of Chemical Engineering | The Effect of Surface-Active Agents on Gas Absorption | WP-00911-02 | 1702 | _____* |
| <u>University of South Carolina</u> <u>Columbia</u> | | | | |
| Davis, Milton W., Jr., Ph.D. Dept. of Chemical Engineering | Purification of Industrial Wastes by Ion Exchange | WP-00595-03 | 1704 | _____* |
| Nelson, Bruce W., Ph.D. Dept. of Geology | Chemical Exchanges Across Sediment-Water Interfaces | WP-00651-04 | 1704 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

LOCATION AND PROJECT DIRECTOR

PROJECT TITLE

GRANT NO.

PPBS. NO.

AMOUNT

TENNESSEEUniversity of Tennessee
KnoxvilleBunting, Dewey L.
Dept. of Zoology & EntomologyEffects of Water Pollution
on Zooplankton

WP-00927-03

1805

9,980

Vanderbilt University
NashvilleFisher, Gerald T., Ph.D.
Dept. of Chemical EngineeringRefractory Adsorption on
Chemcoke

WP-01243-01

1702
1705

42,492

Krenkel, Peter A., Ph.D.
Dept. Sanitary & Water Resources
EngineeringNational Symposium on Thermal
Pollution

WP-01435-01

1613

21,670

Krenkel, Peter A., Ph.D.
Dept. Sanitary & Water Resources
EngineeringProject for Concentrated
Research and Training in the
Hydrologic and Hydraulic Aspects
Of Water Pollution Control

WP-01463-01A1

1605
1608
1613

93,525

Malaney, George W., Ph.D.
Dept. of Civil EngineeringActivated Sludge as an
Ecological SystemWP-00816-02
WP-00816-02S1

1707

_____*
_____*Parker, Frank L., Ph.D.
Sanitary and Water Resources
EngineeringStatus of Thermal Pollution
and Research Needs

WP-01387-01

1613

30,552

Schnelle, Karl B., Jr., Ph.D.
School of EngineeringDewatering and Drying of
Sewage Sludge on Porous Media

WP-01053-02

1707

22,690

*Active in FY 1968 - Supported by funds awarded in previous years

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|--------------|--------|
| <u>TEXAS</u> | | | | |
| <u>Baylor University</u> | | | | |
| <u>Waco</u> | | | | |
| Davidson, Floyd F., Ph.D. Dept. of Biology | Toxic Properties of the Blue-Green Algae | WP-00002-12 | 1805 | _____* |
| <u>North Texas State University</u> | | | | |
| <u>Denton</u> | | | | |
| Silvey, Joseph K.G., Ph.D. Dept. of Biology | A Study of Metabolism of the Aquatic Actinomycetes | WP-00805-04 | 1805 | 16,683 |
| Silvey, Joseph K.G., Ph.D. Dept. of Biology | Naturally Occuring Tastes and Odors in Water Supplies | WP-00785-04 | 1801 | 32,639 |
| Stewart, Kenneth W. Dept. of Biology | Dispersal of Viable Algae and Protozoa | WP-00855-03 | 1604 | 9,307 |
| <u>Texas A&M Research Foundation</u> | | | | |
| <u>College Station</u> | | | | |
| Davis, William B., S.M. Dept. of Civil Engineering | The Molecular Nature of Organic Waste Removal Patterns | WP-01312-01 | 1702 1705 | 32,792 |
| Martell, Arthur E., Ph.D. Dept. of Chemistry | Metal Ion-Catalyzed Oxidation of Phenols and Aromatic Amines | WP-01197-02 | 1702 | 39,301 |
| Smerdon, Ernest T., Ph.D. Water Resources Institute | Water Pollution From Eroded Sediments | WP-00757-03 | 1604 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---------------|-----------|--------|
| <u>TEXAS</u> | | | | |
| <u>Texas Research Foundation</u> <u>Renner</u> | | | | |
| Correll, Donovan S., Ph.D. Botanical Laboratory | Aquatic Plants of Polluted Waters in Southwest United States | WP-00685-04A1 | 1603 | 34,404 |
| <u>Texas Technological College</u> <u>Lubbock</u> | | | | |
| Grubb, Herbert W., Ph.D. Dept. of Agricultural Economics | Economics of Multipurpose Playa Lake Modification | WP-00775-02 | 1609 | _____* |
| <u>The University of Texas</u> <u>Austin</u> | | | | |
| Beightler, Charles S., Ph.D. Dept. of Mechanical Engineering | Use of New Analytical Methods for Water Resources Development | WP-01186-01 | 1609 | _____* |
| Bold, Harold C., Ph.D. Dept. of Botany | An Investigation of Texas Soil Algae | WP-01057-07 | 1805 | _____* |
| Copeland, B. J., Ph.D. Marine Science Institute | Effects of Rivers on the Metabolism of Texas Bays | WP-00811-03 | 1607 | 25,030 |
| Fruh, E. Gus, Ph.D. Dept. of Engineering | Enzymatic Technique for Detection of Surplus Phosphorus Uptake by Activated Sludge | WP-01449-01 | 1701 | 18,869 |
| Gloyna, Earnest F., Dr. Engr. Dept. of Civil Engineering | Effect of Toxic Organics on Waste Stabilization | WP-00688-03 | 1709 | _____* |
| Gloyna, Earnest F., Dr. Engr. Dept. of Civil Engineering | Bactericidal Effects of Algae on Enteric Organisms | WP-01200-01 | 1804 | 20,777 |
| Masch, Frank D., Ph.D. Dept. of Civil Engineering | Mixing and Dispersion of Contaminants in Reserviors | WP-00705-03 | 1605 | 25,942 |
| *Active in FY 1968 - Supported by funds awarded in previous years. | | | | |

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---------------|-----------|--------|
| <u>TEXAS</u> | | | | |
| <u>University of Texas Medical Branch</u> <u>Galveston</u> | | | | |
| Smith, Leland L., Ph.D. Dept. of Biochemistry | Sterols and Lipids in Water Pollution | WP-01003-02 | 1605 | 16,452 |
| <u>UTAH</u> | | | | |
| <u>Utah Department of Fish & Game</u> <u>Salt Lake City</u> | | | | |
| Hinshaw, Russell N., M.S. Dept. of Fish & Game | Pollution as a Result of Fish Cultural Activities | WP-01285-02 | 1604 | 11,445 |
| <u>University of Utah</u> <u>Salt Lake City</u> | | | | |
| Gaufin, Arden R., Ph.D. Dept. of Zoology and Entomology | Bio-Assays of the Toxicity of Pesticides to Aquatic Invertebrates | WP-00003-12 | 1805 | _____* |
| Gaufin, Arden R., Ph.D. Dept. of Zoology and Entomology | Production of Taste and Odor Producing Algae in Reserviors | WP-00334-06 | 1801 | _____* |
| <u>Utah State University</u> <u>Logan</u> | | | | |
| Hendericks, David W., Ph.D. Water Research Laboratory | Bacterial Adsorption on Soils | WP-01111-01A1 | 1604 | 32,021 |
| Neuhold, John M., Ph.D. Dept. of Wildlife Resources | Halide Water Quality Toxicity Effects on Fish | WP-00768-03 | 1805 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|-----------------|-----------|---------|
| <u>UTAH</u> | | | | |
| <u>Utah State University</u> <u>Logan</u> | | | | |
| Peterson, Howard B., Ph.D. Dept. of Agriculture and Irrigation Engineering | Quality of Irrigation Return Flow | WP-01492-01(N)1 | 1303 | 151,904 |
| <u>VIRGINIA</u> | | | | |
| <u>Virginia Polytechnic Institute</u> <u>Blacksburg</u> | | | | |
| Krutchkoff, Richard G., Ph.D. Dept. of Statistics | A Stochastic Model for Pollution in Estuaries | WP-01216-01 | 1607 | 39,698 |
| Walker, William R., L L.B. Water Resources Research Center | Water Rights Related to Water Quality Storage | WP-01087-02 | 1609 | 19,456 |
| <u>WASHINGTON</u> | | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | | |
| Allan, G. Graham, Ph.D. College of Forestry | Pollution Abatement by Fiber Modification | WP-01166-02 | 1204 | 47,041 |
| Anderson, George C., Ph.D. Dept. of Oceanography | Annual Phytoplankton Production in Puget Sound Waters | WP-00633-05 | 1601 | 46,782 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS.NO. | AMOUNT |
|---|--|---------------|----------|---------|
| <u>WASHINGTON</u> | | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | | |
| Bevan, Donald E., Ph.D. College of Fisheries | Estuarine Ecology | WP-00642-03 | 1805 | _____ * |
| Carlson, Dale A., Ph.D. Dept. of Civil Engineering | Wastewater Odor Reduction Mechanisms in Soil Filters | WP-00883-03 | 1702 | 30,968 |
| Carlson, Dale A., Ph.D. Dept. of Civil Engineering | Status and Research Needs for Potato Wastewaters | WP-01486-01 | 1206 | 18,343 |
| Christman, Russell F., Ph.D. Dept. of Civil Engineering | Chemical Characteristics of Organic Color in Water | WP-01031-02 | 1602 | 27,281 |
| English, Thomas S., Ph.D. Dept. of Oceanography | Distribution of Demersal Fishes in Inshore Waters | WP-00803-03S1 | 1805 | 4,656 |
| Gessel, Stanley P., Ph.D. College of Forestry | Influence of Forest Ecosystems on Water Quality | WP-00743-03 | 1608 | _____ * |
| Katz, Max, Ph.D. College of Fisheries | Sublethal Amounts of Organic Insecticides and Fish | WP-00956-02 | 1805 | _____ * |
| McCarthy, Joseph L., Ph.D. Dept. of Chemical Engineering | Studies of Low Molecular Weight Lignin Sulfonates | WP-00628-04 | 1604 | 20,482 |
| McCarthy, Joseph L., Ph.D. Dept. of Civil Engineering | Steam Stripping of Kraft Pulp Mill Effluent Streams | WP-01305-01 | 1204 | 43,665 |
| Nece, Ronald E., Sc.D. Dept. of Civil Engineering | Salt Water Entrainment for Dilution in Sewer Outfalls | WP-00512-05 | 1608 | 12,118 |
| Oglesby, Ray T., Ph.D. Dept. of Civil Engineering | System Analysis of Eutrophica- tion Control by Flushing | WP-01391-01 | 1601 | 109,642 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|-----------|---------|
| <u>WASHINGTON</u> | | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | | |
| Scott, David R., Ph.D. College of Forestry | Water Relationships in High Altitude Forests | WP-00720-03 | 1608 | _____ * |
| Smith, Lynwood S., Ph.D. Fisheries Research Institute | Responses of Fish to Environmental Stress | WP-01056-03 | 1805 | 52,739 |
| Taub, Frieda B., Ph.D. College of Fisheries | Biological Models of Freshwater Communities | WP-00982-03 | 1805 | 31,449 |
| <u>Washington State University</u> <u>Pullman</u> | | | | |
| Bennett, Paul J., B.S. Dept. of Sanitary Engineering | Water Reclamation by Reverse Osmosis | WP-00624-04 | 1708 | _____ * |
| Dunstan, Gilbert H. Sanitary Engineering | Occurence of Pesticides in Aquatic Environments | WP-00676-04 | 1605 | 2,707 |
| Kittrick, James A., Ph.D. Dept. of Agronomy | Clay Mineral Stability and Water Composition | WP-01016-02 | 1611 | 13,800 |
| Parker, Richard A., Ph.D. Dept. of Zoology | Some Aspects of Microcrusta- cean Phosphate Metabolism | WP-00903-06 | 1805 | _____ * |
| Stokes, Jacob L., Ph.D. Dept. of Bacteriology and Public Health | The Biology and Chemistry of Sphaerotilus | WP-00239-07 | 1805 | 25,426 |
| Tinney, E. Roy, Ph.D. Albrook Hydraulic Laboratory | Flushing of Small Shallow Lakes | WP-01313-01 | 1601 | 16,089 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|---------------|-----------|--------|
| <u>WASHINGTON</u> | | | | |
| <u>Western Washington State College</u> <u>Bellingham</u> | | | | |
| Dube, Maurice A., Ph.D. Dept. of Biology | Effects of Pollutants on Submarine Plant Synecology | WP-01206-01 | 1805 | 19,951 |
| <u>WEST VIRGINIA</u> | | | | |
| <u>West Virginia University</u> <u>Morgantown</u> | | | | |
| Gerencser, Vincent F., Ph.D. Dept. of Microbiology | Studies on Aquatic Stalked Bacteria | WP-00616-03S2 | 1805 | 3,068 |
| <u>WISCONSIN</u> | | | | |
| <u>Marquette University</u> <u>Milwaukee</u> | | | | |
| Zanoni, Alphonse E., Ph.D. Dept. of Civil Engineering | Effluent Deoxygenation at Different Temperatures | WP-00829-02 | 1707 | _____* |
| <u>University of Wisconsin</u> <u>Madison</u> | | | | |
| Chesters, Gordon, Ph.D. Dept. of Soils | Herbicide Removal Processes in Soil | WP-00751-03 | 1606 | _____* |
| Ensign, Jerald C., Ph.D. Dept. of Bacteriology | Significance of Arthrobacter in Ecology of Water and Soil | WP-01316-01 | 1805 | 23,190 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|-------------|-----------|---------|
| <u>WISCONSIN</u> | | | | |
| <u>University of Wisconsin</u> <u>Madison</u> | | | | |
| Fitzgerald, George P., Ph.D. Water Chemistry Laboratory | Detection of Limiting and Surplus Nutrients in Algae | WP-00297-07 | 1601 | 28,680 |
| Lee, G. Fred Ph.D. Dept. of Civil Engineering | Concentration of Organic Solutes in Water | WP-00371-03 | 1702 | _____* |
| Rohlich, Gerard A., Ph.D. Hydraulic and Sanitary Laboratory | Eutrophication of Natural Waters | WP-01470-01 | 1601 | 187,917 |
| Rohlich, Gerard A., Ph.D. Hydraulic and Sanitary Laboratory | Investigation of Zooglear Flocs | WP-00905-03 | 1705 | 15,141 |
| <u>FOREIGN</u> | | | | |
| <u>AUSTRALIA</u> | | | | |
| <u>Melbourne Water Science Institute</u> <u>Melbourne</u> | | | | |
| Parker, Cecil D. Director | Function of Solids in Lagoon Treatment of Sewage | WP-00321-05 | 1709 | _____* |
| <u>University of Sydney</u> <u>Sydney</u> | | | | |
| Alexander, Albert E., Sc.D. Department of Pharmacy | Effect of Surface Films on Gases Dissolved in Water | WP-00877-03 | 1605 | 12,850 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT-NO. | PPBS. NO. | AMOUNT |
|---|---|-------------|-----------|--------|
| <u>FOREIGN</u> | | | | |
| <u>CANADA</u> | | | | |
| <u>University of Toronto</u> <u>Ontario</u> | | | | |
| Brinkhurst, Ralph O., Ph.D. Department of Zoology | Taxonomy and Biology of Tubificidae (Sludge Worms) | WP-00940-03 | 1805 | 20,885 |
| <u>University of Waterloo</u> <u>Waterloo, Ontario</u> | | | | |
| Csanady, Gabriel T., Ph.D. Dept. of Mechanical Engineering | Big Eddies and Mixing Process- es in the Great Lakes | WP-01139-01 | 1608 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL
RESEARCH CONTRACTS FISCAL YEAR 1968
SUMMARY OF CONTRACT AWARDS BY STATES

| State | Number of Contractors | Number Awarded | Amount Awarded |
|----------------------|--------------------------|-------------------|-------------------|
| Alabama | 1 | 1 | \$ 51,900 |
| Arizona | 1 | 1 | 65,950 |
| California | 16 | 24 | 2,010,716 |
| Connecticut | 1 | 1 | 42,932 |
| Delaware | 1 | 1 | 99,862 |
| District of Columbia | 1 | 2 | 80,606 |
| Florida | 1 | 1 | 71,810 |
| Illinois | 3 | 5 | 262,416 |
| Indiana | 1 | 1 | 58,402 |
| Massachusetts | 4 | 5 | 255,469 |
| Michigan | 1 | 1 | 143,882 |
| Missouri | 1 | 3 | 157,646 |
| Montana | 1 | 1 | 72,750 |
| New Jersey | 3 | 3 | 146,881 |
| New York | 1 | 1 | 42,336 |
| Ohio | 3 | 3 | 382,173 |
| Oregon | 2 | 2 | 19,225 |
| Pennsylvania | 3 | 3 | 17,584 |
| Rhode Island | 1 | 1 | 128,085 |
| Utah | 1 | 1 | 34,521 |
| Washington | 1 | 1 | 38,000 |
| <u>Wisconsin</u> | <u>2</u> | <u>2</u> | <u>76,066</u> |
| 22 States | 50 | 64 | \$ 4,259,212 |

Active Research Contracts 1968

9 States
15 Contractors
17 Contracts

WATER POLLUTION CONTROL

RESEARCH CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|---|--------------|------------------------------|-----------|
| <u>ALABAMA</u> | | | | |
| Southern Research Institute Birmingham | Demineralization of Sewage Effluents by the Transport-Depletion Process | 14-12-443 | 1701 1704 | \$ 51,900 |
| <u>ARIZONA</u> | | | | |
| INFILCO Fuller Company Tucson | Advanced Wastewater Treatment Using Powdered Activated Carbon in Recirculating Slurry Contractor Clarifiers | 14-12-400 | 1702 1703 1705 | 65,950 |
| <u>CALIFORNIA</u> | | | | |
| Aerojet-General Corp. El Monte | A Study of Biological Methods of Sludge Dewatering | 14-12-427 | 1707 | 78,400 |
| Aerojet-General Corp. El Monte | Analytical Instrumentation for Determining Low Levels of Total Organic Carbon in Water | 14-12-182 | 1602 | 48,900 |
| Aerojet-General Corp. El Monte | Renovation of Municipal Wastewater by Reverse Osmosis Systems | 14-12-184 | 1701 1702 1704 1705 | 203,299 |

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--|---|--------------|-----------|------------|
| <u>CALIFORNIA</u> | | | | |
| Aerojet-General Corp. El Monte | An Experimental Reverse Osmosis Unit for Wastewater Recovery | 14-12-106 | 1701 | \$ 53,740* |
| | | | 1702 | 23,643 |
| | | | 1704 | |
| | | | 1705 | |
| American Process Equipment Los Angeles | A Study of the Effect of Ultrasonic Energy on Wastewater | 14-12-196 | 1701 | 29,120 |
| | | | 1702 | |
| | | | 1706 | |
| Atomics International Canoga Park | Study of the Kinetics and Nature of Precipitate Obtained in Phosphate Removal Using Iron and Aluminum | 14-12-158 | 1701 | 93,500 |
| Atomics International Canoga Park | A Study of a Process for Phosphate Removal from Water Supplies Using Lanthanum Precipitation | 14-12-183 | 1701 | 29,167 |
| | | | 1702 | |
| | | | 1704 | |
| Bechtel Corp. San Francisco | Technical Feasibility and Analysis of Costs and Effectiveness of Bulk Transport of Sewage Treatment Plant Sludge and Dredging Spoils | 14-12-156 | 1401 | 279,597 |
| | | | 1507 | |
| County Sanitation District No. 2 of Los Angeles County Los Angeles | Phosphorus Removal by Addition of Aluminum to the Activated Sludge Process | 14-12-152 | 1701 | 7,500 |
| | | | 1702 | |
| | | | 1704 | |
| Electro-Optical System, Inc. Pasadena | Plasma Arc Processing of Sulfite Waste Liquors | 14-12-162 | 1204 | 49,945 |
| Engineering Science, Inc. Arcadia | Studies on Removal of Carbonaceous, Nitrogenous, and Phosphorus Materials from Concentrated Process Waste Streams | 14-12-431 | 1701 | 44,904 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|--|-----------|
| <u>CALIFORNIA</u> | | | | |
| FMC Corp. Santa Clara | Process to Remove Carbonaceous, Nitro- geneous, and Phosphorus Materials from Concentrated Process Waste Streams | 14-12-414 | 1701 | \$119,346 |
| Garrett Research and Develop- ment Co., Inc. Laverne | An Investigation of High-Pressure Foam Wastewater Treatment Process | 14-12-176 | 1702 1703 1705 1706 | 31,874 |
| General Electric Company Pleasanton | Development of a New Technique for Water Tracing | 14-12-436 | 1606 | 106,339 |
| Gulf General Atomic, Inc. San Diego | Study and Experiments in Wastewater Reclamation by a Reverse Osmosis Process | 14-12-181 | 1703 1704 1705 | 112,410 |
| Gulf General Atomic, Inc. San Diego | Membrane Materials for Wastewater Reclama- tion by Reverse Osmosis | 14-12-452 | 1701 1702 1703 1704 1705 1706 | 65,138 |
| Los Angeles City Board of Public Works Los Angeles | Characterization of the Activated Sludge Process at the Hyperion Treatment Plant | 14-12-148 | 1705 | 77,174 |
| Los Angeles County Sanitation District No. 2 Los Angeles | Support of the Advanced Waste Treatment Pilot Plant at Pomona, California | 14-12-150 | 1708 | 155,545 |
| Rocketdyne, Division of North American Rockwell Corp. Canoga Park | Dilute Solution Reactions of Nitrate Ion as Applied to Water Reclamation | 14-12-52 | 1708 | 26,749 |
| Rocketdyne, Division of North American Rockwell Corp. Canoga | Electro-osmotic Pumping for Dewatering Sewage Sludge | 14-12-406 | 1707 | 83,280 |

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--|---|--------------|--------------|-----------|
| <u>CALIFORNIA</u> | | | | |
| Rocketdyne, Division of North American Rockwell Corp. Canoga Park | Pyrographic Determination of Pollutants in Wastewater | 14-12-424 | 1604 1605 | \$ 84,500 |
| Rocketdyne, Division of North American Rockwell Corp. Canoga Park | Development Program for Treatment of Wastewater by Aeration | 14-12-434 | 1101 | 65,270 |
| Santee County Water District Santee | Reclamation of Biologically, Mechanically and Chemically Treated Wastewater for Potable Water Supply Uses Employing Carbon Adsorption, Electrodialysis, and Chlorination Treatments | 14-12-444 | 1704 | 148,733 |
| University of California Berkley | Removal of Refractory Organic Contaminants from Wastewater by Synthetic Resins | 14-12-28 | 1702 | 58,769* |
| Water Resources Engineers, Inc. Walnut Creek | Formulation of a General Mathematical Model for the Prediction of Thermal Changes in Impoundments | 14-12-422 | 1613 | 46,283 |
| <u>CONNECTICUT</u> | | | | |
| Dorr-Oliver, Inc. Stamford | Obtain Design Information and Realistic Cost Data for Certain Wastewater Treatment Process | 14-12-60 | 1609 | 15,200* |
| Dorr-Oliver Inc. Stamford | Development of a Powdered Carbon Regeneration Device | 14-12-59 | 1702 1703 | 67,485* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| <u>LOCATION/CONTRACTOR</u> | <u>PROJECT TITLE</u> | <u>CONTRACT NO.</u> | <u>PPBS. NO.</u> | <u>AMOUNT</u> |
|---|---|---------------------|------------------|---------------|
| <u>CONNECTICUT</u> | | | | |
| General Dynamics Groton | Study of Flow Reduction and Treatment of Wastewater from Households | 14-12-428 | 1105 1608 | \$ 42,932 |
| <u>DELAWARE</u> | | | | |
| Standard Brands Chemical Dover | Investigation of Amphipatic Water Soluble Polymers as Flocculants and Flotation Aids in Domestic Wastewater Treatment | 14-12-430 | 1703 | 99,862 |
| <u>DISTRICT OF COLUMBIA</u> | | | | |
| Biospherics Research, Inc. Washington | Identification of Limiting Factors in the Biological Treatment of Sewage | 14-12-129 | 1705 | 15,000 |
| Biospherics Research, Inc. Washington, D. C. | Bio-Mass Determination - A New Technique for the Control of Aeration Sewage Treatment Processes | 14-12-419 | 1705 | 65,606 |
| <u>FLORIDA</u> | | | | |
| Cordis Corp. Miami | Application of Immunochemical Techniques to the Detection and Identification of Chemical and Biological Pollutants | 14-12-412 | 1603 1604 | 71,810 |
| <u>ILLINOIS</u> | | | | |
| General American Transportation Corp., General American Research Corp. Niles | Development of a Mathematical Model of Sewage Sludge Fluidized Bed Incinerators | 14-12-415 | 1709 | 31,228 |

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|--------------|------------|
| <u>ILLINOIS</u> | | | | |
| General American Transportation Corp., General American Research Corp. Niles | Development of a Time Dependent Mathematical Model of the Activated Sludge | 14-12-73 | 1705 | \$ 53,600* |
| General American Transportation Corp., General American Research Corp. Niles | Development of a Mathematical Model for Separation, Coagulation, and Sedimentation Process Using Addition of Chemicals | 14-12-416 | 1709 | 41,585 |
| IIT Research Institute Chicago | Ammonia Stripping Mathematical Model for Wastewater Treatment | 14-12-193 | 1709 | 14,483 |
| IIT Research Institute Chicago | Photolysis Mechanisms for Pollution Abatement | 14-12-433 | 1702 1705 | 49,982 |
| W. R. Grace and Company Lake Zurich | Ultimate Disposal of Phosphate from Wastewater by Recovery as Fertilizer | 14-12-171 | 1707 | 125,138 |
| <u>INDIANA</u> | | | | |
| American Oil Company Whiting | Development and Evaluation of a Method for Determining Ammonia and Total Nitrogen in Wastewater | 14-12-109 | 1602 | 41,922* |
| Charles Pfizer and Co., Inc. Terre Haute | Applications of Powdered Magnetic Iron Oxide to the Removal of Pathogenic Microorganisms from Water | 14-12-418 | 1603 1706 | 58,402 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|-------------------------------------|---|--------------|----------------------|-----------|
| <u>MASSACHUSETTS</u> | | | | |
| Dynatech Corp. Cambridge | An Electrochemical Method for Removal of Phosphates from Wastewaters | 14-12-405 | 1701 1702 1703 | \$ 44,113 |
| Ionics Inc., Watertown | The Electro-Oxidation of Ammonia in Sewage to Nitrogen | 14-12-432 | 1701, | 30,580 |
| Ionics, Inc., Watertown | Adjustment of Overhead and G&A Rates for FY 64 and 65, Waste Treatment Electrodialy- sis Pilot Plant, Lebanon, Ohio | PH-86-64-119 | 1704 | 8,286* |
| Process Research, Inc. Cambridge | Membrane Fouling Mechanisms in the Electrodialysis Process | 14-12-91 | 1704 | 63,520* |
| Process Research, Inc. Cambridge | Mathematical Model of the Electrodialysis Process for Advanced Waste Treatment | 14-12-410 | 1704 | 32,590 |
| Process Research, Inc. Cambridge | Selective Nitrate and Phosphate Removal | 14-12-179 | 1701 | 50,558 |
| Tyco Laboratories Waltham | Basic Salinogen Ion Exchange Resins for Selective Nitrate Removal from Potable and Effluent Waters | 14-12-439 | 1701 | 97,628 |
| <u>MICHIGAN</u> | | | | |
| University of Michigan Ann Arbor | Effect on Water Temperature and/or Dissolved Oxygen Requirements on Selected Mollusks | 14-12-441 | 1805 | 143,882 |

*Active in FY-1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|----------------------|-------------------|
| <u>MISSOURI</u> | | | | |
| Midwest Research Institute Kansas City | Research and Field Engineering Studies for Optimizing Lipid Biostabilization Processes | 14-12-198 | 1705 | \$ 59,813 |
| Midwest Research Institute Kansas City | An Investigation of Light-Catalyzed Chlorine Oxidation for Treatment of Wastewater | 14-12-72 | 1701 1702 1706 | 24,972 24,988* |
| Midwest Research Institute Kansas City | Oxygenation of Aqueous Bodies Using Liquid Oxygen "Loxination" | 14-12-168 | 1702 1705 1706 | 72,861 |
| <u>MONTANA</u> | | | | |
| University of Montana Missoula | Water Quality Requirements of Aquatic Insects | 14-12-438 | 1805 | 72,750 |
| <u>NEW JERSEY</u> | | | | |
| Arde Inc. Paramus | Applicability of ARDOX Catalysts to the Oxidation of Municipal Sewage Effluents and of Wastes Produced During Manned Space Flight | 14-12-141 | 1702 1705 1706 | 69,935 |
| Burns and Roe, Inc. Oradell | A Study to Develop the Concept of the D. C. Biological Treatment Plant | 14-12-151 | 1705 | 2,000 |
| FMC Corp. Princeton | Fluidized Carbon Contacting | 14-12-76 | 1702 | 94,000* |
| FMC Corp. Princeton | Thermal Regeneration of Powdered Activated Carbon | 14-12-92 | 1702 1703 | 82,451* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--|---|--------------|----------------------|---------------------|
| <u>NEW JERSEY</u> | | | | |
| Johns-Manville Corp. Manville | Experiments to Determine the Effectiveness of Phosphate Removal by Means of the Moving Bed Filter | 14-12-154 | 1701 1702 1704 | \$ 74,946 |
| <u>NEW YORK</u> | | | | |
| Foster D. Snell, Inc. New York | Investigate the Feasibility of Hydrolysis of Sludge Using Low Pressure Steam with SO ₂ as a Hydrolytic Adjunct and to Study Utilization of the Resulting Hydrolysate | 14-12-188 | 1707 | 42,336 |
| <u>OHIO</u> | | | | |
| Battelle Memorial Institute Columbus | Development of a Fluidized Bed Technique for the Regeneration of Powdered Activated Carbon | 14-12-113 | 1702 1703 | 55,900* |
| Monsanto Research Corp. Dayton | Study of Utilization and Disposal of Lime Sludges Containing Phosphates | 14-12-199 | 1707 | 78,420 |
| Ohio State University Research Foundation Columbus | Development of a Multiple Unit Natural Laboratory for the Study of Acid Mine Drainage | 14-12-97 | 1401 | 39,000 40,301* |
| Rand Development Corp. Cleveland | Field Demonstration of Pipeline Transportation and Land Disposal of Sludge Slurries | 14-12-30 | 1707 | 264,753 683,000* |
| <u>OREGON</u> | | | | |
| Neptune Microfloc, Inc. Corvallis | Modifications to the Pumping Station at Shagwa Lake Field Site, Ely, Minnesota | 14-12-5 | 1601 | 5,125 |

*Active in FY-1968 - Supported by funds awarded in previous.

| <u>LOCATION/CONTRACTOR</u> | <u>PROJECT TITLE</u> | <u>CONTRACT NO.</u> | <u>PPBS. NO.</u> | <u>AMOUNT</u> |
|--|--|---------------------|------------------|---------------|
| <u>OREGON</u> | | | | |
| Oregon State University Corvallis | Mathematical and Computer Services for the Analysis of Data and Design of Experiments for Certain Water Pollution Control Admini- stration Programs | 14-12-440 | 1607 | 14,100 |
| <u>PENNSYLVANIA</u> | | | | |
| Cyrus Wm. Rice and Company Pittsburgh | Use of Inert Gases to Eliminate Acid Pollution from Abandoned Mines | 14-12-404 | 1401 | 13,584 |
| Cyrus Wm. Rice and Company Pittsburgh | The Use of Inert Gases to Eliminate Pollution from Abandoned Mines | 14-12-98 | 1401 | 25,000* |
| MSA Research Corp. Evans City | Investigation of the Regeneration of Spent Granular Activated Carbon | 14-12-107 | 1702 1703 | 55,100* |
| Roy F. Weston West Chester | A Study to Develop the Concept of the District of Columbia Biological Treatment Plant | 14-12-147 | 1705 | 2,000 |
| Swindell-Dressler Company Pittsburgh | A Conceptual Study of the District of Columbia Biological Treatment Plant | 14-12-149 | 1705 | 2,000 |
| Swindell-Dressler Company Pittsburgh | Appraisal of Granular Carbon Contacting | 14-12-105 | 1702 1703 | 64,868* |
| <u>RHODE ISLAND</u> | | | | |
| University of Rhode Island Kingston | Collection and Establishment in Culture of Species and Strains of Marine Phytoplanktonic Organisms | 14-12-447 | 1805 | 128,085 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|---|--------------|--------------|-----------|
| <u>UTAH</u> | | | | |
| Utah State University Research Foundation Logan | Investigation of the Characteristics and Pollutional Problems of Irrigation Return Flows | 14-12-408 | 1303 | \$ 34,521 |
| <u>WASHINGTON</u> | | | | |
| Battelle Memorial Institute Richland | Evaluation of Operating Parameters of Alumina Columns for the Select Removal of Phosphorus from Wastewaters and Ultimate Disposal of Phosphorus as Calcium Phosphate | 14-12-413 | 1701 1707 | 38,000 |
| <u>WISCONSIN</u> | | | | |
| Rex Chainbelt, Inc. Milwaukee | A Mathematical Model for the Final Clarifier of an Activated Sludge Process | 14-12-194 | 1709 | 72,316 |
| University of Wisconsin Madison | Algal Bioassay to Determine the Extent of Nutrient Removal by AWT at the Waste Treatment Plant at Ely, Minnesota | 14-12-145 | 1601 | 3,750 |

WATER POLLUTION CONTROL
 DEMONSTRATION GRANTS FISCAL YEAR 1968
 SUMMARY OF GRANT AWARDS BY STATES

| State | Institutions and Agencies | Number Awarded | Amount Awarded |
|----------------------|------------------------------|-------------------|-------------------|
| Alaska | 1 | 1 | \$ 14,059 |
| Arizona | 2 | 2 | 130,087 |
| California | 3 | 3 | 216,075 |
| Colorado | 1 | 1 | 25,300 |
| Connecticut | 1 | 1 | 39,056 |
| District of Columbia | 2 | 2 | 85,840 |
| Florida | 3 | 3 | 261,499 |
| Illinois | 1 | 1 | 10,000 |
| Indiana | 2 | 3 | 131,623 |
| Kansas | 1 | 1 | 18,378 |
| Louisiana | 1 | 1 | 26,713 |
| Maryland | 1 | 1 | 39,627 |
| Massachusetts | 1 | 1 | 20,460 |
| Michigan | 2 | 2 | 69,500 |
| Minnesota | 3 | 3 | 113,671 |
| Missouri | 2 | 2 | 26,685 |
| New Jersey | 2 | 2 | 141,428 |
| New York | 5 | 5 | 426,209 |
| Ohio | 3 | 3 | 79,373 |
| Oklahoma | 1 | 1 | 12,340 |
| Puerto Rico | 1 | 1 | 46,252 |
| South Dakota | 1 | 1 | 13,033 |
| Tennessee | 1 | 1 | 25,020 |
| Texas | 2 | 2 | 83,037 |
| Utah | 2 | 2 | 74,127 |
| Wisconsin | 1 | 1 | 61,943 |
| Wyoming | 1 | 1 | 34,037 |
| Foreign | 1 | 1 | 14,890 |
| <hr/> | | | |
| 27 States | 48 | 49 | \$ 2,240,262 |

Active Demonstration Grants 1968

15 States
 26 Institutions and Agencies
 27 Demonstration Grants

WATER POLLUTION CONTROL

DEMONSTRATION GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 5 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|------------|-----------|-----------|
| <u>ALASKA</u> | | | | |
| <u>University of Alaska</u> <u>College</u> | | | | |
| Murphy, R. Sage, Ph.D. Dept. of Environmental Health Engineering | Evaluation of an Oxidation Ditch Wastewater Treatment Plant in Sub-artic Alaska | WPD-207-02 | 1101 | \$ 14,059 |
| <u>ARIZONA</u> | | | | |
| <u>Salt River Project</u> <u>Phoenix</u> | | | | |
| Shipley, Henry Assistant General | Spreading Treated Sewage for Groundwater Recharge | WPD-140-02 | 1606 | 12,300 |
| <u>City of Tucson</u> <u>Tucson</u> | | | | |
| Brooks, Frank Director of Water and Sewers | Tucson Wastewater Reclamation Project | WPD-108-04 | 1708 | 118,087 |

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|------------|-----------|--------|
| <u>CALIFORNIA</u> | | | | |
| <u>Eastern Municipal Water District</u> <u>Hemet</u> | | | | |
| Boen, Doyle F. General Manager & Chief Engineer | Reutilization of Wastewater Recycled through Groundwater | WPD-81-03 | 1606 | _____* |
| <u>Lake Tahoe Area Council</u> <u>South Lake Tahoe</u> | | | | |
| McGauhey, P. H. Chairman, Board of Consultants | Demonstration Project on Eutrophication of Surface Waters - Lake Tahoe | WPD-48-03 | 1601 | 74,000 |
| <u>Los Angeles County</u> <u>Los Angeles</u> | | | | |
| Lambie, John A. County Engineer | Wastewater Reclamation Project for Antelope Valley | WPD-50-04 | 1708 | _____* |
| <u>Orange County Water District</u> <u>Santa Ana</u> | | | | |
| Owen, Langdon W. District Engineer | Reclamation of Wastewaters for Injection Underground | WPD-110-02 | 1708 | _____* |
| <u>Sacramento County Dept. of Public Works</u> <u>Sacramento</u> | | | | |
| Wanderer, W. C., Jr. Chief, Utilities Division | Primary Treatment and Sludge Dewatering by Vibrating Screens | WPD-177-02 | 1703 | 27,785 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|------------|-----------|---------|
| <u>CALIFORNIA</u> | | | | |
| <u>City of San Diego</u> <u>San Diego</u> | | | | |
| Cook, Leland, Jr., Superintendent, Utilities Dept. | Sewage Odor Control by Liquid-Gas Extraction | WPD-135-01 | 1705 | _____* |
| <u>City of San Jose</u> <u>San Jose</u> | | | | |
| Belick, Frank M. Engineer-Superintendent | Reducing Waste Activated Sludge Volume by Anaerobiosis | WPD-129-02 | 1707 | _____* |
| <u>Stanford University</u> <u>Stanford</u> | | | | |
| Eliassen, Rolf, Ph.D. Dept. of Civil Engineering | Reclamation of Reusable Water from Sewage | WPD-21-05 | 1708 | _____* |
| <u>State of California Water Resources</u> <u>Sacramento</u> | | | | |
| Beck, Louis A. Senior Sanitary Engineer | Nutrient Removal from Agri- cultural Wastewater | WPD-143-02 | 1303 | 114,290 |
| <u>COLORADO</u> | | | | |
| <u>Beet Sugar Development Foundation</u> <u>Fort Collins</u> | | | | |
| Fischer, James H. Manager | Anaerobic-Aerobic Sugar Beet Waste Treatment | WPD-93-04 | 1206 | 25,300 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|--------------------------|--------------|------------------|
| <u>CONNECTICUT</u> | | | | |
| <u>University of Connecticut</u> <u>Storrs</u> | | | | |
| Klei, Herbert, E., Ph.D. Dept. of Chemical Engineering | Automatic Control of a Completely Mixed Activated Sludge Reactor | WPD-175-02 | 1703 1705 | \$ 39,056 |
| <u>DISTRICT OF COLUMBIA</u> | | | | |
| <u>League of Women Voters-Education Fund</u> <u>Washington</u> | | | | |
| Whittemore, Arthur E., (Mrs.) Trustee, Chairman, Water Resources Projects | Schools for Citizens on the Use of Water for Tomorrow's Living | WPD-62-04S1 WPD-62-05 | 1609 | 10,590 49,450 |
| <u>National Association of Counties Research Foundation</u> <u>Washington</u> | | | | |
| Hillenbrand, Bernard F. Executive Director | Public Officials Water Pollution Control Demonstration Project | WPD-55-04 | 1609 | _____* |
| <u>Water Pollution Control Federation</u> <u>Washington</u> | | | | |
| Burke, George W., Jr. Manager, Technical Services | Aids for Wastewater Systems Personnel Safety and Advancement | WPD-159-02 | 1101 | 25,800 |
| Burke, George W., Jr. Manager, Technical Services | Development of Lecture Guides for Wastewater Treatment Plant Operators | WPD-45-02 | 1709 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|--------------|-----------|-----------|
| <u>FLORIDA</u> | | | | |
| <u>Florida Atlantic Ocean Sciences Institute, Inc.</u> | | | | |
| <u>Boca Raton</u> | | | | |
| McAllister, Raymond F., Ph.D. Dept. of Oceanography | Demonstration of the Limita- tions and Effects of Waste Disposal on an Ocean Shelf | WPD-165-02 | 1607 | \$149,731 |
| <u>City of Gainesville</u> | | | | |
| <u>Gainesville</u> | | | | |
| Black, A. P., Ph.D. Research Professor Emeritus | Disinfectant and Physiological Effects of Iodine for Treatment of Polluted Water Supplies | WPD-19-06 | 1706 | 80,000 |
| <u>Orange County Florida</u> | | | | |
| <u>Department of Water Conservation</u> | | | | |
| <u>Orlando</u> | | | | |
| Sheffield, C. W. Department Head | Field Evaluation of Reaerating Surface Waters | WPD-213-01 | 1608 | 31,768 |
| <u>ILLINOIS</u> | | | | |
| <u>Izaak Walton League of America, Inc.</u> | | | | |
| <u>Glenview</u> | | | | |
| Penfold, Joseph W. Conservation Director | Citizen Workshops on Clean Waters for America | WPD-128-02S1 | 1701 | 10,000 |
| <u>INDIANA</u> | | | | |
| <u>Rose Polytechnic Institute</u> | | | | |
| <u>Terre Haute</u> | | | | |
| Arthur, Robert M., Ph.D. Dept. of Bioengineering | Automatic Recording of Short Term B.O.D. | WPD-141-02 | 1602 | 10,480 |

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|------------|--------------|-----------|
| <u>INDIANA</u> | | | | |
| <u>University of Notre Dame</u> <u>Notre Dame</u> | | | | |
| Tenney, Mark W., Ph.D. Dept. of Environmental Health Engineering | Effects of Domestic Pollu- tion Abatement on a Eutrophic Lake | WPD-126-03 | 1601 | \$ 30,031 |
| Tenney, Mark W., Ph.D. Dept. of Environmental Health Engineering | Removal of Organic and Eutro- phying Pollutants by Combined Chemical and Biological Treatment | WPD-224-01 | 1701 1705 | 91,112 |
| <u>IOWA</u> | | | | |
| <u>University of Iowa</u> <u>Iowa City</u> | | | | |
| Smith, H. Sidwell, Ph.D. Dept. of Civil Engineering | Homogeneous (Totally Mixed) Activated Sludge Applications | WPD-138-01 | 1707 | _____* |
| <u>KANSAS</u> | | | | |
| <u>University of Kansas</u> <u>Lawrence</u> | | | | |
| McKinney, Ross E., Ph.D. Dept. of Civil Engineering | Cattle Feedlot Wastewater Treatment | WPD-123-03 | 1304 | 18,378 |
| <u>LOUISIANA</u> | | | | |
| <u>Tulane University</u> <u>New Orleans</u> | | | | |
| MacDonald, Frank W., Ph.D. Dept. of Civil Engineering and Public Health | Bedding and Infiltration Studies of Sanitary Sewers in the Gulf Coast Area | WPD-80-04 | 1102 | 26,713 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|---|------------|-----------|--------|
| <u>MARYLAND</u> | | | | |
| <u>The John Hopkins University</u> <u>Baltimore</u> | | | | |
| Liebman, Jon C., Ph.D. Dept. of Environmental Engineering | Optimization of Regional Waste Treatment Facilities | WPD-125-02 | 1709 | _____* |
| Renn, Charles E., Ph.D. Dept. of Environmental Engineering | Management of Recycled Waste Process Water Ponds | WPD-117-03 | 1201 | 39,627 |
| <u>MASSACHUSETTS</u> | | | | |
| <u>Massachusetts Health Research Institute, Inc.</u> <u>Boston</u> | | | | |
| Bridges, Colton H., Co-Director Supt., Bureau of Wildlife Research and Management | Massachusetts Pesticide Monitoring Demonstration | WPD-88-04 | 1602 | 20,460 |
| <u>MICHIGAN</u> | | | | |
| <u>City of Jackson</u> <u>Jackson</u> | | | | |
| Greene, Robert A., Supt. of Sewage Treatment | Supplementary Aeration Demonstration for Secondary Effluent | WPD-157-01 | 1707 | _____* |
| <u>City of Trenton</u> <u>Trenton</u> | | | | |
| Hennessey, Timothy L. City Engineer | Phosphate Removal by Biological Process | WPD-173-02 | 1701 | 46,500 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|------------|----------------------|--------|
| <u>MICHIGAN</u> | | | | |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | | |
| Brown, Robert M., President National Sanitation Foundation | Development of Criteria for Packaged Compact Sewage Treatment Plants | WPD-74-03 | 1709 | _____* |
| Mancy, K.H., Ph.D. School of Public Health | Application of Programmed Learning to Water Chemistry | WPD-139-02 | 1602 | 23,000 |
| <u>MINNESOTA</u> | | | | |
| <u>Minnesota State Department of Health</u> <u>Minneapolis</u> | | | | |
| Bauer, Henry Deputy Executive Officer | Demonstration of the Channel Aeration Process in Treatment of Sewage | WPD-33-04 | 1101 | 31,397 |
| <u>St. Mary's College</u> <u>Winona</u> | | | | |
| McNabb, C. D., Ph.D. Dept. of Biology | Undergraduate Training for Careers in Water Supply and Pollution Control | WPD-144-03 | 1609 | 20,274 |
| <u>State of Minnesota</u> <u>Department of Iron Range Resources and Rehabilitation</u> <u>St. Paul</u> | | | | |
| Deyoannes, A. M. Commissioner | Peat Bog Waste Stabiliation | WPD-164-02 | 1701 1703 1705 | 62,000 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|----------------|-----------|-----------|
| <u>MISSOURI</u> | | | | |
| <u>City of Kansas City</u> <u>Kansas City</u> | | | | |
| Popalisky, J.R., Chief Water Supply Division | Organics Causing Taste or Odor in Missouri River | WPD-201-01 | 1801 | \$ 14,675 |
| <u>Missouri Department of Conservation</u> <u>Fisheries Division</u> <u>Jefferson City</u> | | | | |
| Whitley, James R., Supervisor Water Quality Branch | Control of Undesirable Aquatic Vegetation in Lake Taneycona, Missouri | WPD-222-01(R1) | 1601 | 12,010 |
| <u>NEW JERSEY</u> | | | | |
| <u>Delaware River Basin Commission</u> <u>Trenton</u> | | | | |
| Wright, James F. Executive Director | Interstate Regional Planning for Water Supply and Waste Disposal | WPD-136-03 | 1609 | 79,996 |
| <u>Division of Fish and Game</u> <u>Bureau of Fisheries Management</u> <u>Trenton</u> | | | | |
| Pyle, A. Bruce Principal Fisheries Biologist | Fish and Aquatic Life Consideration in New Jersey's Water Pollution Abatement Program | WPD-4-06 | 1805 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS.NO. | AMOUNT |
|---|---|------------|----------|----------|
| <u>NEW JERSEY</u> | | | | |
| <u>Rutgers - The State University</u> <u>New Brunswick</u> | | | | |
| Whipple, William Jr., Director Water Resources Research Institute | Oxygen Regeneration of Polluted Rivers | WPD-131-02 | 1608 | \$61,432 |
| <u>NEW MEXICO</u> | | | | |
| <u>New Mexico State University</u> <u>Las Cruces</u> | | | | |
| Speece, R. E., Ph.D. Dept. of Civil Engineering | Diffused Air U-Tube Oxygenation in an Oxidation Pond | WPD-202-01 | 1709 | _____* |
| <u>NEW YORK</u> | | | | |
| <u>Health Research Inc.</u> <u>New York State Dept. of Health</u> <u>Albany</u> | | | | |
| O'Brien, James E. Division of Laboratories Research | To Evaluate the Utility of Existing Automatic Chemical Analysis Equipment for Water Quality Surveillance Under Computer Control | WPD-119-02 | 1602 | 67,673 |
| <u>County of Nassau</u> <u>Mineola</u> | | | | |
| Simins, Herbert J. Commissioner of Public Works | Water Conservation by Waste Water Reclamation and Injection for Recharge | WPD-71-03 | 1708 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|------------|--------------|-----------|
| <u>NEW YORK</u> | | | | |
| <u>National Pollution Control Foundation Inc.</u> <u>New York</u> | | | | |
| Moshy, Raymond J., Ph.D. Staff V.P. & Director-Research American Machine & Foundry Co. | Pollution Control of Bathing Beaches by Use of a Pneumatic Curtain | WPD-229-01 | 1501 1508 | \$173,283 |
| <u>Rensselaer Polytechnic Institute</u> <u>Troy</u> | | | | |
| Aulenbach, Donald B., Ph.D. Dept. of Environmental Engineering | Removal of Syndets and Recla- mation of Laundry Wastes | WPD-99-01 | 1705 | _____* |
| <u>New York State Dept. of Health</u> <u>Albany</u> | | | | |
| Hetling, Leo J., Director Research Unit, Environmental Health Services | Treatment Needed by Sewage Before Injection-Well Recharge | WPD-83-04 | 1708 | 58,000 |
| <u>Soap & Detergent Association</u> <u>New York</u> | | | | |
| Brenner, Theodore E. Research Director | Phosphorus Removal in the Activated Sludge Process | WPD-220-01 | 1701 | 108,116 |
| <u>State University College</u> <u>Brockport Research Foundation</u> <u>Brockport</u> | | | | |
| Damann, Kenneth E., Ph.D. Dept. of Biological Sciences | Renovation of a Dystrophic Lake into a Eutrophic Lake | WPD-180-02 | 1601 | 19,137 |

*Active in FY 1968- Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|---|--|------------|-----------|--------|
| <u>NORTH DAKOTA</u> | | | | |
| <u>North Dakota State Dept. of Health</u> <u>Bismark</u> | | | | |
| Van Heuvelen, Willis Chief, Environmental Health and Engineering Services | Anaerobic Fermentation-Aerobic Stabilization Process for Treating Waste Whey with Domestic Waste | WPD-155-01 | 1206 | _____* |
| Van Heuvelen, Willis Chief, Environmental Health and Engineering Services | Treatment of Waste from the Manufacture of Potato Starch by Anaerobic Fermentation- Aerobic Stabilization | WPD-94-03 | 1206 | _____* |
| <u>OHIO</u> | | | | |
| <u>City of Cincinnati</u> <u>Cincinnati</u> | | | | |
| Caster, Arthur D. Superintendent, Division of Water Pollution Control | Nitrogen Removal in Municipal Waste Treatment | WPD-151-01 | 1701 | _____* |
| <u>City of Dayton</u> <u>Dayton</u> | | | | |
| Tossey, Defro Superintendent, Sewage Treatment | Tertiary Treatment by Floccu- lation and Rapid-Sand Filtration | WPD-114-03 | 1703 | 10,942 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|---|------------|-----------|-----------|
| <u>OHIO</u> | | | | |
| <u>Ohio State University</u> <u>Athens</u> | | | | |
| Kaneshige, Harry M., Ph.D. Dept. of Civil Engineering | Operational Demonstration of Oxidation Ditch Method of Waste Treatment | WPD-100-03 | 1101 | \$ 39,106 |
| <u>University of Cincinnati</u> <u>Cincinnati</u> | | | | |
| Eye, David J. Dept. of Environmental Health Engineering | Treatment of Total Wastes from a Sole Leather Tannery | WPD-185-02 | 1212 | 29,325 |
| <u>OKLAHOMA</u> | | | | |
| <u>University of Oklahoma, Research Institute</u> <u>Norman</u> | | | | |
| Reid, George W., Ph.D. Dept. of Sanitary Science and Public Health | Demonstrating the Effect of Nutrients in Oxidation Pond Receiving Streams | WPD-98-03 | 1601 | 12,340 |
| <u>OREGON</u> | | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | | |
| Burgess, Fredrick J., Ph.D. Dept. of Civil Engineering | Water Reuse Quantity-Quality Effect on Treatment Process | WPD-90-03 | 1708 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| <u>LOCATION AND PROJECT DIRECTOR</u> | <u>PROJECT TITLE</u> | <u>GRANT NO.</u> | <u>PPBS. NO.</u> | <u>AMOUNT</u> |
|--|---|------------------|------------------|---------------|
| <u>PENNSYLVANIA</u> | | | | |
| <u>Pennsylvania State University</u> <u>University Park</u> | | | | |
| Farrell, Michael A. Director, Agricultural Experiment Station | Renovation of Sewage Effluent for Reuse as a Water Resource | WPD-95-03 | 1708 | _____* |
| <u>Villanova University</u> <u>Villanova</u> | | | | |
| Clarke, Edgar W., Ph.D. Dept. of Chemical Engineering | Elimination of Water Pollution by Used Oil Re-Refining Plants | WPD-174-01 | 1508 | _____* |
| <u>PUERTO RICO</u> | | | | |
| <u>Agricultural Exp. Station</u> <u>University of Puerto Rico</u> <u>Rum Pilot Plant</u> <u>Rio Piedras</u> | | | | |
| Guzman, Ramon M. Aqueduct and Sewage Authority | Disposal of Rum Distillery Wastes | WPD-226-01 | 1206 | 46,252 |
| <u>SOUTH DAKOTA</u> | | | | |
| <u>General Beadle State College</u> <u>Madison</u> | | | | |
| Brashier, Clyde K., Ph.D. Dept. of Biology | A Study to Evaluate the Effect of Silt Removal in a Northern Prairie Lake | WPD-218-01 | 1601 | 13,033 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|--|--|------------|-----------|-----------|
| <u>TENNESSEE</u> | | | | |
| <u>Vanderbilt University</u> <u>Nashville</u> | | | | |
| Krenkel, Peter A., Ph.D. Dept. of Sanitary and Water Engineering | Turbulent Diffusion and Reaeration in Natural Rivers | WPD-168-02 | 1605 | \$ 25,020 |
| <u>TEXAS</u> | | | | |
| <u>North Texas State University</u> <u>Denton</u> | | | | |
| Guthrie, Rufus, Ph.D. Dept. of Biology | Rapid Identification of Microbial Populations in Water | WPD-146-02 | 1603 | 16,100 |
| <u>San Antonio River Authority</u> <u>Water Quality and Supply Division</u> <u>San Antonio</u> | | | | |
| Koch, C. Thomas Engineering Assistant | Drying Characteristics of Aerobically Digested Sludge | WPD-182-01 | 1707 | _____* |
| <u>University of Texas Medical Branch</u> <u>Galveston</u> | | | | |
| Connell, C. H., Ph.D. Dept. of Preventive Medicine and Community Health | Phosphorus Removal and Disposal from Municipal Wastewater | WPD-223-01 | 1701 | 66,937 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| <u>LOCATION AND PROJECT DIRECTOR</u> | <u>PROJECT TITLE</u> | <u>GRANT NO.</u> | <u>PPBS. NO.</u> | <u>AMOUNT</u> |
|--|--|----------------------------|------------------|---------------------|
| <u>UTAH</u> | | | | |
| <u>Utah State University</u> <u>Logan</u> | | | | |
| Hendricks, David W., Ph.D. Utah Water Research Laboratory | Sequential Water Use Within a Hydrologic Complex | WPD-17-03 | 1608 | 37,390 |
| Woffinden, Duard S. Utah Water Research Laboratory | Continuation of Water Quality Telemetry Project | WPD-179-02 | 1602 | 36,737 ¹ |
| <u>VIRGINIA</u> | | | | |
| <u>Individual</u> | | | | |
| Strandberg, Carl H. Fairfax | Aerial Water Quality Recon- naissance Demonstration | WPD-20-03 WPD-20-03(S1) | 1608 | _____* |
| <u>University of Virginia</u> <u>Charlottesville</u> | | | | |
| Parker, Clinton E., Ph.D. Dept. of Civil Engineering | An Anaerobic-Aerobic Lagoon for Treating Vegetable Tannins | WPD-199-01 | 1206 | _____* |
| <u>WASHINGTON</u> | | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | | |
| Oglesby, Ray T., Ph.D. Dept. of Civil Engineering | Dilution Effects on Nutrients and Productivity in Receiving Waters | WPD-38-03 | 1605 | _____* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION AND PROJECT DIRECTOR | PROJECT TITLE | GRANT NO. | PPBS. NO. | AMOUNT |
|-------------------------------|---------------|-----------|-----------|--------|
|-------------------------------|---------------|-----------|-----------|--------|

WASHINGTON

Washington State University
Pullman

| | | | | |
|--|---|------------|------|---------|
| Proctor, Donald E., Ph.D. Dept. of Sanitary Engineering | Anaerobic-Aerobic Lagoon Treatment of Dairy Manure Wastes | WPD-184-01 | 1605 | _____ * |
|--|---|------------|------|---------|

WISCONSIN

Sewerage Commissioner of the City of Milwaukee
Milwaukee

| | | | | |
|--|---|------------|------|--------|
| Ernest, Lawrence A. Laboratory Director | Sewage Phosphorus Removal by an Activated Sludge Plant | WPD-188-02 | 1701 | 61,943 |
|--|---|------------|------|--------|

WYOMING

University of Wyoming
Laramie

| | | | | |
|--|--|------------|------|--------|
| Champlin, Robert L., Ph.D. Dept. of Civil Engineering | Supplementary Aeration of Lagoons in Rigorous Climate Areas | WPD-133-02 | 1705 | 34,037 |
|--|--|------------|------|--------|

FOREIGN

AUSTRALIA

Melbourne Water Science Institute
Melbourne

| | | | | |
|------------------------------|---|------------|------|--------|
| Parker, Cecil D. Director | Cannery Waste Treatment by Lagoons and Oxidation Ditches | WPD-211-01 | 1206 | 14,890 |
|------------------------------|---|------------|------|--------|

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATES

| State | Number of Municipalities | Number Awarded | Amount Awarded |
|---------------|-----------------------------|-------------------|-------------------|
| Michigan | 1 | 1 | \$ 500,250 |
| New Hampshire | 1 | 1 | 559,080 |
| New Jersey | 1 | 1 | 474,000 |
| New York | 1 | 1 | 843,750 |
| Ohio | 1 | 1 | 325,162 |
| Texas | 1 | 1 | 828,750 |
| 6 States | 6 | 6 | \$ 3,530,992 |

Active Storm and Combined Sewer Grants 1968

11 States
15 Municipalities
15 Grants

WATER POLLUTION CONTROL
STORM AND COMBINED SEWER GRANTS
FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)1 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|--|-----------|--------------|---------------------------------|----------------|
| <u>IDAHO</u> | | | | | |
| City of Meridian Meridian | Reduction of Ground Water Infiltration into Sewers by Zone Pumping | 29-IDA-2 | 1102 | 25,000 | 18,375* |
| <u>ILLINOIS</u> | | | | | |
| City of Chicago Chicago | Lawrence Avenue Overflow Sewer System | 31-ILL-6 | 1102 | 14,389,600 | 1,500,000* |
| City of Shelbyville Shelbyville | Systems Approach to Combined Sewer Storm Water Overflow Pollution Abatement | 24-ILL-4 | 1102 | 2,640,760 | 440,000* |
| Springfield Sanitary District Springfield | Evaluation of a Stabilization Pond for Treatment of Combined Sewer Overflows | 3-ILL-1 | 1102 | 199,140 | 86,570* |
| <u>INDIANA</u> | | | | | |
| East Chicago Sanitary District East Chicago | East Chicago Treatment Lagoon | 11-IND-1 | 1102 | 3,116,533 | 1,044,120* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|--|-------------|--------------|---------------------------------|----------------|
| <u>LOUISIANA</u> | | | | | |
| Sewerage and Water Board New Orleans | Chlorination and Hypochlorination of Polluted Storm Water Pumpage | 14-LA-1 | 1102 | 1,429,000 | 1,034,250* |
| <u>MASSACHUSETTS</u> | | | | | |
| Metropolitan District Commission Boston | The Construction of a Storm Deten- tion and Chlorination Station | 7-MASS-1 | 1102 | 4,345,650 | 1,000,000* |
| <u>MICHIGAN</u> | | | | | |
| City of Detroit Board of Water Commissioners Detroit | System Monitoring and Remote Control | 4-MICH-1 | 1102 | 2,113,000 | 1,000,000* |
| City of Mt. Clemens Mt. Clemens | A Combined Sewerage Collection and Treatment Facility | 37-MICH-2 | 1102 | 667,500 | 500,250 |
| <u>MINNESOTA</u> | | | | | |
| Minneapolis-St. Paul Sanitary District St. Paul | Dispatching System for Control of Combined Sewer Losses | 1-MINN-1 | 1102 | 1,741,500 | 870,750* |
| City of South St. Paul South St. Paul | Efficiency and Economy of Polymeric Sewage Clarification | WPRD-111-01 | 1102 | 845,159 | 450,000* |
| <u>NEW HAMPSHIRE</u> | | | | | |
| City of Somersworth Somersworth | Somersworth Combined Sewage Overflow Treatment Project | 30-NH-1 | 1102 | 931,800 | 559,080 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|--|---------------|--------------|---------------------------------|----------------|
| <u>NEW JERSEY</u> | | | | | |
| Borough of New Providence New Providence | Utilization of High Rate Trickling Filters for Treatment of Combined Sewer Overflows | 34-NJ-1 | 1102 | 637,500 | 474,000 |
| <u>NEW YORK</u> | | | | | |
| City of New York New York | Evaluation of Spring Creek Auxiliary Pollution Control Project | 36-NY-2 | 1102 | 1,126,000 | 843,750 |
| City of New York New York | Wards Island Water Pollution Control Plant Ponsor Flow Regulating Siphon | 25-NY-1 | 1102 | 223,000 | 167,250* |
| <u>OHIO</u> | | | | | |
| City of Cleveland Cleveland | A Program for Demonstrating Combined Sewer Overflow Control Techniques for Water Quality Improvement and Beach Protection | WPRD-234-01 | 1102 | 1,030,000 | 325,162 |
| City of Columbus Columbus | Modification of Whittier Street Storm Stand-by Tanks | 27-OHIO-1 | 1102 | 1,231,519 | 300,000* |
| <u>TEXAS</u> | | | | | |
| City of Dallas Dallas | Stormwater Treatment Facilities | WPRD-35-Tex-1 | 1102 | 1,105,000 | 828,750 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|--|-----------|--------------|---------------------------------|----------------|
| <u>WASHINGTON</u> | | | | | |
| Municipality of Metropolitan Seattle Seattle | Duwamish River-Elliot Bay Storm Water Control System | 13-WASH-1 | 1102 | 3,891,900 | 1,400,000* |
| <u>WISCONSIN</u> | | | | | |
| City of Chippewa Falls Chippewa Falls | Utilization of a Storage Pond with Treatment for Combined Sewer Overflows | 22-WIS-2 | 1102 | 773,983 | 289,685* |
| City of Milwaukee Milwaukee | Humboldt Avenue Overflow Detention and Chlorination Facility | 10-WIS-1 | 1102 | 2,118,118 | 1,468,589* |

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

STORM AND COMBINED SEWER CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATES

| State | Number of Contractors | Number Awarded | Amount Awarded |
|----------------------|--------------------------|-------------------|-------------------|
| California | 4 | 5 | \$ 886,277 |
| District of Columbia | 2 | 2 | 687,367 |
| Illinois | 1 | 1 | 250,000 |
| Maryland | 2 | 2 | 306,017 |
| Michigan | 1 | 1 | 52,604 |
| Nebraska | 1 | 1 | 301,200 |
| New York | 1 | 1 | 343,210 |
| Ohio | 2 | 2 | 634,913 |
| Oklahoma | 1 | 1 | 61,285 |
| Oregon | 1 | 1 | 139,331 |
| Pennsylvania | 2 | 2 | 409,600 |
| Rhode Island | 1 | 1 | 32,733 |
| Texas | 1 | 2 | 172,702 |
| Virginia | 1 | 1 | 411,305 |
| <u>Wisconsin</u> | <u>1</u> | <u>1</u> | <u>586,515</u> |
| 15 States | 22 | 24 | \$ 5,275,059 |

Active Storm and Combined Sewer Contracts 1968

7 States
9 Contractors
9 Contracts

WATER POLLUTION CONTROL
STORM AND COMBINED SEWER CONTRACTS
FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)1 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | FPBS. NO. | AMOUNT |
|---|--|--------------|-----------|------------|
| <u>CALIFORNIA</u> | | | | |
| Acoustica Associates Los Angeles | Demonstrate Feasibility of Use of Ultrasonic Filtration in Treating Overflows from Combined and/or Storm Sewers | 14-12-23 | 1102 | \$ 75,693* |
| Aerojet-General Corp. El Monte | A Method for Assessing the Extent of Pollution from Storm Water Run-off in an Urban Area | 14-12-197 | 1102 | 402,594 |
| Aerojet-General Corp. El Monte | Role of Solids in Combined Sewage Pollution | 14-12-180 | 1102 | 92,605 |
| American Process Equipment Corp. Los Angeles | Fabrication and Evaluation of a Ultrasonic System for Treating Sewage | 14-12-195 | 1102 | 248,500 |
| FMC Corporation Santa Clara | Feasibility of a Periodic Flushing System for Combined Sewer Cleansing | 14-12-19 | 1102 | 31,093* |
| FMC Corporation Santa Clara | Feasibility of a Periodic Flushing System for Combined Sewer Cleansing | 14-12-19 | 1102 | 1,278 |
| Metcalf & Eddy, Inc. Engineers Palo Alto | Engineering Investigation of the East Bay Municipal Utility District of the San Francisco Bay Area (Oakland) | 14-12-407 | 1102 | 141,300 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|-----------|-----------|
| <u>DISTRICT OF COLUMBIA</u> | | | | |
| Economic Systems Corp., AYCO Washington | Develop the Relation between Land-Use Practices and Influence of Pollution in Urban Storm Water | 14-12-187 | 1102 | \$114,300 |
| Underwater Storage Inc. Washington | Demonstrate Underwater Facility to Provide Temporary Storage of Storm Overflows from a Combined Sewer | 14-12-42 | 1102 | 97,714* |
| Underwater Storage Inc. and Silver Schwartz Ltd. Washington | Pilot Demonstration Underwater Storage Facility for Storm Water Overflow | 14-12-139 | 1102 | 573,067 |
| <u>ILLINOIS</u> | | | | |
| American Public Works Assn. Chicago | Study Methods for Reducing Water Pollution from Storm Sewer and Combination Discharges through Defined Public Work Practices | WA-66-23 | 1103 | 104,000* |
| American Public Works Assn. Chicago | The Problems of Combined Sewer Facilities and Overflows in United States Communities | 14-12-65 | 1102 | 250,000 |
| <u>MARYLAND</u> | | | | |
| Hercules Incorporated Cumberland | A Feasibility Study of Utilizing a Self-Cleaning, Self- Adjusting Spiralloy Filter | 14-12-39 | 1102 | 108,293 |
| Hittman Associates Baltimore | System Study, Design and Evaluation of Local Storage, Treatment and Reuse of Water | 14-12-20 | 1103 | 197,724 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|-----------|------------|
| <u>MICHIGAN</u> | | | | |
| Dow Chemical Company Midland | Demonstrate the Use of Polymeric Flocculants for Improved Efficiency in the Treatment of Combined Sewer Overflows at the Milk River Pumping Station | 14-12-9 | 1102 | \$700,000* |
| Dow Chemical Company Midland | Rock Creek Clarification Project (Washington, D. C.) | 14-12-170 | 1102 | 52,604 |
| <u>NEBRASKA</u> | | | | |
| Henningson, Durham & Richardson Omaha | An Engineering Investigation of Storm and Combined Sewer Problems | 14-12-402 | 1102 | 301,200 |
| <u>NEW YORK</u> | | | | |
| American Society of Civil Engineers New York | Feasibility and Development of New Methods of Separating Sanitary Sewage from Combined Sewerage Systems | 14-12-29 | 1102 | 343,210 |
| <u>OHIO</u> | | | | |
| Burgess & Nipple, Limited Consulting Engineers Columbus | Develop the Relation Between Land-Use Practices and Increase of Pollution in Urban Stormwater | 14-12-401 | 1102 | 136,665 |
| Havens and Emerson Consulting Engineers | Feasibility Study and a Preliminary Design of a Full-Scale Stabilization Retention Basin to be Installed in Lake Erie and to Serve the Demonstration Area Within the Easterly Sewer District | 14-12-27 | 1102 | 87,616* |
| Karl R. Rohrer Associates Akron | Design, Construction and Operation of a Facility to Demonstrate Offshore Underwater Temporary Storage of Storm Overflow from a Combined Sewer | 14-12-143 | 1102 | 498,248 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--|--|--------------|-----------|------------|
| <u>OHIO</u> | | | | |
| Rand Development Corporation Cleveland | Design, Construction, Operation and Evaluation of a Rapid-Flow Combustile Filter for Treatment of Combined Sewer Overflow | WA-67-2 | 1102 | \$300,000* |
| <u>OKLAHOMA</u> | | | | |
| Rhodes Corporation Oklahoma City | Demonstration Project of a Prototype Treatment Plant Designed to Treat Wastes Found at a Combined Sewer Overflow | 14-12-11 | 1102 | 256,448* |
| Rhodes Corporation Oklahoma City | Demonstration Project of a Prototype Treatment Plant Designed to Treat Wastes Found at a Combined Sewer Overflow | 14-12-11 | 1102 | 61,285 |
| <u>OREGON</u> | | | | |
| Cornell, Howland, Hayes and Merrifield Corvallis | Primary Treatment of Storm Water Overflow from Combined Sewers by High Rate Fine Mesh Screens | 14-12-128 | 1102 | 139,331 |
| <u>PENNSYLVANIA</u> | | | | |
| Glenfield and Kennedy Inc. King of Prussia | Microstraining Pilot Tests | 14-12-136 | 1102 | 186,086 |
| R. F. Weston West Chester | Develop and Demonstrate a Method for Assessing the Extent of Pollution from Storm Water Run-off in an Urban Area | 14-12-403 | 1102 | 223,514 |
| <u>RHODE ISLAND</u> | | | | |
| Fram Corporation Providence | Feasibility Investigation of a Self- Cleaning Strainer and a Self-Cleaning Filter | 14-12-17 | 1102 | 32,733 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--------------------------------------|--|--------------|-----------|----------|
| <u>TEXAS</u> | | | | |
| Western Company Richardson | Methods to Reduce Water Pollution Caused by Storm Water Sewer Loading by Using Fluid Flow Friction Reducers | 14-12-34 | 1102 | 300,178* |
| Western Company Richardson | Methods to Reduce Water Pollution Caused by Storm Water Sewer Loading by Using Fluid Flow Friction Reducers | 14-12-34 | 1102 | 76,000 |
| Western Company Richardson | Development and Demonstration of Materials to Reduce or Eliminate Water Infiltration Into Sewerage | 14-12-146 | 1102 | 96,702 |
| <u>VIRGINIA</u> | | | | |
| Melpar, Incorporated Falls Church | Construction of a Facility to Demonstrate Off-Shore Underwater Temporary Storage of Storm Overflow From a Combined Sewer | 14-12-133 | 1102 | 411,305 |
| <u>WISCONSIN</u> | | | | |
| Allis-Chalmers Milwaukee | Design, Construction, Operation and Evaluation of a Demonstration Waste Treatment Device Termed the Rotating Biological Contactor | 14-12-24 | 1102 | 388,526 |
| Rex Chainbelt, Inc. Milwaukee | Demonstration of the Applicability of Screening and Chemical Oxidation of Storm and Combined Sewage | 14-12-40 | 1102 | 197,989 |

*Active in FY 1968 - Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATE

| State | Municipalities | Number Awarded | Amount Awarded |
|----------------------|----------------|-------------------|-------------------|
| Arkansas | 1 | 1 | \$ 153,569 |
| California | 2 | 2 | 637,125 |
| Colorado | 1 | 1 | 47,289 |
| District of Columbia | 1 | 1 | 300,000 |
| Florida | 1 | 1 | 300,000 |
| Illinois | 1 | 1 | 346,182 |
| Iowa | 1 | 1 | 392,700 |
| Louisiana | 1 | 1 | 112,500 |
| Maryland | 2 | 2 | 418,660 |
| Missouri | 1 | 1 | 24,092 |
| New York | 2 | 2 | 728,275 |
| Ohio | 2 | 2 | 343,728 |
| Oregon | 1 | 1 | 325,104 |
| Pennsylvania | 1 | 1 | 88,230 |
| Texas | 2 | 2 | 345,590 |
| Washington | 1 | 1 | 565,318 |
| <u>Wisconsin</u> | <u>1</u> | <u>1</u> | <u>261,258</u> |
| 17 States | 22 | 22 | \$ 5,389,620 |

Active Advanced Waste Treatment Grants 1968

8 States
14 Municipalities
14 Grants

WATER POLLUTION CONTROL
ADVANCED WASTE TREATMENT GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)2 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|---|-------------|--------------|---------------------------------|----------------|
| <u>ARKANSAS</u> | | | | | |
| City of Jacksonville Jacksonville | Demonstration of a Facility for the Biological Treatment of a Complex Chlorophenolic Waste | WPRD-246-01 | 1106 | 243,313 | 153,569 |
| <u>CALIFORNIA</u> | | | | | |
| City of Chino Chino | Tertiary Activated Sludge Treatment to Reclaim Wastes for Water Supply for Agricultural and Recreational Purposes | WPRD-16-01 | 1705 | 750,000 | 560,000* |
| County Sanitation District No. 2 of Los Angeles County Los Angeles | Basic Research on Sulfide Occurrence and Control in Sewage Collections System | WPRD-171-01 | 1101 | 200,000 | 73,125 |
| Eastern Municipal Water District Hemet | Reverse Osmosis to Remove Dissolved Solids from Reclaimed Wastewater Used in Ground Water Recharge Program | WPRD-4-01 | 1708 | 300,000 | 225,000* |
| Improvement District No. 1 of Irvine Ranch Water District Irvine | Tertiary Sewage Treatment for Reuse | WPRD-59-01 | 1708 | 465,000 | 325,500* |
| Los Angeles County Board of Supervisors Los Angeles | Antelope Valley Wastewater Reclamation Project | WPRD-97-01 | 1708 | 1,237,700 | 564,000 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. No. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|---|----------------|--------------|---------------------------------|----------------|
| <u>CALIFORNIA</u> | | | | | |
| City of San Buenaventura Ventura | Integrated Activated Sludge Biological Filter Process | WPRD-2-01 | 1705 | 120,301 | 90,226* |
| City of San Jose San Jose | BOD, Solids, and Nutrient Removal from Secondary Effluent by Foam Fractionation | WPRD-30-01 | 1703 | 53,870 | 36,100* |
| Santee County Water District Santee | Renovation of Waste Effluent for Recreation and Potable Water Supply Use | WPRD-5-01 | 1708 | 1,700,000 | 800,000* |
| South Tahoe Public Utility District South Lake Tahoe | Recovery and Reuse of Lime as a Coagulant in Tertiary Treatment and Nitrogen Removal from Tertiary Treated Effluent | WPRD-52-01 | 1701 | 2,044,000 | 1,022,000* |
| <u>COLORADO</u> | | | | | |
| City of Colorado Springs Colorado Springs | Tertiary Treatment of Sewage Plant Effluent Reuse-Pikes Peak | WPRD-75-01 | 1708 | 63,052 | 47,289 |
| <u>DISTRICT OF COLUMBIA</u> | | | | | |
| D. C. Government Dept. of Sanitary Engineering Washington | Use of Modified Activated Sludge Treatment to Achieve Nutrient Removal and to provide Consistent Feed to Tertiary Treatment System | WPRD-50-01 | 1705 | 400,000 | 300,000* |
| D. C. Government Dept. of Sanitary Engineering Washington | Use of Modified Activated Sludge Treatment to Achieve Nutrient Removal and to Provide Consistent Feed to Tertiary Treatment System | WPRD-50-01- S1 | 1705 | 511,683 | 300,000 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|---|----------------|--------------|---------------------------------|----------------|
| <u>DISTRICT OF COLUMBIA</u> | | | | | |
| D. C. Government Dept. of Sanitary Engineering Washington | Full Scale Raw Waste Water Floccula- tion Study | WPRD-53-01 | 1703 | 393,600 | 293,600* |
| <u>FLORIDA</u> | | | | | |
| City of Hollywood Hollywood | Aerobic Digestion of Sewage Sludge with Effluent Disposal by an Ocean Outfall | WPRD-57-01- R1 | 1101 | 594,320 | 300,000 |
| <u>ILLINOIS</u> | | | | | |
| Metropolitan Sanitary District of Greater Chicago Chicago | Hanover Tertiary Plant Studies | WPRD-92-01 | 1101 | 461,576 | 346,182 |
| <u>INDIANA</u> | | | | | |
| East Chicago Sanitary District East Chicago | Tertiary Treatment of Combined Storm Water Sanitary Relief Discharges and Sewerage Treatment Plant Effluent | WPRD-70-01 | 1101 | 600,000 | 450,000* |
| <u>IOWA</u> | | | | | |
| City of Cedar Rapids Cedar Rapids | Fly Ash Filter Aid of Sewage Solids Dewatering and Disposal | WPRD-158-01 | 1106 | 1,518,900 | 392,700 |
| <u>LOUISIANA</u> | | | | | |
| Jefferson Parish Metairie | Study Involving Aeration to Freshen Sewage and Retard Bacterial Activity in Long Sewer Lines | WPRD-121-01-R1 | 1101 | 150,000 | 112,500 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|--|-------------|--------------|---------------------------------|----------------|
| <u>MARYLAND</u> | | | | | |
| City of Hagerstown Hagerstown | A Pretreatment Study on Combined Industrial-Municipal Wastewaters | WPRD-149-01 | 1106 | 427,853 | 320,890 |
| Community of St. Michaels St. Michaels | Controlled Treatment Systems- Ultraviolet Disinfection | WPRD-139-01 | 1706 | 130,360 | 97,770 |
| Washington Suburban Sanitary Model Commission Hyattsville | Advanced Waste Treatment Plant | WPRD-62-01 | 1708 | 2,200,000 | 1,650,000* |
| <u>MICHIGAN</u> | | | | | |
| City of Detroit Detroit | Pilot-Scale Study of Improved Phosphate Removal by Modified Activated Sludge Process | WPRD-51-01 | 1701 | 581,200 | 299,800* |
| <u>MISSOURI</u> | | | | | |
| Metropolitan St. Louis Sewer District St. Louis | Evaluation of Odor Control by Covering A Sludge Thickener with a Styrofoam Dome | WPRD-23-01 | 1101 | 32,123 | 24,092 |
| <u>NEW YORK</u> | | | | | |
| Nassau County Dept. of Public Works Mineola | Advanced Waste Treatment for Water Reclamation and Reuse by Injection | WPRD-61-01 | 1708 | 1,853,200 | 700,000* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| <u>LOCATION/GRANTEE</u> | <u>PROJECT TITLE</u> | <u>GRANT NO.</u> | <u>PPBS. NO.</u> | <u>ESTIMATED PROJECT COST</u> | <u>TOTAL GRANT</u> |
|--|--|------------------|------------------|-------------------------------|--------------------|
| <u>NEW YORK</u> | | | | | |
| New York State Dept. of Health Albany | High Performance Bio-Treatment Process for Municipal Wastes | WPRD-143-01-R1 | 1705 | 662,147 | 371,125 |
| Onondaga County Dept. of Public Works Syracuse | A Demonstration of Joint Municipal-Industrial Waste Treatment in the Onondaga Lake Watershed | WPRD-66-01 | 1106 | 507,700 | 357,150 |
| <u>OHIO</u> | | | | | |
| City of Cleveland Cleveland | The Use of Organic Polyelectrolytes for Operational Improvement of Waste Treatment Processes | WPRD-102-01 | 1703 | 158,000 | 118,500 |
| Lake County Painesville | Water Pollution Abatement Program for Mentor, Lake County, Ohio | WPRD-172-01-R1 | 1101 | 301,504 | 225,228 |
| <u>OREGON</u> | | | | | |
| City of Dallas Dallas | Demonstrate the Economics and Efficiency of the Completely Aerobic Treatment Method When Applied to the Treatment of Combined Domestic and Industrial Wastes from a Small Municipality | WPRD-29-01 | 1106 | 463,472 | 325,104 |
| <u>PENNSYLVANIA</u> | | | | | |
| City of Erie Erie | Joint Treatment of Domestic Sewage and Pulp and Paper Mill Waste | WPRD-223-01 | 1106 | 333,674 | 88,230 |
| <u>TEXAS</u> | | | | | |
| City of Austin Austin | Design Guides for Selective Wastewater Treatment Processes | WPRD-178-01 | 1101 | 461,906 | 326,176 |

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|---|----------------|--------------|---------------------------------|----------------|
| <u>TEXAS</u> | | | | | |
| City of Dallas Dallas City Water Works Dallas | A Complete Recycle Wastewater Treatment Plant | WPRD-64-01 | 1708 | 1,692,500 | 510,000* |
| San Antonio River Authority San Antonio | Contact Stabilization Operating Parameters | WPRD-205-01 | 1101 | 25,900 | 19,414 |
| <u>WASHINGTON</u> | | | | | |
| Municipality of Metropolitan Seattle Seattle | Park Development with Wet Digested Sludge | WPRD-180-01-R1 | 1707 | 1,097,239 | 565,318 |
| <u>WISCONSIN</u> | | | | | |
| Green Bay Metropolitan Sewerage District Green Bay | Combined Industrial and Municipal Waste Treatment | WPRD-60-01 | 1106 | 335,000 | 251,250* |
| Sewage Commission City of Milwaukee Milwaukee | Development of a System for Condition- ing and Dewatering Sludge by Freezing | WPRD-71-01 | 1101 | 348,344 | 261,258 |

*Active in FY 1968- Supported by funds awarded in previous years.

WATER POLLUTION CONTROL

ADVANCED WASTE TREATMENT CONTRACTS FISCAL YEAR 1968

SUMMARY OF CONTRACT AWARDS BY STATE

| State | Number of Contractors | Number Awarded | Amount Awarded |
|--------------|--------------------------|-------------------|-------------------|
| Missouri | 1 | 1 | \$ 72,861 |
| Ohio | 1 | 1 | 380,000 |
| Pennsylvania | 2 | 2 | 215,280 |
| <hr/> | | | |
| 3 States | 4 | 4 | \$ 668,141 |

WATER POLLUTION CONTROL
ADVANCED WASTE TREATMENT CONTRACTS
FISCAL YEAR 1968

AWARDED UNDER SECTION 6(a)2 OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|---|--|--------------|-----------|---------|
| <u>MISSOURI</u> | | | | |
| Midwest Research Institute Kansas City | Oxygenation of Aqueous Bodies Using Liquid Oxygen - "Loxination" | 14-12-68 | 1705 | 72,861 |
| <u>OHIO</u> | | | | |
| Rand Development Corp. Cleveland | Field Demonstration of Pipeline Transporta- tion and Land Disposal of Sludge Slurries | 14-12-30 | 1707 | 380,000 |
| <u>PENNSYLVANIA</u> | | | | |
| Roy F. Weston Inc. West Chester | Architectual and Engineering Biological Treatment Pilot Plant and Sludge Disposal Facility (Blue Plains, Washington, D. C.) | 14-12-167 | 1705 | 56,430 |
| Yule, Jordan, and McNee Philadelphia | Design and Development of a 3.5 Million Gallon Per Day Sewerage Treatment Plant Using a Coal Treatment Process | 14-12-38 | 1709 | 158,850 |

WATER POLLUTION CONTROL

INDUSTRIAL WASTE TREATMENT GRANTS FISCAL YEAR 1968

SUMMARY OF GRANT AWARDS BY STATE

| State | Agencies and Corporations | Number Awarded | Amount Awarded |
|----------------------|------------------------------|-------------------|-------------------|
| California | 1 | 2 | \$ 853,739 |
| District of Columbia | 1 | 3 | 100,703 |
| Florida | 1 | 1 | 165,000 |
| Georgia | 2 | 3 | 802,776 |
| Idaho | 1 | 1 | 483,217 |
| Indiana | 1 | 1 | 170,265 |
| Massachusetts | 1 | 1 | 87,215 |
| Minnesota | 2 | 2 | 551,585 |
| New Jersey | 2 | 2 | 180,350 |
| New York | 2 | 2 | 506,970 |
| North Carolina | 3 | 3 | 650,844 |
| Ohio | 1 | 1 | 209,000 |
| Oklahoma | 1 | 1 | 75,886 |
| Oregon | 1 | 1 | 42,028 |
| Pennsylvania | 1 | 6 | 1,338,747 |
| Tennessee | 1 | 1 | 50,400 |
| Texas | 1 | 1 | 184,816 |
| Washington | 1 | 1 | 374,669 |
| <u>Wisconsin</u> | <u>1</u> | <u>1</u> | <u>483,371</u> |
| 19 States | 25 | 34 | \$ 7,311,581 |

Active Industrial Waste Treatment Grants 1968

8 States
10 Agencies and Corporations
10 Grants

WATER POLLUTION CONTROL
INDUSTRIAL WASTE TREATMENT GRANTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(b) OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|---|-------------|--------------|---------------------------------|----------------|
| <u>CALIFORNIA</u> | | | | | |
| Aerojet-General Corp. El Monte | Demonstration of Industrial Water Renovation Plant of Odessa, Texas | WPRD-31-01 | 1106 | 323,500 | 226,500* |
| Crown Zellerbach Corp. San Francisco | Economic Optimization of Secondary Treatment and Determination of Load to Control Biological Growths in a Stream | WPRD-69-01 | 1204 | 732,627 | 503,739 |
| Crown Zellerbach Corp. San Francisco | A Demonstration Plant Evaluation of Four Methods for Pulp and Paper Sludge Utilization and Disposal | WPRD-144-01 | 1204 | 848,320 | 350,000 |
| FMC Corp. Santa Clara | Cannery Waste Treatment by the Kehr Activated Sludge Process | WPRD-18-01 | 1206 | 43,200 | 29,300* |
| <u>COLORADO</u> | | | | | |
| Beet Sugar Development Foundation Fort Collins | Concentration of Sugar Beet Wastes for Economic Treatment with Biological Systems | WPRD-43-01 | 1206 | 372,500 | 102,000* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|---|-------------|--------------|---------------------------------|----------------|
| <u>DISTRICT OF COLUMBIA</u> | | | | | |
| National Canners Association Research Foundation Washington | Reconditioning and Reuse of Food Processing Brines | WPRD-134-01 | 1206 | 45,000 | 31,500 |
| National Canners Association Research Foundation Washington | Integrated Treatment of Liquid Wastes from Food Canning Operations | WPRD-151-01 | 1206 | 55,120 | 33,330 |
| National Canners Association Washington | Evaluation of Controlled Temperature and Forced Aeration and Trickling Filter Treatment of Food Canning Wastewaters | WPRD-251-01 | 1206 | 51,251 | 35,873 |
| <u>FLORIDA</u> | | | | | |
| Minute Maid Company Orlando | Removal of Organics and Nutrients From Citrus Processing Plant Wastes | WPRD-38-01 | 1206 | 550,000 | 350,000* |
| Winter Garden Citrus Products Winter Garden | Lime Treatment and Inplant Reuse of an Activated Sludge Plant Effluent in the Citrus Processing Industry | WPRD-161-01 | 1206 | 442,300 | 165,000 |
| <u>GEORGIA</u> | | | | | |
| Georgia Kraft Company Rome | Explore the Feasibility of Using Foam Separation for Concentrating and/or Removing Components of High BOD from Kraft Mill Wastes | WPRD-117-01 | 1204 | 68,830 | 48,181 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|-------------------------------------|---|-------------|--------------|---------------------------------|----------------|
| <u>GEORGIA</u> | | | | | |
| Georgia Kraft Company Rome | Determine the Technical and Economic Feasibility of Using Cooling Towers to Reduce BOD and Heat Content of Kraft Mill Wastes and to Reduce Water Usage in Kraft Mills | WPRD-116-01 | 1204 | 411,000 | 287,700 |
| Interstate Paper Corp. Riceboro | Chemical Coagulation Color Removal System for Kraft Mill Effluent | WPRD-183-01 | 1204 | 741,160 | 466,895 |
| <u>IDAHO</u> | | | | | |
| R. T. French Company Shelley | Aerobic Secondary Treatment of Potato Processing Wastes with Mechanical Aeration | WPRD-15-01 | 1206 | 690,310 | 483,217 |
| <u>INDIANA</u> | | | | | |
| American Oil Company Whiting | Fluid-Bed Incineration of Petroleum Refinery Wastes | WPRD-215-01 | 1205 | 354,530 | 170,265 |
| <u>IOWA</u> | | | | | |
| John Morrell and Company Ottumwa | Aerobic Treatment of Packinghouse Waste | WPRD-54-01 | 1206 | 815,000 | 489,000* |
| <u>KENTUCKY</u> | | | | | |
| Caldwell Lace Leather Co. Auburn | Complete Treatment of Tannery Industrial Waste for Chrome Tanning, Alum Tanning, and Vegetable Tanning | WPRD-25-01 | 1212 | 68,200 | 46,340* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|---|-------------|--------------|---------------------------------|----------------|
| <u>MAINE</u> | | | | | |
| Vahlsing, Inc. Easton | Treatment of Wastes from Potato and Sugar Beet Processing Plant by Activated Sludge | WPRD-56-01 | 1206 | 280,020 | 196,014* |
| <u>MASSACHUSETTS</u> | | | | | |
| A. C. Lawrence Leather Co. Peabody | Wastewater Treatment Pilot Plant Investigation, Mixed Chrome Tannery Wastewater and Municipal Sewage | WPRD-133-01 | 1212 | 124,593 | 87,215 |
| <u>MINNESOTA</u> | | | | | |
| North Star Research and Development Institute Minneapolis | Use of Fungi Imperfecti in Waste Control | WPRD-49-01 | 1206 | 118,160 | 76,585 |
| S. B. Foot Tanning Co. Red Wing | Aerobic Biological Treatment, Sludge Dewatering and Disposal and Effluent Reuse for a Side Leather Tannery | WPRD-232-01 | 1212 | 2,046,268 | 475,000 |
| <u>NEW JERSEY</u> | | | | | |
| Johns-Manville Product Corporation Manville | Experimental Closed Water System to Eliminate Wastewater Discharge from Johns-Manville Plant #3, Defiance, Ohio | WPRD-87-01 | 1208 | 164,700 | 82,350 |
| Metal Finishers' Foundation Upper Montclair | An Investigation of Techniques for the Removal of Chromium and Cyanides from Electroplating Wastes | WPRD-201-01 | 1201 | 145,000 | 98,000 |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|--|----------------|--------------|---------------------------------|----------------|
| <u>NEW YORK</u> | | | | | |
| Interstate Paper Corp. New York | Chemical Coagulation Color Removal System for Kraft Mill Effluent | WPRD-183-01 | 1204 | 741,160 | 466,895 |
| RAI Research Corp. Long Island City | Improvement of Treatment of Food Industry Waste | WPRD-3-01 | 1206 | 57,250 | 40,075 |
| <u>NORTH CAROLINA</u> | | | | | |
| American Enka Corporation Enka | Zinc Precipitation and Recovery Plant | WPRD-216-01-RI | 1209 | 980,417 | 282,700 |
| Fiber Industries Charlotte | Reuse of Plant Effluent and Cooling Water Blowdown as Process Water | WPRD-100-01 | 1209 | 500,000 | 350,000 |
| North Carolina State Univ. Raleigh | Filtration of Kraft Pulp Liquor through Chips | WPRD-115-01 | 1204 | 25,920 | 18,144 |
| <u>OHIO</u> | | | | | |
| Armco Steel Corporation Middletown | Treatment of Wastewater-Waste Oil Mixtures | WPRD-169-01 | 1201 | 1,541,720 | 209,000 |
| Champion Papers, Inc. Hamilton | Improve Pollution Control by Reuse of Paper Machine Process Waters | WPRD-28-01 | 1204 | 1,030,000 | 700,000* |
| The Mead Corporation Chillicothe | Evaluation of Role of High Rate Trick- ling Filters & Aeration Devices Sepa- rately and in Combination for the Advan- ced Biological Treatment of Integrated Kraft Pulp and Paper Mill Effluents | WPRD-55-01 | 1204 | 428,500 | 299,950* |

*Active in FY 1968 - Supported by funds awarded in previous years.

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|--|--|-------------|--------------|---------------------------------|----------------|
| <u>OKLAHOMA</u> | | | | | |
| Continental Oil Company Ponca City | Microbiological Removal of Iron from Drainage | WPRD-36-01 | 1401 | 115,996 | 75,886 |
| <u>OREGON</u> | | | | | |
| Klamath Plywood Corp. Klamath Falls | Aerobic Secondary Treatment of Plywood Glue Wastes | WPRD-174-01 | 1210 | 65,040 | 42,028 |
| <u>PENNSYLVANIA</u> | | | | | |
| Commonwealth of Pennsylvania Coal Research Board Harrisburg | Application of Bacteriophages to Eliminate Mine Acids | WPRD-164-01 | 1401 | 123,723 | 86,484 |
| Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg | Study of the Use of Inert Cases to Eliminate Acid Pollution from Abandoned Deep Mines | WPRD-227-01 | 1401 | 54,143 | 37,900 |
| Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg | Use of Latex as a Soil Sealant to Control Acid Mine Waste Drainage | WPRD-252-01 | 1401 | 259,770 | 181,839 |
| Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg | Control of Mine Water Treatment Plant at Hollywood, Pennsylvania | WPRD-34-01 | 1401 | 1,000,000 | 700,000 |
| Commonwealth of Pennsylvania Dept. of Mines and Mineral Industries Harrisburg | Optimization and Development of Improved Chemical Techniques for the Treatment of Coal Mine Drainage | WPRD-63-01 | 1401 | 150,000 | 105,000 |

| LOCATION/GRANTEE | PROJECT TITLE | GRANT NO. | PPBS. NO. | ESTIMATED TOTAL PROJECT COST | FWPCA GRANT |
|---|--|-------------|--------------|---------------------------------|----------------|
| <u>PENNSYLVANIA</u> | | | | | |
| Commonwealth of Pennsylvania Dept. of Mine and Mineral Industries Harrisburg | Study of the Use of Insitu Precipitation of Sludge Resulting from Reaction of Mine Water with Low Cost Additives in an Abandoned Mine to Prevent Mine Drainage | WPRD-242-01 | 1401 | 325,035 | 227,524 |
| <u>TENNESSEE</u> | | | | | |
| Chemical Separations Corp. Oak Ridge | Acid Pickle Liquor Waste Treatment Utilizing Advanced Ion Exchange Techniques | WPRD-41-01 | 1201 | 359,500 | 50,400 |
| <u>TEXAS</u> | | | | | |
| West Central Texas Municipal Water District Abilene | North Fork Alluvial Decontamination Project | WPRD-176-01 | 1402 | 272,323 | 184,816 |
| <u>WASHINGTON</u> | | | | | |
| Battelle-Northwest Environmental and Radiological Sciences Richland | Removal of Ammonia from Agricultural Runoff by Selective Ion Exchange | WPRD-26-01 | 1704 | 258,000 | 180,600* |
| Snokist Growers Yakima | Pollution Prevention by Aeration of Fruit Processing Wastes | WPRD-58-01 | 1206 | 572,262 | 374,669 |
| <u>WISCONSIN</u> | | | | | |
| Pulp Manufacturers Research League, Inc. Appleton | In-Plant Treatment of Dilute Wastes of the Pulping Industry | WPRD-12-01 | 1204 | 690,530 | 483,371 |

*Active 1968 - Supported by funds awarded in previous years

WATER POLLUTION CONTROL
INDUSTRIAL WASTE TREATMENT CONTRACTS FISCAL YEAR 1968
SUMMARY OF CONTRACT AWARDS BY STATE

| State | Number of Contractors | Number Awarded | Amount Awarded |
|--------------|--------------------------|-------------------|-------------------|
| California | 1 | 1 | \$ 279,597 |
| Pennsylvania | 1 | 1 | 56,250 |
| <hr/> | | | |
| 2 States | 2 | 2 | \$ 335,847 |

WATER POLLUTION CONTROL
INDUSTRIAL WASTE TREATMENT CONTRACTS

FISCAL YEAR 1968

AWARDED UNDER SECTION 6(b) OF THE FEDERAL WATER POLLUTION CONTROL ACT, AS AMENDED

| LOCATION/CONTRACTOR | PROJECT TITLE | CONTRACT NO. | PPBS. NO. | AMOUNT |
|--------------------------------------|---|--------------|-----------|---------|
| <u>CALIFORNIA</u> | | | | |
| Bechtel Corporation San Francisco | Technical Feasibility and Analysis of Costs and Effectiveness of Bulk Transpost of Sewage Treatment Plant Sludge and Dredging Spoils | 14-12-156 | 1507 | 279,597 |
| <u>PENNSYLVANIA</u> | | | | |
| Cyrus Wm. Rice Co. Pittsburg | Cost Effectiveness Study for Industrial Waster Water Treatment Practices | 14-12-435 | 1202 | 56,250 |

TRAINING GRANTS FISCAL YEAR 1968

SUMMARY OF GRANTS AWARDED BY STATES

| States | Institutions and Agencies | Number Awards | Amount Awarded |
|----------------|------------------------------|------------------|-------------------|
| Arizona | 1 | 1 | \$ 27,461 |
| Arkansas | 1 | 1 | 29,536 |
| California | 4 | 4 | 163,194 |
| Colorado | 2 | 2 | 93,758 |
| Delaware | 1 | 1 | 18,959 |
| Florida | 1 | 1 | 60,163 |
| Georgia | 3 | 3 | 86,517 |
| Hawaii | 1 | 1 | 27,197 |
| Illinois | 1 | 1 | 47,552 |
| Indiana | 1 | 1 | 16,143 |
| Iowa | 1 | 1 | 24,264 |
| Kansas | 1 | 1 | 44,309 |
| Kentucky | 1 | 1 | 20,772 |
| Maine | 2 | 2 | 23,950 |
| Maryland | 2 | 2 | 98,098 |
| Massachusetts | 4 | 6 | 228,913 |
| Michigan | 3 | 3 | 209,105 |
| Minnesota | 1 | 2 | 28,717 |
| Mississippi | 1 | 1 | 50,043 |
| Missouri | 3 | 4 | 129,466 |
| Montana | 2 | 2 | 54,678 |
| Nebraska | 1 | 1 | 27,056 |
| New Jersey | 1 | 1 | 32,416 |
| New Mexico | 1 | 1 | 32,142 |
| New York | 3 | 4 | 202,863 |
| North Carolina | 2 | 3 | 148,302 |
| Ohio | 3 | 3 | 74,935 |
| Oklahoma | 2 | 3 | 82,734 |
| Oregon | 1 | 3 | 211,732 |
| Pennsylvania | 2 | 2 | 61,208 |
| Puerto Rico | 1 | 1 | 5,862 |
| South Carolina | 1 | 1 | 63,749 |
| South Dakota | 1 | 1 | 38,465 |
| Tennessee | 1 | 1 | 48,698 |
| Texas | 5 | 6 | 323,610 |
| Utah | 1 | 1 | 38,190 |
| Virginia | 1 | 1 | 34,156 |
| Washington | 2 | 3 | 125,835 |
| West Virginia | 1 | 1 | 44,028 |
| Wisconsin | 2 | 6 | 286,221 |
| 40 States | 69 | 84 | \$3,364,997 |

Active Training Grants 1968

40 States

69 Institutions and Agencies

87 Training Grants

WATER POLLUTION CONTROL

114

TRAINING GRANTS

FISCAL YEAR 1968

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|---|--|--------------------------|
| <u>ARIZONA</u> | | | |
| <u>University of Arizona</u> | | | |
| <u>Tucson</u> | | | |
| Mees, Quintin M. Dept. of Civil Engineering | Training in Water Management, Development and Reuse | 5T1-WP-92-03 3T1-WP-92-03(S1) | 26,867 594 |
| <u>ARKANSAS</u> | | | |
| <u>University of Arkansas</u> | | | |
| <u>Fayetteville</u> | | | |
| Heiple, Loren R., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 3T1-WP-85-03(S1) 5T1-WP-85-04 3T1-WP-85-04(S1) | 2,878 23,780 2,878 |
| <u>CALIFORNIA</u> | | | |
| <u>Sacramento State College</u> | | | |
| <u>Sacramento</u> | | | |
| Kerri, Kenneth D., Ph.D. Dept. of Civil Engineering | The Development of a Pilot Correspondence School for Treatment Plant Operators | 1T1-WP-16-01 | 25,790 |
| <u>San Jose State College</u> | | | |
| <u>San Jose</u> | | | |
| Agardy, Franklin J., Ph.D. Dept. of Civil Engineering & Applied Mechanics | Sanitary Engineering Graduate Training Program | 5T1-WP-198-01 | 16,049 |
| <u>Stanford University</u> | | | |
| <u>Stanford</u> | | | |
| Eliassen, Rolf, Sc.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-38-06 3T1-WP-38-06(S1) | 107,450 5,301 |
| <u>University of California</u> | | | |
| <u>Davis</u> | | | |
| Biggar, James W., Ph.D. Dept. of Water Science & Engr. | Training in Water Supply and Pollution Control | 5T1-WP-205-01 | 8,604 |
| <u>COLORADO</u> | | | |
| <u>University of Colorado</u> | | | |
| <u>Boulder</u> | | | |
| Flack, J. Ernest, Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-105-03 | 44,709 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|--|------------------------------------|-----------------|
| <u>COLORADO (Cont.)</u> | | | |
| <u>Colorado State University</u> <u>Fort Collins</u> | | | |
| Morrison, S. M., Ph.D. Dept. of Microbiology | Training in Water Supply and Pollution Control | 5T1-WP-127-03 | 49,049 |
| <u>DELAWARE</u> | | | |
| <u>Delaware State College</u> <u>Dover</u> | | | |
| Seidel, George R., Ph.D. Dept. of Chemistry | Water Chemistry - Basic Theory and Methods | 1TT1-WP-2-01 | 18,959 |
| <u>FLORIDA</u> | | | |
| <u>University of Florida</u> <u>Gainesville</u> | | | |
| Kiker, John E., Jr. Dept. of Bioenvironmental Engr. | Water Pollution Control | 5T1-WP-119-02 3T1-WP-119-02(S1) | 59,080 1,083 |
| <u>GEORGIA</u> | | | |
| <u>Atlanta Area Technical School</u> <u>Atlanta</u> | | | |
| Ferguson, Robert A. Dept. of Vocational-Technical and Adult Education | Water Quality Technology Training Program | 1TT1-WP-22-01 | 11,561 |
| <u>Georgia Institute of Technology</u> <u>Atlanta</u> | | | |
| Kindsvater, Carl E. Dept. of Water Resources Center | Training in Water Supply and Pollution Control | 5T1-WP-62-05 | 45,850 |
| <u>Georgia State College</u> <u>Atlanta</u> | | | |
| Parrish, Fred K., Ph.D. Dept. of Biology | Identification of Pollution Important Organisms | 1TT1-WP-19-01 | 29,106 |
| <u>HAWAII</u> | | | |
| <u>University of Hawaii</u> <u>Honolulu</u> | | | |
| Burbank, Nathan C., Sc.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-69-05 | 27,197 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|--|----------------------------------|---------------|
| <u>ILLINOIS</u> | | | |
| <u>University of Illinois</u> <u>Urbana</u> | | | |
| Engelbrecht, Richard S., Ph.D. Dept. of Civil Engineering | Training in Water Quality and Pollution Control | 5T1-WP-128-03 | 47,552 |
| <u>INDIANA</u> | | | |
| <u>Purdue University</u> <u>Lafayette</u> | | | |
| Etzel, James E., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 2T1-WP-13-07 | 16,143 |
| <u>IOWA</u> | | | |
| <u>Iowa State University of</u> <u>Science and Technology</u> <u>Ames</u> | | | |
| Baumann, E. Robert, Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-195-01 | 24,264 |
| <u>KANSAS</u> | | | |
| <u>University of Kansas</u> <u>Lawrence</u> | | | |
| McKinney, Ross E., Sc.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 3T1-WP-50-04(S1) 5T1-WP-50-05 | 150 44,159 |
| <u>KENTUCKY</u> | | | |
| <u>University of Kentucky</u> <u>Lexington</u> | | | |
| Lauderdale, Robert A., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-64-05 | 20,772 |
| <u>MAINE</u> | | | |
| <u>Southern Maine Vocational</u> <u>Technical Institute</u> <u>South Portland</u> | | | |
| Coombs, Kenneth I. Dept. of Water and Waste Water Technology | Water Pollution - Special Technician Training Institute | 1TT1-WP-23-01 | 7,656 |
| <u>University of Maine</u> <u>Orono</u> | | | |
| Sproul, Otis J., Sc.D. Dept. of Civil Engineering | Water Supply and Pollution Control Training | 5T1-WP-182-01 | 16,294 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|---|-----------------|--------|
| <u>MARYLAND</u> | | | |
| <u>Charles County Community College</u> <u>La Plata</u> | | | |
| Jensen, Belva L. Mrs. Dept. of Environmental Engineering Technology | Water Pollution Control Technician Curriculum Development | 1TT1-WP-3-01 | 44,820 |
| <u>The Johns Hopkins University</u> <u>Baltimore</u> | | | |
| Wolman, Markley G., Ph.D. Dept. of Environmental Engr. Science | Water Sciences and Management Program | 5T1-WP-197-01 | 53,278 |
| <u>MASSACHUSETTS</u> | | | |
| <u>Harvard University</u> <u>Cambridge</u> | | | |
| Morris, J. Carrell, Ph.D. Dept. of Engineering and Applied Physics | Summer Institute in Advanced Sanitary Chemistry | 5T1-WP-133-02 | 13,033 |
| Stumm, Werner, Ph.D. Dept. of Engineering and Applied Physics | Research Education in Aquatic Chemistry | 1T1-WP-147-01A1 | 37,698 |
| <u>Northeastern University</u> <u>Boston</u> | | | |
| Cochrane, John J., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-136-02 | 38,603 |
| <u>Tufts University</u> <u>Medford</u> | | | |
| Hanes, Norman B., Ph.D. Dept. of Civil Engineering | Graduate Training for Environmental Engineering | 5T1-WP-192-01 | 46,308 |
| <u>University of Massachusetts</u> <u>Amherst</u> | | | |
| Feng, Tsuan Hua, Ph.D. Dept. of Civil Engineering | Water Supply and Pollution Control | 5T1-WP-77-04 | 51,302 |
| Litsky, Warren, Ph.D. Institute of Industrial and Agricultural Microbiology | Summer Water Pollution Institute for High School Teachers | 1TT1-WP-12-01 | 41,969 |
| <u>MICHIGAN</u> | | | |
| <u>Michigan State University</u> <u>East Lansing</u> | | | |
| Roelfs, Eugene W., Ph.D. Dept. of Fisheries and Wildlife | Graduate Training of Pollution Biologists | 5T1-WP-109-03 | 45,050 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|--|--|---------|
| <u>MICHIGAN (Cont.)</u> | | | |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | |
| Borchardt, Jack A., Ph.D. Dept. of Civil Engineering | Training Grant in Sanitary Engineering | 1T1-WP-157-01 | _____ * |
| Craine, Lyle E., Ph.D. Dept. of Conservation | Integrated Program of Training in Water Resources | 1T1-WP-177-01 | 131,280 |
| Gannon, John J. Dept. of Environmental Health | Training in Water Resources and Pollution Control | 2T1-WP-15-06 | _____ * |
| Smith, Frederick E., Ph.D. Dept. of Wildlife & Fisheries | Toxicology of Aquatic Organisms | 2T1-WP-16-06 | _____ * |
| <u>Wayne State University</u> <u>Detroit</u> | | | |
| Dirasian, Henry A., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-101-02 | 32,775 |
| <u>MINNESOTA</u> | | | |
| <u>University of Minnesota</u> <u>Minneapolis</u> | | | |
| Olson, Theodore A., Ph.D. Dept. of Public Health & Biology | USDI Training in Water Supply and Pollution Control | 5T1-WP-95-03 | 14,659 |
| Schroepfer, George J. Dept. of Civil Engineering | Sanitary Engineering and Water Resources Program | 5T1-WP-191-01 8,524 3T1-WP-191-01(S1) 5,534 | |
| <u>MISSISSIPPI</u> | | | |
| <u>Mississippi State University</u> <u>State College</u> | | | |
| Williford, Howard K. Dept. of Civil Engineering | Waste Water Disposal Engineering Training Program | 5T1-WP-108-03 | 50,043 |
| <u>MISSOURI</u> | | | |
| <u>University of Missouri</u> <u>Columbia</u> | | | |
| Ray, Arliss D., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-30-05 | 45,500 |
| <u>University of Missouri</u> <u>Rolla</u> | | | |
| Grigoropoulos, S. G., Sc.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-86-03 | 33,839 |

*Active 1968 - Supported by funds awarded in previous years

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO | AMOUNT |
|---|--|------------------------------------|------------------|
| <u>MISSOURI (Cont.)</u> | | | |
| <u>Water & Wastewater Technical School</u> <u>Neosho</u> | | | |
| Caughran, Ira L. Dept. of Water and Wastewater | Development of Industrial Waste Training | 1TT1-WP-8-01 | 17,727 |
| Caughran, Ira L. Dept. of Water and Wastewater | Establishment of Water and Wastewater Training Institutions | 1TT1-WP-17-01 | 32,400 |
| <u>MONTANA</u> | | | |
| <u>Montana State University</u> <u>Bozeman</u> | | | |
| Wright, John D., Ph.D. Dept of Botany & Microbiology | Physics, Chemistry and Biology of Water Quality | 5T1-WP-180-01 | 38,318 |
| <u>University of Montana</u> <u>Missoula</u> | | | |
| Gaufin, Arden R., Ph.D. Dept. of Zoology | Water Supply and Water Pollution Biology | 2T1-WP-200-01 | 16,360 |
| <u>NEBRASKA</u> | | | |
| <u>University of Nebraska</u> <u>Lincoln</u> | | | |
| Hammer, Mark J., Ph.D. Dept. of Civil Engineering | Sanitary Engineering | 1T1-WP-120-01A1 | 27,056 |
| <u>NEW JERSEY</u> | | | |
| <u>Rutgers The State University</u> <u>New Brunswick</u> | | | |
| Kaplovsky, A. Joel, Ph.D. Dept. of Environmental Sciences | Training in Water Supply and Pollution Control | 1T1-WP-163-01 3T1-WP-163-01(S1) | 19,780 12,636 |
| <u>NEW MEXICO</u> | | | |
| <u>New Mexico State University</u> <u>Las Cruces</u> | | | |
| Clark, John W. Dept. of Civil Engineering | Water Quality Management | 5T1-WP-196-01 | 32,142 |
| <u>NEW YORK</u> | | | |
| <u>Cornell University</u> <u>Ithaca</u> | | | |
| Gates, Charles D. Dept. of Water Resources Engr. | Water Quality Control Engineering | 1T1-WP-172-01 | 21,287 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|--|---|------------------------------------|------------------|
| <u>NEW YORK (Cont.)</u> | | | |
| <u>Manhattan College</u> | | | |
| <u>Bronx</u> | | | |
| Jeris, John S., Sc.D. Dept. of Civil Engineering | Training of Engineers in Water Pollution Control | 5T1-WP-188-01 3T1-WP-188-01(S1) | 72,520 9,810 |
| O'Connor, Donald J. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-190-01 | 15,192 |
| <u>New York University</u> | | | |
| <u>New York</u> | | | |
| Molof, Alan H., Ph.D. Dept. of Civil Engineering | Water Supply and Water Pollution Control Engineering | 5T1-WP-186-01 | 84,054 |
| <u>NORTH CAROLINA</u> | | | |
| <u>North Carolina State University</u> | | | |
| <u>Raleigh</u> | | | |
| Smallwood, Charles M., Ph.D. Dept. of Civil Engineering | Water Supply and Pollution Control | 3T1-WP-68-04(S1) 5T1-WP-68-05 | 7,514 21,692 |
| Smallwood, Charles M., Ph.D. Dept. of Civil Engineering | Industrial Waste Control and Abatement | 1T1-WP-165-01 | 71,148 |
| <u>University of North Carolina</u> | | | |
| <u>Chapel Hill</u> | | | |
| Weiss, Charles M., Ph.D. Dept. of Environmental Sciences and Engineering | Graduate Training in Water Quality Management | 1T1-WP-173-01 3T1-WP-173-01(S1) | 33,800 14,148 |
| <u>OHIO</u> | | | |
| <u>Ohio State University</u> | | | |
| <u>Columbus</u> | | | |
| Dambach, Charles A., Ph.D. Natural Resources Institute | Training in Water Supply and Pollution Control | 5T1-WP-39-05 | 20,934 |
| <u>University of Cincinnati</u> | | | |
| <u>Cincinnati</u> | | | |
| Eye, J. David, Sc.D. Dept. of Civil Engineering | Training in Water Supply and Water Pollution Control | 5T1-WP-46-05 | 34,239 |
| <u>University of Toledo</u> | | | |
| <u>Toledo</u> | | | |
| Bennett, Gary F., Ph.D. Dept. of Chemical Engineering | Bioengineering Training in Water Pollution Control | 5T1-WP-94-03 | 19,762 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|--|--|-----------------|---------|
| <u>OKLAHOMA</u> | | | |
| <u>Oklahoma State University</u> <u>Stillwater</u> | | | |
| Dorris, Troy C., Ph.D. Dept. of Zoology | Aquatic Ecology Specialists in Water Pollution | 5T1-WP-185-01 | 33,324 |
| Gaudy, A. F., Jr., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 2T1-WP-19-07 | 21,852 |
| <u>University of Oklahoma</u> <u>Norman</u> | | | |
| Reid, George W. Dept. of Civil and Environmental Sciences | Water Resources Development | 5T1-WP-189-01 | 27,558 |
| <u>OREGON</u> | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | |
| Burgess, Frederick J. Dept. of Civil Engineering | Graduate Training in Water Quality Engineering | 5T1-WP-187-01 | 78,220 |
| Curl, Herbert C., Jr., Ph.D. Dept. of Oceanography | Training in Water Supply and Pollution Control | 5T1-WP-111-03 | 108,002 |
| Warren, Charles E., Ph.D. Dept. of Fisheries and Wildlife | Training in Freshwater and Marine Pollution Biology | 5T1-WP-208-01 | 25,510 |
| <u>PENNSYLVANIA</u> | | | |
| <u>Drexel Institute of Technology</u> <u>Philadelphia</u> | | | |
| Strandberg, William B., Ph.D. Dept. of Environmental Engr. and Science | Training in Water Quality Management and Control | 1T1-WP-125-01A1 | 29,902 |
| <u>University of Pittsburgh</u> <u>Pittsburgh</u> | | | |
| Tryon, C. A., Ph.D. Pymatuning Lab. of Field Biology | Graduate Training in Aquatic Ecology | 5T1-WP-83-03 | 31,306 |
| <u>PUERTO RICO</u> | | | |
| <u>University of Puerto Rico</u> <u>Myaguez</u> | | | |
| Melendez, Miguel Santiago, Ph.D. Dept. of Civil Engineering | Water Pollution Control Technician Training Institute | 1TT1-WP-25-01 | 5,862 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|--|--|------------------------------------|------------------|
| <u>SOUTH CAROLINA</u> | | | |
| <u>Clemson University</u> <u>Clemson</u> | | | |
| Rich, Linvil G., Ph.D. Dept. of Environmental Systems Engineering | Teaching in Process Engineering | 5T1-WP-181-01 3T1-WP-181-01(S1) | 59,769 3,980 |
| <u>SOUTH DAKOTA</u> | | | |
| <u>South Dakota State University</u> <u>Brookings</u> | | | |
| Dornbush, James N., D. Sc. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-93-04 | 38,465 |
| <u>TENNESSEE</u> | | | |
| <u>Vanderbilt University</u> <u>Nashville</u> | | | |
| Krenkel, Peter A., Ph.D. Dept. of Sanitary and Water Resources Engineering | Water Resources and Environmental Health Engineering | 5T1-WP-201-01 | 48,698 |
| <u>TEXAS</u> | | | |
| <u>James Connally Technical Institute</u> <u>Waco</u> | | | |
| Lancaster, D. L. Dept. of Water and Waste Water Technology | Water Pollution Control Technician Training | 1TT1-WP-21-01 | 10,350 |
| <u>North Texas State University</u> <u>Denton</u> | | | |
| Silvey, Joseph K. G., Ph.D. Dept. of Biology | Training in Water Supply and Pollution Control | 5T1-WP-107-03 | 26,189 |
| <u>Texas A&M University</u> <u>College Station</u> | | | |
| Davis, William B., Sc.D. Dept. of Civil Engineering | Petrochemical Waste Abatement | 5T1-WP-74-05 | 95,790 |
| <u>University of Texas</u> <u>Austin</u> | | | |
| Gloyna, Earnest F., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-183-01 | 81,057 |
| Eckenfelder, W. Wesley, Jr. Dept. of Water Resources | Development of Instruction Material for Industrial Wastewater Treatment Training | 1TT1-WP-4-01 | 53,676 |
| <u>William Marsh Rice University</u> <u>Houston</u> | | | |
| Busch, Arthur W. Dept. of Environmental Science and Engineering | Training in Water Supply and Pollution Control | 5T1-WP-194-01 3T1-WP-194-01(S1) | 46,504 10,044 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT |
|---|--|------------------------------------|-----------------|
| <u>UTAH</u> | | | |
| <u>Utah State University</u> <u>Logan</u> | | | |
| Jones, Norman B. Dept. of Civil Engineering | Interdisciplinary Training Program in Water Quality | 1T1-WP-153-01A1 | 38,190 |
| <u>VIRGINIA</u> | | | |
| <u>Virginia Polytechnic Institute</u> <u>Blacksburg</u> | | | |
| King, Paul H., Ph.D. Dept. of Civil Engineering | Water Resources Management and Quality Control | 1T1-WP-166-01 | 34,156 |
| <u>WASHINGTON</u> | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | |
| Brown, George W., Jr., Ph.D. Dept. of Fisheries | Biological Effects of Water Pollution | 1T1-WP-175-01 | 35,168 |
| Sylvester, Robert O. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-122-03 3T1-WP-122-03(S1) | 62,606 3,305 |
| <u>Washington State University</u> <u>Pullman</u> | | | |
| Dunstan, Gilbert H. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 1T1-WP-170-01 | 24,756 |
| <u>WEST VIRGINIA</u> | | | |
| <u>West Virginia University</u> <u>Morgantown</u> | | | |
| Burchinal, Jerry C. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 3T1-WP-72-04(S2) 5T1-WP-72-05 | 600 43,428 |
| <u>WISCONSIN</u> | | | |
| <u>Marquette University</u> <u>Milwaukee</u> | | | |
| Kipp, Raymond J., Ph.D. Dept. of Civil Engineering | Training in Water Supply and Pollution Control | 5T1-WP-129-02 | 19,872 |
| <u>University of Wisconsin</u> <u>Madison</u> | | | |
| Chesters, Gordon, Ph.D. Dept. of Soils | Soil and Water Sanitation | 1T1-WP-100-01A1 | 53,110 |
| Clarenbach, Fred A., Ph.D. Dept. of Geology & Geophysics | Water Resources Management | 5T1-WP-60-05 | 63,287 |
| Hasler, Arthur D., Ph.D. Dept. of Zoology | Biological Aspects of Water Resource Management | 5T1-WP-204-01 | 44,797 |

| LOCATION AND PROGRAM DIRECTOR | PROGRAM TITLE | GRANT NO. | AMOUNT | AMOUNT |
|-------------------------------|---------------|-----------|--------|--------|
|-------------------------------|---------------|-----------|--------|--------|

WISCONSIN (Cont.)University of Wisconsin
Madison

| | | | | |
|-------------------------------|------------------------------|-------------------|--------|--|
| Lee, G. Fred, Ph.D. | Chemistry of Water Supply | 5T1-WP-184-01 | 67,756 | |
| Dept. of Civil Engineering | and Pollution Control | 3T1-WP-184-01(S1) | 8,640 | |
| Polkowski, Lawrence B., Ph.D. | Training in Water Supply and | 5T1-WP-132-03 | 28,759 | |
| Dept. of Civil Engineering | Pollution Control | | | |

RESEARCH FELLOWSHIPS FISCAL YEAR 1968

SUMMARY OF AWARDS BY STATES

| State | Institutions and Agencies | Number Awarded | Amount Awarded |
|----------------|------------------------------|-------------------|-------------------|
| Arkansas | 1 | 0 | 0 |
| California | 3 | 4 | 16,418 |
| Colorado | 2 | 1 | 4,945 |
| Florida | 1 | 1 | 6,100 |
| Georgia | 2 | 0 | 0 |
| Idaho | 1 | 2 | 11,940 |
| Indiana | 1 | 1 | 12,049 |
| Iowa | 2 | 7 | 37,858 |
| Kansas | 1 | 1 | 2,517 |
| Louisiana | 1 | 1 | 4,900 |
| Maryland | 1 | 0 | 0 |
| Massachusetts | 3 | 4 | 31,200 |
| Michigan | 3 | 20 | 91,651 |
| Missouri | 2 | 2 | 11,600 |
| Montana | 1 | 2 | 11,935 |
| New Hampshire | 1 | 2 | 11,108 |
| New Mexico | 1 | 1 | 6,300 |
| New York | 3 | 13 | 74,586 |
| North Carolina | 1 | 3 | 18,120 |
| Ohio | 1 | 1 | 12,432 |
| Oklahoma | 2 | 2 | 5,611 |
| Oregon | 1 | 4 | 30,600 |
| Pennsylvania | 1 | 0 | 0 |
| South Carolina | 1 | 8 | 44,902 |
| Texas | 3 | 2 | 17,431 |
| Utah | 2 | 6 | 39,700 |
| Washington | 1 | 3 | 9,483 |
| Wisconsin | 1 | 18 | 109,200 |
| Foreign | 4 | 4 | 10,405 |
| 28 States | 48 | 113 | 632,991 |

Active Research Fellowships 1968

28 States 4 Foreign Countries
 48 Institutions and Agencies
 155 Research Fellowships

WATER POLLUTION CONTROL
RESEARCH FELLOWSHIPS
FISCAL YEAR 1968

126

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|-------------------|--------|
| <u>ARKANSAS</u> | | | |
| <u>University of Arkansas</u> <u>Fayetteville</u> | | | |
| Owen, Ray Dept. of Civil Engineering | Waste Treatment Prediction Using Computers | 1-F1-WP-35,936-01 | _____* |
| <u>CALIFORNIA</u> | | | |
| <u>Stanford University</u> <u>Stanford</u> | | | |
| Atkins, Patrick R. Dept. of Civil Engineering | Rain-out Washout Processes Applied to Lead Aerosols | 5-F1-WP-33,496-02 | 418** |
| Downs, Charles, E. Dept. of Civil Engineering | Radioisotope Training in W.S. and P.C. Nuclear Hydrology | 1-F1-WP-26,323-01 | 10,400 |
| Foree, Edward G. Dept. of Civil Engineering | Decomposition of Algae in Natural Anaerobic Waters | 5-F1-WP-26,177-02 | _____* |
| Haskell, Broderick P. Department of Civil Engineering | Secondary Benefits Evaluation Derived from Water Pollution abatement | 2-F3-WP-26,102-02 | _____* |
| Huff, Dale D. Dept. of Civil Engineering | Rainfall Deposition of Radioactive Fallout in Water Supplies | 5-F1-WP-26,022-02 | _____* |
| Linstedt, Kermit D. Dept. of Civil Engineering | Vanadium Removal in Water Treatment Coagulation | 5-F1-WP-22,084-04 | _____* |
| Yount, James C. Dept. of Civil Engineering | The Anaerobic Filter for Waste Treatment | 5-F1-WP-28,715-02 | _____* |
| <u>University of California</u> <u>Berkeley</u> | | | |
| Cordes, Ronald A. Dept. of Chemical Engineering | Filtration of Aqueous Effluents Carrying Emulsified Oils | 1-F1-WP-26,276-01 | 5,100 |

**Supply, travel or dependent allowance

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|---|-------------------|----------|
| <u>CALIFORNIA</u> | | | |
| <u>University of California</u> <u>Berkeley</u> | | | |
| Middlebrooks, Eddie J. Dept. of Civil Engineering | Kinetics of Biological Systems | 1-F3-WP-26,205-01 | \$ 500** |
| <u>COLORADO</u> | | | |
| <u>Colorado State University</u> <u>Fort Collins</u> | | | |
| Peters, John C. Dept. of Fishery & Wildlife | Effects of Sedimentation on a Trout Stream | 1-F1-WP-26,268-01 | 4,945 |
| Wendt, Theodore M. Dept. of Pathology and Microbiology | Urease Positive Bacteria and their Relation to Water Pollution | 5-F1-WP-26,114-02 | _____* |
| <u>University of Colorado</u> <u>Boulder</u> | | | |
| Lavelle, James W. Dept. of Biology | Primary Productivity of the Arkansas River in the Vicinity of Pueblo, Colorado | 5-F1-WP-26,101-02 | _____* |
| Young, Willard C. Dept. of Biology | The Hydracarina of Colorado and their Distribution as Related to Altitude and Water Chemistry | 5-F1-WP-26,062-02 | _____* |
| <u>FLORIDA</u> | | | |
| <u>Florida State University</u> <u>Tallahassee</u> | | | |
| Housley, Carl B. Dept. of Economics | An Economic Evaluation of Water Laws | 1-F1-WP-26,277-01 | 6,100 |
| <u>GEORGIA</u> | | | |
| <u>Emory University</u> <u>Atlanta</u> | | | |
| Mozley, Samuel Dept. of Biology | Ecology of Chironomid Species in a Small Lake | 1-F1-WP-37,227-01 | _____* |
| <u>University of Georgia</u> <u>Athens</u> | | | |
| Todd, Russell L. Dept. of Bacteriology | Bacterial Decomposition of Detergents in Sewage | 5-F1-WP-21,402-03 | _____* |

*Active 1968 - Supported by funds awarded in previous years

** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|-------------------|---------|
| <u>IDAHO</u> | | | |
| <u>University of Idaho</u> <u>Moscow</u> | | | |
| Lank, John C. Dept. of Civil Engineering | The Effects of Accumulated Decomposition Products on Rates of Biological Treatment of Organic Wastes | 1-F1-WP-26,295-01 | 6,040 |
| Siddoway, Dean W. Dept. of Chemical Engineering | Mechanisms of Potato Waste Degradation | 1-F1-WP-26,282-01 | 5,900 |
| <u>INDIANA</u> | | | |
| <u>Purdue University</u> <u>Lafayette</u> | | | |
| Rollag, Dwayne A. Dept. of Civil Engineering | Anaerobic Pre-treatment for Aerobic Treatment Systems | 1-F3-WP-26,312-01 | 12,049 |
| <u>IOWA</u> | | | |
| <u>Iowa State University</u> <u>Ames</u> | | | |
| Bacon, Dale L. Dept. of Civil Engineering | Bio-flocculation in the Anaerobic Contact Process | 1-F1-WP-26,332-01 | 4,900 |
| Bridges, Harold R. Dept. of Civil Engineering | Diatomite Filter Cake Resistance for Surface Waters | 5-F1-WP-26,104-03 | 5,100 |
| | | 5-F1-WP-26,104-04 | 5,300 |
| Burns, Donald E. Dept. of Civil Engineering | Removal of Particulate Matter on Coated Filter Media | 5-F1-WP-26,003-03 | _____ * |
| Raschke, Ronald L. Dept. of Botany & Plant Pathology | Algal Productivity and Waste Reclamation in a Sewage Stabilization Pond | 5-F1-WP-26,064-03 | 6,800 |
| Sedgwick, Stephen R. Dept. of Civil Engineering | Biological Treatment of Adsorbed Refractories | 5-F1-WP-26,242-02 | 6,558 |
| Wildman, Ruth B. Dept. of Botany | The Biochemistry of the Blue-green Algae | 5-F1-WP-37,930-02 | 5,300 |

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|---------------------|---------|
| <u>IOWA</u> | | | |
| <u>University of Iowa</u> <u>Iowa City</u> | | | |
| Bright, David F. Dept. of Civil Engineering | Water or Wastewater Treatment Process Analysis | 1-F1-WP-37,089-01 | _____ * |
| Lampe, Wallace D. Dept. of Civil Engineering | Biological Flocculation in Activated Sludge | 5-F1-WP-33,656-03 | 3,900 |
| <u>KANSAS</u> | | | |
| <u>Kansas State University</u> <u>Manhattan</u> | | | |
| Fox, Charles L. Dept. of Chemistry | Properties and Structure of Metal EDTA Complexes | 5-F1-WP-26,202-02 | 2,517 |
| <u>LOUISIANA</u> | | | |
| <u>Northwestern State</u> <u>Natchitoches</u> | | | |
| Brown, Ellison E. Dept. of Biological Sciences | Effects of Pollution on Benthic Macroinvertebrates | 1-F1-WP-216-01 | _____ * |
| Damico, Sam A. Dept. of Biological Sciences | Effect of Treated Sewage Effluent on Primary Production | 1-F1-WP-26,322-01 | 4,900 |
| <u>MARYLAND</u> | | | |
| <u>Johns Hopkins University</u> <u>Baltimore</u> | | | |
| Meyers, Caldwell D. Dept. of Environmental Engineering Science | Responses of the White Perch to Temperature and O ₂ | 1-F1-WP-26,198-01A1 | _____ * |
| Schubel, Jerry R. Dept. of Oceanography | Sedimentation and Mineral Assemblages in Estuaries | 5-F1-WP-23,785-03 | _____ * |
| <u>MASSACHUSETTS</u> | | | |
| <u>Harvard University</u> <u>Cambridge</u> | | | |
| Chi, Tze-wen Dept. of Civil Engineering | Analysis of a Waste Water Transportation System for the Penjerdel Megalopolis | 1-F1-WP-26,303-01 | 6,800 |

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|---------------------|---------|
| <u>MASSACHUSETTS</u> | | | |
| <u>Harvard University</u> <u>Cambridge</u> | | | |
| Murdoch, David M. Graduate School of Business Administration | Financing Water Supply and Pollution Control Projects | 1-F3-WP-26,258-01 | 13,000 |
| Schaaake, John C. Dept. of Environmental Sciences and Engineering | Economic Aspects of Management | 1-F2-WP-26,108-01 | _____ * |
| Tihansky, Dennis P. Dept. of Engineering & Applied Physics | Models of Environmental Health and Economic Growth | 1-F1-WP-26,285-01 | 5,100 |
| <u>Massachusetts Institute of</u> <u>Technology</u> <u>Cambridge</u> | | | |
| Matson, Wayne R. Dept. of Chemistry | Lead Geochemistry in an Urban Environment | 5-F1-WP-31,180-02 | _____ * |
| <u>University of Massachusetts</u> <u>Amherst</u> | | | |
| Saines, Marvin Dept. of Geology | Hydrology Induced Infiltration | 5-F1-WP-26,229-02 | 6,300 |
| <u>MICHIGAN</u> | | | |
| <u>Michigan State University</u> <u>East Lansing</u> | | | |
| Bahr, Thomas G. Dept. of Fisheries & Wildlife | Effects of Sublethal Pesticide Stress Upon Fish | 4-F1-WP-26,004-05 | 2,900 |
| Fast, Arlo W. Dept. of Fisheries & Wildlife | Effects of Artificial Destratification on Lake Ecology | 1-F1-WP-26,292-01 | 5,752 |
| Garton, Ronald R. Dept. of Fisheries & Wildlife | Metallic Ion Pollution in a Warm-Water Stream | 5-F1-WP-26,008-04 | _____ * |
| Haines, Terry A. Dept. of Fisheries & Wildlife | Some Effects of Water Pollution on Fish Populations | 5-F1-WP-26,225-02 | 5,100 |
| Jackson, Dennis Dept. of Botany and Plant Pathology | The Taxonomy and Ecological Distribution of the Desmidiaceae in Montana | 1-F1-WP-26,081-01A1 | _____ * |

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|---|-------------------|----------------|
| <u>MICHIGAN</u> | | | |
| <u>Michigan State University</u> <u>East Lansing</u> | | | |
| Jensen, Alvin L. Dept. of Fisheries & Wildlife | Effect of Organic Pollution on Energy Transfer of Microbes in a Stream Ecosystem | 5-F1-WP-26,154-03 | 2,650 |
| Lenon, Herbert L. Dept. of Fisheries & Wildlife | Transfer of the Insecticide Dieldrin Through Trophic Levels | 5-F1-WP-29,109-03 | _____ * |
| Sohacki, Leonard P. Dept. of Fisheries & Wildlife | Movement of Sodium Arsenite in a Pond Ecosystem | 5-F1-WP-25,711-04 | 2,575 |
| <u>Michigan State University</u> <u>Hickory Corners</u> | | | |
| Miller, Michael C. Dept. of Botany | Organic Excretion and Heterotrophy within a Plankton Community | 5-F1-WP-37,449-02 | 5,990 |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | |
| Atkins, Peter F. Dept. of Civil Engineering | Kinetics and Uptake of Nitrogen and Phosphates by Ion Exchange | 5-F1-WP-26,174-02 | 5,350 |
| Brockway, Donald L. Dept. of Fisheries & Wildlife | Release Effects of Tissue Stored Dieldrin in Fishes | 2-F1-WP-34,286-02 | _____ * |
| DiGiano, Francis A. Dept. of Civil Engineering | Activated Carbon Adsorption in Heterogeneous Systems | 5-F1-WP-26,176-02 | 6,100 |
| Foess, Gerald W. Dept. of Civil Engineering | The Sand Filtration of Algae Suspensions | 5-F1-WP-26,036-04 | 5,800 400** |
| Jordan, Robert A. Dept. of Environmental Health | Algal Nutrition in Relation to Eutrophication | 1-F1-WP-26,294-01 | 5,100 |
| Keinath, Thomas M. Dept. of Civil Engineering | Kinetics of Adsorption in Columns of Fluidized Media | 5-F1-WP-24,505-04 | _____ * |
| Leland, Harry V. Dept. of Fisheries & Wildlife | Structure-Toxicity of M. Parathion Analogs to Fishes | 5-F1-WP-26,240-02 | 1,967 |
| Life, Jeffry S. Dept. of Zoology | Histopathological Responses of Fish Chronically Exposed to Sublethal Levels of Heavy Metal Pollutants | 1-F1-WP-26,315-01 | 7,300 |

* Active 1968 - Supported by funds awarded in previous years

** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|-------------------|--------|
| <u>MICHIGAN</u> | | | |
| <u>University of Michigan</u> <u>Ann Arbor</u> | | | |
| Meier, Peter G. Dept. of Environmental Health | Photosynthetic Oxygen Relationships in Channels | 1-F1-WP-26,296-01 | 5,800 |
| Midkiff, William S. Dept. of Civil Engineering | Fluidized-ion Exchange Column | 5-F1-WP-26,227-02 | 5,800 |
| Pohland, Frederick Dept. of Environmental Health | Study and Research in Water Resources Sciences | 1-F3-WP-37,035-01 | 500** |
| Schenk, John Dept. of Civil Engineering | Silica Interaction with Trace Metals | 5-F1-WP-26,034-04 | 5,367 |
| Schimpff, Warren K. Dept. of Environmental Health | Ion-Specific, Ion-Exchange Membrane Electrodes | 1-F1-WP-26,298-01 | 5,800 |
| Sharpin, Ronald E. Dept. of Environmental Health | Reaer Coeff's Relationship to longitudinal mixing and roughness | 1-F1-WP-26,299-01 | 6,100 |
| Winklehaus, Charles Dept. of Civil Engineering | Phosphate Stripping from Waste Waters | 5-F1-WP-26,231-02 | 5,300 |
| <u>MISSOURI</u> | | | |
| <u>University of Missouri</u> <u>Columbia</u> | | | |
| Hoehn, Robert C. Dept. of Civil Engineering | Biological Degradation of Organics Adsorbed on Activated Carbon | 5-F1-WP-26,150-03 | 6,300 |
| <u>Washington University</u> <u>St. Louis</u> | | | |
| Smith, James E. Dept. of Civil and Environmental Engineering | Control of Activated Sludge Bulking with Heavy Metals | 5-F1-WP-26,249-02 | 5,300 |
| <u>MONTANA</u> | | | |
| <u>University of Montana</u> <u>Missoula</u> | | | |
| Morgan, Garth R. Dept. of Zoology | The Fate of Mineral Nutrients in Flathead Lake, Montana | 5-F1-WP-26,212-02 | 6,600 |
| Sonstelie, Lawrence C. Dept. of Zoology | Effects of DDT Application on Stream Insects | 1-F1-WP-26,319-01 | 5,335 |

* Active 1968 - Supported by funds awarded in previous years

** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|--|---------------------|----------------|
| <u>WISCONSIN</u> | | | |
| <u>University of Wisconsin</u> <u>Madison</u> | | | |
| TeKippe, Rudy J. Dept. of Civil Engineering | Application of Flocculation Theories | 1-F1-WP-26,100-01A2 | 6,600 |
| Tranquillo, James S. Dept. of Civil Engineering | Septic Tanks as a Source of Phosphorus for Lakes | 5-F1-WP-26,329-01 | 10,400 |
| Walesh, Stuart G. Dept. of Civil Engineering | Subsurface Water Movement | 5-F1-WP-26,072-03 | _____* |
| Walton, Craig P. Dept. of Civil Engineering | Microhabitats of Indicator Organisms | 1-F1-WP-26,330-01 | 5,900 |
| FOREIGN | | | |
| <u>ENGLAND</u> | | | |
| <u>Westfield College</u> <u>London, England</u> | | | |
| Jewell, William J. Dept. of Botany | Algae and Sessile Plant Degradation in Waterways | 1-F2-WP-33,693-01S1 | 1,250 |
| <u>Freshwater Biological Association</u> <u>Ambleside</u> | | | |
| Stockner, John G. Dept. of Chemistry | Lake Sediments Study | 1-F2-WP-26,042-01 | _____* |
| <u>SWEDEN</u> | | | |
| <u>Chalmers University of Technology</u> <u>Goteborg, Sweden</u> | | | |
| Kirk, Thomas K. Dept. of Organic Chemistry | Use of Hymenomycetes to Decompose Waste Lignin | 1-F2-WP-26,273-01 | 8,155 500** |
| <u>SWITZERLAND</u> | | | |
| <u>Swiss Federal Institute of</u> <u>Technology</u> <u>Zurich</u> | | | |
| Washington, Donald R. Biological Section | Effects of Algae on Stream Oxygen Balance | 1-F3-WP-7935-01 | 500** |

* Active in 1968 - Supported by funds awarded in previous years

** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|--|-------------------|---------|
| <u>WISCONSIN</u> | | | |
| <u>University of Wisconsin</u> <u>Madison</u> | | | |
| Gardner, Wayne S. Dept. of Civil Engineering | Amino Acids in Natural Water Systems | 5-F1-WP-26,224-02 | 6,100 |
| Hazelwood, Loren F. Dept. of Water Chemistry | Electrolytic Treatment of Cyanide Wastes | 1-F1-WP-26,304-01 | 5,100 |
| Hughes, Robert A. Dept. of Civil Engineering | Persistence of Toxaphene in Natural Waters | 5-F1-WP-26,196-02 | 6,600 |
| Jebens, Harold J. Dept. of Civil Engineering | Nitrogen Transformations in Streams | 1-F1-WP-26,311-01 | 6,300 |
| Karr, Malcolm H. Dept. of Urban and Regional Planning | Water Resources Management | 1-F3-WP-26,167-01 | _____ * |
| Kluesener, John W. Dept. of Civil Engineering | Studies on the Effect of Pulp and Paper Pollution of Wisconsin River | 1-F1-WP-26,310-01 | 6,600 |
| Koonce, Joseph F. Dept. of Zoology | Biological Investigations on Polluted Impoundments | 1-F1-WP-26,279-01 | 5,400 |
| Peterson, James O. Dept. of Civil Engineering | Concentration of Organics | 5-F1-WP-26,183-03 | 4,400 |
| Plumb, Russell H. Dept. of Civil Engineering | Chlorination of Cyanide Planting Wastes | 1-F1-WP-26,316-01 | 5,100 |
| Rees, Colin P. Dept. of Zoology | Two Factors Influencing the Distribution of Gammarus Pseudolimnaeus | 5-F1-WP-36,364-02 | 5,300 |
| Rodel, Max G. Dept. of Civil Engineering | Characterization of Algal Odors | 1-F1-WP-26,317-01 | 5,300 |
| Shannon, James E. Dept. of Civil Engineering | Estimating Eutrophication of Lakes by Sediment Cores | 5-F1-WP-26,012-04 | 6,800 |
| Spear, Richard D. Dept. of Chemistry | Chemistry of Glycollic Acid in Natural Waters | 5-F1-WP-26,020-03 | _____ * |

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|--|---------------------|---------|
| <u>WASHINGTON</u> | | | |
| <u>University of Washington</u> <u>Seattle</u> | | | |
| Stockner, John G. Dept. of Zoology | Ecology of Thermal Springs | 5-F1-WP-26,042-03 | _____ * |
| Woelke, Charles E. Dept. of Fisheries | Bioassay Study of Fertilized Oyster Eggs in Puget Sound | 5-F1-WP-26,014-04 | 2,683 |
| <u>WISCONSIN</u> | | | |
| <u>University of Wisconsin</u> <u>Madison</u> | | | |
| Baillod, Charles Dept. of Civil Engineering | Mass Transfer of Nutrients Through Bacterial Floc | 5-F1-WP-24,612-02 | _____ * |
| Bentley, Eugene M. Dept. of Civil Engineering | Effect of Marshes on Water Quality | 5-F1-WP-26,189-02 | 6,800 |
| Berthouex, Paul M. Dept. of Civil Engineering | Optimum Waste Treatment System Design | 1-F1-WP-26,306-01 | 5,800 |
| Biggar, James W. Dept. of Soils | Mixing Process in Soil in Relation to Waste Control | 1-F1-WP-28,715-01 | _____ * |
| Bortleson, Gilbert C. Dept. of Civil Engineering | Eutrophication-Lake Sediment Cores | 1-F1-WP-26,188-01A2 | 5,600 |
| Boucher, Francis R. Dept. of Civil Engineering | Chlorinated Pesticides in Natural Water | 5-F1-WP-26,137-02 | _____ * |
| Cole, Jon A. Dept. of Civil Engineering | General Area of Physical Thickening of Sludges from Biological Waste Treatment | 5-F1-WP-28,270-03 | _____ * |
| Cowen, William F. Dept. of Civil Engineering | Effect of Organics on Growth of Algae | 5-F1-WP-26,207-02 | 5,100 |
| Delfino, Joseph J. Dept. of Civil Engineering | Aqueous Environmental Chemistry of Manganese | 1-F1-WP-26,217-01 | _____ * |

* Active 1968 - Supported by funds awarded in previous years

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|------------------------|---------------|--------|--------|
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TEXAS
University of Texas
Port Aransas

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|---|--|-------------------|-------|
| Steed, David L. Dept. of Marine Science Institute | Carbon Metabolism of an Estuarine Ecosystem | 5-F1-WP-26,209-02 | 5,300 |
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UTAH
University of Utah
Salt Lake City

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| Hales, Donald C. Dept. of Zoology | Effects of Insecticides on a Stream Environment | 5-F1-WP-26,025-03 | _____* |
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| Jacobi, Gerald Z. Dept. of Zoology and Entomology | A New Artificial Substrate for Pollution Surveillance | 1-F1-WP-26,325-01 | 5,100 |
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|---------------------------------------|---|--|----------------|
| Merkley, Wayne B. Dept. of Zoology | Evaluation of Nematodes in Water Treatment Plant | 5-F1-WP-26,016-04 5-F1-WP-26,016-05 | 6,600 7,300 |
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|---|--|-------------------|-------|
| Prows, Bernard L. Dept. of Zoology and Entomology | Bioassays to Determine the Toxicity of Pesticides to Aquatic Insects | 5-F1-WP-26,130-03 | 8,300 |
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Utah State University
Logan

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| Beers, Gary D. Dept. of Wildlife Resources | Algal and Sphaerotilus Production in a Polluted River | 5-F1-WP-33,276-02 | 5,800 |
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|---|---|-------------------|-------|
| Mayer, Foster L. Dept. of Wildlife Resources | Insecticide Interaction Effects on Fish Metabolism | 5-F1-WP-31,575-02 | 6,600 |
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WASHINGTON
University of Washington
Seattle

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|--|---|-------------------|-------|
| Abernathy, Atwell R. Dept. of Zoology | Limnological Study of Recovery of Lake Washington | 1-F3-WP-26,213-01 | 500** |
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| Gotelli, David M. Dept. of Botany | Fungal Parasites of the Phytoplankton | 5-F1-WP-26,248-02 | 6,300 |
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* Active 1968 - Supported by funds awarded in previous years

** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|---------------------|---------|
| <u>SOUTH CAROLINA</u> | | | |
| <u>Clemson University</u> <u>Clemson</u> | | | |
| Cannella, Albert A. Dept. of Environmental Systems Engineering | Chemical Aspects of Waste Treatment | 5-F1-WP-30,617-02 | _____ * |
| Click, Clifford Dept. of Chemical Engineering | Growth Kinetics of Algae | 5-F1-WP-29,884-03 | 7,300 |
| Cline, David M. Dept. of Environmental Systems Engineering | Population Dynamics in Surface Attached Microorganisms | 1-F1-WP-26,287-01 | 5,600 |
| Holland, Lyman L. Dept. of Chemical Engineering | The Kinetics of an Algal Photosynthetic Gas Exchanger | 5-F1-WP-26,173-02S1 | 202** |
| | | 5-F1-WP-26,173-03 | 2,900 |
| Stokley, Dave R. Dept. of Chemical Engineering | The Rate and Composition of Gases Evolved in a Lagoon | 1-F1-WP-26,328-01 | 4,900 |
| Weers, Walter A. Dept. of Environmental Systems Engineering | Multi-Stage-Pluri- Stream Continuous Culture of Microorganisms | 5-F1-WP-26,243-02 | 6,800 |
| Wrenn, John D. Dept. of Chemical Engineering | The Effect of Light Source on Chlorophyll in Algae | 5-F1-WP-26,181-03 | 5,800 |
| Young, Thomas B. Dept. of Environmental Systems Engineering | Analysis of a Pure Continuous Culture | 1-F1-WP-26,331-01 | 11,400 |
| <u>TEXAS</u> | | | |
| <u>Texas A & M University</u> <u>College Station</u> | | | |
| Evelt, Jack B. Dept. of Civil Engineering | Waste Assimilation Capacity in Non-Steady Rivers | 5-F1-WP-23,068-03 | _____ * |
| <u>University of Texas</u> <u>Austin</u> | | | |
| Lindsey, Edgar E. College of Engineering | Chemical and Environmental Engineering | 1-F3-WP-26,255-01 | 12,131 |

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** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|---|---------------------|--------|
| <u>OKLAHOMA</u> | | | |
| <u>Oklahoma University</u> <u>Norman</u> | | | |
| Engelken, Walter Dept. of Civil Engineering and Environmental Science | Ionic Buffer Capacity of High Surface Area Materials | 1-F1-WP-26,233-01S1 | 311** |
| <u>Oklahoma State University</u> <u>Stillwater</u> | | | |
| Grady, C. P. Leslie Dept. of Civil Engineering | Metabolic Control in Multicomponent Systems | 5-F1-WP-16,744-04 | 5,300 |
| <u>OREGON</u> | | | |
| <u>Oregon State University</u> <u>Corvallis</u> | | | |
| Bolen, John J. Dept. of Oceanography | Marine Radioecology | 1-F1-WP-26,321-01 | 12,400 |
| Gillespie, Paul A. Dept. of Microbiology | Sediment-Water-Bacteria | 1-F1-WP-26,289-01 | 5,100 |
| Haertel, Lois J. Dept. of Oceanography | Relationships Between Columbia River Estuary Plankton, Radionuclides and Wood Fibers | 5-F1-WP-31,471-02 | _____* |
| Holton, Robert L. Dept. of Oceanography | Radiosensitivity of Marine Organisms | 5-F1-WP-30,166-03 | _____* |
| McCain, Bruce B. Dept. of Microbiology | The Characterization of a Sockeye Salmon Virus | 5-F1-WP-26,157-03 | 5,800 |
| Robertson, James M. Dept. of Microbiology | A Physiological Ecological Study of Sphaerotilus Natans in an Experimental Stream | 5-F1-WP-26,040-02 | _____* |
| Williams, Harvey D. Dept. of Botany and Plant Pathology | Kraft Pulp Effluent Effects on Algae in Streams | 5-F1-WP-26,159-02 | 7,300 |
| <u>PENNSYLVANIA</u> | | | |
| <u>Pennsylvania State University</u> <u>University Park</u> | | | |
| Eberhardt, William A. Dept. of Civil Engineering | Anaerobic Biological Waste Treatment | 5-F1-WP-26,021-03 | _____* |

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** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|---|---|----------------------|----------------|
| <u>NEW YORK</u> | | | |
| <u>Cornell University</u> <u>Ithaca</u> | | | |
| Skelly, Michael Dept. of Sanitary Engineering | Optimal Process Design for Multiple Waste Components | 1-F1-WP-33,749-01A1 | _____ * |
| Stensel, H. David Dept. of Water Resources Engineering | Optimization of Wastewater Treatment Process | 1-F1-WP-26,284-01 | 5,600 |
| Verma, Rameshwar D. Dept. of Water Resources Engineering | Nonlinear Model for Predicting Extreme Runoff | 1-F1-WP-26,266-01 | 8,100 |
| Wanielista, Martin P. Dept. of Water Resources Engineering | Optimal Location and Evaluation of Surveillance Nets | 1-F1-WP-33, 751-01A1 | _____ * |
| <u>New York University</u> <u>University Heights</u> | | | |
| Blanc, Matthew M. Dept. of Civil Engineering | Control of Electrode Potentials in Digestion | 1-F1-WP-26,251-01 | 5,300 |
| Zuckerman, Matthew M. Dept. of Civil Engineering | Secondary Effluent Suitability for Carbon Treatment | 1-F1-WP-26,253-01 | 5,600 500** |
| <u>NORTH CAROLINA</u> | | | |
| <u>North Carolina State University</u> <u>Raleigh</u> | | | |
| Byron, Michael M. Dept. of Zoology | Movement of Dissolved Organics in Estuarine Environment | 1-F1-WP-26,275-01 | 5,400 |
| Engel, David W. Dept. of Zoology | Effects of Environmental Factors of Marine Crustacea | 1-F1-WP-26,269-01 | 6,610 |
| Hoss, Donald E. Dept. of Zoology | Metabolic Rates of Estuarine Fish | 1-F1-WP-26,271-01 | 6,110 |
| <u>OHIO</u> | | | |
| <u>University of Cincinnati</u> <u>Cincinnati</u> | | | |
| Pappas, James M. Dept. of Civil Engineering | Urban Runoff Characteristics | 1-F1-WP-26,326-01 | 12,432 |

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** Supply, travel or dependent allowance

| LOCATION AND RECIPIENT | PROJECT TITLE | NUMBER | AMOUNT |
|--|--|--|----------------|
| <u>NEW HAMPSHIRE</u> | | | |
| <u>University of New Hampshire</u> <u>Durham</u> | | | |
| Gallup, Donald N. Dept. of Zoology | Zoo-Nannoplankton Relationship in a Mesotrophic Lake | 5-F1-WP-26,218-02 | 5,008 |
| McGill, Hugh J. Dept. of Zoology | Algal Blooms in Eutrophic Waters | 1-F1-WP-26,265-01 | 6,100 |
| <u>NEW MEXICO</u> | | | |
| <u>New Mexico State University</u> <u>Las Cruces</u> | | | |
| Kramer, Gary R. Dept. of Civil Engineering | Mathematical Model of the Transition State | 5-F1-WP-26,220-02 | 6,300 |
| <u>NEW YORK</u> | | | |
| <u>Clarkson College of Technology</u> <u>Potsdam</u> | | | |
| Andros, Peter J. Dept. of Civil Engineering | A Water Renovation Process for Virus Removal | 1-F1-WP-26,270-01 | 4,900 |
| <u>Cornell University</u> <u>Ithaca</u> | | | |
| Alexander, Martin Dept. of Agronomy | Biochemical Ecology of Microorganisms | 1-F3-WP-26,260-01 | 13,800 |
| Arnold, Dean E. Dept. of Ecology and Systematics | Effects of the Blue- Green Algae on Zooplankton | 1-F1-WP-26,214-01S1 5-F1-WP-36,214-02 | 386** 6,300 |
| Gablinger, Moshe Water Resources Engineering | Application of Operations Research to Water Management | 1-F1-WP-26,262-01 | 6,600 |
| Grove, Thurman L. Dept. of Ecology and Systematics | Population Dynamics and Seasonal Metabolism of Zooplankton | 1-F1-WP-26,314-01 | 5,800 |
| Milnes, Thomas R. Dept. of Water Resources Engineering | Use of Systems Analysis in Water Pollution Control | 1-F1-WP-26,264-01 | 6,600 |
| O'Brien, William J. Dept. of Ecology and Systematics | Plankton Succession in Artificially Fertilized Ponds | 1-F1-WP-26,280-01 | 5,100 |

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** Supply, travel or dependent allowance