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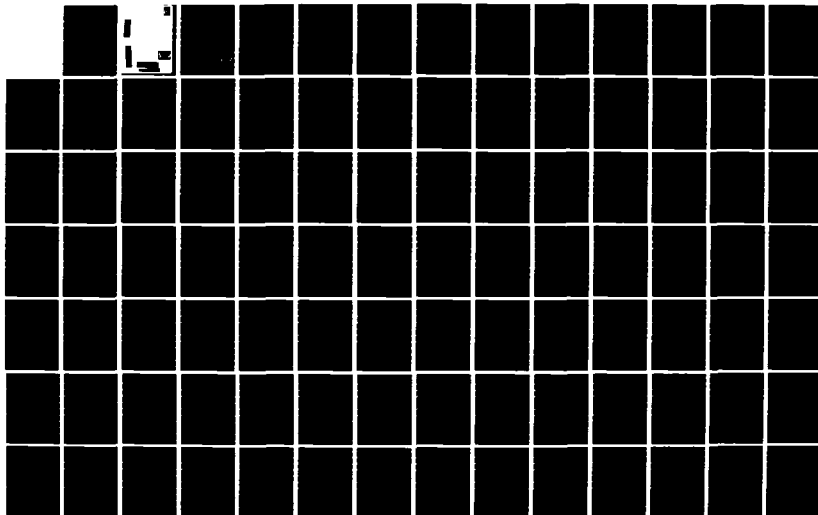
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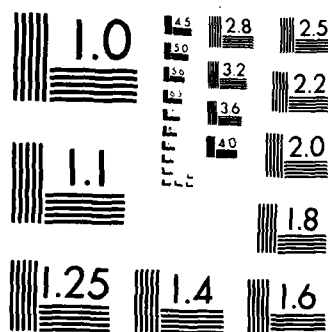
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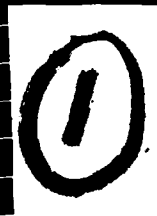
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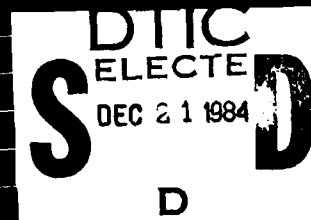
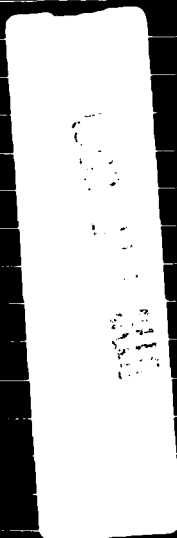
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Great Lakes Science Advisory Board
Report to the International Joint Commission



AD-A153 028

The Appendices to the
1982 Annual Report
Great Lakes Research Review



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Great Lakes Science Advisory Board
Report to the International Joint Commission

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**The Appendices to the
1982 Annual Report
Great Lakes Research Review**

November 1982
Windsor, Ontario

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Introduction

This volume includes the Appendices to the Science Advisory Board's 1982 Annual Report on Great Lakes research. The main objective of this review is to determine how fully the existing research effort is meeting the requirements of the 1978 Great Lakes Water Quality Agreement. Based on this review the Board reached certain conclusions regarding research needs and formulated recommendations.

Copies of the Science Advisory Board's 1982 Annual Report on Great Lakes research may be obtained from the International Joint Commission at the Great Lakes Regional Office in Windsor, Ontario, Canada.

Abbreviations

This list includes abbreviations of all the names and locations used in the 1982 Annual Report on Great Lakes research.

ACB	Abatement and Compliance Branch
ACE	Army Corps of Engineers
ACRES	Acres Consulting Services Limited
AES	Atmospheric Environment Service
AE.SCI.CONS.	Applied Earth Science Consultants Incorporated
AG.CAN.	Agriculture Canada
AINL.ASSOC.	Ainley and Associates
APWA	American Public Works Association
AQ.TEC.ENV.CON.	Aqua Tech Environmental Consultants Inc.
ARC	Animal Research Centre
ARG.NAT.LAB	Argonne National Laboratory
BEAK	Beak Consultants Limited
BGSU	Bowling Green State University
BRANTFORD P.U.C.	Brantford Public Utilities Commission
CAN.RES.INST.	Canadian Research Institute
CANVIRO	Canviro Consultants Limited
CCIW	Canada Centre for Inland Waters
CHI.MED.SCH.	Chicago Medical School
CLARK COL.	Clarkson College of Technology
COMP SC.	Computer Sciences Corporation
COR.PUB.SER.LTD.	Corpus Publishers Services Limited
COR.U.	Cornell University
CR.INST.SC.	Cranbrook Institute of Science
CWR U.	Case Western Reserve University
CWS	Canada Wildlife Service
DAL.U.	Dalhousie University
DEARBORN	Dearborn Environmental Consulting Services
DEPAUL U.	Depaul University
DET.ED.	Detroit Edison
DFO	Canada Department of Fisheries and Oceans
DOE	Canada Department of the Environment
DOF	Dofasco
DSS	Canada Department of Supply and Services
EHD	Environmental Health Directorate
EMR	Canada Department of Energy, Mines and Resources
EMS	Environmental Management Service
E.NAZ.COL.	Eastern Nazarene College
ENL	Eldorado Nuclear Limited
EPS	Environmental Protection Service
ERL-D	Environmental Research Laboratory-Duluth
ESEERCO	Empire State Electric Energy Research Corporation
EV.HAM.INC.	Evans-Hamilton Incorporated

ABBREVIATIONS (Continued)

FWS	Fish and Wildlife Service
GE	General Electric Company
GLERL	Great Lakes Environmental Research Lab
GLFC	Great Lakes Fishery Commission
GLFL	Great Lakes Fishery Lab
GLFRB	Great Lakes Fisheries Research Branch*
GO.STO.LTD.	Gore and Storrie Limited
GOV.SU.	Governors State University
GREG.GEOSC.LTD.	Gregory Geoscience Limited
GSC	Geological Survey of Canada
HRS	Harrow Research Station
HYD.CON.S.LTD.	Hydrology Consultants Ltd.
IEC	International Environmental Consultants
IJC	International Joint Commission
ILL.GS.	Illinois State Geological Survey
ILL.INST.TEC.	Illinois Institute of Technology
IND.BIO.T.LAB	Industrial Bio-Test Laboratories Incorporated
INF.LTD.	Informetrica Ltd.
INST.ARM-FRAP.	Institute Armand- Frappier
INST.PED.	Institute of Pedology
INT.ENV.CON.S.	International Environmental Consultants
INT.SAT.INF.	Integrated Satellite Information Services Limited
IWD	Inland Waters Directorate
KPA	Ker Priestman and Associates
KU.CO.	Kuhlmun Corporation
LAKEHEAD U.	Lakehead University
LAVAL U.	Laval University
LAW.MAT.SK.ENG.	Lawler, Matusky and Skelly Engineers
LLRS	Large Lake Research Station
LRRRI	Land Resource Research Institute
MAC.LTD.	James F. MacLaren Limited
MAN.COL.	Manhattan College
MCGILL U.	McGill University
McM.U.	McMaster University
MCN.AS.	W.R. McNeil and Associates
MED.COL.WI.	Medical College of Wisconsin
MIAMI	Miami University
MI.DNR	Michigan Department of Natural Resources
MINN.DNR	Minnesota Department of Natural Resources
MI.PUB.H.	Michigan Department of Public Health

* Previously known as Great Lakes Biolimnology Lab

ABBREVIATIONS
(Continued)

MOLSON'S	Molson's Brewery (Ontario) Ltd.
MO.CO.PWA	Monroe County Pure Water Association
MONT.SU.	Montana State University
MSG	Michigan Sea Grant
MSU	Michigan State University
MTU	Michigan Technological University
MUC	Montreal Urban Community
NASA	National Aeronautics and Space Administration
NHW	National Health and Welfare Canada
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council of Canada
NWRI	National Water Research Institute
NWU	Northwestern University
NYSDEC.	New York State Department of Environmental Conversation
OMAF	Ontario Ministry of Agriculture and Food
OMNR	Ontario Ministry of Natural Resources
OMOE	Ontario Ministry of the Environment
OMOEN	Ontario Ministry of Energy
OMOH	Ontario Ministry of Health
OMOL	Ontario Ministry of Labour
ONT.H.	Ontario Hydro
ORF	Ontario Research Foundation
OSU	Ohio State University
P&R LTD.	Proctor and Redfern Limited
PHIL.AC.NAT.SC.	Philadelphia Academy of Natural Sciences
POLY	Polysar
PUR.U.	Purdue University
QUE.H.	Quebec Hydro
QUE.U.	Queen's University
REG.MUN.OTT.CAR.	Regional Municipality of Ottawa Carleton
RES.TRIA.INST.	Research Triangle Institute
RESEARCH CONS.	Research Consultants
RPF	Roslyn Park Farms
SCIEX	Sciex Incorporated
SUCB	State University College of Buffalo
SUNY	State University of New York
SYR.U.	Syracuse University
TEX	Texaco Canada
TEXAS A&M	Texas A and M University
TOR	Metro Toronto

ABBREVIATIONS
(Continued)

U.ALB.	University of Alberta
U.BC	University of British Columbia
U.CALIF.	University of California
U.CINN.	University of Cincinnati
U.DAY.	University of Dayton
U.DET.	University of Detroit
U.GUE.	University of Guelph
U.ILL.	University of Illinois
UM	University of Michigan
U.MINN.	University of Minnesota
U.NY.	University of New York
U.OTT.	University of Ottawa
U.QUE.	University of Quebec
USCG	United States Coast Guard
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFDA	United States Food and Drug Administration
USGS	United States Geological Survey
USSCS	United States Soil Conservation Service
U.TEX.	University of Texas
U.TOR.	University of Toronto
UTRCA	Upper Thames River Conservation Authority
U.TRENT	University of Trent
U.WAT.	University of Waterloo
U.WI.	University of Wisconsin
U.WIN.	University of Windsor
U.WO.	University of Western Ontario
W.H.OCEAN.INST.	Woods Hole Oceanographic Institute
WI.DNR	Wisconsin Department of Natural Resources
WIEPC	Wisconsin Electric Power Company
WMB	Waste Management Branch
WTC	Wastewater Technology Centre
YORK U.	York University
ZENON.ENV.ENT.	Zenon Environmental Enterprises

Appendix I

Correspondence

- A. Request for Research Information
- B. Verification of Coded and Classified Information
- C. Verification of Research Expenditure



INTERNATIONAL JOINT COMMISSION

GREAT LAKES SCIENCE ADVISORY BOARD
100 Ouellette Avenue, 8th floor, Windsor, Ontario N9A 6T3



File 3000-5-11

February 8, 1982

CORRESPONDENCE (A): REQUEST FOR RESEARCH INFORMATION

Dear Sir:

Re: RESEARCH ACTIVITIES RELATING TO THE GREAT LAKES

The Science Advisory Board (SAB) of the International Joint Commission (IJC) is attempting to determine the extent to which existing research programs in the Great Lakes basin are meeting the needs of the Great Lakes Water Quality Agreement. It is recognized that major agency and institutional research programs are not designed to specifically meet the needs of the Agreement and this review is not meant to be critical of other research activities. Rather, the purpose is to develop sufficient information to enable the Board to advise the Commission of the scope of on-going research activities which are directly relevant to the needs identified in the Agreement and require continued support, and to identify any research areas which do not appear to be adequately addressed.

The SAB has directed its members and the staff of the IJC Regional Office to undertake the task of collecting information on research programs directly related to the Great Lakes. The staff of the Regional Office will contact the various agencies, organizations, and research laboratories which are involved in such activities. Your cooperation in providing this information to the staff will be appreciated.

The specific information which we are seeking for each research project includes the following:

1. Funding or Supporting Agency/Organization
2. Performing Agency/Organization
3. Project Title
4. Principal Investigator and Telephone Number
5. Funding by Fiscal Year
6. Duration of Project (anticipated completion) and Man Years Involved
7. Project Summary including:
 - 7.1 Project Outline
 - 7.2 Anticipated Benefits
 - 7.3 Identified Benefits to Date (results or publications)

Enclosed for your information are three typical examples of project descriptions providing the type of information we seek.

You may include any additional information which you believe may be useful.

All information could be sent by March 10, 1982 to Dr. F.K. Fahmy, at the IJC Great Lakes Regional Office, 100 Ouellette Avenue, Windsor, Ontario N9A 6T3.

Yours very truly,

W.R. Drynan
Secretary
Science Advisory Board

WRD/matb
Enclosures (As Noted)



INTERNATIONAL JOINT COMMISSION

GREAT LAKES SCIENCE ADVISORY BOARD
100 Ouellette Avenue, 8th floor, Windsor, Ontario L9A 6T5



File 3000-5-11

May 3, 1982

CORRESPONDENCE (B): VERIFICATION OF CODED AND CLASSIFIED INFORMATION

Dear Sir:

Enclosed are copies of a computer printout of summaries of your research projects. These are the projects which you had sent to us in response to a request from the Science Advisory Board.

The material which you are receiving now is only a draft. We urge you to review this draft carefully and make sure that the information included is accurate and acceptable to you. The approach we used to classify the projects and describe their objectives has been approved by the Science Advisory Board. We cannot alter the approach, but we can change the information to more accurately reflect the scope of work and the objectives of your projects.

The following describes the approach which we followed to classify your projects and to describe their objectives:

Research needs were classified according to the nature of the problem being studied, research subject(s), and the activity under which this project may fit within the requirements of the Great Lakes Water Quality Agreement (Table 1).

A. Research Problems

Six specific problems were identified: toxic organics, toxic metals, phosphorus, nutrients, pathogens and thermal pollution (Section A of Table 1). Each problem is coded by a capital letter, e.g. A,B,C,D as indicated in the Table. If the project description indicated that the problem was toxic substances, but did not indicate whether it was dealing with toxic metals or organics, or if the project was dealing with other deleterious substances, e.g. asbestos fibers or chlorides, then it was classified under "Contaminants - general" or with the code letter "E".

If the project was dealing with a specific problem which was not among the problems mentioned, for example current measurements, then it was classified as "Other" with a code letter "H".

If the project did not specify the exact nature of the problem, it was classified under "Unspecified" with a code letter "I".

If the project dealt with more than one of the problems identified above, then it was classified under "Several". In all cases, groups of keywords were used to identify the specific problems being investigated.

B. Research Subject

To investigate a problem, research activities may involve some or all of the following subjects (see Section B of Table 1):

May 3, 1982

Code

"0" Source and Loading:

Determination of the source(s) of the problem and the quantities of pollutants reaching the Great Lakes;

"1" Characteristics:

Identification of the characteristics of the problem. In the case of a pollutant, it is important to know its physical, chemical and toxicological properties. For example, scientists found that there is a correlation between the structure of some chemicals and their activity in the environment, including their rates of bioaccumulation and persistence in biological systems;

"2" Fate and Transport:

Determination of the fate of the pollutant in the environment including retention of its characteristics, the influence of environmental factors on these characteristics, and its distribution among the various compartments of the environment, i.e. water, sediment, air and biological systems. It is also important to know how the substance moves from one location or compartment to another;

"3" Environmental Impacts:

Determination of the impacts of the problem on the biotic and abiotic components of the environment;

"4" Human Health Effects:

Estimation of the potential impacts of the problem on human health;

"5" Method Development and Modeling:

Development of new techniques and methods to measure the problem, and development of mathematical models to predict its behaviour and potential impact on the environment and human health;

"6" Criteria:

Development of objectives, standards, criteria, guidelines and regulations;

"7" Management:

Development of cost-effective management strategies to control and/or alleviate the problem.

C. Activity under the Agreement

We attempted to relate each problem to one or more of the several activities (sources) outlined in the Agreement; for example: atmospheric, dredging, industrial municipal, shipping, non-point, other, unspecified, several (see Section C of Table 1).

The information which we received from the various organizations varied widely in format and in the degree of detail provided for each research project. For the purpose of this review, it was essential to standardize the format and to develop a flexible computer program for the storage and retrieval of this information.

- That efforts continue to be made to identify the extent of, and develop programs for, the control of pollution from combined sewer overflows. (p. 11)

1973 Annual Report

- The need for data on the levels and effects of a variety of persistent contaminants in the Great Lakes environment has become increasingly evident in recent years. Most State and Provincial environmental agencies have responded to this need by instituting surveillance programs to monitor levels of mercury, chlorinated hydrocarbons and their residues, and more recently, PCBs in the water, sediment and biota of the Great Lakes. (p. 35)
- Additional research is necessary to determine the environmental significance of observed levels of PCBs in the biota and to evaluate human health implications. (p. 38)
- Considerable research, particularly in the field of pulp and paper, is being conducted across Canada and elsewhere, and the Ministry is monitoring this work. Technology for the control of toxicity in paper mill effluents is still lacking. (p. 73)
- Pollution via overflows from combined storm and sanitary sewers continues to be a major problem in the Great Lakes. (p. 83)
- Because of very high cost of controlling combined sewer discharges by existing methods such as sewer separation, little emphasis has been placed on this problem in the past. However, active research programs are underway which will more adequately define the scope of the problem, and lead to the development of the most economical methods of control and/or elimination. (p. 83)

- The Water Quality Board recommends that Governments place increased emphasis on research and development of techniques for disposal of municipal sludge, including pretreatment of wastes entering municipal systems and alternative technology for disposal or reuse of waste treatment by-products. (p. 1)
- The Water Quality Board recommends that in the environmental assessment of significant water intakes, the Governments require an evaluation of the effect on lakewide fish populations. (p. 1)
- A recent proposal by Detroit Edison for a once-through site on the St. Clair River suggests the need for international cooperation in the assessment of the impact of such facilities, particularly in view of the proximity of this facility to others on the United States and Canadian shores, and concern that existing facilities may already be affecting walleye populations. (p. 74)

1976 Annual Report

- Standard procedures need to be developed to assess the additive and synergistic effects in receiving waters of toxic materials from complex industrial effluents. (p. 18)
- Surveillance programs to identify the presence of toxic materials in the environment and research programs to determine their effect on human health were also recommended. (p. 26)

1975 Annual Report

- Continued support be given to the development of "lake effect models" to provide guidance for eutrophication and other pollution control programs. Further, it is recommended that increased efforts be made to refine the estimates of phosphorus loadings from the atmosphere and land drainage, and determine the fraction available for biological growth. (p. 13)
- The Board further suggests that efforts be continued toward the further scientific development and verification of "lake effect" mathematical models and urges the use of such models by governments to guide the development and assessment of remedial programs. (p. 70, 71)
- The economic and technical feasibility of requiring further reductions in phosphorus content of point-source discharges be investigated. (p. 71)

1974 Annual Report

- In view of the continued serious problems with dissolved oxygen depletion in Lake Erie, Governments actively support continued investigations and research into the problem as a basis for assessing the effectiveness of remedial programs and modifying them as required. (p. 10)

- Studies at power plants have not addressed lakewide impacts and usually suggest that impingement and entrainment are insignificant compared to commercial catches and that populations will compensate for intake losses. To date, most of the studies have been concerned with the local effects of individual plants rather than system-wide effects. (p. 19, 20)
- The relationship between reductions in phosphorus loads from municipal sources and the ecosystem of the receiving water is complex and cannot be readily evaluated by field measurements. There is insufficient information relating fish and plankton populations to changing phosphorus loads. It is probable that environmental changes have affected fish stocks, although other stresses are present in the system. (p. 24)
- Because of gaps in knowledge of the eutrophication process, mathematical models used to estimate lake responses to changes in phosphorus loads are regarded only as planning tools, and are used to quantify and interpret the models which are based on consideration of total phosphorus include: the seasonal succession of algal species, which is presently limited to two species; and finally the question of the bioavailability. (p. 24)

1978 Annual Report

- Scientists have different opinions on the reasons for the low dissolved oxygen in the Lake Erie central basin. Some attribute this phenomenon to the recent influence of man in the form of increased phosphorus discharges. Another group views the problem as an ongoing situation that has not changed appreciably over the past 20 or 30 years. (p. 13)
- Levels of PCBs have also declined in herring gull eggs (Table 2.2), as have levels of DDE, DDT, dieldrin, and HCBs. Associated with these declines has been a distinct increase in reproductive success from 0.15 in 1974 to 1.01 in 1978. Although the effects of contaminants on reproductive success is not fully understood, the present findings are encouraging. (p. 13)
- Levels of dioxin in Saginaw Bay ranged from 10 to 1,000 pg/g (parts per trillion), and in Lake Ontario, ranged from 4.6 to 6.5 pg/g. Further assessments of these concentrations and their environmental implications are required. (p. 17)

1977 Annual Report

- The Water Quality Board recommends that Governments develop rational schemes to order priorities for evaluating the risk of toxic chemicals to human health and environment. (p. 1)

1976 Annual Report

- Report on "Great Lakes Water Quality Research Needs 1976" identified 117 ecological issues, 47 technological issues and 71 social-economic-political issues for which research was needed (p. 3)

1975 Annual Report

- societal impact of the Cladophora problem (p. 6)
- long-term, large-scale drift and dispersal patterns in the Great Lakes (p. 7)

C. RECOMMENDATIONS OF THE WATER QUALITY BOARD

1981 Annual Report

- The absence of any priority or ranking of substances found in the Great Lakes ecosystem which have the greatest potential to adversely affect human and environmental health. (p. 5)
- Prepare a single priority list of toxic substances in the Great Lakes Basin for which inventory data must be developed, rank these substances according to their potential environmental and human health effects, and periodically update the list and the ranking. (p. 5, 6)
- Continue efforts to develop and use structure activity correlations and other new screening tests for toxic substances occurring in the Great Lakes Basin. (p. 6)
- Field monitoring and research activities be coordinated, in order to acquire the information needed for priority setting and hazard assessment. (p. 7)
- Ecosystem studies of the transport, fate, and effects of ambient levels of toxic substances in the Great Lakes be encouraged. (p. 7)
- Conduct joint field and research programs into the atmospheric deposition of toxic substances, in order to conduct scientific assessments and refine control strategies. (p. 7)
- Develop a common definition of hazardous waste, and develop compatible programs to ensure the safe transport and disposal of hazardous wastes among the jurisdictions. (p. 8)

1980 Annual Report

- Causes of the shift in trophic conditions in Lake Michigan are not fully understood, although they might be related to the severity of the winter of 1976-77. The extent to which the phosphorus control programs contributed to this improvement and the permanence of this improvement are the subjects of additional research and monitoring. (p. 13)

B. RECOMMENDATIONS OF THE SCIENCE ADVISORY BOARD

1981 Annual Report

- sources and pathways of hazardous substances into the Great Lakes and their environmental and human health effects (p. 7)
- methodology for determining relative bioavailability of various forms of phosphorus (p. 21)
- the relationship between phosphorus and biological productivity and the movement of phosphorus through large lake ecosystems (p. 21)
- long range transport of atmospheric pollutants and their interactions in the water, sediment and biota of large lakes (p. 33)

1980 Annual Report

- compartmentalization of hazardous substances in large lake ecosystems (p. 18)
- degradation pathways for hazardous substances (p. 19)
- extent to which pollutants may be transmitted to lakes via groundwater, for example from industrial waste disposal sites (p. 34)
- development of methods to determine net benefit of pollution control measures (p. 55)

1979 Annual Report

- potential effects of man-made chemicals in the environment (p. vi)
- support for research program on acid precipitation and its effects, as recommended by U.S. Council on Environmental Quality (1978) (p. 20 and 21)

1978 Annual Report

- cost-effective programs for reducing phosphorus loadings, especially runoff from urban and agricultural lands (p. 32)
- development and verification of improved eutrophication models (p. 32)

1977 Annual Report

- studies to determine the exchange of persistent toxic materials among the air, water, sediment and biota (p. 4)
- development of better analytical methods for identifying and quantifying toxic organic chemicals in the environment (p. 4)
- biological availability of phosphorus (p. 15)

ANNEX 12

4. Monitoring. Monitoring and research programs in support of the Great Lakes International Surveillance Plan should be established at a level sufficient to identify:
 - (a) Temporal and spatial trends in concentration of persistent toxic substances such as PCB, mirex, DDT, mercury and dieldrin, and of other substances known to be present in biota and sediments of the Great Lakes System;
 - (b) The impact of persistent toxic substances on the health of humans and the quality and health of living aquatic systems;
 - (c) The sources of input of persistent toxic substances; and
 - (d) The presence of previously unidentified persistent toxic substances.
5. Early Warning System. An early warning system consisting of, but not restricted to, the following elements shall be established to anticipate future toxic substances problems:
 - (a) Development and use of structure-activity correlations to predict environmental characteristics of chemicals;
 - (b) Compilation and review of trends in the production, import, and use of chemicals;
 - (c) Review of the results of environmental testing on new chemicals;
 - (d) Toxicological research on chemicals, and review of research conducted in other countries;
 - (e) Maintenance of a biological tissue bank and sediment bank to permit retroactive analysis to establish trends over time;
 - (f) Monitoring to characterize the presence and significance of chemical residues in the environment;
 - (g) Development and use of mathematical models to predict consequences of various loading rates of different chemicals; and
 - (h) Development of a data bank for storage of information on physical/chemical properties, toxicology, use and quantities in commerce of known and suspected persistent toxic substances.
7. Research. Research should be intensified to determine the pathways, fate and effects of toxic substances aimed at the protection of human health, fishery resources and wildlife of the Great Lakes Basin Ecosystem. In particular, research should be conducted to determine:
 - (a) The significance of effects of persistent toxic substances on human health and aquatic life;
 - (b) Interactive effects of residues of toxic substances on aquatic life, wildlife, and human health; and
 - (c) Approaches to calculation of acceptable loading rates for persistent toxic substances, especially those which, in part, are naturally occurring.

RESEARCH NEEDS

A. REQUIRED BY THE 1978 GREAT LAKES WATER QUALITY AGREEMENT

ARTICLE I

"Research" means development, demonstration and other research activities but does not include monitoring and surveillance of water or air quality.

ARTICLE V

2. The Parties shall use their best efforts to ensure that:

- (a) The principal research funding agencies in both countries orient the research programs of their organizations in response to research priorities identified by the SAB and recommended by the Commission; and
- (b) Mechanisms be developed for appropriate cost-effective international cooperation.

ARTICLE VI

- 1. The Parties shall continue to develop and implement programs and other measures to fulfil the purpose of this Agreement and to meet the General and Specific Objectives including:
 - (e) research and educational programs be strengthened to facilitate integration of cultural, biological and chemical pest control techniques;
 - (g) development of criteria for the identification of polluted sediments;
 - (j) identification of harmful quantities of hazardous polluting substances;
 - (l) programs to identify airborne pollutant sources and relative source contributions, including the more accurate definition of wet and dry deposition rates.

ANNEX 3

- 2. (e) Maintenance of a viable research program to seek maximum efficiency and effectiveness in the control of phosphorus introductions into the Great Lakes.

ANNEX 7

- 4. The Parties shall encourage research to investigate advances in dredging technology and pathways, fate and effects of nutrients and contaminants of dredged materials.

Appendix III

Research Needs

- A. REQUIRED BY THE 1978 GREAT LAKES WATER QUALITY AGREEMENT
- B. RECOMMENDATIONS OF THE SCIENCE ADVISORY BOARD
- C. RECOMMENDATIONS OF THE WATER QUALITY BOARD

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Toronto, Ontario M5G 1X6

RESEARCH AGENCIES AND ORGANIZATIONS PROVIDING
RESEARCH INFORMATION

UNITED STATES

Brig. General Scott Smith
Division Engineer
U.S. Army Corps of Engineers
North Central Division
536 S. Clark Street
Chicago, Illinois 60605

Dr. Charles E. Herdendorf
Sea Grant Director
Center for Lake Erie Area Research
Ohio State University
484 W. 12th Avenue
Columbus, Ohio 43210

Dr. Donald F. Squires
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Sea Grant Institute
State University of New York
and Cornell University
411 State Street
Albany, New York 12246

Mr. Richard M. Wood
Research Specialist
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, N.Y. 13202

Dr. S.I. Shibko
Chief, Contaminants & Natural Toxicants
Evaluation Branch
Division of Toxicology, HFF-159
Food and Drug Administration
Department of Human Health Services
200 C. Street, S.W.
Washington, D.C. 20204

Dr. D.C. McNaught
Director
Minnesota Sea Grant Program
Professor of Ecology
435 Animal Science/Vet. Medicine
1988 Fitch Avenue
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St. Paul, Minnesota 55108

Dr. Joseph Kutkuhn, Director
Great Lakes Fishery Laboratory
1451 Green Road
Ann Arbor, Michigan 48105

Dr. Fred Meyer, Director
National Fishery Research Laboratory
U.S. Fish and Wildlife Service
P.O. 818
2630 Fanta Reed Road
LaCrosse, WI 54601

Mr. Alfred M. Beeton
Director
Michigan Sea Grant Program
Michigan State University
Institute of Water Research
2200 Bonisteel Boulevard
East Lansing, Michigan 48824

Dr. Robert A. Ragotzkie, Director
Sea Grant Institute Program
University of Wisconsin-Madison
1800 University Avenue
Madison, Wisconsin 53706

Dr. N. Jaworski, Director
Environmental Research Lab.-Duluth
U.S. Environmental Protection Agency
6201 Congdon Boulevard
Duluth, Minnesota 55804

Dr. Eugene Aubert, Director
NOAA/ERL
Great Lakes Environmental Res. Laboratory
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Ann Arbor, Michigan 48138

Mr. Clifford Risley, Jr.
Chief
Surveillance and Research Staff
Great Lakes National Program Office
U.S. Environmental Protection Agency
536 S. Clark Street
Chicago, Illinois 60605

Mr. Craig Kennedy
Joyce Foundation
135 South LaSalle Street
Chicago, Illinois 60603

Mr. Randy L. Eshenroder
Senior Scientist for Fishery Resources
Great Lakes Fishery Commission
1451 Green Road
Ann Arbor, Michigan 48105

Appendix II
Research Agencies and Organizations
Providing Research Information

Verification of Research Expenditure
August 12, 1982
Page 2

The Board also is requesting your assistance on two issues, research budgets and the number of researchers in your organization. Table 13 summarizes the numbers of projects and the resources allocated for these projects. Some of the project descriptions provided to the Science Advisory Board did not include budget figures. Table 13 shows both the total number of projects undertaken as well as the number of projects for which budgets were reported.

The lack of complete information on research budgets is constituting a problem to the Board. It is difficult to compare research efforts without some knowledge of the budgets involved. Accordingly, the Board is soliciting your assistance. Please provide us with the following information:

- (1) Total (not detailed project by project) budgets for current Great Lakes research including the years 1981, 1982 and estimates of 1983. If you find difficulty in reporting budgets allocated for Great Lakes research, please report your total research budget and estimate roughly the percentage of this budget used for Great Lakes research.
- (2) If possible, historical information on total budgets between 1974-1977. The Board recognizes that it may be difficult, if not even impossible to obtain some of the historical information. This, however, should not discourage you from providing us with any available information or rough estimates.
- (3) Total research staff at your laboratory or agency.

One more problem requires your assistance. Some research institutions have reported total budgets including salaries and personnel related costs, such as benefits. Others only reported operating budgets. To be consistent, the Board urges you to distinguish between the two. It will be useful if you can report both total and operating budgets.

Please incorporate your findings into the table of Resource Allocation by Agency, which has been included for your convenience.

Your early response on the above issues will be greatly appreciated. You may also telephone your comments and your reported budgets to us at (519) 256-7821 Canadian line, or (313) 963-9041 United States line.

Sincerely yours,

FKF/matb

F.K. Fahmy, Ph.D.
Acting Secretary

Enclosures (As noted)



INTERNATIONAL JOINT COMMISSION

GREAT LAKES SCIENCE ADVISORY BOARD
100 Ouellette Avenue, 8th floor, Windsor, Ontario NSA 6T3



File 3000-5-11

August 12, 1982

CORRESPONDENCE (C): VERIFICATION OF RESEARCH EXPENDITURE

Dear Sir:

In our previous correspondence, we indicated that you will be kept informed of the progress being made by the Science Advisory Board of the International Joint Commission on its review of Great Lakes research. The Board has prepared summaries of research program descriptions which were provided by twenty-four research institutions. These institutions are carrying out the bulk of Great Lakes water quality research. The Board is aware that there are a few other state agencies and academic institutions which are not included in this review that may undertake some projects dealing with the Great Lakes. However, the intention of this year's review was to concentrate on those institutions dealing primarily with Great Lakes water quality problems.

Enclosed is Appendix V which includes summaries of current research efforts. Enclosed as well is Appendix VI which includes summaries of historical research efforts. The latter was reviewed by the Board in order to determine trends in research subjects over the last eight years. Detailed descriptions of these projects were included in the 1976 Directory of Great Lakes Research and Related Activities.

As was indicated to you before, research projects were classified and coded according to research needs identified by the Board (Appendix III). Tables 2 and 3 (attached) include summaries of the numbers of projects dealing with each research subject for the various research problems, current and historical, respectively. For example, there is a total of 94 current research projects addressing the problem of toxic organics. Eleven of these projects are dealing with source and loading, forty-five are dealing with fate and transport, forty-five dealing with method development, etc. It is not uncommon to find a project addressing more than one subject area. Accordingly, the total number of projects under the subject category will often exceed the total number of projects under each problem.

Tables 2 and 3 show the distribution of the research effort among the various problems and research subjects. Comparing the data of these two tables will show the trend in research emphasis over the last eight years.

Current and historical project budget allocations are respectively documented in tables 6 and 7.

Also enclosed are lists of abbreviations used in the various appendices and titles of all projects included in the inventory.

Please review the enclosed material carefully and contact us as soon as possible if you have any concerns about the accuracy of this information.

Verification of Coded and Classified Information

Page 3

May 3, 1982

In the attached computer printouts, each project was identified by an International Joint Commission (IJC) serial number, followed by a letter indicating whether it is a United States project (A) or a Canadian project (C), then the agency project number as indicated on your project description, followed by a triple coding classification system consisting of a capital letter identifying the problem being investigated, followed by up to three numbers referring to the subject(s) being addressed and finally a small letter identifying the activity under which the project is being conducted. For example, a project which is dealing with the problem of toxic organics and is addressing three subjects including fate and transport, human health effects, and method development, and is related to pollution from industrial sources would be assigned a code of "A 245 c".

For the convenience of the reader, coding letters and numbers are also translated into words under each project summary.

In addition to the coding system, we used a set of keywords to identify the specific aspects of each study. These keywords may include: names of specific pollutants under investigation; environmental components being examined, whether water, sediment or biota; location of the study including the name of the lake, bay or river; as well as any other specific information which might assist the Board in its review.

The information stored in the computer also includes the name of the funding organization, the name of the organization performing the research and the funds allocated for the project in each fiscal year.

If you have any comments or want any changes to be made to the summaries of your projects, please use the same system outlined above. For example, if the project was classified as dealing with "Contaminants general", but you know that the investigator is studying toxic metals, then please make the change accordingly. You may include the changes on the additional copy of the computer printout which is included for your convenience.

Please send to us your changes before May 15, 1982.

If you have any questions please call Dr. Ron Drynan or myself at (519) 256-7821 (Cdn.) or (313) 963-9041 (U.S.).

Sincerely yours,

FKF/matb

F.K. Fahmy, Ph.D.
Acting Secretary

Enclosures (As noted)

Appendix IV
Classification and Coding System
of Research Projects

CLASSIFICATION AND CODING SYSTEM OF RESEARCH PROJECTS

The following describes the approach used to classify Great Lakes research projects and to describe their objectives:

Research needs were classified according to the nature of the problem being studied, research subject(s), and the activity under which each project may fit within the requirements of the Great Lakes Water Quality Agreement (Table 1).

A. Research Problems

Six specific problems were identified: toxic organics, toxic metals, phosphorus, nutrients, pathogens, and thermal discharges (Section A of Table 1). Each of these problems is coded by a capital letter, e.g. A,B,C,D, as indicated in the table. If the project description indicated that the problem was toxic substances, but did not indicate whether it was dealing with toxic metals or organics, or if the project was dealing with other deleterious substances, e.g. asbestos fibers or chlorides, then it was classified as "Contaminants - general" with the code letter "E".

If the project was dealing with a specific problem which was not among the problems mentioned, for example current measurements, then it was classified as "Other" with a code letter "H".

If the project description did not specify the exact nature of the problem, it was classified under "Unspecified" with a code letter "I".

If the project dealt with more than one of the problems identified above, then it was classified as "Several". In all cases, groups of keywords were used to identify the specific problems being investigated.

B. Research Subject

To investigate a problem, research activities may involve some or all of the following subjects (see Section B of Table 1):

Code
"0"

Source and Loading

Determination of the source(s) of the problem and the quantities of the pollutants reaching the Great Lakes;

"1"

Characteristics

Identification of the characteristics of the problem. In the case of a pollutant, it is important to know its physical, chemical and toxicological properties. For example, scientists found that there is a correlation between the structure of some chemicals and their activity in the environment, including their rates of bioaccumulation and persistence in biological systems;

- "2" Fate and Transport
Determination of the fate of the pollutant in the environment including retention of its characteristics, the influence of environmental factors on these characteristics and its distribution among the various compartments of the environment, ie. water, sediment, air and biological systems. It is also important to know how the substance moves from one location or compartment to another;
- "3" Environmental Impacts
Determination of the impacts of the problem on living and non-living components of the environment;
- "4" Human Health Effects
Estimation of the potential impacts of the problem on human health;
- "5" Method Development and Modeling
Development of new techniques and methods to measure the problem, and development of mathematical models to predict its behaviour and potential impact on the environment and human health;
- "6" Criteria:
Development of objectives, standards, criteria, guidelines and regulations;
- "7" Management:
Development of cost-effective management strategies to control and/or alleviate the problem.

C. Activity Under the Agreement

An attempt was made to relate each problem to one or more of the several activities (sources) outlined in the Agreement, for example atmospheric, dredging, municipal, shipping, non-point, other, unspecified, several (see Section C of Table 1).

In the attached computer printouts, each project was identified by an International Joint Commission (IJC) serial number, followed by a letter indicating whether it is a United States project (A) or a Canadian project (C), then the agency project number as indicated on each project description, for only current research and by page number as it corresponds to the 1975 Research Directory for historical research, followed by a triple coding classification system consisting of a capital letter identifying the problem being investigated, followed by up to three numbers referring to the subject(s) being addressed and finally a small letter identifying the activity under which the project is being conducted. For example, a project which is dealing with the problem of toxic organics and is addressing three subjects including fate and transport, human health effects, and method development, and is related to pollution from industrial sources would be assigned a code of "A 245 c".

For the convenience of the reader, coding letters and numbers are also translated into words under each project summary.

In addition to the coding system, a set of keywords was used to identify the specific aspects of each study. These keywords may include: names of specific pollutants under investigation; environmental components being examined, whether water, sediment or biota; location of the study including the name of the lake, bay or river; as well as any other specific information which might assist the Board in its review.

The information stored in the computer also includes the name of the funding organization, the name of the organization performing the research and the funds allocated for the project in each fiscal year.

TABLE 1
CLASSIFICATION AND CODING OF RESEARCH NEEDS

A. <u>RESEARCH PROBLEM</u>	<u>CODE</u>	B. <u>RESEARCH SUBJECT</u>	<u>CODE</u>
Toxic organics	A	Source and loading	0
Toxic metals	B	Characteristics	1
Phosphorus	C	Fate and transport	2
Nutrients	D	Environmental impacts	3
Contaminants - general	E	Human health effects	4
Pathogens	F	Method development	
Thermal discharges	G	and modeling	5
Other	H	Criteria	6
Unspecified	I	Management	7
Several	J	Other	8
		Unspecified	9
C. <u>ACTIVITY (SOURCE)</u>	<u>CODE</u>		
Atmospheric	a		
Dredging	b		
Industrial	c		
Municipal	d		
Shipping	e		
Non-point	f		
Other	g		
Unspecified	h		
Several	i		

Appendix V
Current Research Activities
in the Great Lakes

TODAY'S DATE IS OCTOBER 19, 1982

APPENDIX V. CURRENT RESEARCH ACTIVITIES IN THE GREAT LAKES

I J.C. SERIAL NO.	AGENCY PROJECT CODE	FUNDING ORGANIZATION	PERFORMING ORGANIZATION	AMOUNT FUNDED	KEYWORDS
001 A 0300	E 136 h	ERL-D	ERL-D	FY81 102,680	TOXICITY TESTING, PRIORITY CHEMICALS, FISH.
(E=CONTAMINANTS, GEN. 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 6=CRITERIA h=UNSPECIFIED SOURCES)					
002 A 0302	B 156 h	ERL-D	ERL-D	FY81 43,600	TOXICITY TESTING,
(B=TOXIC METALS 1=CHARACTERISTICS 3=METHOD DEV. & MODELING 6=CRITERIA n=UNSPECIFIED SOURCES)					
003 A 0303	E 7 i	ERL-D	ERL-D	FY81 11,800 FY82 14,400	IJC, TOXIC SUBSTANCES, ADVISORY,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT i=SEVERAL SOURCES)					
004 A 0306	B 35 h	ERL-D	ERL-D	FY81 20,000 FY82 34,400	TOXICITY, CADMIUM, FISH, ST. LOUIS RIVER,
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING n=UNSPECIFIED SOURCES)					
005 A 0309	B 135 h	ERL-D	ERL-D	FY81 79,100 FY82 194,900	TOXICITY TESTING, FISH, CADMIUM, HARDNESS, ALKALINITY, SUSPENDED SOLIDS,
(B=TOXIC METALS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING n=UNSPECIFIED SOURCES)					

0.12 A 0405 A 15 h ERL-D ERL-D FY81 17,500 STATISTICAL MODELLING.
FY82 16,500 STRUCTURE-ACTIVITY.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

0.13 A 0406 E 35 h ERL-D ERL-D FY81 46,800 TOXICITY TESTING, CHEMICAL MIXTURES.
FY82 50,300 FISH, MODELS,
(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

0.14 A 0409 A 35 h ERL-D MONT.SUL. FY81 160,000 TOXICITY TESTING, FISH.
FY82 39,000

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

0.15 A 0410 A 2 h ERL-D U.WI. FY81 15,800 SURVEILLANCE, PESTICIDES, PCB'S, FISH
FY82 65,600

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

0.16 A 0421 A 125 h ERL-D U.WI. FY81 184,380 TOXICITY TESTING, STRUCTURE-ACTIVITY,
FY82 176,000 BIODEGRADATION,

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

0.17 A 0422 A 3 h ERL-D ERL-D FY81 11,700 TOXICITY, STRUCTURE-ACTIVITY, FISH,
FY82 61,500 PHYSIOLOGY,

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

018 A 0427 A 7 h ERL-D MONT SU FY81 294,000 TOXICITY, STRUCTURE-ACTIVITY,
FY82 296,200 PROGRAM DEVELOPMENT,
(A=TOXIC ORGANICS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

019 A 0430 A 15 h ERL-D E NAZ COL FY82 40,000 TOXICITY, STRUCTURE-ACTIVITY, MODELS,
(A=TOXIC ORGANICS 1=CHARACTERISTICS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

020 A 0431 A 23 d ERL-D ERL-D FY82 35,600 BIOAVAILABILITY, DIOXINS, FURANS, FISH,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)

021 A 0209 E 23 h ERL-D ERL-D FY81 23,800 ASBESTOS FIBERS, ACCUMULATION, FISH,
FY82 33,600
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

022 A 0213 E 02 c ERL-D ERL-D FY81 4,000 SURVEILLANCE, ASBESTOS FIBERS,
FY82 5,600 DISTRIBUTION, LAKE SUPERIOR,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT c=INDUSTRIAL SOURCE)

023 A 0215 E 15 h ERL-D ERL-D FY82 54,300 STRUCTURE-ACTIVITY, FIBRILS,
(E=CONTAMINANTS, GEN. 1=CHARACTERISTICS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)
CARCINOGENICITY, STATISTICAL MODELLING,

024 A 0218

E 5 F ERL-D FY82 0 PHYSIOLOGY, FISH TOXICITY, CHEMICAL MIXTURES, LEMNAGES, MODELS.

(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING F=NON-POINT SOURCE)

025 A 0103

A 235 9 ERL-D FY81 120,900 PESTICIDES, TOXICITY, BIOTA, STREAMS, FY82 46,000 MODELS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 9=OTHER SOURCES)

026 A 0104

A 23 9 ERL-D FY81 21,100 DIAZINON, TOXICITY, BIOTA, PHYSIOLOGY, FY82 15,300 STREAMS,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 9=OTHER SOURCES)

027 A 0107

A 23 9 ERL-D FY81 3,500 PESTICIDES, SUSPENDED SOLIDS, BIOACCUMULATION, FISH, TOXICITY,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 9=OTHER SOURCES)

028 A 0108

E 5 9 ERL-D FY82 34,500 TOXICITY, TOXICITY TESTING, MODELS, FY83 250,000 FY84 200,000

(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING 9=OTHER SOURCES)

029 A 0509

E 35 0 ERL-D FY81 39,000 ATMOSPHERIC DEPOSITION, TOXICITY, FY82 74,800 AQUATIC ENVIRONMENTS, MODELS,

(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 0=ATMOSPHERIC SOURCE)

033	W	0603	U	05	H	ERL-D	ERL-DOLLARS	FY81	8,600	PROGRAM DEVELOPMENT - WATER QUALITY PLAN
LE=CONTAMINANTS GEN MANAGEMENT H=UNSPECIFIED SOURCES										
034	W	0604	H	05	H	ERL-D	ERL-DOLLARS	FY81 FY82	94,000 175,500	PROGRAM DEVELOPMENT - FATE AND TRANSPORT ENVIRONMENTAL EFFECTS MODEL
LE=CONTAMINANTS GEN MANAGEMENT H=UNSPECIFIED SOURCES										
035	W	0605	H	05	H	ERL-D	ERL-DOLLARS	FY81 FY82	42,700 112,800	PRECIPITATION FOR - EVALUATES
LE=CONTAMINANTS GEN MANAGEMENT H=UNSPECIFIED SOURCES										
036	W	0606	U	05	H	ERL-D	ERL-DOLLARS	FY81 FY82	68,400 103,700	STATISTICAL MODELING - DATA BASE
LE=CONTAMINANTS GEN MANAGEMENT H=UNSPECIFIED SOURCES										
037	W	0607	E	57	H	ERL-D	ERL-DOLLARS	FY81 FY82	85,300 21,500	PROGRAM DEVELOPMENT - MODELS - COMPUTER
LE=CONTAMINANTS GEN S=METHOD DEV & MODELING 7=MANAGEMENT H=UNSPECIFIED SOURCES										
038	W	0608	H	25	B	ERL-D	U CALIF.	FY81 FY82	85,500 90,800	SUSPENDED MATERIALS MODEL
LE=CONTAMINANTS GEN S=METHOD DEV & MODELING 7=MANAGEMENT H=UNSPECIFIED SOURCES										

036 A 0606 J 025 h ERL-D ERL-D/LLRS FY81 42,700 TOXIC METALS TOXIC ORGANICS MODELS
FY82 43,000
(C=SEVERAL 1=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

037 A 0607 E 24 h ERL-D MI PUB H FY81 258,600 DATA COLLECTION, BREAST MILK,
FY82 10,800
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

038 A 0608 D 03 h ERL-D U. MINN. FY81 55,860 ZOOPLANKTON, LAKE HURON, SAGINAW BAY,
FY82 0
(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

039 A 0609 D 035 h ERL-D UM FY81 8,800 PHYTOPLANKTON, WASTEWATER TREATMENT,
FY82 79,800 LAKE HURON, SAGINAW BAY, MODELS,
(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

040 A 0610 C 12 h ERL-D CLARK, COL. FY81 80,000 BIOASSAY, BIOAVAILABILITY,
FY82 50,000 SUSPENDED SOLIDS, LAKE ERIE, RIVERS,
(C=PHOSPHORUS 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

041 A 0611 A 0 a ERL-D DEPAUL U. FY81 71,000 PCB'S, PRECIPITATION, LAKE MICHIGAN,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

042 A 0612 J 25 h ERL-D MMN COL FY81 8,600 PRODUCTION, PCB'S, EUTROPHICATION,
FY82 257,300 MODELS.

(J=SEVERAL 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED S=SOURCE)

043 A 0613 J 025 h ERL-D CR INST SC FY81 290,000 TOXIC ORGANICS, NUTRIENTS,
FY82 21,500 DATA COLLECTION, ECOSYSTEM MODELS.

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

044 A 0614 E 7 h ERL-D COMP. SC. FY81 220,000 PROGRAM DEVELOPMENT, COMPUTER,
FY82 296,700 WATER QUALITY.

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

045 A 0621 E 05 h ERL-D ERL-D/LERS FY82 165,900 RIVERS, FLINT RIVER, DATA COLLECTION,
MODELS.

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

046 A 0622 2 h ERL-D TEXAS A&M FY82 10,000 PCB'S, ANALYSIS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

047 A 0624 E 025 h ERL-D ERL-D FY82 2,500 LAKE MICHIGAN, LAKE ERIE,
TOXIC SUBSTANCES, PERSISTENCE,
EUTROPHICATION, MODELS.

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

048 A 0625 A 3 h ERL-D U MINN FY82 59,000 TOXAPHENE, PLANKTON, PHYSIOLOGY, LAKE SUPERIOR.

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

049 A 0626 E 7 h ERL-D MTU FY82 70,800 POLLUTION, OXYGEN, LAKE MICHIGAN, GREEN BAY, SOURCE AND LOADING.

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

050 A 0627 E 7 h ERL-D LLRS FY82 22,800 CHLORIDES, SALTS, ECOLOGY, PHYTOPLANKTON, SOURCE AND LOADING, PLAN.

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

051 A 0628 C 7 h ERL-D LLRS FY82 110,800 AVAILABILITY, COST-BENEFIT.

(C=PHOSPHORUS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

052 A 0629 A 245 h ERL-D RES. TRIA. INST. FY82 50,800 PCB'S, ANALYSIS, TOXIC ORGANICS 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

053 A 0630 E 7 i ERL-D LLRS FY82 10,800 TOXIC SUBSTANCES, TOXICITY, PROGRAM DEVELOPMENT, NEARSHORE, FATE AND TRANSPORT, ENVIRONMENTAL IMPACT, LAKE SUPERIOR, ST. LOUIS HARBOR.

(E=CONTAMINANTS, GEN 7=MANAGEMENT i=SEVERAL SOURCES)

132 A R/PW-1 E 3 H NOAA-BGSU BGSU 39,400 ASBESTOS FIBERS, AQUATIC SYSTEMS BIOTA, LAKE ERIE.

(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS H=UNSPECIFIED SOURCES)

133 A E/ED-1 I 7 H NOAA-OSU OSU 38,700 ADMINISTRATION, EDUCATION

(I=UNSPECIFIED 7=MANAGEMENT H=UNSPECIFIED SOURCES)

134 A E/AD-1 I 7 H NOAA-OSU OSU 64,956 84,700 EDUCATION

(I=UNSPECIFIED 7=MANAGEMENT H=UNSPECIFIED SOURCES)

135 A E/MP-1 H 7 H NOAA-OSU OSU 15,000 EDUCATION, INFORMATION.

(H=OTHER 7=MANAGEMENT H=UNSPECIFIED SOURCES)

136 A A/EP-1 H 7 H NOAA-OSU OSU 208,700 245,200 ADVISORY, EDUCATION, INFORMATION, EROSION, LAKE ERIE.

(H=OTHER 7=MANAGEMENT H=UNSPECIFIED SOURCES)

137 A A/AV-1 H 7 H NOAA-OSU OSU 21,500 PROGRAM DEVELOPMENT, ADVISORY, EDUCATION, INFORMATION, LAKE ERIE.

(H=OTHER 7=MANAGEMENT H=UNSPECIFIED SOURCES)

126 A R/DE-1 J 23 h NOAA.OSU OSU 34,200 FY82 SEDIMENTS, ORGANIC CONTAMINANTS, BIOTA, ALGAE, ACCUMULATION, DYNAMICS, PALEOLIMNOLOGY DISTRIBUTION, LAKE ERIE.

(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

127 A R/MP-1 J 1 b NOAA.BGSU.KU.CO BGSU 45,800 FY82 SEDIMENTS, CHEMICAL CHARACTERIZATION, LAKE ERIE.

(J=SEVERAL 1=CHARACTERISTICS b=DREDGING)

128 A R/DE-1 H 25 h NOAA.OSU OSU 52,800 FY82 SEDIMENTS, RESUSPENSION, INSTRUMENTATION, MODELS,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

129 A R/DE-3 H 7 f NOAA.BGSU BGSU 2,000 FY82 EROSION, NEARSHORE, COST-BENEFIT.

(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)

130 A R/DE-1 H 27 f NOAA.OSU OSU 16,600 FY82 SEDIMENTS, EROSION, NEARSHORE, DISTRIBUTION, TEMPORAL VARIATION, LAKE ERIE.

(H=OTHER 2=FATE AND TRANSPORT 7=MANAGEMENT f=NON-POINT SOURCE)

131 A R/ER-1 E 37 h NOAA.OSU OSU 48,400 FY82 MARSH, BIOTA, FISH HABITAT, PRODUCTIVITY, ECOLOGY, LAKE ERIE.

(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

120 A R/CL-1 A 25 h NOAA U MINN U MINN
 FY81 29,800 AIR, WATER, BIOTA, SEDIMENTS, PCB'S,
 FY82 21,760 CHLORINATED HYDROCARBONS,
 TEMPORAL VARIATION, DYNAMICS,
 LAKE SUPERIOR, MODELS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

121 A R/CL-6 H 25 c NOAA U MINN U MINN
 FY82 20,180 SEDIMENTS, DISTRIBUTION, CURRENTS,
 LAKE SUPERIOR, MODELS

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING c=INDUSTRIAL SOURCE)

122 A R/CL-7 H 2 c NOAA U MINN U MINN
 FY82 11,560 SEDIMENTS, EROSION, CURRENTS, DYNAMICS,
 LAKE SUPERIOR,

(H=OTHER 2=FATE AND TRANSPORT c=INDUSTRIAL SOURCE)

123 A M/P-1 E 7 h NOAA U MINN U MINN
 FY81 129,230 PROGRAM DEVELOPMENT, INFORMATION,
 FY82 127,190

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

124 A M/P-2 E 7 h NOAA U MINN
 FY81 21,830 PROGRAM DEVELOPMENT, EDUCATION,
 FY82 15,000

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

125 A M/P-3 E 7 h NOAA U MINN
 FY81 7,000 FIELD SUPPORT,
 FY82 15,000

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

114 A R/PS-28	E 357	NOAA.U.WI.	U.WI.	FY81	48,565	MUNICIPAL SOURCE, INDUSTRIAL SOURCE, SEWAGE, WASTE MANAGEMENT, ECONOMICS, PLYWOOD, GREEN BAY, LAKE MICHIGAN, MODELS.
(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 7=MANAGEMENT 1=SEVERAL SOURCES)						
115 A R/WA-7	H 0	NOAA.U.WI.	U.WI.	FY81	30,957	LAKE SUPERIOR, EROSION, HYDROLOGY, TEMPORAL VARIATION.
(H=OTHER 0=SOURCE AND LOADING F=NON-POINT SOURCE)						
116 A R/MN-1	E 025	NOAA.U.WI.	U.WI.	FY81 FY82	72,635 86,630	LAKE MICHIGAN, HYDRAULICS, GROUNDWATER, SEDIMENTS, MODELS.
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING 1=SEVERAL SOURCES)						
117 A AS/A-3	E 7	NOAA.U.WI.	U.WI.	FY81	39,201	PROGRAM DEVELOPMENT, INFORMATION.
(E=CONTAMINANTS, GEN. 7=MANAGEMENT 1=SEVERAL SOURCES)						
118 A E/E-8	E 7	NOAA.U.WI.	U.WI.	FY81	8,679	PROGRAM DEVELOPMENT, REMOTE SENSING, TEMPORAL VARIATION, GREEN BAY, LAKE MICHIGAN, COMPUTER.
(E=CONTAMINANTS, GEN. 7=MANAGEMENT 1=SEVERAL SOURCES)						
119 A R/F-9	D 35	NOAA.U.MINN.	U.MINN.	FY81 FY82	20,742 17,990	PHOSPHORUS, NITROGEN, SILICA, TEMPERATURE, LIGHT, BIOTA, ALGAE, PRODUCTIVITY, PLANKTON, FISH, LAKE SUPERIOR, DULUTH, HARBOR, MODELS.
(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING H=UNSPECIFIED SOURCES)						

108 A R/GS-15 J 02 h NOAA.U.WI. U.WI. FY81 79,490 PERSISTENCE, SEDIMENTS, DISTRIBUTION
FY82 57,467 SINKS, TRENDS, GREEN BAY
LAKE MICHIGAN.

(J)=SEVERAL (C)=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES

109 A R/MW-23 A 0 i NOAA.U.WI. U.WI. FY81 54,085 PCB'S, ATMOSPHERIC SOURCE
MUNICIPAL SOURCE, INDUSTRIAL SOURCE,
SEDIMENTS, LAKE MICHIGAN

(A)=TOXIC ORGANICS 0=SOURCE AND LOADING i=SEVERAL SOURCES

110 A R/MW-26 E 3 h NOAA U.WI. FY81 10,691 WATER QUALITY, PCB'S, BIOTA, FISH,
PHYSIOLOGY, LAKE MICHIGAN

(E)=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES

111 A R/MW-24 B 12 h NOAA.U.WI. U.WI. FY81 53,629 TOXIC SUBSTANCES, SUSPENDED MATERIALS
FY82 49,201 PARTICULATES, SEDIMENTS, LAKE MICHIGAN

(B)=TOXIC METALS 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES

112 A R/MW-25 E 2 h NOAA.U.WI. U.WI. FY81 44,606 TOXIC SUBSTANCES, BIOAVAILABILITY,
FY82 27,322 SUSPENDED SOLIDS, PARTICULATES,
LAKE SUPERIOR, HARBOUR

(E)=CONTAMINANTS, GEN 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES

113 A R/MW-27 A 23 h NOAA.U.WI. U.WI. FY81 63,109 DIOXINS, FURANS, PERSISTENCE
FY82 61,336 DISTRIBUTION, TOXICITY TESTING
PHYSIOLOGY, BIOTA, FISH

(A)=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES

102 A R/LP-23	D 03	h	NOAA,U.WI.	U.WI.	FY81	9,983	MACROPHYTES, ECOLOGY, PRODUCTIVITY, DISTRIBUTION, NEARSHORE EROSION, OPEN LAKE, POLLUTION, LAKE MICHIGAN,
(D=NUTRIENTS C=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
103 A R/AQ-11	J 3	h	NOAA,U.WI.	U.WI.	FY81	44,304	NUTRIENTS, AMMONIA, OXYGEN, TEMPERATURE, BIOTA, FISH, PHYSIOLOGY,
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
104 A R/CB-5	E 7	h	NOAA,U.WI.	U.WI.	FY81 FY82	32,217 33,924	PROGRAM DEVELOPMENT, GREEN BAY, LAKE MICHIGAN, POLLUTION, BIOTA, FISH, PRODUCTIVITY, PHYSICAL LIMNOLOGY,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT h=UNSPECIFIED SOURCES)							
105 A R/BB-12	D 23	h	NOAA,U.WI.	U.WI.	FY81	32,273	DYNAMICS, EUTROPHICATION, OXYGEN, HYPOLIMNION, DISTRIBUTION, TEMPORAL VARIATION, CHLOROPHYLL, GREEN BAY, LAKE MICHIGAN,
(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
106 A R/WU-20	E 05	i	NOAA,U.WI.	U.WI.	FY81	64,254	ORGANIC CONTAMINANTS, INDUSTRIAL SOURCE, MUNICIPAL SOURCE, ANALYSIS, SEDIMENTS, BIOTA, RIVERS, FOX RIVER, GREEN BAY, LAKE MICHIGAN,
(E=CONTAMINANTS, GEN. C=SOURCE AND LOADING 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)							
107 A R/W4-21	A 125	h	NOAA,U.WI.	U.WI.	FY81 FY82	72,307 80,892	TOXIC SUBSTANCES, SORPTION, EVAPORATION, LIGHT, DEGRADATION, FOX RIVER, GREEN BAY, LAKE MICHIGAN, MODELS, PCB'S, STRUCTURE-ACTIVITY,
(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							

096 A R/LR-5 D 023 h NOAA.MSG MSU
 FY81 38,194 SEDIMENTS, HYDROLOGY, PRODUCTIVITY,
 FY82 39,883 RIVERS, MARSH, BIOTA, MACROPHYTES,
 TEMPORAL VARIATION, WATER CHEMISTRY,
 WATER QUANTITY.

(C=NUTRIENTS O=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

097 A R/ER-8 D 35 h NOAA.MSG UM
 FY81 68,730 BIOASSAY, GREEN BAY, RIVERS, FOX RIVER,
 FY82 16,337 LAKE MICHIGAN, WATER QUALITY,
 EUTROPHICATION, BIOTA, PLANKTON.

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

098 A R/ER-12 J 037 f NOAA.MSG UM
 FY82 28,356 AGRICULTURE, WASTE MANAGEMENT,
 SEDIMENTS, PESTICIDES, BIOTA, BENTHOS,
 ALGAE, SURVEILLANCE, RIVERS,
 SALINE RIVER, WATER QUALITY.

(J=SEVERAL O=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT f=NON-POINT SOURCE)

099 A M/PM-1 I 7 h NOAA.MSG UM
 FY81 445,614 ADMINISTRATION, PROGRAM DEVELOPMENT,
 FY82 254,801 INFORMATION, EDUCATION,

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

100 A R/LR-14 A 257 h NOAA,U.WI. U.WI.
 FY81 34,408 PCB'S, DYNAMICS, COST-BENEFIT, BIOTA,
 FISH, PHYSIOLOGY, LAKE MICHIGAN,
 MODELS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

101 A R/LR-19 E 02 h NOAA,U.WI. U.WI.
 FY81 42,957 NITROGEN, ORGANIC CONTAMINANTS, BIOTA,
 PRODUCTIVITY, LAKE MICHIGAN, ECOSYSTEM,
 MICROORGANISMS, BACTERIA, PLANKTON,
 ZOOPLANKTON.

(E=CONTAMINANTS, GEN. O=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

090 A R/GLE-3 1 7 h NOAA UM FY81 12,643 INFORMATION, EDUCATION,
FY82 5,000

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

091 A R/GLE-11 1 35 h NOAA UM FY82 43,000 BIOTA, FISH, HABITAT, REHABILITATION,
PRODUCTIVITY, MODELS,

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

092 A R/TS-19 1 36 h NOAA MSU FY82 12,840 PESTICIDES, TOXICITY TESTING, BIOTA,
FISH, PHYSIOLOGY,

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 6=CRITERIA h=UNSPECIFIED SOURCES)

093 A R/TS-21 1 35 h NOAA UM FY82 22,402 BIOASSAY, CADMIUM, ZINC,
TOXICITY TESTING, BIOTA, FISH,
PHYSIOLOGY, TEMPORAL VARIATION,
DISTRIBUTION, SURVEILLANCE,

(8=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

094 A R/TS-14 1 23 h NOAA UM FY81 29,895 PCB'S, DYNAMICS, WATER, SEDIMENTS,
FY82 40,032 BIOACCUMULATION, BIOTA, PLANKTON,
ZOOPLANKTON, LAKE MICHIGAN, ECOSYSTEM,
TEMPORAL VARIATION,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

095 A R/TS-22 1 2 h NOAA UM FY82 40,250 BIOTA, PLANKTON, ZOOPLANKTON, PAH'S,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

084 A E/T-2 H 7 h NOAA SUNY, COR U 31,250 31,250 LEGALITIES, EDUCATION, NEARSHORE.

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

085 A E/T-3 I 7 h NOAA SUNY, COR U 206,250 193,750 EDUCATION.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

086 A P/M-1 I 7 h NOAA, SUNY, COR U SUNY, COR U 225,037 217,739 ADVISORY.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

087 A P/M-3 I 7 h NOAA, SUNY, COR U SUNY, COR U 278,341 131,042 ADVISORY, PROGRAM DEVELOPMENT.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

088 A A/FP-1 E 7 h NOAA, MSG MSU 621,600 360,310 ADVISORY.

(E=CONTAMINANTS, GEN. 7=MANAGEMENT h=UNSPECIFIED SOURCES)

089 A A/C-1 I 7 h NOAA, MSG UM 266,523 187,600 INFORMATION.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

079 A R/L-3 H 23 F NOAA, SUNY, COR U SUNY, COR U DYNAMICS, EROSION, NEARSHORE,
LAKE ONTARIO, LAKE ERIE,

FY82 89,087

(H=OTHER C=FAKE AND TRANSPORT B=ENVIRONMENTAL IMPACTS F=NON-POINT SOURCE)

079 A R/L-3

H 23 F NOAA, SUNY, COR U SUNY, COR U

FY82 27,568

EROSION, NEARSHORE, TEMPORAL VARIATION,
WAVES,

(H=OTHER C=FAKE AND TRANSPORT B=ENVIRONMENTAL IMPACTS F=NON-POINT SOURCE)

080 A R/L-1

H 7 F NOAA, SUNY, COR U SUNY, COR U

FY81 1,000,000
FY82 1,000,000

NEARSHORE, EROSION, ADVISORY, EDUCATION,

(H=OTHER T=MANAGEMENT F=NON-POINT SOURCE)

081 A R/L-1

I 7 H NOAA, SUNY, COR U SUNY, COR U

FY81 105,477
FY82 100,291

INFORMATION,

(I=UNSPECIFIED T=MANAGEMENT H=UNSPECIFIED SOURCES)

082 A R/L-6

I 7 H NOAA, SUNY, COR U SUNY, COR U

FY81 89,438
FY82 50,395

PROGRAM DEVELOPMENT, EDUCATION,
NEARSHORE,

(I=UNSPECIFIED T=MANAGEMENT H=UNSPECIFIED SOURCES)

083 A R/L-3

I 7 H NOAA, SUNY, COR U SUNY, COR U

FY81 124,178
FY82 124,496

LEGALITIES, EDUCATION, NEARSHORE,

(I=UNSPECIFIED T=MANAGEMENT H=UNSPECIFIED SOURCES)

072 A R/S-16 H 237 b NOAA,ACE,SUNY SUNY,COR.U FY81 166,569 SEDIMENTS, HARBOUR, WASTE MANAGEMENT, WATER QUALITY,

(H=OTHER 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT b=DREDGING)

073 A R/S-17 H 67 b NOAA,SUNY,COR.U SUNY,COR.U FY81 19,759 SEDIMENTS, PLAN, HARBOUR, FY82 10,297

(H=OTHER 6=CRITERIA 7=MANAGEMENT b=DREDGING)

074 A R/E-10 E 37 c NOAA,SUNY,COR.U SUNY,COR.U FY81 23,014 WASTE MANAGEMENT, BIOTA, FISH, FY82 86,095 BIOACCUMULATION, LEACHATES, LAKE ONTARIO,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT c=INDUSTRIAL SOURCE)

075 A R/M-31 H 7 f NOAA,SUNY,COR.U SUNY,COR.U FY81 46,338 EROSION, NEARSHORE, FY82 51,389

(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)

076 A R/M-34 H 257 g NOAA,SUNY,COR.U SUNY,COR.U FY81 43,792 WAVES, NEARSHORE, FY82 49,366

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 7=MANAGEMENT g=OTHER SOURCES)

077 A R/M-35 H 35 f NOAA,SUNY,COR.U SUNY,COR.U FY81 54,438 EROSION, SOIL, LAKE ONTARIO, MODELS, FY82 64,281

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

066 A 1933-772-30 J 37 ACE GLFL FY82 54,900 NON-POINT SOURCE, DREDGING,
ENVIRONMENTAL IMPACT, WATER QUALITY,
BIOTA, BENTHOS, FISH, LAKE ERIE,
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT I=SEVERAL SOURCES)

067 A 1300-83410-974-60 H 37 G FWS GLFL FY81 172,000 ENVIRONMENTAL IMPACT, FISH, PHYSIOLOGY,
FY82 180,100
(H=OTHER 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT G=OTHER SOURCES)

068 A 1110-83410-750-50 E 235 FWS GLFL FY81 332,000 DYNAMICS, DISTRIBUTION, TRENDS,
FY82 304,700 TOXICITY, ANALYSIS, FISH,
WASTE MANAGEMENT,
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING I=SEVERAL SOURCES)

069 A 1110-83410-750-70 E 135 FWS GLFL FY81 93,000 TOXIC SUBSTANCES, TOXICITY, BIOTA, FISH,
FY82 123,300 PHYSIOLOGY, BIOCHEMISTRY, METHODOLOGY,
(E=CONTAMINANTS, GEN. 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING I=SEVERAL SOURCES)

070 A R/E-16 A 14 h NOAA,SUNY,COR.U SUNY,COR.U FY82 48,907 BIOTA, ALGAE, CHEMICAL CHARACTERIZATION,
LAKE ERIE, LAKE MICHIGAN,
(A=TOXIC ORGANICS 1=CHARACTERISTICS 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

071 A R/F-22 H 3 h NOAA,SUNY,COR.U SUNY,COR.U FY81 42,229 PARTICULATES, SUSPENDED SOLIDS,
FY82 44,451 TEMPERATURE, INTERACTIVE EFFECTS,
BIOTA,
(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

060 A 8 H 3 h GLFC U W1
 FY81 9,000 TEMPERATURE, LIGHT, OXYGEN, FISH,
 FY82 3,000 MOBILITY, GENETICS,

(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

061 A 9 E 7 h GLFC PRIVATE CONSUL. FY82 7,200 REHABILITATION, ECOSYSTEM, FISH,
 COST-BENEFIT.

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

062 A 10 E 73 h GLFC
 FY81 48,500 ECOSYSTEM, REHABILITATION, ECONOMICS,
 FY82 16,500 ECOLOGY, COST-BENEFIT, FISH.

(E=CONTAMINANTS, GEN 7=MANAGEMENT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

063 A 1300-83410-974-10 J 3 i FWS GLFL
 FY81 218,000 FISH, HABITAT, NEARSHORE, PRODUCTIVITY,
 FY82 210,400 DREDGING,

(J=SEVERAL 7=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

064 A 1300-83410-974-20 D 03 i FWS GLFL
 FY81 162,000 ATMOSPHERIC SOURCE, NON-POINT SOURCE,
 FY82 189,900 RIVERS, SUSPENDED SOLIDS,
 WATER QUALITY, BIOTA, BENTHOS,
 PLANKTON, PRODUCTIVITY, AVAILABILITY,

(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

065 A 1933-772-31 J 37 b ACE GLFL
 FY82 20,000 SHORE, EROSION, MITIGATION,
 ENVIRONMENTAL IMPACT,
 AQUATIC ENVIRONMENTS, NEARSHORE,
 LAKE HURON.

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT b=DREDGING)

054 A 0631 E 356 h ERL-D ERL-D FY82 71,500 HAZARD ASSESSMENT,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

055 A 0632 E 2 h ERL-D ARGONNE NAT LAB FY82 50,000 BIOACCUMULATION, TOXIC SUBSTANCES,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

056 A 0633 A 2 h ERL-D, USEPA U.WI. FY81 100,000 PCB'S, WATER, SEDIMENTS, RIVERS, FISH,
FY82 100,000 LAKE MICHIGAN,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

057 A 0634 A 02 a ERL-D, USEPA UM FY81 99,985 TOXAPHENE, ATMOSPHERIC DEPOSITION,
FY82 100,000 LAKE MICHIGAN, PRECIPITATION,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

058 A 0635 A 2 h ERL-D CR. INST. SC. FY82 195,800 SEDIMENTS, BIOTA, WATERFOUL, BENTHOS,
LAKE ERIE, DETROIT RIVER, ANALYSIS,
BIOACCUMULATION,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

059 A 0636 h 25 h ERL-D OSU FY82 20,000 SEDIMENTS, NEARSHORE, LAKE ERIE, MODELS,
(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

138 A M/P-1 H 7 h NOAA.OSU OSU FY81 118,200 PROGRAM DEVELOPMENT, ADMINISTRATION,
FY82 143,200

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

139 A 1 E 3 h ACE NFRL FY82 8,500 TOXIC SUBSTANCES, SEDIMENTS, HARBOUR,
BIOTA, BIOASSAY,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

140 A 2 E 2 h GLFC NFRL FY81 142,250 INTERACTIVE EFFECTS, LAMPICIDES,
FY82 107,800

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

141 A P-1 E 25 i NOAA GLERL FY81 581,000 NEARSHORE, OFFSHORE, CURRENTS,
FY82 622,000 TEMPERATURE, DISTRIBUTION,
TEMPORAL VARIATION, ECOLOGY,
WATER QUALITY, DYNAMICS, CIRCULATION,
MODELS,

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)

142 A P-2 H 25 f NOAA GLERL FY81 309,000 EROSION, NEARSHORE, DYNAMICS, WAVES,
FY82 316,000 TEMPORAL VARIATION, MODELS,

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

143 A P-3 J 125 i NOAA GLERL FY81 295,000 ATMOSPHERIC SOURCE, DREDGING,
FY82 352,000 NON-POINT SOURCE, PARTICULATES,
DYNAMICS, DISTRIBUTION,
TEMPORAL VARIATION, MODELS,
TOXIC ORGANICS,

(J=SEVERAL 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)

144 A P-4 A 125 i NOAA GLERL FY81 346,000 ENVIRONMENTAL SIMULATION, ECOSYSTEM,
FY82 493,000 PCB'S, PAH'S, MODELS.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING i=SEVERAL SOURCES)

145 A P-5 D 35 h NOAA GLERL FY81 219,000 ECOLOGY, BIOTA, PLANKTON, TRENDS,
FY82 274,000 ENVIRONMENTAL SIMULATION, NUTRIENTS,
MODELS.

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

146 A P-6 D 025 h NOAA GLERL FY81 625,000 EUTROPHICATION, NEARSHORE,
FY82 494,000 ENVIRONMENTAL SIMULATION, ECOLOGY,
PHOSPHORUS, BIOAVAILABILITY, MODELS.

(D=NUTRIENTS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

147 A P-7 H 025 g NOAA GLERL FY81 427,000 HYDROLOGY, PRECIPITATION, RUNOFF,
FY82 483,000 GROUNDWATER, EVAPORATION, MODELS.

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING g=OTHER SOURCES)

148 A P-9 E 7 i NOAA GLERL FY81 131,000 ADVISORY, INFORMATION,
FY82 134,000

(E=CONTAMINANTS, GEN. 7=MANAGEMENT i=SEVERAL SOURCES)

149 A P-10 E 357 i NOAA GLERL FY81 313,000 SYSTEMS ANALYSIS, COST-BENEFIT, MODELS,
FY82 307,000

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

150 A P-11	E 7	i	NOMA	GLERL	FY81 FY82	22,000 63,000	PROGRAM DEVELOPMENT,
(E=CONTAMINANTS, GEN 7=MANAGEMENT i=SEVERAL SOURCES)							
151 A 2	B 0	h	ESEERCO	LAW MAT SK ENG.	FY81 FY82	150,000 13,000	WATER, RIVERS, LAKES,
(B=TOXIC METALS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)							
152 A 00215	A 5	h	USFDA	USFDA	FY82	224,000	DIOXINS, ANALYSIS,
(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
153 A 1	J 0	h	JOYCE FOUND.	U.WI.	FY82	76,800	TOXIC SUBSTANCES, EUTROPHICATION,
(J=SEVERAL 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)							
154 A 2	B 0	h	USEPA	UM	FY81	54,533	DATA COLLECTION, TRENDS, LAKE ERIE, LAKE MICHIGAN,
(B=TOXIC METALS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)							
155 A 3	J 3	f	USEPA	U.WI.	FY81	119,469	SALTS, BIOTA, PLANKTON, PHYTOPLANKTON, OFFSHORE, LAKE MICHIGAN, TRENDS,
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS f=NON-POINT SOURCE)							

156 A 4 J 0 a USEPA 1,000 FY82 ATMOSPHERIC DEPOSITION, PRECIPITATION, WATER CHEMISTRY, LAKES, CHLORIDES, NUTRIENTS,

(J=SEVERAL 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

157 A 5 B 0 a USEPA, MINN. DNR ERL-D, U. MINN. 20,000 FY82 MERCURY, ATMOSPHERIC DEPOSITION,
(B=TOXIC METALS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

158 A 6 E 5 a USEPA GOV. SU 71,832 FY82 EQUIPMENT, ATMOSPHERIC DEPOSITION,
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)

159 A 7 C 7 d USEPA IL. INST. TEC. 84,407 FY81 WATER QUALITY, WASTE MANAGEMENT, SEWAGE,
(C=PHOSPHORUS 7=MANAGEMENT d=MUNICIPAL SOURCE)

160 A 8 H 34 a USEPA, USCG 50,000 FY81 LAKES, MITIGATION,
(H=OTHER 3=ENVIRONMENTAL IMPACTS 4=HUMAN HEALTH EFFECTS a=SHIPPING)

161 A 9 J 15 h USEPA AQ. TEC ENV. CON. 71,000 FY81 SEDIMENTS, TOXIC SUBSTANCES, BIOASSAY, TOXICITY TESTING, METHODOLOGY,

(J=SEVERAL 1=CHARACTERISTICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

162 A 10 J 35 b USEPA, GLFL GLFL FY81 152,000 TOXIC SUBSTANCES, BIOACCUMULATION,
FY82 94,000 TOXICITY TESTING, BIOTA, METHODOLOGY.

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING b=DREDGING)

163 A P-8 H 025 i NOAA GLERL FY81 344,000 LAKES, ICE, DISTRIBUTION,
FY82 360,000 TEMPORAL VARIATION, ATMOSPHERIC SOURCE,
ATMOSPHERIC DEPOSITION,
NON-POINT SOURCE, SHORE, MODELS,

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)

164 A E/GLE-2 I 8 h NOAA, MSG UM FY81 56,256 EDUCATION, AQUATIC ENVIRONMENTS,

(I=UNSPECIFIED 8=OTHER h=UNSPECIFIED SOURCES)

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165 A E/CCD-2 I 9 h NOAA, MSG UM FY81 35,637 PROGRAM DEVELOPMENT, EDUCATION, LAKES,

(I=UNSPECIFIED 9=UNSPECIFIED h=UNSPECIFIED SOURCES)

166 A R/GLE-4 H 8 h NOAA, MSG MSU FY81 44,779 EDUCATION, INFORMATION,

(H=OTHER 8=OTHER h=UNSPECIFIED SOURCES)

167 A R/GLE-4 H 35 h NOAA, MSG UM FY81 30,459 BOTTOM SUBSTRATES, TEMPERATURE, FISH,
HABITAT, DISTRIBUTION, LAKE MICHIGAN,
MODELS, MODELS,

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

168 A R/GLF-7 A 356 h MSG MSU FY81 24,009 CHLORINATED HYDROCARBONS, PCB'S,
TOXICITY, FISH, METHODOLOGY,
BIOACCUMULATION, AGRICULTURE

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

169 A R/GLF-2 A 246 h NOAA,MSG MSU FY81 23,489 PESTICIDES, PCB'S, TEMPORAL VARIATION,
FISH, SAGINAW BAY, LAKE MICHIGAN,
LAKE HURON, LAKE ERIE.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS 6=CRITERIA h=UNSPECIFIED SOURCES)

170 A R/FPA-1 F 3 h NOAA,MSG MSU FY81 30,985 BACTERIA, FISH,
(F=PATHOGENS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

171 A R/TIS-13 A 9 h NOAA,MSG UM FY81 15,053 PCB'S, INFORMATION, DATA COLLECTION,
(A=TOXIC ORGANICS 9=UNSPECIFIED h=UNSPECIFIED SOURCES)

172 A R/TIS-12 J 02 a NOAA UM FY81 36,380 CHLORINATED HYDROCARBONS, PCB'S,
ORGANIC MATTER, SURFACE FILMS,
PARTICULATES, WATER, AIR,
AIR QUALITY, FISH, FISH

NOAA - ENVIRONMENTAL IMPACTS - 1980 - 1981 - 1982 - 1983 - 1984 - 1985 - 1986 - 1987 - 1988 - 1989 - 1990

173 A R/TIS-11 J 02 a NOAA UM FY81 36,380 CHLORINATED HYDROCARBONS, PCB'S,
ORGANIC MATTER, SURFACE FILMS,
PARTICULATES, WATER, AIR,
AIR QUALITY, FISH, FISH

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

174 A R/TS-10 E 7 h NOAA.MSC MSU FY81 20,968 TOXIC SUBSTANCES, REGULATIONS,
LEGALITIES, ADMINISTRATION, ADVISORY.

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

175 A R/CU-8 H 25 h NOAA.MSC UM FY81 31,362 SEDIMENTS, SUSPENDED SOLIDS, MAPSH,
HYDROLOGY, METHODOLOGY, RADIOACTIVITY.

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

176 A R/CU-6 I 23 h NOAA.MSC UM FY81 19,440 MAPSH, ECOSYSTEM,

(I=UNSPECIFIED 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

177 A R/GLF-1 I 7 h NOAA.MSC MSU FY81 79,496 PROGRAM DEVELOPMENT, ECOSYSTEM,
LAKE MICHIGAN.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

178 A R/CL-2 H 2 b NOAA, U. MINN. U. MINN. FY81 15,251 SEDIMENTS, HARBOUR, DISTRIBUTION,

(H=OTHER 2=FATE AND TRANSPORT b=DREDGING)

179 A E/T-2 I 8 h NOAA, U. MINN. U. MINN. FY81 20,512 EDUCATION, LAKES, RIVERS, ECOSYSTEM,
LAKE SUPERIOR, INFORMATION.

(I=UNSPECIFIED 8=OTHER h=UNSPECIFIED SOURCES)

180 A P/EM-1 H 5 NOAA, OSU OSU FY81 49,300 LAKE ERIE, MODELS, ENVIRONMENTAL SIMULATION, PHYSICAL LIMNOLOGY, ATMOSPHERIC SOURCE, NON-POINT SOURCE.

(H=OTHER 5=METHOD DEV & MODELING (=SEVERAL SOURCES))

181 A T/CD-1 H 6 NOAA, OSU OSU FY81 47,900 EDUCATION, PROGRAM DEVELOPMENT.

(H=OTHER 6=OTHER h=UNSPECIFIED SOURCES)

182 A E/CD-1 H 7 NOAA, OSU OSU FY81 6,400 EDUCATION, PROGRAM DEVELOPMENT, SHORE, INFORMATION.

(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)

183 A A/PE-1 H 8 NOAA, OSU OSU FY81 21,500 INFORMATION, PROGRAM DEVELOPMENT, LAKE ERIE.

(H=OTHER 8=OTHER h=UNSPECIFIED SOURCES)

184 A P/CB-18 D 02 NOAA, U.WI. U.WI. FY82 64,614 PHOSPHORUS, NITROGEN, CARBON, MARSH, GREEN BAY, NEARSHORE, OFFSHORE, TEMPORAL VARIATION, BIOTA, PLANKTON, ZOOPLANKTON, PRODUCTIVITY.

(D=NUTRIENTS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

185 A P/CB-19 J 5 NOAA, U.WI. U.WI. FY82 56,147 MODELS, WATER QUALITY, DYNAMICS, DATA COLLECTION, FOX RIVER, GREEN BAY, LAKE MICHIGAN.

(J=SEVERAL 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

186 A R/MW-20 A 02 A NOAA,U.WI. U.WI. FY82 52,565 PAH'S, PCB'S, TOKAPHENE, AIR, WATER, TEMPORAL VARIATION. TRENDS, LAKE MICHIGAN.

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ATMOSPHERIC SOURCE)

187 A R/MW-29 J 024 C NOAA,U.WI. U.WI. FY82 41,180 PRIORITY CHEMICALS, CHLORINATED HYDROCARBONS, PCB'S, PHENOLS, METALS, DATA QUALITY, PESTICIDES,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS C=INDUSTRIAL SOURCE)

188 A R/MW-30 E 35 H NOAA,U.WI. U.WI. FY82 42,110 TOXIC SUBSTANCES, MUTAGENS, CARCINOGENECITY, BIOTA, FISH, METHODOLOGY,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)

189 A R/PS-30 H 57 I NOAA,U.WI. U.WI. FY82 59,072 WATER QUANTITY, WATER, AVAILABILITY, HYDROLOGY, ECONOMICS, LEGALITIES, MODELS, PLAN,

(H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT I=SEVERAL SOURCES)

190 A 711230 D 3 H USEPA,LLRS,OSU OSU FY81 103,982 WATER QUALITY, OXYGEN, EUTROPHICATION, BIOTA, FISH, LAKE ERIE,

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS H=UNSPECIFIED SOURCES)

191 A 711846 H 25 G USDJ,OSU OSU FY81 131,730 METHODOLOGY, MODELS, WATER QUANTITY, RIVERS, LAKES, TEMPERATURE,

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING G=OTHER SOURCES)

001 C 019	B 2	h	GLFRB*	U. WAT.	FY81	10,000	CHEMICAL MIXTURES, INTERACTIVE EFFECTS, ENVIRONMENTAL SIMULATION, PHYSIOLOGY, BIOTA, PHYTOPLANKTON, TOXICITY.
(B=TOXIC METALS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
002 C 021	B 3	h	GLFRB	GLFRB, U. GUE.	FY81 FY82	11,000 7,000	TOXIC SUBSTANCES, INTERACTIVE EFFECTS, TOXICITY, FISH, PHYSIOLOGY, LEAD, SELENIUM.
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
003 C 022	E 356	h	GLFRB	GLFRB	FY81 FY82	13,500 30,000	PHYSIOLOGY, FISH, METHODOLOGY, TOXICITY.
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)							
004 C 023	A 135	h	GLFRB	GLFRB, NWRI	FY81 FY82	35,700 51,500	STRUCTURE-ACTIVITY, TOXICITY, BIOTA, FISH, STATISTICAL MODELLING.
(A=TOXIC ORGANICS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
005 C 024	A 35	h	GLFRB	GLFRB	FY81	6,000	TOXICITY, BIOTA, PHYSIOLOGY.
(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
006 C 200	E 7	h	GLFRB	GLFRB	FY81 FY82	45,500 20,000	TOXICOLOGY, FIELD SUPPORT, ADMINISTRATION.
(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)							

007 C 036	H 23	h	GLFRB	U TOR.	FY81	2,500	LIGHT, TEMPERATURE, PHYSIOLOGY, BIOTA.
(H=OTHER 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
008 C 005	E 3	h	GLFRB	GLFRB	FY81	4,500	BENTHOS, SEDIMENTS, ANALYSIS, DISTRIBUTION, LAKE ERIE.
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
009 C 034	J 3	h	GLFRB	GLFRB	FY81	126,000	TOXIC ORGANICS, TOXIC METALS, TRENDS, BIOTA, FISH, BENTHOS, ZOOPLANKTON, SURVEILLANCE.
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
010 C 040	D 3	h	GLFRB	GLFRB, NWRI	FY81 FY82	11,000 20,000	EUTROPHICATION, PHYTOPLANKTON, DYNAMICS, ECOLOGY.
(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
011 C 041	B 25	h	GLFRB	GLFRB, NWRI	FY81 FY82	7,000 18,000	NANOPLANKTON, DYNAMICS, ZOOPLANKTON, METHODOLOGY, BIOASSAY, ALGAE, BIOACCUMULATION.
(B=TOXIC METALS 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
012 C 050	A 5	h	GLFRB	GLFRB	FY81 FY82	20,500 28,000	CHLORINATED HYDROCARBONS, PCB'S, PLANKTON, FISH, TISSUE BANK.
(A=TOXIC ORGANICS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							

* FORMERLY KNOWN AS GREAT LAKES BIOLOGY LAB (GLBL)

013 C 077 B 36 b GLFRB GLFRB FY81 15,000 PHYTOPLANKTON, BIOASSAY,
FY82 50,000 CHEMICAL CHARACTERIZATION,
BIOAVAILABILITY, SEDIMENTS,
LAKE ONTARIO, RIVERS,
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 6=CRITERIA b=DREDGING)

014 C 099 D 23 h GLFRB GLFRB FY81 109,500 TRENDS, BIOTA, SURVEILLANCE,
FY82 84,000 LAKE ONTARIO, OPEN LAKE, NEARSHORE,
WATER CHEMISTRY, STATISTICAL ANALYSIS.
(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

015 C 020 D 23 h GLFRB GLFRB FY81 49,000 LAKE ONTARIO, BAY OF QUINTE, ECOSYSTEM,
FY82 37,000 BIOTA, ECOLOGY, DATA COLLECTION.
(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

016 C 051 J 023 a GLFRB GLFRB,D0E,0MNR FY81 203,500 ATMOSPHERIC DEPOSITION, ACID RAIN, PH,
FY82 160,000 AQUATIC SYSTEMS, LAKES, STREAMS,
BUFFERING CAPACITY,
ORGANIC CONTAMINANTS, METALS, BIOTA,
(J=SEVERAL a=SOURCE AND LOADING, 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)

017 C 072 I 7 h GLFRB GLFRB FY81 14,000 MINERAL ACIDS, HEAVY METALS,
FY82 36,500 ATMOSPHERIC DEPOSITION, SURVEILLANCE,
LAKE HURON, GEORGIAN BAY,
PRECIPITATION, BIOTA, SEDIMENTS,
(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

018 C AR-9 E 2 a 0M0E YORK U. FY81 3,221 AEROSOL, DISTRIBUTION, REMOTE SENSING,
SATELLITES,
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

019 C AR-20 I 7 h OMDE, OMDL, OMDEN OMDE
 234,000 DIOXINS, FURANS, PCB'S,
 75,000 CHLORINATED AROMATICS,
 MUNICIPAL SOURCE, INDUSTRIAL SOURCE,
 ATMOSPHERIC SOURCE, HEALTH STANDARDS,
 FY81
 FY82

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

020 C HC-1 I 7 h OMDE RESEARCH CONS. FY81 5,000 TOXICITY, INTERACTIVE EFFECTS, FISH,

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

021 C LS-9 F 7 d OMDE OMDE FY81 16,000 ULTRAVIOLET, DISINFECTION, SEWAGE,
 MICROBIOLOGY,

(F=PATHOGENS 7=MANAGEMENT d=MUNICIPAL SOURCE)

022 C LS-12 A 5 h OMDE OMDE FY81 4,000 ANALYSIS, CAPILLARY COLUMNS, PESTICIDES,
 FY82 10,000 PCB'S, FISH,

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

023 C LS-13 A 5 h OMDE OMDE FY81 14,000 ANALYSIS, FURANS, DIOXINS, AIR, WATER,
 FY82 10,000 FISH, SEDIMENTS, CAPILLARY COLUMNS,

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

024 C LS-14 A 5 c OMDE OMDE FY81 6,000 ANALYSIS, CAPILLARY COLUMNS, PHENOLS,
 FY82 7,000 CHLORINATED AROMATICS,
 FY83 7,000

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING c=INDUSTRIAL SOURCE)

025 C LS-15	A 5	h	OMOE	OMOE	FY81	6,000	CHROMATOGRAPHY ANALYSIS, PESTICIDES.
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
026 C LS-16	A 5	h	OMOE	OMOE	FY81 FY82 FY83	7,333 7,333 7,333	PCB'S, ANALYSIS, FISH, PESTICIDES.
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
027 C LS-18	A 5	h	OMOE	OMOE	FY81	4,500	WATER, PESTICIDES, PCB'S.
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
028 C LS-19	A 5	h	SCIEA, OMOE	OMOE	FY81	1,500	DIOXINS, FISH, SEDIMENTS.
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
029 C LS-20	A 5	h	OMOE	OMOE	FY81 FY82	5,000 5,000	BIOTA, FISH, PCB'S, ANALYSIS.
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
030 C LS-31	A 5	h	OMOE	OMOE	FY81 FY82	6,000 6,000	CHLOROPHYLL, ANALYSIS.
(A=OTHER S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							

109 C 13 J 02 1WD QUE U FY81 9 500 SEDIMENTS, RIVERS, TEMPORAL VARIATION
DISTRIBUTION.

(J=SEVERAL C=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=SEVERAL SOURCES)

110 C 15 A 125 h 1WD U TOR. FY81 12,000 STRUCTURE-ACTIVITY DISTRIBUTION
ACCUMULATION MODELS.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

111 C 16 J 2 h 1WD U WAT. FY81 12,000 TOXIC METALS, COMPLEXATION,
TOXIC ORGANICS, MICROORGANISMS
GROUNDWATER.

(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

112 C 10 B 25 h 1WD MCM.U. FY81 27,000 MOBILITY, PH, SOIL MODELS,

(B=TOXIC METALS 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

113 C 17 A 12 h 1WD U WAT. FY81 6,000 METHYLATION, LEAD, SEDIMENTS,
CHEMICAL CHARACTERIZATION, TIN,

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

114 C 18 E 25 h 1WD U WAT. FY81 11,000 GROUNDWATER MODELS,

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

103 C 5 A 3 h 1WD U QUE FY81 5,500 PESTICIDES, TOXICITY, BIOTA, BENTHOS, PHYSIOLOGY.

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

104 C 6 A 25 h 1WD LAKEHEAD U. FY81 11,000 BIODEGRADATION, TOXICITY TESTING, MICROORGANISMS, BACTERIAL FUNGI, ALGAE, INTERACTIVE EFFECTS, MODELS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

105 C 7 E 0 i 1WD LAVAL U. FY81 5,000 RADIOACTIVITY, ST. LAWRENCE RIVER, ATMOSPHERIC DEPOSITION.

(E=CONTAMINANTS: GEN 0=SOURCE AND LOADING i=SEVERAL SOURCES)

106 C 8 D 25 h 1WD MCGILL U. FY81 18,000 NITROGEN, DENITRIFICATION, AQUATIC SYSTEMS, BIOSASSAY, LAKE ERIE.

(D=NUTRIENTS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

107 C 9 J 57 d 1WD MCM U. FY81 15,000 URBAN RUNOFF, SEWAGE, WATER QUALITY, ENVIRONMENTAL IMPACT, HARBOUR, BACTERIA, NUTRIENTS, SUSPENDED SOLIDS, MODELS.

(J=SEVERAL 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

108 C 12 J 235 h 1WD U QUE FY81 12,000 PALEOLIMNOLOGY, ACID LAKES, TEMPORAL VARIATION, SEDIMENTS.

(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

097 C 4 E 7 f AG CAN LRP1 FY81 56,800 PROGRAM DEVELOPMENT, WATER QUALITY,
FY82 56,800 AGRICULTURE,
(E=CONTAMINANTS GEN 7=MANAGEMENT f=NON-POINT SOURCE)

098 C 5 H 012 f AG CAN LRP1 INST PED FY81 36,500 SOIL, EROSION,
FY82 42,600
(H=OTHER 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

099 C 6 E 23 f AG CAN LRP1 FY81 52,500 NITROGEN, PHOSPHORUS, AGRICULTURE,
FY82 56,000 RUNOFF, GROUNDWATER, MANURE,
WATER QUALITY,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS f=NON-POINT SOURCE)

100 C 7 E 27 h AG CAN LRC FY81 773,000 PESTICIDES, MICROORGANISMS, DEGRADATION,
AQUATIC SYSTEMS, SOIL, GROUNDWATER,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

101 C 8 E 2 f AG CAN ARC FY81 45,000 NUTRIENTS, ORGANIC CONTAMINANTS,
FY82 45,000 POLLUTION, AGRICULTURE, GROUNDWATER,
STREAMS, ACCUMULATION, SOIL,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

102 C 3 E 5 a IMD DAL U FY81 11,000 TOXIC SUBSTANCES, ACID RAIN, ANALYSIS,
(E=CONTAMINANTS, GEN 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)

091 C 6606-1750-54(N) F 0 h NHV OMOM FY81 38,000 SURVEILLANCE, WATER.
 (F=PATHOGENS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

092 C 6606-1852-54(N) F 0 h NHV U.WIN. FY81 20,000 SURVEILLANCE, WATER.
 (F=PATHOGENS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

093 C 6605-1746-54(N) F 02 h NHV INST ARM.-FAAP FY81 19,882 RUNOFF,
 (F=PATHOGENS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

094 C 1 C 025 f AG.CAN. LRRI.NRS FY81 56,400 SUBSURFACE DRAINAGE, SOIL, SURVEILLANCE,
 FY82 14,000 AGRICULTURE, MODELS.
 (C=PHOSPHORUS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

095 C 2 H 025 f AG.CAN. U.GUE.LRRI FY81 73,600 SEDIMENTS, RUNOFF, EROSION, AGRICULTURE,
 FY82 9,020 MODELS.
 (H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

096 C 3 E 7 f AG.CAN.,OMAF UTRCA FY81 20,000 WATER QUALITY, EROSION, AGRICULTURE,
 IMPLEMENTATION.
 (E=CONTAMINANTS, GEN 7=MANAGEMENT f=NON-POINT SOURCE)

086 C 011 B 235 h GLFRB GLFRB 11,000 TOXICITY TESTING, ZOOPLANKTON.
FY81 4,000
FY82

(B=TOXIC METALS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

086 C 012 B 135 h GLFRB GLFRB 3,000 METAL SPECIATION, TOXICITY, BIOHA.
FY81 8,000
FY82

(B=TOXIC METALS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

087 C 013 B 123 h GLFRB GLFRB.NHRI 25,500 METHYLATION, TIN, LEAD TOXICITY, ALGAE.
FY81 10,000 SEDIMENTS
FY82

(B=TOXIC METALS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

088 C 6605-1569-54(N) F 124 h NHU INST.ARM.-FRAP FY81 3,366 RUNOFF,
(F=PATHOGENS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

089 C 6606-1781-54(N) F 02 h NHU U.OIT. 38,000 WATER, ANALYSIS,
(F=PATHOGENS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

090 C 6605-1649-54(N) F 02 h NHU INST.ARM.-FRAP FY81 38,000 WATER, ANALYSIS,
(F=PATHOGENS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

019 C	WR-14	E 7	h	OMOE, OMNR	OMOE	FY81	30,000	OXYGEN, RIVERS, COST-BENEFIT, BIOTA,
(E=CONTAMINANTS GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)								
080 C	WR-21	E 37	q	OMNR, OMOE	OMOE	FY81	0	ACID LAKES, NEUTRALIZATION, AQUATIC SYSTEMS.
(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT q=ATMOSPHERIC SOURCE)								
081 C	WR-25	E 7	h	OMOE	OMOE	FY81	0	URBAN RUNOFF, IMPOUNDMENT, EUTROPHICATION, OXYGEN
(E=CONTAMINANTS GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)								
082 C	WR-27	E 3	h	OMOE, OMNR	OMOE	FY81	50,000	ECOLOGY, PHYTOPLANKTON, ACID LAKES, EUTROPHICATION, NUTRIENTS,
(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)								
083 C	WR-32	J 23	h	OMOE	OMOE	FY81	30,000	TOXICITY TESTING, PH, TOXIC METALS, BIOTA, FISH, INTERACTIVE EFFECTS,
(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)								
084 C	WR-33	J 23	h	OMOE	OMOE	FY81	170,000	TOXIC METALS, PH, WATER CHEMISTRY, INTERACTIVE EFFECTS, TOXICITY TESTING, BIOTA, FISH, PHYSIOLOGY,
(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)								

073 C PC-27 F 7 d OMOE 42,000 FY81 ULTRAVIOLET, DISINFECTION, SEWAGE,
(F=PATHOGENS 7=MANAGEMENT d=MUNICIPAL SOURCE)

074 C PL-6 E 02 d OMOE INT ENV. CONS. FY81 21,700 ORGANIC CONTAMINANTS, GRAND RIVER,
SURVEILLANCE, TEMPORAL VARIATION,
ANALYSIS, FISH,
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

075 C PL-11 E 7 d DOE, OMOE REG. MUN. OTT. CAR FY81 68,000 URBAN RUNOFF, PLAN, POLLUTION,
ENVIRONMENTAL IMPACT, RIVERS, STREAMS,
IMPOUNDMENT,
(E=CONTAMINANTS, GEN 7=MANAGEMENT d=MUNICIPAL SOURCE)

076 C PL-22 A 4 h OMOE, OMOE MCM. U. FY81 62,285 PCB'S, DIOXINS, TOXICITY TESTING,
FY82 23,038 PHYSIOLOGY,
(A=TOXIC ORGANICS 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

077 C WR-9 E 02 h OMOE 40,000 GROUNDWATER, POLLUTION,
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

078 C WR-12 E 025 h OMOE 86,000 HARBOR, LAKE ONTARIO, OXYGEN,
SURVEILLANCE, ENVIRONMENTAL SIMULATION,
TRENDS, MODELS,
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

067 C PC-18 A 2 H OMDE U MU FY61 7,500 PESTICIDES, DEGRADATION, MICROORGANISMS,
SOIL ENTER TEMPERATURE

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)

068 C PC-5 J 04 G OMDE OMDE FY81 10,000 SURVEILLANCE, WATER QUALITY,
FY82 25,000

(J=SEVERAL G=SOURCE AND LOADING 4=HUMAN HEALTH EFFECTS d=MUNICIPAL SOURCE)

069 C PC-6 E 7 d OMDE, NHU ZENON ENV. ENT. FY81 150,000 ORGANIC CONTAMINANTS, SEWAGE,
FY82 99,000

(E=CONTAMINANTS, GEN 7=MANAGEMENT d=MUNICIPAL SOURCE)

070 C PC-19 E 7 d OMDE BRANTFORD P.U.C. FY81 19,000 ORGANIC CONTAMINANTS, WATER,
CHLORINATION, WASTEWATER TREATMENT,

(E=CONTAMINANTS, GEN 7=MANAGEMENT d=MUNICIPAL SOURCE)

071 C PC-15 B 7 d OMDE OMDE FY81 13,000 IRON, CHEMICAL MIXTURES, WATER,

(B=TOXIC METALS 7=MANAGEMENT d=MUNICIPAL SOURCE)

072 C PC-22 E 7 h OMDE OMDE FY81 5,000 ARSENIC, LEACHATES,

(E=CONTAMINANTS, GEN. 7=MANAGEMENT h=UNSPECIFIED SOURCES)

061 C UR-35 A 236 C EPS, OMOE LAKEHEAD U. FY81 108,327 TOXICITY TESTING, HAZARD ASSESSMENT,
FY82 118,241 CHEMICAL MIXTURES, INTERACTIVE EFFECTS,
FY83 118,242 BIOTA, FISH, BIOACCUMULATION,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 6=CRITERIA C=INDUSTRIAL SOURCE)

062 C UR-36 E 356 C OMOE OMOE FY81 90,000 BIOASSAY, TOXICITY, TOXIC SUBSTANCES,
BIOTA, CHEMICAL MIXTURES, SEWAGE,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 6=CRITERIA C=INDUSTRIAL SOURCE)

063 C NC-2 A 3 h OMOE, EPS, RAC LAKEHEAD U. FY81 16,000 TOXICITY TESTING, BIOTA, FISH,

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

064 C LS-10 F 5 h OMOE OMOE FY81 2,000 BACTERIA,

(F=PATHOGENS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

065 C LS-11 F 5 h OMOE OMOE FY81 30,000 ANALYSIS, PESTICIDES, CHROMATOGRAPHY,
CAPILLARY COLUMNS, CHEMICAL MIXTURES,

(A=TOXIC ORGANICS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

066 C LS-32 E 5 h OMOE OMOE FY81 9,000 ANALYSIS, WATER QUALITY,

(E=CONTAMINANTS, GEN. 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

055 C WR-26 C 37 d OMNR, OMOE, CCIW OMOE FY81 0 SEWAGE, LAKE HURON, BAY OF QUINTE,
STURGEON BAY,

(C=PHOSPHORUS 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)

056 C WR-28 A 03 d EPS, OMOE OMOE FY81 14,400 BIOACCUMULATION, FISH, NEARSHORE,
SEWAGE,

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)

057 C WR-29 E 35 c OMOE OMOE FY81 70,000 TOXICITY, TOXIC SUBSTANCES, BIOASSAY,
BIOACCUMULATION, BIOTA,

(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING c=INDUSTRIAL SOURCE)

058 C WR-30 A 07 c OMOE OMOE FY81 40,000 PRIORITY CHEMICALS, SEWAGE,
ST. CLAIR RIVER,

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 7=MANAGEMENT c=INDUSTRIAL SOURCE)

059 C WR-31 A 135 h OMOE OMOE FY81 15,000 TOXICITY, FISH, STRUCTURE-ACTIVITY,
MODELS,

(A=TOXIC ORGANICS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

060 C WR-34 E 023 i OMOE OMOE FY81 40,000 PERSISTENCE, MUNICIPAL SOURCE,
INDUSTRIAL SOURCE, SURVEILLANCE,
TEMPORAL VARIATION, DISTRIBUTION,
TRENDS, BIOTA, FISH, NEARSHORE,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

049 C WR-10 E 257 i OMNR,OMOE,TOR OMOE FY81 86,000 PLAN, HARBOUR, CURRENTS, CIRCULATION, NEARSHORE, OPEN LAKE, DISPERSION, DREDGING, MUNICIPAL SOURCE, INDUSTRIAL SOURCE, MODELS,

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

050 C WR-11 E 02 i OMOE,OMNR,TEX OMOE FY81 22,000 SURVEILLANCE, NEARSHORE, CURRENTS, WATER QUALITY, INDUSTRIAL SOURCE, URBAN RUNOFF, NON-POINT SOURCE,

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT i=SEVERAL SOURCES)

051 C WR-13 E 7 h OMNR,OMOE,OMDL OMOE FY81 2,402,000 PROGRAM DEVELOPMENT, SURVEILLANCE, POLLUTION, WATER QUALITY, TRENDS,

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

052 C WR-22 J 7 h OMOE OMOE FY81 65,000 PROGRAM DEVELOPMENT, ALGAE, DISTRIBUTION, TRENDS, STREAMS, NEARSHORE, LAKE ONTARIO, NIAGARA RIVER, NUTRIENTS, PCB'S, HEAVY METALS,

(J=SEVERAL 7=MANAGEMENT h=UNSPECIFIED SOURCES)

053 C WR-23 E 7 d OMOE OMOE FY81 80,000 MARSH, SEWAGE, COST-BENEFIT,

(E=CONTAMINANTS, GEN 7=MANAGEMENT d=MUNICIPAL SOURCE)

054 C WR-24 J 235 h OMOE OMOE FY81 0 TOXIC ORGANICS, TOXIC METALS, BIOASSAY, BIOTA, ALGAE, INTERACTIVE EFFECTS, TOXICITY,

(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

043 C	PL-1	J 7	d	OMOE	OMOE, GO. STD. LTD	FY81	18,000	MARSH, SEWAGE, COST-BENEFIT, SURVEILLANCE, NUTRIENTS, HEAVY METALS, BACTERIA.
(J=SEVERAL 7=MANAGEMENT d=MUNICIPAL SOURCE)								
044 C	PL-7	A 2	h	OMOE	ORF	FY81	47,300	ANALYSIS, WATER, TEMPORAL VARIATION,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)								
045 C	PL-12	A 5	c	OMOE	MCM. U.	FY81	39,100	ANALYSIS,
(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING c=INDUSTRIAL SOURCE)								
046 C	PL-14	A 7	f	OMAF, OMOE	U. GUE.	FY81 FY82 FY83	47,500 95,000 95,000	BIOLOGICAL CONTROL, STERILIZATION, PESTICIDES,
(A=TOXIC ORGANICS 7=MANAGEMENT f=NON-POINT SOURCE)								
047 C	PL-20	A 57	h	OMOE	LAKEHEAD U.	FY81	10,900	PRIORITY CHEMICALS, ANALYSIS, TOXICITY, PROGRAM DEVELOPMENT,
(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)								
048 C	PL-21	A 236	c	OMOE, DOE	LAKEHEAD U.	FY81 FY82 FY83	53,300 143,570 143,570	TOXICITY, INTERACTIVE EFFECTS, BIOACCUMULATION, FISH, PHYSIOLOGY,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 6=CRITERIA c=INDUSTRIAL SOURCE)								

037 C PC-24 F 7 d OMOE OMOE 1,000 1,000 ULTRAVIOLET, DISINFECTION, SEWAGE,
 (F=PATHOGENS 7=MANAGEMENT d=MUNICIPAL SOURCE)

038 C PC-25 A 2 d OMOE,DOE CANVIRO 15,000 PRIORITY CHEMICALS, SEWAGE,
 (A=TOXIC ORGANICS 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

039 C PC-28 C 7 d OMOE AINL ASSOC. 80,000 SEWAGE, CHEMICAL MIXTURES,
 (C=PHOSPHORUS 7=MANAGEMENT d=MUNICIPAL SOURCE)

040 C PC-29 C 2 d OMOE,DSS CANVIRO 168,000 168,000 SEWAGE, BIOAVAILABILITY,
 (C=PHOSPHORUS 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

041 C PC-30 J 27 f DOE,OMO REG.MUN.OTT.CAR FY81 70,000 URBAN RUNOFF, IMPOUNDMENT,
 (J=SEVERAL 2=FATE AND TRANSPORT 7=MANAGEMENT f=NON-POINT SOURCE) WATER QUALITY, PRECIPITATION,

042 C PC-37 C 7 d OMOE OMOE 0 COST-BENEFIT, SEWAGE,
 (C=PHOSPHORUS 7=MANAGEMENT d=MUNICIPAL SOURCE) WASTEWATER TREATMENT,

031 C PAC-17 A 3 h OMDE OMDE FY81 10,900 TOXICITY, PESTICIDES, FISH, PHYSIOLOGY,
FY82 10,500

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

032 C PC-9 F 246 h OMDE BEAK FY81 24,500 CHLORINATION, SEWAGE, MICROORGANISMS,
DISINFECTION, STREAMS,
HEALTH STANDARDS.

(F=PATHOGENS 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS 6=CRITERIA h=UNSPECIFIED SOURCES)

033 C PC-11 A 02 d OMDE OMDE FY81 35,000 SURVEILLANCE, WATER QUALITY,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

034 C PC-16 E 02 d OMDE OMDE FY81 10,000 ASBESTOS FIBERS, SURVEILLANCE,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

035 C PC-21 A 2 h OMDE OMDE FY81 6,000 DISINFECTION, CHLORINATION, STREAMS,
FY82 3,000

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

036 C PC-23 J 2 d OMDE OMDE FY81 1,000 PRIORITY CHEMICALS, TOXIC METALS,
TOXIC ORGANICS, ANALYSIS, SEWAGE.

(J=SEVERAL 2=FATE AND TRANSPORT d=MUNICIPAL SOURCE)

115 C 20 J 7 F 1WD YORK U FY81 8,000 HYPOXIMION, OXYGEN, WATER CHEMISTRY, SURVEILLANCE, TOXIC SUBSTANCES

(J=SEVERAL 7=MANAGEMENT F=NON-POINT SOURCE)

116 C 014 A 23 h GLFRB FY81 50,000 PHYSIOLOGY, TEMPERATURE, BIOTA, FY82 36,500 BIOACCUMULATION, BENZENES, PHENOLS,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

117 C 015 B 2 a GLFRB FY81 4,000 PH, LEAD, METHYLATION, BIOTA, MICROORGANISMS, SEDIMENTS,

(B=TOXIC METALS 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

118 C 016 J 25 h GLFRB FY81 7,000 DYNAMICS, ENVIRONMENTAL SIMULATION, BIOTA, ALGAE, ZOOPLANKTON, BENTHOS, SEDIMENTS, MODELS,

(J=SEVERAL 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

119 C 018 J 13 h GLFRB GLFRB,NWRI FY81 24,000 STRUCTURE-ACTIVITY, TOXICITY, FY82 17,000 TOXIC ORGANICS, TOXIC METALS, TIN, ALGAE, ZINC,

(J=SEVERAL 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

120 C M407326 A 24 h NHW,USFDA NHW FY82 210,000 PCB'S, TOXICITY, PHARMACOKINETICS, BREAST MILK, INFANT MONKEYS,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

121 C 109 H 7 9 NWRI NWRI FY81 51,000 BIOTA, FISH, HABITAT, BOTTOM SUBSTRATES,
FY82 71,000 NEARSHORE, TEMPORAL VARIATION.

(H=OTHER 7=MANAGEMENT 9=OTHER SOURCES)

122 C 110 H 125 h NWRI NWRI FY81 5,000 SEDIMENTS, WATER, INTERACTIVE EFFECTS,
DISTRIBUTION, STATISTICAL ANALYSIS,
MODELS.

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

123 C 210 A 135 h NWRI,DOE NWRI FY81 70,500 STRUCTURE-ACTIVITY, HAZARD ASSESSMENT,
FY82 54,000 TOXICITY TESTING BIOTA, BENZENES,
PHENOLS.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

124 C 81-211 A 5 h NWRI,DOE NWRI FY81 82,000 ANALYSIS, PCB'S, SEDIMENTS, BIOTA,
RIVERS, NIAGARA RIVER, LAKE ONTARIO.

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

125 C 82-211 A 15 h NWRI,DOE NWRI FY82 32,500 STRUCTURE-ACTIVITY, PCB'S, DIOXINS,
BENZENES, PHENOLS, HAZARD ASSESSMENT.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

126 C 212 A 02 h NWRI NWRI FY81 101,000 ANALYSIS, SEDIMENTS, WATER, BIOTA, FISH,
FY82 13,000 DISTRIBUTION, SINKS, RIVERS,
NIAGARA RIVER, LAKE ONTARIO.

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

127 C 213 A 012 h NWRI FY82 70,000 CHLORINATED HYDROCARBONS, PCB-S,
ANALYSIS, SEDIMENTS, BIOTA
AQUATIC SYSTEMS, TRENDS, RIVERS,
NIAGARA RIVER, LAKE ONTARIO,

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

128 C 216 A 2 h NWRI FY81 44,000 CHLORINATED HYDROCARBONS, SURFACE FILMS,
WATER, AIR, EVAPORATION.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

129 C 218 A 25 h NWRI,DOE FY82 35,000 BIOAVAILABILITY, SEDIMENTS.

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

130 C 219 A 02 h NWRI FY82 2,000 SURFACE FILMS, RIVERS NIAGARA RIVER
LAKE ERIE, LAKE ONTARIO,

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

131 C 220 A 2 h NWRI,DOE FY81 92,500 SUSPENDED SOLIDS, SEDIMENTS,
FY82 80,000 DISTRIBUTION, BIOTA, BENTHOS,
BIODACCUMULATION, RIVERS, NIAGARA RIVER,
LAKE ONTARIO,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

132 C 222 A 1 h NWRI FY82 31,000 SORPTION, SEDIMENTS, LAKE ONTARIO,

(A=TOXIC ORGANICS 1=CHARACTERISTICS h=UNSPECIFIED SOURCES)

133 C 230 E 12 h NWRI.DOE NWRI FY81 44,000 TOXIC SUBSTANCES, DISTRIBUTION,
FY82 112,000 AVAILABILITY, SUSPENDED SOLIDS,
SEDIMENTS, METAL SPECIFICATION,
LAKE ONTARIO.

(E=CONTAMINANTS, GEN. 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

134 C 232 B 25 h NWRI.DOE NWRI.GLFRB FY82 118,000 METHYLATION, TIN, LEAD, ANALYSIS,
AQUATIC ENVIRONMENTS, COMPLEXATION,
WATER, TOXICITY, ORGANOTINS.

(B=TOXIC METALS 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

135 C 233 A 125 h NWRI NWRI FY82 8,000 ORGANOTINS, SURVEILLANCE,
AQUATIC SYSTEMS, PERSISTENCE,
SURFACE FILMS, ANALYSIS, WATER,
SEDIMENTS, BIOTA, FISH, ALGAE.

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

136 C 234 B 23 c NWRI NWRI FY82 68,000 DYNAMICS, SEDIMENTS, SUSPENDED SOLIDS,
AVAILABILITY, BIOTA, PLANKTON,
PHYTOPLANKTON, BIOASSAY, NEARSHORE,
NIAGARA RIVER.

(B=TOXIC METALS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)

137 C 240 E 03 c NWRI.DOE NWRI.GLFRB FY81 72,000 RADIOACTIVITY, SURVEILLANCE, TRENDS,
FY82 84,000 OPEN LAKE, BIOTA, FISH.

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)

138 C 241 E 25 c NWRI.DOE NWRI FY81 39,000 RADIOACTIVITY, WASTE MANAGEMENT,
FY82 58,000 GROUNDWATER, LEACHATES, LAKE ONTARIO.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING c=INDUSTRIAL SOURCE)

139 C 242 E 025 C NURI.DOE NURI FY82 130,000 RADIOACTIVITY, ANALYSIS, SEDIMENTS,
TRENDS, RIVERS, NIAGARA RIVER,
LAKE ONTARIO,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING C=INDUSTRIAL SOURCE)

140 C 309 E 02 F NURI FY82 47,000 TOXIC SUBSTANCES, URBAN RUNOFF,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

141 C 310 E 035 F NURI FY82 34,000 URBAN RUNOFF, WATER QUALITY,
WATER QUANTITY,
ENVIRONMENTAL SIMULATION, MODELS,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING F=NON-POINT SOURCE)

142 C 349 E 7 B NURI FY82 2,000 NEARSHORE, WASTE MANAGEMENT,

(E=CONTAMINANTS, GEN. 7=MANAGEMENT B=DREDGING)

143 C 353 E 02 F NURI.DOE NURI FY81 109,000 TOXIC SUBSTANCES, URBAN RUNOFF,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

144 C 419 E 035 H NURI.DOE NURI FY81 7,000 BIOGEOCHEMISTRY, PALEOLIMNOLOGY, TRENDS,
FY82 9,000 SEDIMENTS, MODELS,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)

145 C 420 C 02 h NWRI FY81 41,000 OXYGEN, DYNAMICS, TRENDS, ANALYSIS,
FY82 23,000 TEMPORAL VARIATION, EUTROPHICATION,
LAKE ERIE, HYPOLIMNION.

(C=PHOSPHORUS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

146 C 421 E 2 h NWRI FY81 18,000 DISTRIBUTION, TEMPORAL VARIATION,
FY82 41,000 TRENDS, SEDIMENTS, PARTICULATES,
LAKE ONTARIO.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

147 C 422 D 7 i NWRI FY81 15,000 LAKE ERIE, DEGRADATION, TRENDS.
FY82 17,000 REHABILITATION, INFORMATION.

(D=NUTRIENTS 7=MANAGEMENT i=SEVERAL SOURCES)

148 C 423 C 23 h NWRI FY81 35,000 BIOTA, BENTHOS, SURVEILLANCE,
FY82 20,000 DISTRIBUTION, TEMPORAL VARIATION,
ECOLOGY, WATER QUALITY, RIVERS,
NIAGARA RIVER, LAKE ONTARIO.

(C=PHOSPHORUS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

149 C 425 E 02 h NWRI FY81 23,000 SEDIMENTS, NUTRIENTS, DECOMPOSITION,
FY82 90,000 ACCUMULATION, PLANKTON, PHYTOPLANKTON,
NEARSHORE, OFFSHORE, NIAGARA RIVER,
LAKE ONTARIO.

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

150 C 426 D 123 h NWRI FY81 41,000 ORGANIC CONTAMINANTS, BIOTA, ALGAE,
FY82 20,000 PRODUCTIVITY, DECOMPOSITION, SEDIMENTS,
OXYGEN, NUTRIENTS, DYNAMICS, LAKE ERIE
EPIPLIMNION.

(D=NUTRIENTS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

151 C 428 H 12 h NWRI FY81 20,000 SEDIMENTS, SUSPENDED MATERIALS,
FY82 10,000 LAKE ONTARIO,

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

152 C 430 C 25 h NWRI FY81 37,000 BIOAVAILABILITY, SORPTION, IRON,
FY82 16,000 SEDIMENTS, BAY OF QUINTE, LAKE ERIE,
LAKE ONTARIO,

(C=PHOSPHORUS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

153 C 433 C 5 h NWRI FY81 25,000 BIOAVAILABILITY, BIOASSAY, BIOTA,
FY82 3,000 MICROORGANISMS, LAKES,

(C=PHOSPHORUS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

154 C 475 D 2 h NWRI FY82 3,000 SEDIMENTS, MACROPHYTES, LAKES,

(D=NUTRIENTS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

155 C 479 D 356 h NWRI FY82 4,000 BIOTA, ALGAE, PRODUCTIVITY,
DISTRIBUTION, EUTROPHICATION,
NEARSHORE, WATER QUALITY MODELS

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

156 C 494 D 23 h NWRI, DOE FY82 172,000 LAKE ONTARIO, BIOTA, ALGAE, PHYSIOLOGY,
EUTROPHICATION, WATER QUALITY

(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

157 C 495 E 02 h MURI DOE MURI FY81 32,000 SEDIMENTS, DISTRIBUTION,
FY82 58,000 TEMPORAL VARIATION, TRENDS,
SEDIMENT BANK

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

158 C 497 D 037 h MURI MURI FY82 30,000 LAKE ERIE SURVEILLANCE,
PROGRAM DEVELOPMENT, TRENDS, OXYGEN

(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

159 C 501 E 235 h MURI MURI FY82 17,000 ENVIRONMENTAL SIMULATION,
WASTE MANAGEMENT, ECOSYSTEM DYNAMICS,
WATER QUALITY MODELS

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

160 C 503 E 25 h MURI MURI FY82 21,000 NEARSHORE, CIRCULATION, DYNAMICS,
DISPERSION, RIVERS, NIAGARA RIVER,
LAKE ONTARIO, PLUMES, MODELS

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

161 C 504 A 125 h MURI MURI FY81 30,000 WATER, SEDIMENTS, INTERACTIVE EFFECTS,
FY82 10,000 SORPTION, PARTICULATES, DISTRIBUTION,
RIVERS, NIAGARA RIVER, LAKE ONTARIO,
MODELS

(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

162 C 505 C 025 h MURI MURI FY81 43,000 DISTRIBUTION, TEMPORAL VARIATION,
FY82 17,000 TRENDS, STATISTICAL MODELLING, RIVERS,
NIAGARA RIVER, ST LAWRENCE RIVER,
LAKE ONTARIO

(C=PHOSPHORUS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

163 C 506 E 25 h NWRI DOE NWRI FY81 20,000 NEARSHORE, CIRCULATION, DISPERSION,
FY82 45,000 MODELS.

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

164 C 508 H 5 h NWRI NWRI FY82 10,000 INSTRUMENTATION, CURRENTS, TEMPERATURE,
OXYGEN

(H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

165 C 509 H 12 h NWRI NWRI FY81 202,000 PHYSICAL LIMNOLOGY, LAKE ERIE,
FY82 36,000

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

166 C 510 H 12 h NWRI NWRI FY81 79,000 LAKE ONTARIO, PHYSICAL LIMNOLOGY,
FY82 115,000 NEARSHORE, OPEN LAKE, CURRENTS,
INTERACTIVE EFFECTS,
TEMPORAL VARIATION, NIAGARA RIVER,

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

167 C 511 J 025 h NWRI, GLFRB NWRI, GLFRB FY81 25,000 STATISTICAL MODELLING, DISTRIBUTION,
FY82 40,000 TEMPORAL VARIATION, TRENDS, NUTRIENTS,
OXYGEN, CHLOROPHYLL, TOXIC SUBSTANCES,
AMMONIA,

(J=SEVERAL C=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

168 C 540 H 125 h NWRI NWRI FY81 130,000 WATER QUALITY, AVAILABILITY, LIGHT,
FY82 16,000 CHLOROPHYLL, SUSPENDED MATERIALS,
SATELLITES, DYNAMICS, RIVERS,
NIAGARA RIVER, MODELS,

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

169 C 541 E 25 h NWRI NWRI FY82 3,000 GROUNDWATER, LAKES, ENVIRONMENTAL SIMULATION, RADIOACTIVITY, MODELS.

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

170 C 572 E 7 h NWRI NWRI FY82 37,000 ADMINISTRATION, SURVEILLANCE, DATA COLLECTION,

(E=CONTAMINANTS, GEN 7=MANAGEMENT h=UNSPECIFIED SOURCES)

171 C 573-574 H 7 h NWRI NWRI FY81 98,000 PROGRAM DEVELOPMENT, FY82 100,000 STATISTICAL ANALYSIS, COMPUTER, ADVISORY,

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

172 C 576 H 7 h NWRI,DOE NWRI FY81 5,000 PROGRAM DEVELOPMENT, COMPUTER, SURVEILLANCE, WATER QUALITY, MODELS, INSTRUMENTATION,

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

173 C 599 H 7 h NWRI NWRI FY82 15,000 PHYSICAL LIMNOLOGY, INSTRUMENTATION, SURVEILLANCE, NEARSHORE, MODELS,

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

174 C 614 E 5 h NWRI,DOE NWRI FY81 30,500 PRIORITY CHEMICALS, ANALYSIS, INSTRUMENTATION, WATER, SEDIMENTS, CHROMATOGRAPHY,

(E=CONTAMINANTS, GEN 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

175 C 615	A 5	h	NWRI,DOE	NWRI	FY81 FY82	46,500 100,000	ANALYSIS, BENZENES, TOXAPHENE, WATER, SEDIMENTS, BIOTA, FISH,
(A=TOXIC ORGANICS S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
176 C 619	A 5	h	NWRI,DOE	NWRI	FY81 FY82	81,000 61,000	ANALYSIS, DIOXINS, FURANS, SEDIMENTS, SUSPENDED SOLIDS, BIOTA, FISH,
(A=TOXIC ORGANICS S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
177 C 627	E 5	h	NWRI,DOE	NWRI	FY81	50,000	ANALYSIS, CARCINOGENICITY, MUTAGENS, MICROORGANISMS, BACTERIA, RIVERS, NIAGARA RIVER,
(E=CONTAMINANTS, GEN. S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
178 C 628	F 06	h	NWRI	NWRI	FY81 FY82	45,000 45,000	MICROORGANISMS, BACTERIA, SURVEILLANCE, LAKE ONTARIO, IJC,
(F=PATHOGENS O=SOURCE AND LOADING G=CRITERIA h=UNSPECIFIED SOURCES)							
179 C 633	E 7	h	NWRI,DOE	NWRI	FY81 FY82	59,000 92,000	PROGRAM DEVELOPMENT, ADVISORY, DATA QUALITY, IJC,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT h=UNSPECIFIED SOURCES)							
180 C 670	H 7	h	NWRI	NWRI	FY81 FY82	83,000 100,000	COMPUTER, INSTRUMENTATION, ADMINISTRATION,
(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)							

181 C 22	J 467 i	END	EHC	FY81 458,000 FY82 1,082,900 FY83 825,000	TOXIC ORGANICS, TOXIC METALS, MICROORGANISMS, WATER CHEMISTRY, SURVEILLANCE, PRIORITY CHEMICALS, ANALYSIS, REGULATIONS, MUTAGENS
(J=SEVERAL 4=HUMAN HEALTH EFFECTS 6=CRITERIA 7=MANAGEMENT i=SEVERAL SOURCES)					
182 C 23	J 467 i	END	EHC	FY81 341,700 FY82 1,131,400 FY83 1,243,000	TOXIC SUBSTANCES, MICROORGANISMS, ASBESTOS FIBERS, PRIORITY CHEMICALS, METHODODOLOGY, MODELS, DISINFECTION, INFORMATION, SEWAGE,
(J=SEVERAL 4=HUMAN HEALTH EFFECTS 6=CRITERIA 7=MANAGEMENT i=SEVERAL SOURCES)					
183 C 24	J 457 c	END	EHC	FY81 751,400 FY82 964,900 FY83 950,000	PRIORITY CHEMICALS, MUTAGENS, CARCINOGENECITY, TOXICITY, PHYSIOLOGY, PHARMACOKINETICS.
(J=SEVERAL 4=HUMAN HEALTH EFFECTS 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)					
184 C 25	J 45 a	END	EHC	FY81 298,400 FY82 506,800 FY83 490,000	TOXIC ORGANICS, TOXIC METALS, LEAD, CADMIUM, METHODOLOGY, ANALYSIS, HAZARD ASSESSMENT.
(J=SEVERAL 4=HUMAN HEALTH EFFECTS 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)					
185 C 26	J 45 i	END	EHC	FY81 227,600 FY82 356,400 FY83 380,000	TOXIC ORGANICS, MICROORGANISMS, METHODODOLOGY, ANALYSIS, NEARSHORE, HAZARD ASSESSMENT, SURVEILLANCE, SEWAGE, SOIL, ATMOSPHERIC SOURCE,
(J=SEVERAL 4=HUMAN HEALTH EFFECTS 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)					
186 C 27	A 457 h	END	EHC	FY81 448,200 FY82 953,500 FY83 1,050,000	PESTICIDES, MUTAGENS, HAZARD ASSESSMENT, AGRICULTURE, TOXICITY, MODELS, ADVISORY INFORMATION, METHODOLOGY,
(A=TOXIC ORGANICS 4=HUMAN HEALTH EFFECTS 5=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)					

187 C 20	B 457 a	END	EHG	FY81 690,500 FY82 1,426,500 FY83 900,000	ACID RAIN, ATMOSPHERIC DEPOSITION, ATMOSPHERIC SOURCE, INDUSTRIAL SOURCE, HAZARD ASSESSMENT, SURVEILLANCE, EQUIPMENT, ADVISORY, PHA'S.
(B=TOXIC METALS 4=HUMAN HEALTH EFFECTS 5=METHOD DEV. & MODELING 7=MANAGEMENT a=ATMOSPHERIC SOURCE)					
188 C 029/01	E 7 c	DOF,DSS,EPS	WTC,ACB	FY81 76,000 FY82 51,650	TOXIC SUBSTANCES, NITROGEN, WASTEWATER TREATMENT, COOKING EFFLUENT TREATMENT,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT c=INDUSTRIAL SOURCE)					
189 C 02	E 67 c	ACB,EMR,EPS	WTC	FY81 80,000 FY82 148,500	WASTEWATER TREATMENT, BIOLOGICAL CONTROL, COAL LIQUEFACTION.
(E=CONTAMINANTS, GEN. 6=CRITERIA 7=MANAGEMENT c=INDUSTRIAL SOURCE)					
190 C 81-24/04	E 67 d	EPS,DSS	U.BC	FY81 120,000 FY82 20,000	LEACHATES, CHEMICAL CHARACTERIZATION, WASTE MANAGEMENT, BIOLOGICAL CONTROL, ORGANIC CONTAMINANTS, TOXIC SUBSTANCES,
(E=CONTAMINANTS, GEN. 6=CRITERIA 7=MANAGEMENT d=MUNICIPAL SOURCE)					
191 C 81-20/05	C 237 d	OMDE,EPS,DSS	WTC,CANVIRD	FY81 250,000 FY82 38,000	BIOAVAILABILITY, WASTEWATER TREATMENT, LAKE ERIE, LAKE ONTARIO,
(C=PHOSPHORUS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)					
192 C 79-27/06/07	E 7 i	EPS,NRC	WTC,CANVIRD	FY81 101,200 FY82 124,000	WASTEWATER TREATMENT, MUNICIPAL SOURCE, INDUSTRIAL SOURCE, ORGANIC CONTAMINANTS, ANAEROBIC PROCESSES, ANAEROBIC FILTER, FLUIDIZED BED.
(E=CONTAMINANTS, GEN. 7=MANAGEMENT i=SEVERAL SOURCES)					

193 C 09	E 7	EPS, DSS, OMOE	WTC, GO, STO, LTD	FY81 FY82	96,000 42,500	ANAEROBIC FILTER, METHANE, WASTEWATER TREATMENT, ORGANIC CONTAMINANTS, INDUSTRIAL SOURCE, MUNICIPAL SOURCE.
(E=CONTAMINANTS GEN 7=MANAGEMENT i=SEVERAL SOURCES)						
194 C 08	H 7	AG CAN, EPS	WTC	FY82	12,500	AGRICULTURE, WASTEWATER TREATMENT, ORGANIC CONTAMINANTS, ANAEROBIC FILTER,
(H=OTHER 7=MANAGEMENT c=INDUSTRIAL SOURCE)						
195 C 80-11/10	H 7	AG CAN, EMR, EPS	RPF, CANVIRD	FY81 FY82	190,000 30,000	MANURE, AGRICULTURE, WASTE MANAGEMENT, METHANE, ANAEROBIC DIGESTION, COMPOSTING,
(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)						
196 C 78-9/11	H 7	OMO, NRC, EPS	IEC	FY81 FY82	71,700 69,200	SEWAGE, ANAEROBIC DIGESTION, MIXING.
(H=OTHER 7=MANAGEMENT d=MUNICIPAL SOURCE)						
197 C 082/13	H 7	EPS	WTC	FY81 FY82	10,200 3,000	SEWAGE, COST-BENEFIT, WASTEWATER TREATMENT, ACTIVATED SLUDGE, PROCESS CONTROL, INDUSTRIAL SOURCE, MUNICIPAL SOURCE.
(H=OTHER 7=MANAGEMENT i=SEVERAL SOURCES)						
198 C 18	D 7	EPS, DSS	U, BC	FY82	100,000	PHOSPHORUS, NITROGEN, BIOLOGICAL CONTROL.
(D=NUTRIENTS 7=MANAGEMENT d=MUNICIPAL SOURCE)						

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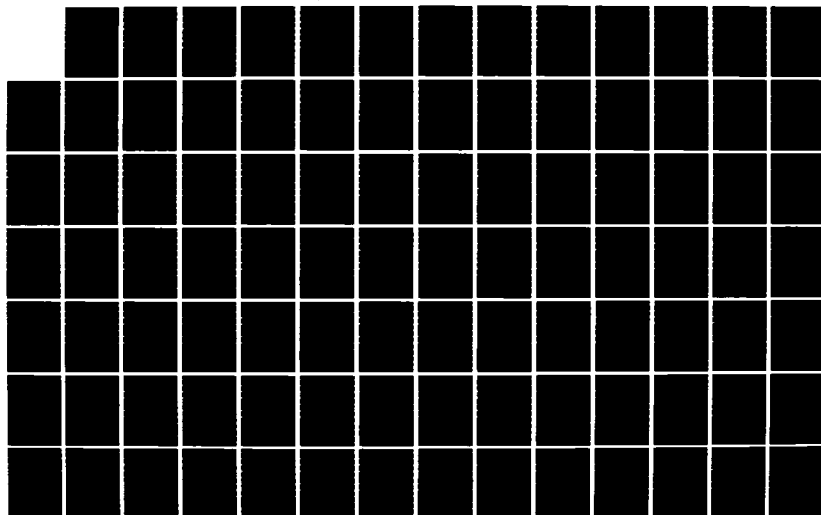
GREAT LAKES RESEARCH REVIEW 1982 APPENDICES(U)
PETROLEUM REFINERY POINT SOURCE TASK FORCE WINDSOR
(ONTARIO) NOV 82

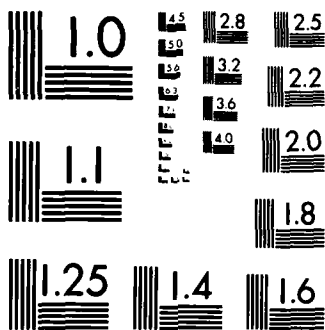
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

199 C 80-12/12 H 57 I EPS WTC FY81 54,000 SECONDARY CLARIFICATION, PROCESS DESIGN,
FY82 9,000 SEDIMENTATION, WASTEWATER TREATMENT,
INDUSTRIAL SOURCE, MUNICIPAL SOURCE,

(H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT I=SEVERAL SOURCES)

200 C 80-14/34 J 25 I EPS WTC FY81 19,000 TOXIC SUBSTANCES, LEACHATES,
FY82 33,000 CHEMICAL CHARACTERIZATION, METHODOLOGY,
TOXICS MOBILITY, SEWAGE SLUDGE,
LEACHING PROTOCOL,

(J=SEVERAL 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING I=SEVERAL SOURCES)

201 C 80-15/35 H 57 d EPS WTC FY81 10,000 WASTEWATER TREATMENT, COMPUTER,
FY82 3,000 ADVISORY, COST-BENEFIT, MODELS,

(H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

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202 C 036A/36 H 57 I EPS WTC FY81 17,000 WASTEWATER TREATMENT, METHODOLOGY,
FY82 69,000 COST-BENEFIT, SLUDGE CONDITIONING,
PROCESS CONTROL,

(H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT I=SEVERAL SOURCES)

203 C 038/38 H 02 C EPS WTC FY81 3,000 RADIOACTIVITY, SEDIMENTS, LEACHATES,
FY82 3,000 WASTE MANAGEMENT,

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT C=INDUSTRIAL SOURCE)

204 C 39 H 7 C EPS,ENR WTC,DEARBORN FY81 80,000 ADVISORY, FIELD SUPPORT, ANALYSIS,
FY82 106,000 DATA QUALITY, LEACHATES,
POWER GENERATION,
DESULPHURISED RESIDUES.

(H=OTHER 7=MANAGEMENT C=INDUSTRIAL SOURCE)

205 C 40	H 7 C	EPS, ENR	WTC	FY81 FY82	30,000 7,000	ADVISORY, FIELD SUPPORT, CHEMICAL CHARACTERIZATION, ANALYSIS, POWER GENERATION, BED COMBUSTION RESIDUES.
(H=OTHER 7=MANAGEMENT C=INDUSTRIAL SOURCE)						
206 C 81-2/42	B 7 C	EPS	WTC	FY81 FY82	20,000 14,000	ACCUMULATION, WASTEWATER TREATMENT, POWER GENERATION, ASH RECIRCULATION,
(B=TOXIC METALS 7=MANAGEMENT C=INDUSTRIAL SOURCE)						
207 C 81-3/43	J 237 d	EPS, DSS	WTC	FY81 FY82	65,000 2,000	MICROORGANISMS, BACTERIA, HEAVY METALS, ORGANIC CONTAMINANTS, SEWAGE, SORPTION, AGRICULTURE, SOIL,
(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)						
208 C 81-4/44	E 156 i	EPS	WTC	FY81 FY82	38,000 35,000	WASTEWATER TREATMENT, LEACHATES, TOXIC IMMOBILIZATION, SOLIDIFICATION, FIXATION,
(E=CONTAMINANTS, GEN. 1=CHARACTERISTICS 5=METHOD DEV. & MODELING 6=CRITERIA i=SEVERAL SOURCES)						
209 C 81-5/45	E 27 i	EPS, ENR, DSS	WTC, DEARBORN	FY81 FY82	85,000 40,000	WASTE MANAGEMENT, COST-BENEFIT, TOXICS CONTROL, SEWAGE SLUDGE, INCINERATION,
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 7=MANAGEMENT i=SEVERAL SOURCES)						
210 C 81-6/46	H 67 d	EPS	WTC	FY81 FY82	3,000 13,000	WASTE MANAGEMENT, AGRICULTURE, SOIL, SLUDGE TREATMENT, SLUDGE UTILIZATION,
(H=OTHER 6=CRITERIA 7=MANAGEMENT d=MUNICIPAL SOURCE)						

211 C	81-7/47	A 236	I	EPS, ACB, UMB	WTC	FY81 FY82	39,000 12,000	AGRICULTURE, SOIL, ACCUMULATION, PERSISTENCE, SEWAGE SLUDGE, ORGANIC CONTAMINANTS, INDUSTRIAL SOURCE, MUNICIPAL SOURCE,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 6=CRITERIA 1=SEVERAL SOURCES)								
212 C	81-8/48	E 27	I	EPS, DSS, OMDE	WTC, CANVIRO	FY81 FY82	76,000 190,000	TOXIC SUBSTANCES, MOBILITY, SEWAGE SLUDGE, SLUDGE CONDITIONING, SLUDGE PROCESSING,
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 7=MANAGEMENT 1=SEVERAL SOURCES)								
213 C	16	H 7	I	EPS	WTC	FY82	70,500	ACTIVATED SLUDGE, WASTEWATER TREATMENT, ENERGY, COST-BENEFIT, PROCESS CONTROL,
(H=OTHER 7=MANAGEMENT 1=SEVERAL SOURCES)								
214 C	069/69	E 57	C	EPS	WTC	FY81 FY82	1,000 7,000	RADIOACTIVITY, PHYSICAL/CHEMICAL TREATMENT, RADIUM-226 REMOVAL,
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING 7=MANAGEMENT C=INDUSTRIAL SOURCE)								
215 C	79-4/71	E 567	C	EPS, ENL	WTC	FY81 FY82	36,000 1,000	RADIOACTIVITY, SUSPENDED SOLIDS, WASTEWATER TREATMENT, PHYSICAL/CHEMICAL TREATMENT, RADIUM-226 REMOVAL,
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING 6=CRITERIA 7=MANAGEMENT C=INDUSTRIAL SOURCE)								
216 C	80-7/73	H 57	C	EPS	WTC	FY81 FY82	4,000 1,500	SUSPENDED SOLIDS, WASTEWATER TREATMENT, PHYSICAL/CHEMICAL TREATMENT, RADIUM-226 REMOVAL,
(H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT C=INDUSTRIAL SOURCE)								

217 C 01-30/74 J 57 d EPS, MUC WTC, MUC FY81 45,000 ADVISORY, FIELD SUPPORT,
FY82 35,000 WASTEWATER TREATMENT, BACTERIA,
SUSPENDED SOLIDS, PHOSPHORUS REMOVAL,

(J=SEVERAL 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

218 C 01-34/76 F 7 d EPS WTC FY81 2,000 ADVISORY, DISINFECTION, CHLORINATION,
FY82 5,000 WASTEWATER TREATMENT, DECHLORINATION,

(F=PATHOGENS 7=MANAGEMENT d=MUNICIPAL SOURCE)

219 C 78 I 357 c EPS WTC FY82 1,000 PROGRAM DEVELOPMENT, ADVISORY,
WASTEWATER TREATMENT, ANALYSIS,
METHODODOLOGY, COAL MINING,

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)

220 C 79 E 6 c EPS WTC FY82 1,000 ADVISORY, INFORMATION, REGULATIONS,
RADIOACTIVITY,

(E=CONTAMINANTS, GEN. 6=CRITERIA c=INDUSTRIAL SOURCE)

221 C 80 E 7 c EPS WTC FY82 1,000 RADIOACTIVITY, WASTEWATER TREATMENT,
PRECIPITATION, RADIUM-226 REMOVAL,

(E=CONTAMINANTS, GEN. 7=MANAGEMENT c=INDUSTRIAL SOURCE)

222 C 060/81 J 57 c EPS, ACB, DSS WTC, CANVIRO, KPA FY81 97,000 HEAVY METALS, CYANIDE, ARSENIC,
FY82 204,000 TOXIC SUBSTANCES, WASTEWATER TREATMENT,
GOLD MINING, ALKALINE-CHLORINATION,

(J=SEVERAL 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)

223 C	80-10/37	J 3	d	EPS	UTC	FY81 FY82	5,000 2,000	HEAVY METALS, PCB'S, SEWAGE, SOIL, AGRICULTURE, TOXICITY, VEGETATION.
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)								
224 C	17	M 7	i	EPS	UTC	FY82	24,000	ACTIVATED SLUDGE, PROCESS CONTROL, WASTEWATER TREATMENT, TESTING PROTOCOL,
(M=OTHER 7=MANAGEMENT i=SEVERAL SOURCES)								
225 C	81-9/49	A 27	c	EPS,DSS,ENR	UTC,DEARBORN	FY81 FY82	65,000 32,500	CHLORINATED HYDROCARBONS, PHENOLS, MOBILITY, WASTEWATER TREATMENT, TOXICS CONTROL, INCINERATION, COST-BENEFIT,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 7=MANAGEMENT c=INDUSTRIAL SOURCE)								
226 C	78-10/70	J 67	i	EPS	UTC	FY81 FY82	5,000 8,000	TOXIC SUBSTANCES, ATMOSPHERIC SOURCE, INDUSTRIAL SOURCE, ACID RAIN, WASTEWATER TREATMENT, ADVISORY, POWER GENERATION,
(J=SEVERAL 6=CRITERIA 7=MANAGEMENT i=SEVERAL SOURCES)								
227 C	79-5/72	A 57	c	EPS,DSS	UTC,ZENON	FY81 FY82	12,300 90,500	WASTEWATER TREATMENT, ACTIVATED CARBON,
(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)								
228 C	79-22	E 57	c	EPS,DSS	UTC	FY81	1,000	WASTEWATER TREATMENT, THIOSALTS REMOVAL, BIOLOGICAL TREATMENT,
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)								

229 C 034CE B 267 d EPS WTC FY81 7,000 WASTE MANAGEMENT, SOIL, SEWAGE, COPPER, TOXICITY, METHODOLOGY, CHEMICAL SLUDGES, LAND DISPOSAL, LYSIMETER STUDIES,

(B=TOXIC METALS 2=FATE AND TRANSPORT 6=CRITERIA 7=MANAGEMENT d=MUNICIPAL SOURCE)

230 C 78-7 E 57 c EPS WTC, MOLSON'S FY81 45,000 WASTEWATER TREATMENT, COST-BENEFIT, DEEP SHAFT PROCESS, PERFORMANCE EVALUATION,

(E=CONTAMINANTS, GEN 5=METHOD DEV. & MODELING 7=MANAGEMENT c=INDUSTRIAL SOURCE)

231 C 81-21/03 E 257 i EPS WTC FY81 6,000 TOXIC SUBSTANCES, ORGANIC CONTAMINANTS, BIOLOGICAL CONTROL, WASTEWATER TREATMENT, METHODOLOGY, FY82 13,500

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

232 C 81-23/15 I 57 i EPS, POLY WTC FY81 22,000 WASTEWATER TREATMENT, ECONOMICS, SEWAGE, INDUSTRIAL SOURCE, MUNICIPAL SOURCE, ACTIVATED SLUDGE, PROCESS CONTROL, FY82 33,700

(I=UNSPECIFIED 5=METHOD DEV. & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

233 C 81-32/75 J 57 i EPS WTC FY81 15,000 PHOSPHORUS, TOXIC SUBSTANCES, WASTEWATER TREATMENT, MUNICIPAL SOURCE, INDUSTRIAL SOURCE, FILTRATION, PROCESS CONTROL, FY82 36,000

(J=SEVERAL 5=METHOD DEV. & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

234 C 81-35 H 567 c EPS, DOF WTC FY81 11,000 SUSPENDED SOLIDS, WASTEWATER TREATMENT, ADVISORY, FIELD SUPPORT,

(H=OTHER 5=METHOD DEV. & MODELING 6=CRITERIA 7=MANAGEMENT c=INDUSTRIAL SOURCE)

235 C 01-36/77	I 7 C	EPS	WTC	FY81 FY82	2,000 23,000	WASTEWATER TREATMENT, ADVISORY,
(1=UNSPECIFIED 7=MANAGEMENT C=INDUSTRIAL SOURCE)						
236 C (0)-2	C 3 d	OMNR	OMNR	FY81 FY82 FY83	22,448 17,896 10,330	PHOSPHORUS CONTROL, ECOSYSTEM RESPONSES, FISH, LAKE ONTARIO, BAY OF QUINTE,
(C=PHOSPHORUS 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)						
237 C (0)-5	C 3 h	OMNR	OMNR	FY81 FY82 FY83	6,614 5,291 9,285	ECOLOGY, FISH, BIOTA, LAKE ONTARIO, BAY OF QUINTE,
(C=PHOSPHORUS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
238 C (S)-1	H 3 a	OMNR	OMNR	FY81 FY82 FY83	22,003 11,374 13,200	ACID RAIN, ECOSYSTEM RESPONSES, TOXICITY TESTING, FISH, BENTHOS, LAKE SUPERIOR BASIN, INLAND LAKES,
(H=OTHER 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)						
239 C (P)-1	J 3 a	OMNR	OMNR	FY81 FY82 FY83	26,767 23,814 23,273	ECOSYSTEM PRODUCTIVITY, STRESS RESPONSES, ACID RAIN, EXPLOITATION, BIOTA, FISH, LAKE SUPERIOR BASIN, BOREAL FOREST LAKES,
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)						
240 C (A)-2	H 3 a	OMNR	OMNR	FY81 FY82 FY83	32,500 32,529 28,600	ACID RAIN, FISH GROWTH, PHYSIOLOGY, LAKE ONTARIO DRAINAGE, INLAND LAKES,
(H=OTHER 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)						

241 C (A)-3 H 3 a OMNR OMNR FY81 19,500 FISH GROWTH, CALCIUM METABOLISM,
FY82 9,550 ACID STRESS, AGE DETERMINATION,

(H=OTHER 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)

242 C 077 B 3 b GLFRB GLFRB FY82 15,500 BIOTA, BENTHOS, BIOASSAY, SEDIMENTS,
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS b=DREDGING)

243 C 073 H 8 h GLFRB GLFRB, OMNR FY82 10,000 BIOTA, PLANKTON, ZOOPLANKTON, FISH,
TRENDS, PARTICULATES, TEMPERATURE,
GEORGIAN BAY, LAKE HURON.

(H=OTHER 8=OTHER h=UNSPECIFIED SOURCES)

244 C 082 I 35 h GLFRB GLFRB FY82 5,000 FISH, BAY OF QUINTE, METHODOLOGY,
SURVEILLANCE, HABITAT, LAKE ONTARIO,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

245 C 028/098 A 2 h GLFRB GLFRB FY82 11,000 PCB'S, BIOTA, BENTHOS, SEDIMENTS,
DYNAMICS, ALGAE, LAKE ONTARIO,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

246 C 001 A 3 h GLFRB GLFRB FY82 6,000 DIOXINS, PRODUCTIVITY, FISH, MARSH,
NIAGARA RIVER, BIOCHEMISTRY,
PHYSIOLOGY, LAKE ONTARIO,

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

247 C 007 A 35 h GLFRB FY81 53,000 PAW'Z, FISH, PHYSIOLOGY, BIOCHEMISTRY.
FY82 20,500 HARBOUR, LAKE ONTARIO,

(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

248 C 008 E 3 h GLFRB FY81 21,000 FISH, PRODUCTIVITY, PHYSIOLOGY,
FY82 23,000 LAKE ONTARIO, BIOSASSAY,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

249 C 042 I 5 b GLFRB FY82 26,000 METHODOLOGY, SEDIMENTS, BIOSASSAY,
GLFRB, NWRI AQUATIC SYSTEMS, HARBOUR, LAKE ONTARIO,
LAKE ERIE, CHEMICAL CHARACTERIZATION,
GEOCHEMISTRY,

(I=UNSPECIFIED 5=METHOD DEV. & MODELING b=DREDGING)

250 C 006 E 3 h GLFRB FY82 10,000 DATA COLLECTION, BIOTA, BENTHOS,
GLFRB ECOLOGY, WATER QUALITY, SEDIMENTS,
LAKE ERIE, DISTRIBUTION,

(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

251 C 030 E 5 a GLFRB FY82 15,000 METHODOLOGY, FISH, STREAMS, ACID RAIN,
GLFRB LAKE SUPERIOR,

(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)

252 C 065 H 7 h GLFRB, GLFC FY82 2,000 MODELS, ENVIRONMENTAL SIMULATION,
GLFRB, GLFC REHABILITATION, FISH, HABITAT,

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

253 C 071	I 3 h	GLFRB	GLFAB	FY81 FY82	1,500 4,000	PRODUCTIVITY, BIOTA, PLANKTON, PHYTOPLANKTON, BENTHOS, ECOLOGY, DYNAMICS, LAKE HURON.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
254 C 99300	E 0 a	ONT. H.	ONT. H.	FY83 FY84	40,000 40,000	SULFUR DIOXIDE, SURVEILLANCE,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)						
255 C 99315	J 2 c	ONT. H.	ONT. H.	FY82	30,000	THERMAL POLLUTION, CHLORINATION, PLUMES, ANALYSIS, LIMITED USE ZONE.
(J=SEVERAL 2=FATE AND TRANSPORT c=INDUSTRIAL SOURCE)						
256 C 99316	E 0 a	ONT. H.	ONT. H.	FY83 FY84	50,000 50,000	PRECIPITATION, AEROSOL, ACID RAIN, SULPHATES, ANALYSIS, SURVEILLANCE,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)						
257 C 99353	G 3 c	ONT. H.	ONT. H.	FY82 FY83 FY84	83,333 83,333 83,333	BIOTA, HYDROLOGY, FISH, ENTRAPMENT,
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)						
258 C 99355	G 7 c	ONT. H.	ONT. H.	FY82	15,000	INTAKE, SCREENS, FISH.
(G=THERMAL DISCHARGES 7=MANAGEMENT c=INDUSTRIAL SOURCE)						

259 C 99350	G 3 C	ONT.H.	ONT.H.	FY83	45,000	BIOTA, ALGAE, PRODUCTIVITY, DISTRIBUTION, HABITAT.
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS C=INDUSTRIAL SOURCE)						
260 C 99360	G 3 C	ONT.H.	ONT.H.	FY82 FY83 FY84	50,000 50,000 50,000	ENTRAPMENT, BIOTA, FISH.
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS C=INDUSTRIAL SOURCE)						
261 C 99365	E 2 f	ONT.H.	ONT.H.	FY83 FY84	30,000 30,000	LEACHATES, FLY ASH, MOBILITY, AQUATIC ENVIRONMENTS, LANDFILLS, LAND DISPOSAL.
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT f=NON-POINT SOURCE)						
262 C 99366	B 0 C	ONT.H.	ONT.H.	FY83 FY84	75,000 75,000	ASH, COAL PILES, RUNOFF, PH, GROUNDWATER, LEACHATES.
(B=TOXIC METALS 0=SOURCE AND LOADING C=INDUSTRIAL SOURCE)						
263 C 99367	B 0 C	ONT.H.	ONT.H.	FY83 FY84	45,000 45,000	LEACHATES, ASH, AIR, COAL.
(B=TOXIC METALS 0=SOURCE AND LOADING C=INDUSTRIAL SOURCE)						
264 C 99369	J 07 C	ONT.H.	ONT.H.	FY83 FY84	75,000 75,000	TOXIC ORGANICS, RADIOACTIVITY, PAH's, NITRIC OXIDE, ORGANIC CONTAMINANTS, CARBON.
(J=SEVERAL 0=SOURCE AND LOADING 7=MANAGEMENT C=INDUSTRIAL SOURCE)						

245 C 99371	E 0	ONT H	FY83	30,000	LEACHATES, ASH, LAGOON, SEWAGE, SURVEILLANCE.
(E=CONTAMINANTS, GEN 0=SC E AND LOADING C=INDUSTRIAL SOURCE)					
246 C 99372	E 3 a	ONT H.	FY83 FY84	30,000 30,000	ACID, BIOTA, LAKES, SOCIOECONOMICS,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)					
267 C 99373	E 3 c	ONT H.	FY83 FY84	60,000 60,000	SOCIOECONOMICS, COST-BENEFIT, POWER GENERATION, AIR, WATER,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)					
268 C 99374	E 5 a	ONT H.	FY83 FY84	70,000 15,000	MODELS, ACID RAIN, ATMOSPHERIC DEPOSITION, POWER GENERATION,
(E=CONTAMINANTS, GEN 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)					
269 C 99376	E 05 a	ONT H.	FY83 FY84	15,000 15,000	ACID RAIN, ATMOSPHERIC DEPOSITION, MODELS,
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)					
270 C 99377	J 0 c	ONT H.	FY83 FY84	45,000 45,000	LEACHATES, TOXIC ORGANICS, DIOXINS, WASTE MANAGEMENT, SEWAGE, SCRUBBER, SULFUR DIOXIDE,
(J=SEVERAL 0=SOURCE AND LOADING c=INDUSTRIAL SOURCE)					

066 A 41 H 25 h NOAA U WI MURI* FY74 32,285 LAKE ONTARIO, PHYSICAL LIMNOLOGY.
FY75 32,285 TEMPORAL VARIATION, DISTRIBUTION.
FY76 32,285 WAVES.

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

067 A 45 H 23 g NOAA U WI FY74 9,470 LAKE ONTARIO, TEMPERATURE, WAVES.
FY75 9,470 DISTRIBUTION,
FY76 9,470

(H=OTHER 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 9=OTHER SOURCES)

068 A 46 E 25 h NOAA SUNY, EV HAM INC FY76 19,895 DISPERSION, STATISTICAL MODELLING,
DISTRIBUTION, TEMPORAL VARIATION.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

069 A 61 I 7 h NOAA DSU, SUNY FY76 15,000 DATA COLLECTION, PROGRAM DEVELOPMENT.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

070 A 195 A 2 h NOAA MED. COL. WI. FY74 14,185 ACCUMULATION, FISH, PHYSIOLOGY, PCB'S.
FY75 14,185 LAKE MICHIGAN,
FY76 14,185

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

071 A 205 A 2 h NOAA MED. COL. WI. FY74 5,909 LAMPRICIDES, PCB'S, BIOTRANSFORMATION,
FY75 5,909 BIOTA, FISH,
FY76 5,909
FY77 5,909

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

* FORMERLY KNOWN AS CANADA CENTRE FOR INLAND WATERS (CCIW) BRANCH

060 A 443	H 37 9	NOAA	U.WI., WIDNR	FY74 FY75 FY76 FY77	21,191 21,191 21,191 21,191	BIOTA, FISH, TEMPERATURE, LIGHT, PRODUCTIVITY, FIELD SUPPORT,
(H=OTHER 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT 9=OTHER SOURCES)						
061 A 462	J 37 i	NOAA, U.WI.	U.WI.	FY75 FY76	8,641 8,641	SHORE, VEGETATION, BIOTA, MACROPHYTES, DISTRIBUTION, ECOLOGY, POLLUTION, EROSION, REHABILITATION, LAKE MICHIGAN,
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT i=SEVERAL SOURCES)						
062 A 474	I 67 i	NOAA, U.WI.	U.WI., U.ALB.	FY76	32,689	MITIGATION, REGULATIONS, POLLUTION, FOX RIVER.
(I=UNSPECIFIED 6=CRITERIA 7=MANAGEMENT i=SEVERAL SOURCES)						
063 A 475	I 7 h	NOAA, U.WI.	U.WI.	FY76	17,963	SHORE, INFORMATION, PLAN,
(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
064 A 480	H 9 e	NOAA, U.WI.	U.WI.	FY74 FY75 FY76	33,333 33,333 33,333	TRENDS, ECONOMICS,
(H=OTHER 9=UNSPECIFIED e=SHIPPING)						
065 A 481	I 37 i	NOAA	U.WI.	FY75 FY76	24,417 24,417	LAKES, SHORE, PLAN,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT i=SEVERAL SOURCES)						

054 A 299 H 5 0 NOAA.U WI. U.WI. FY75 30,807 BOTTOM SUBSTRATES, DISTRIBUTION.
FY76 30,807 LAKE MICHIGAN.

(H=OTHER 5=METHOD DEV. & MODELING 9=OTHER SOURCES)

055 A 324 H 05 f NOAA U.WI..WIDNR FY75 18,500 SHORE, EROSION, COMPUTER, LAKE MICHIGAN.
FY76 18,500 LAKE SUPERIOR.

(H=OTHER 0=SOURCE AND LOADING 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

056 A 327 H 02 f NOAA U.WI. FY75 27,763 SHORE, EROSION, LAKE MICHIGAN.
FY76 27,763 NEARSHORE, DYNAMICS, DISTRIBUTION.
SEDIMENTS.

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

057 A 434 H 3 h NOAA U.WI..WIDNR FY75 11,051 BIOTA, FISH, HABITAT, DISTRIBUTION,
FY76 11,051 TEMPERATURE, BOTTOM SUBSTRATES,
GREEN BAY, LAKE MICHIGAN.

(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

058 A 435 H 35 h NOAA U.WI. FY75 15,411 BIOTA, FISH, ECOLOGY, TEMPERATURE,
FY76 15,411 ENVIRONMENTAL SIMULATION.

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

059 A 443 H 35 g NOAA U.WI..WIDNR FY75 29,196 BIOTA, FISH, TEMPERATURE, LIGHT,
FY76 29,196 BOTTOM SUBSTRATES,

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING 9=OTHER SOURCES)

048 A 332 H 012 f NOAA U WI. FY75 17,220 SHORE, EROSION, TRENDS, LAKE MICHIGAN,
FY76 17,220

(H=OTHER 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

049 A 392 D 2 h NOAA U WI. FY74 23,779 DISTRIBUTION, PRODUCTIVITY, BIOTA,
FY75 23,779 PLANKTON, PHYTOPLANKTON, LIGHT,
FY76 23,779 LAKE MICHIGAN,

(D=NUTRIENTS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

050 A 402 I 5 h NOAA, U WI. U WI. FY76 21,324 BIOTA, PLANKTON, ZOOPLANKTON,
DATA COLLECTION, METHODOLOGY,
DISTRIBUTION, TEMPORAL VARIATION,
LAKE MICHIGAN,

(I=UNSPECIFIED 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

051 A 431 H 3 h NOAA, U WI. U WI., ERL-D FY75 15,000 SUSPENDED SOLIDS, BIOTA, FISH, BIOASSAY,
DISTRIBUTION, LAKE SUPERIOR,

(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

052 A 232 C 7 i NOAA U WI. FY74 20,245 LAKE MICHIGAN, WASTE MANAGEMENT,
FY75 20,245
FY76 20,245

(C=PHOSPHORUS 7=MANAGEMENT i=SEVERAL SOURCES)

053 A 240 J 7 c NOAA U WI., WIDNR FY76 18,902 SURVEILLANCE, DISINFECTION, NUTRIENTS,
NITROGEN, SUSPENDED SOLIDS,

(J=SEVERAL 7=MANAGEMENT c=INDUSTRIAL SOURCE)

042 A 196	A 4	h	NOAA	U.WI.	FY74 FY75 FY76	13,814 13,814 13,814	PCB'S, PHYSIOLOGY,
(A=TOXIC ORGANICS 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)							
043 A 198	A 012 C	h	NOAA, U.WI.	U.WI.	FY76	10,392	DIOXINS, STRUCTURE-ACTIVITY, TOXICITY, PERSISTENCE, DISTRIBUTION, AQUATIC ENVIRONMENTS,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT c=INDUSTRIAL SOURCE)							
044 A 199	A 4	h	NOAA, U.WI.	U.WI.	FY76	18,950	DIOXINS, TOXICITY,
(A=TOXIC ORGANICS 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)							
045 A 215	B 02	h	NOAA	U.WI.	FY75 FY76	11,829 11,829	DISTRIBUTION, RIVERS, FOX RIVER, NEARSHORE, LAKE MICHIGAN, HARBOUR, PARTICULATES, SEDIMENTS, BIOTA, TEMPORAL VARIATION,
(B=TOXIC METALS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
046 A 329	H 2	f	NOAA	SUCB,ACE	FY74 FY75 FY76 FY77	0 0 0 0	SHORE, MORPHOLOGY, LAKE ERIE, LAKE ONTARIO,
(H=OTHER 2=FATE AND TRANSPORT f=NON-POINT SOURCE)							
047 A 475	I 7	i	NOAA, COR.U.	SUNY	FY74 FY75 FY76 FY77	190,000 190,000 190,000 190,000	SHORE, ADVISORY, INFORMATION,
(I=UNSPECIFIED 7=MANAGEMENT i=SEVERAL SOURCES)							

036 A 170	G 7 C NOAA	U WI.	FY75 FY76	58,244 58,244	EDUCATION, ENVIRONMENTAL SIMULATION, NEARSHORE.
(G=THERMAL DISCHARGES 7=MANAGEMENT C=INDUSTRIAL SOURCE)					
037 A 185	J 2 h NOAA	U WI	FY74 FY75 FY76	14,077 14,077 14,077	METALS, ORGANIC CONTAMINANTS, PHOSPHORUS, DISTRIBUTION, ACCUMULATION, SURFACE FILMS, LAKE MICHIGAN.
(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)					
038 A 188	A 2 h NOAA	U WI.	FY75 FY76	30,132 30,132	DISTRIBUTION, WATER, BIOTA, SEDIMENTS, LAKES, CIRCULATION, LAKE MICHIGAN,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)					
039 A 190	A 023 h NOAA	U WI.	FY75 FY76	23,907 23,907	CHLORINATED HYDROCARBONS, PESTICIDES, ACCUMULATION, PERSISTENCE, PCB'S, BIOTA, PLANKTON, NEARSHORE, LAKE MICHIGAN.
(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
040 A 194	A 2 h NOAA, FWS	U WI.	FY74 FY75 FY76	4,545 4,545 4,546	TRENDS, BOTTOM SUBSTRATES, BIOTA, BENTHOS, FISH, WATERFOUL, PCB'S, GREEN BAY, ECOSYSTEM, LAKE MICHIGAN.
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)					
041 A 195	A 3 h NOAA, U WI.	U WI.	FY76	18,450	CHLORINATED HYDROCARBONS, PCB'S, MORPHOLOGY, PHYSIOLOGY, BIOTA, FISH, PRODUCTIVITY,
(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					

030 A 65 J 2 h NOAA,CLERL GLERL,NOAA FY75 0 LAKE MICHIGAN, NEARSHORE, DISTRIBUTION,
FY76 0 TEMPORAL VARIATION, OPEN LAKE.

(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

031 A 89 J 02 h NOAA,CLERL GLERL FY74 0 RIVERS, OSWEGO RIVER, LAKE ONTARIO,
FY75 0 HARBOUR, WATER QUALITY, DISTRIBUTION,
FY76 0 TEMPORAL VARIATION,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

032 A 109 H 2 h NOAA,CLERL GLERL FY76 0 OXYGEN, DYNAMICS, LAKE ONTARIO,
STATISTICAL ANALYSIS,

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

033 A 48 H 235 h NOAA,U.WI. U.WI. FY76 17.734 INSTRUMENTATION, NEARSHORE, HARBOUR,
WATER QUALITY,

(H=OTHER 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

034 A 48 H 25 h NOAA,U.WI. U.WI. FY75 100.469 HARBOUR, LAKES, DISPERSION, POLLUTION,

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

035 A 162 G 256 c NOAA,WIDNR U.WI.,WIEPC FY74 30.625 REMOTE SENSING, NEARSHORE, PLUMES,
FY75 30.625 LAKE MICHIGAN, CIRCULATION,
FY76 30.625

(G=THERMAL DISCHARGES 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 6=CRITERIA c=INDUSTRIAL SOURCE)

024 A 38 H 2 h NOAA GLERL.CCIW FY74 0 LAKE ONTARIO, PHYSICAL LIMNOLOGY,
FY75 0
FY76 0

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

025 A 40 H 2 h NOAA,USEPA GLERL FY76 0 CURRENTS, NEARSHORE, LAKE MICHIGAN,
FY77 0 CIRCULATION, TEMPORAL VARIATION,
DISTRIBUTION,

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

026 A 41 H 8 h NOAA GLERL FY76 0 LAKE HURON, PHYSICAL LIMNOLOGY,
FY77 0 TEMPORAL VARIATION,

(H=OTHER 8=OTHER h=UNSPECIFIED SOURCES)

027 A 53 H 2 h NOAA GLERL FY76 0 TEMPORAL VARIATION, SURVEILLANCE,
HYDROLOGY,

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

028 A 53 H 5 g NOAA,GLERL GLERL FY76 0 HYDROLOGY, HYDRAULICS, TEMPERATURE,
RIVERS, ST. CLAIR RIVER, DETROIT RIVER,

(H=OTHER 5=METHOD DEV. & MODELING g=OTHER SOURCES)

029 A 59 I 2 g NOAA GLERL,USEPA FY74 4,375,000 LAKE ONTARIO, DATA COLLECTION,
FY75 4,375,000 WATER QUALITY, PHYSICAL LIMNOLOGY,
FY76 4,375,000
FY77 4,375,000

(I=UNSPECIFIED 2=FATE AND TRANSPORT g=OTHER SOURCES)

018 A 325	M 07 F	ACE	MTU	FY75	18,720	SHORE, EROSION, PLAN, HARBOUR, TRENDS,
(H=OTHER 0=SOURCE AND LOADING 7=MANAGEMENT F=NON-POINT SOURCE)						
019 A 325	M 0 F	ACE	MTU	FY74 FY75 FY76	22,500 22,500 22,500	SHORE, EROSION, TRENDS, HARBOUR, WAVES,
(H=OTHER 0=SOURCE AND LOADING F=NON-POINT SOURCE)						
020 A 397	M 3 0	ACE	SUCB,USEPA	FY76	80,941	HARBOUR, BIOTA, PLANKTON, BENTHOS, FISH, DISTRIBUTION, TEMPORAL VARIATION, ECOLOGY,
(H=OTHER 3=ENVIRONMENTAL IMPACTS 0=DREDGING)						
021 A 37	F 2 0	NOAA	GLERL	FY76 FY77	0 0	PHYSICAL LIMNOLOGY, CIRCULATION, DYNAMICS, TEMPORAL VARIATION, WAVES.
(F=PATHOGENS 2=FATE AND TRANSPORT 0=ATMOSPHERIC SOURCE)						
022 A 37	F 2 0	NOAA, GLERL	U.S. OCEAN INST.	FY74 FY75 FY76 FY77	0 0 0 0	PHYSICAL LIMNOLOGY, NEARSHORE, CIRCULATION,
(F=PATHOGENS 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)						
023 A 38	M 25 0	NOAA	GLERL	FY75 FY76 FY77	0 0 0	ENVIRONMENTAL SIMULATION, CIRCULATION, DISTRIBUTION, TEMPORAL VARIATION, TEMPERATURE, NEARSHORE, LAKE ONTARIO, LAKE MICHIGAN,
(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. 0=MODELING H=UNSPECIFIED SOURCES)						

012 A 315 I 3 b ACE SUCB 180.941 HARBOUR, BIOTA, BENTHOS, PLANKTON, FISH,
LAKE ERIE.

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS b=DREDGING)

013 A 315 E 7 b ACE 0 POLLUTION, WASTE MANAGEMENT,
0 SURVEILLANCE,
FY76
FY77

(E=CONTAMINANTS GEN 7=MANAGEMENT b=DREDGING)

014 A 316 E 7 b ACE 0 SURVEILLANCE, POLLUTION,
0 WASTE MANAGEMENT,
FY76
FY77

(E=CONTAMINANTS GEN 7=MANAGEMENT b=DREDGING)

015 A 318 H 12 b ACE 181.057 SEDIMENTS, HARBOUR, LAKE ERIE,
HYDRAULICS,
FY76

(H=OTHER 1=CHARACTERISTICS 2=FATE AND TRANSPORT b=DREDGING)

016 A 319 H 7 b ACE 90.000 SEDIMENTS, WASTE MANAGEMENT,
ACRES AM LTD. FY76

(H=OTHER 7=MANAGEMENT b=DREDGING)

017 A 324 H 07 f ACE 20.000 SHORE, EROSION, PLAN, HARBOUR, TRENDS.
FY76

(H=OTHER 0=SOURCE AND LOADING 7=MANAGEMENT f=NON-POINT SOURCE)

006 A 198 A 26 b ACE U. TEX. FY76 0 PCB'S, SEDIMENTS, BIOTA, BENTHOS, ACCUMULATION, BIOSASSAY,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 6=CRITERIA b=DREDGING)

007 A 231 E 057 h ACE ACE, USEPA FY74 625,000 PROGRAM DEVELOPMENT, REHABILITATION, FY75 625,000 LAKE ERIE, WASTEWATER TREATMENT, FY76 625,000 FY77 625,000

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 3=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

008 A 297 H 1 g ACE ACE FY75 0 SEDIMENTS, BOTTOM SUBSTRATES, LAKES, FY76 0

(H=OTHER 1=CHARACTERISTICS g=OTHER SOURCES)

009 A 313 J 3 b ACE U. WI. FY74 98,864 TOXIC SUBSTANCES, SEDIMENTS, FY75 98,864 BIOAVAILABILITY, CURRENTS, TEMPERATURE, FY76 98,864 OPEN LAKE, HARBOUR, LAKE SUPERIOR,

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS b=DREDGING)

010 A 314 E 23 b ACE ACE, SUCB FY76 607,000 SEDIMENTS, HARBOUR, OPEN LAKE, AQUATIC SYSTEMS, HYDRAULICS,

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS b=DREDGING)

011 A 314 J 3 b ACE SUCB, ACE, USEPA FY76 245,562 NUTRIENTS, TOXIC METALS, PH, OIL, WATER QUALITY, OPEN LAKE, HARBOUR, SEDIMENTS, LAKE ERIE,

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS b=DREDGING)

TODAY'S DATE IS OCTOBER 19, 1982

APPENDIX VI. HISTORICAL RESEARCH ACTIVITIES IN THE GREAT LAKES

I. J. C. SERIAL NO.	PAGE NO. IN 1976 DIRECTORY	PROJECT CODE	FUNDING		PERFORMING ORGANIZATION	AMOUNT FUNDED	KEYWORDS
			ORGANIZATION	AMOUNT			
001 A 49		M 2	h	ACE	ACE	FY75 69,333 FY76 69,333 FY77 69,333	PHYSICAL LIMNOLOGY, CURRENTS, WAVES,
(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
002 A 52		M 3	g	ACE	ACE,NDAA	FY75 0	PHYSICAL LIMNOLOGY, HYDROLOGY,
(H=OTHER 3=METHOD DEV. & MODELING g=OTHER SOURCES)							
003 A 54		M 5	f	ACE	ACE,NDAA	FY76 41,666 FY77 41,666	EROSION, NEARSHORE, TEMPORAL VARIATION,
(H=OTHER 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)							
004 A 59		E 235	i	ACE	ACE	FY76 260,000 FY77 260,000	SURVEILLANCE, POLLUTION, REMOTE SENSING, DISPERSION, EROSION, SEDIMENTS, TEMPERATURE, DYNAMICS, ECOLOGY, EUTROPHICATION,
(E=COLTAMINANTS, GEN. 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)							
005 A 82		E 3	f	ACE	U. WI.	FY76 5,774,000	DATA COLLECTION, BIOTA, FISH, MACROPHYTES, LAKE SUPERIOR, RIVERS, ST. LOUIS RIVER, HARBOUR,
(E=CONTAMINANTS, GEN. 3=ENVIRONMENTAL IMPACTS f=NON-POINT SOURCE)							

Appendix VI
Historical Research Activities
in the Great Lakes

271 C	99370	E 7	C	ONT. H.	ONT. H.	FY83 FY84	85,000 85,000	SULFUR DIOXIDE, AIR, ECONOMICS, POWER GENERATION,
(E=CONTAMINANTS, GEN 7=MANAGEMENT C=INDUSTRIAL SOURCE)								
272 C	1	G 37	C	ONT. H.	ONT. H.	FY82 FY83 FY84	305,000 305,000 305,000	WATER QUALITY, BIOTA, FISH, ENTRAPMENT, INTAKE,
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT C=INDUSTRIAL SOURCE)								
273 C	2	G 2	C	ONT. H.	ONT. H.	FY81 FY82 FY83	42,000 130,000 54,000	PLUMES, LAKE HURON, DISTRIBUTION, TEMPERATURE,
(G=THERMAL DISCHARGES 2=FATE AND TRANSPORT C=INDUSTRIAL SOURCE)								
274 C	3	J 25	C	ONT. H.	ONT. H.	FY82 FY83	28,500 28,500	THERMAL POLLUTION, HYDROGEN SULPHIDE, PLUMES, LIMITED USE ZONE, MODELS,
(J=SEVERAL 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING C=INDUSTRIAL SOURCE)								

072 4 228 I 25 h NOAA UM,USEPA FY76 24.915 BIOTA PLANKTON, PHYTOPLANKTON, ECOLOGY, DISTRIBUTION, TEMPORAL VARIATION LAKE ONTARIO

(I=UNSPECIFIED 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

073 4 70 E 23 h NOAA,OSU OSU FY76 50,000 ECOLOGY, ESTUARY, ECOSYSTEM, LAKE ERIE, RIVERS, OLD WOMAN CREEK, LAKE ONTARIO

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

074 4 109 D 25 h NOAA,GLERL GLERL FY76 0 CARBON, DYNAMICS, LAKE ONTARIO, ECOSYSTEM,

(D=NUTRIENTS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

075 4 140 C 5 h NOAA GLERL FY75 0 ATMOSPHERIC SOURCE, NON-POINT SOURCE, URBAN RUNOFF, AGRICULTURE, MUNICIPAL SOURCE, INDUSTRIAL SOURCE, ENVIRONMENTAL SIMULATION,

(C=PHOSPHORUS 5=METHOD DEV. & MODELING h=SEVERAL SOURCES)

076 4 40 H 2 9 USEPA,IJC GLERL,HURI FY75 150,000 LAKE HURON, CURRENTS, CIRCULATION, RIVERS, DISTRIBUTION, WATER,

(H=HEAVY METALS 2=FATE AND TRANSPORT 9=OTHER SOURCES)

077 4 46 H 2 h USEPA UM FY76 10,000 SUSPENDED SOLIDS, BIOTA, PLANKTON, REMOTE SENSING, DISTRIBUTION, LAKE HURON, LAKE ERIE,

(UM=USEPA 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

079 A 67 E 025 h USEPA CR INST SC FY76 126,941 LAKE MICHIGAN, SAGINAW BAY,
WATER QUALITY, SURVEILLANCE, HYDROLOGICAL,
STATISTICAL MODELLING

CONTAMINANTS GEN 0=SOURCE AND LOADING 2=RATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES

079 A 67 E 25 h USEPA USEPA, GLERL, IJC FY74 0 CHLORIDES, LAKE HURON, SAGINAW BAY,
FY75 0 DYNAMICS, WATER QUALITY, DATA,
FY76 0

(CONTAMINANTS GEN 2=RATE AND TRANSPORT 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

080 A 81 J 0 h USEPA GLRC FY76 28,733 STREAMS

(I=SEVERAL 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

081 A 86 I 03 h USEPA, NASA, IJC OSU, NASA, CUR U FY75 50,000 RIVERS, RUNOFF, LAKE ERIE,
REMOTE SENSING

(I=UNSPECIFIED 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

082 A 116 I 7 h USEPA UM FY76 31,146 SURVEILLANCE, WATER QUALITY, LAKES

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

093 A 117 I 7 i USEPA, NASA NASA FY76 0 PROGRAM DEVELOPMENT, ADVISORY,
SURVEILLANCE, WATER, AIR,
REMOTE SENSING, NON-POINT SOURCE,
RATE AND TRANSPORT, DISPERSION, MODELS

(I=UNSPECIFIED 7=MANAGEMENT i=SEVERAL SOURCES)

034 - 143	5 5 9	USEPA	0 01	FY76 FY77	38,313 38,313	WATER ANALYSIS
C=CONTAMINANTS GEN S=METHOD DEV & MODELING 9=OTHER SOURCES						
035 - 143	0 3 h	USEPA	UM	FY75 FY76	15,000 15,000	EUTROPHICATION, TEMPORAL VARIATION, BENTHOS, ALGAE, LAKE HURON, LAKE SUPERIOR, LAKE MICHIGAN,
C=CONTAMINANTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES						
036 - 143	0 3 h	USEPA	UM	FY75 FY76	93,250 93,250	EUTROPHICATION, BIOTA, BENTHOS, PLANKTON, DISTRIBUTION, SAGINAW BAY, LAKE HURON,
C=D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES						
037 - 144	0 2 h	USEPA	UM	FY74 FY75 FY76	86,666 86,666 86,666	DISTRIBUTION, TEMPORAL VARIATION, PLANKTON, PHYTOPLANKTON, SAGINAW BAY, LAKE HURON,
C=D=NUTRIENTS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES						
038 - 144	0 35 h	USEPA	UM	FY74 FY75 FY76	29,333 29,333 29,333	BIOMASSAY, PLANKTON, PHYTOPLANKTON, LIGHT, TEMPERATURE, OPEN LAKE, LAKE HURON,
C=D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES						
039 - 146	0 37 h	USEPA	SUCB,ACE,OSU	FY76	110,000	LAKE ERIE, WATER, SEDIMENTS, BIOTA, BENTHOS, PLANKTON, PHYTOPLANKTON,
C=D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT h=UNSPECIFIED SOURCES						

030 A 159	0 03	F	USEPA	U	WI	FY75 FY76	16,000 16,000	EUTROPHICATION, OXYGEN
(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS F=NON-POINT SOURCE)								
031 A 150	0 37	G	USEPA	U	WI	FY75 FY76	15,054 15,054	NITROGEN, LAKES, AVAILABILITY
(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT 9=OTHER SOURCES)								
032 A 150	1 7	G	USEPA	U	MINN	FY76	45,000	ECOSYSTEM, LAKES, REHABILITATION
(I=UNSPECIFIED 7=MANAGEMENT 9=OTHER SOURCES)								
033 A 150	0 02	H	USEPA	PHIL	AC NAT, SC	FY74 FY75 FY76	36,101 36,101 36,101	STREAMS, AQUATIC ENVIRONMENTS
(D=NUTRIENTS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT N=UNSPECIFIED SOURCES)								
034 A 156	0 25	H	USEPA	U	MINN	FY76	17,700	WATER, TEMPERATURE, DYNAMICS, DISTRIBUTION, AIR, SOIL
(G=THERMAL DISCHARGES 2=FATE AND TRANSPORT 3=METHOD DEV & MODELING N=UNSPECIFIED SOURCES)								
035 A 159	0 3	C	USEPA	U	MINN	FY75 FY76 FY77	0 0 0	DISTRIBUTION, BIOTA, FISH, PLANTS
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS C=INDUSTRIAL SOURCE)								

104 A 184 G 3 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

105 A 185 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

106 A 186 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

107 A 187 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

108 A 188 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

109 A 189 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

110 A 190 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

111 A 191 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

112 A 192 E 2 C USEPA MSU OSU DET ED FY75 51 500 WATER CHEMISTRY, BIOTA, FISH, PLANKTON
FY76 51 500 DISTRIBUTION, LAKE EPIE

102 A 200 M 52 h USEPA U DAY FY75 48.863 PESTICIDES, DECOMPOSITION, TEMPERATURE,
FY76 48.863

(A=TOXIC ORGANICS S=METHOD DEV & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

103 A 201 A 0 h USEPA SYR U FY76 56.000 SURVEILLANCE, WATER,

(A=TOXIC ORGANICS O=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

104 A 211 B 13 h USEPA DSU FY76 50.247 SELENIUM, STRUCTURE-ACTIVITY, BIOTA,

(B=TOXIC METALS 1=CHARACTERISTIC 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

105 A 220 B 4 d USEPA U IL FY76 40.589 WATER,
FY77 40.589

(B=TOXIC METALS 4=HUMAN HEALTH EFFECTS d=MUNICIPAL SOURCE)

106 A 221 B 36 h USEPA U MINN FY75 49.329 TOXICITY TESTING, BIOTA, FISH, CYANIDE,
FY76 49.329

(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 6=CRITERIA h=UNSPECIFIED SOURCES)

107 A 221 J 3 h USEPA U MINN FY76 40.000 BIOASSAY, BIOTA, ALGAE, LEACHATES,
ECOLOG, PHYSIOLOGY, CHLOROPHYLL,
ENVIRONMENTAL SIMULATION.

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

108 A 234	I 07 F	USEPA	U MI	FY74 FY75 FY76 FY77	120,720 120,720 120,720 120,720	SEPTIC TANKS, WASTE MANAGEMENT,
(I=UNSPECIFIED Q=SOURCE AND LOADING Z=MANAGEMENT F=NON-POINT SOURCE)						
109 A 237	I 7	USEPA	U MI	FY75 FY76	37,500 37,500	BIOLOGICAL CONTROL, BIOTA,
(I=UNSPECIFIED Z=MANAGEMENT I=SEVERAL SOURCES)						
110 A 242	D 7 h	USEPA	UM	FY75 FY76 FY77	32,510 32,510 32,510	NITROGEN,
(D=NUTRIENTS Z=MANAGEMENT h=UNSPECIFIED SOURCES)						
111 A 243	D 7 i	USEPA	UM	FY76	44,654	NITROGEN, WATER, WASTE MANAGEMENT,
(D=NUTRIENTS Z=MANAGEMENT i=SEVERAL SOURCES)						
112 A 250	F 7 d	USEPA	U IL	FY76	65,085	DISINFECTION, CHLORINATION,
(F=PATHOGENS Z=MANAGEMENT d=MUNICIPAL SOURCE)						
113 A 404	B 35 h	USEPA	MIAMI U.	FY74 FY75 FY76	5,387 5,387 5,387	BIOASSAY, TOXICITY TESTING, COPPER, ZINC, BIOTA, PLANKTON ZOOPLANKTON,
(B=TOXIC METALS Z=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						

114 A 431	H 3	H	USEPA	U WI	ERL-D	FY74 FY75 FY76	23,000 23,000 23,000	SUSPENDED SOLIDS, BIOTA, FISH, DISTRIBUTION, TEMPERATURE, PHYSIOLOGY, LAKE SUPERIOR.
(H=OTHER 3=ENVIRONMENTAL IMPACTS N=UNSPECIFIED SOURCES)								
115 A 449	I 3	H	USEPA	UM		FY75 FY76	15,000 15,000	BIOTA, BENTHOS, ALGAE, ECOLOGY, HABITAT, BOTTOM SUBSTRATES, LAKE MICHIGAN, LAKE SUPERIOR.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS N=UNSPECIFIED SOURCES)								
116 A 457	B 3	C	USEPA	U WI		FY76	85,509	LEACHATES, BIOTA, BENTHOS, MACROPHYTES, WABOOR, LAKE SUPERIOR.
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS C=INDUSTRIAL SOURCE)								
117 A 326	H 025	F	USEPA	U MINN	NOAA	FY75 FY76	28,500 28,500	SUSPENDED SOLIDS, CURRENTS, RUNOFF, STREAMS, LAKES, SHORE, EROSION, RESUSPENSION, SATELLITES, LAKE SUPERIOR.
(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING F=NON-POINT SOURCE)								
118 A 333	J 0	F	USEPA	GLBC,ACE,USCS		FY76	14,000	SHORE, EROSION, WATER CHEMISTRY.
(J=SEVERAL 0=SOURCE AND LOADING F=NON-POINT SOURCE)								
119 A 340	H 2	F	USEPA	U WI		FY75 FY76 FY77	0 0 0	SOIL, EROSION, VEGETATION, NEHAQUI RIVER.
(H=OTHER 2=FATE AND TRANSPORT F=NON-POINT SOURCE)								

120 A 341 H 2 f USEPA U.WI. FY76 37,000 SOIL EROSION WATER VEGETATION
NEMADJI RIVER, RIVERS

(H=OTHER 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

121 A 341 H 2 f USEPA U.WI. FY76 23,000 EROSION, VEGETATION, ANALYSIS, RIVERS
NEMADJI RIVER,

(H=OTHER 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

122 A 342 H 37 f USEPA U.WI.,USEPA FY76 43,333 EROSION, NEMADJI RIVER, BIODA, FISH,
FY77 43,333 DISTRIBUTION, ECOLOGY,

(H=OTHER 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT f=NON-POINT SOURCE)

123 A 345 J 7 f USEPA U.WI.,USSCS,USGS FY74 239,779 PROGRAM DEVELOPMENT, SEDIMENTS, EROSION,
FY75 239,779 REGULATIONS, ECONOMICS, URBAN RUNOFF,
FY76 239,779 AGRICULTURE, CHEMICAL CHARACTERIZATION,
FY77 239,779

(J=SEVERAL 7=MANAGEMENT f=NON-POINT SOURCE)

124 A 352 J 012 f USEPA OSU FY74 95,603 LAND USE, SEDIMENTS, AGRICULTURE,
FY75 95,603 RIVERS, SOIL, EROSION, SORPTION,
FY76 95,603 PRECIPITATION, INTERACTIVE EFFECTS,
FY77 95,603

(J=SEVERAL 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

125 A 353 J 025 f USEPA U.WI.,MIDNR FY74 202,461 NON-POINT SOURCE, ATMOSPHERIC SOURCE,
FY75 202,461 URBAN RUNOFF, AIR, PRECIPITATION,
FY76 202,461 STREAMS, WATER QUALITY, WATER QUANTITY,
FY77 202,461 LAKE MICHIGAN,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=SEVERAL SOURCES)

126 A 353	E 025 F	USEPA	MODEL	FY74 300,000 FY75 300,000 FY76 300,000 FY77 300,000	LAND USE, RIVERS, WATER QUALITY.
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(E=CONTAMINANTS GEN Q=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING (NON-POINT SOURCE)

127 A 354	J 017 F	USEPA	MSU-IJC	FY74 250,430 FY75 250,430 FY76 250,430 FY77 250,430	POLLUTION AGRICULTURE HYDROLOGY CHEMICAL CHARACTERIZATION SURVEILLANCE.
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(J=SEVERAL Q=SOURCE AND LOADING 1=CHARACTERISTICS 7=MANAGEMENT (NON-POINT SOURCE)

128 A 358	J 0 F	USEPA	MSU	FY75 11,448 FY76 11,448	NITROGEN, PHOSPHORUS, RUNOFF.
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(J=SEVERAL Q=SOURCE AND LOADING (NON-POINT SOURCE)

129 A 365	A 02 H	USEPA	MSU	FY75 38,770 FY76 38,770	PESTICIDES, RUNOFF, RIVERS.
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(A=TOXIC ORGANICS Q=SOURCE AND LOADING 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)

130 A 381	F 04 H	USEPA	USEPA	FY75 0	WATER.
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(F=PATHOGENS Q=SOURCE AND LOADING 4=HUMAN HEALTH EFFECTS H=UNSPECIFIED SOURCES)

131 A 382	F 1 H	USEPA	U DET	FY76 28,000	BACTERIA.
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(F=PATHOGENS 1=CHARACTERISTICS H=UNSPECIFIED SOURCES)

132 A 382	F 5	h	USEPA	PUR U.	FY76	22,833	SURVEILLANCE METHODOLOGY.
(F=PATHOGENS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
133 A 383	F 5	h	USEPA	CHI. MED SCH	FY75 FY76	29,000 29,000	METHODOLOGY.
(F=PATHOGENS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
134 A 383	F 5	h	USEPA	SYR U.	FY76	19,000	METHODOLOGY, SORPTION.
(F=PATHOGENS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
135 A 383	F 4	d	USEPA	U. WI.	FY76	58,691	WATER.
(F=PATHOGENS 4=HUMAN HEALTH EFFECTS d=MUNICIPAL SOURCE)							
136 A 387	I 5	g	USEPA	UM	FY76	34,000	BIOTA, ALGAE, REMOTE SENSING. ANALYSIS. LAKE ONTARIO.
(I=UNSPECIFIED 5=METHOD DEV. & MODELING g=OTHER SOURCES)							
137 A 397	D 3	h	USEPA	U. WI.	FY75 FY76	37,464 37,464	BIOTA, ALGAE, AVAILABILITY, PH. LIGHT. TEMPERATURE, IRON.
(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							

138 A 393 D 3 h USEPA UM,LLRS FY76 65,000 BIOTA, PLANKTON, ECOLOGY,
FY77 65,000 EUTROPHICATION, SAGINAW BAY,
LAKE HURON.

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

139 A 400 I 03 h USEPA U NY FY74 23,333 BIOTA, PLANKTON, ZOOPLANKTON,
FY75 23,333 DISTRIBUTION, PRODUCTIVITY,
FY76 23,333 WATER QUALITY.

(I=UNSPECIFIED 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

140 A 402 I 35 h USEPA UM,CR INST SC FY76 0 BIOTA, PLANKTON, ZOOPLANKTON, ECOLOGY,
WATER QUALITY, STATISTICAL ANALYSIS,
SAGINAW BAY, LAKE HURON.

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

141 A 66 D 2 h USEPA LLRS,IJC FY75 10,000 LAKE HURON, WATER QUALITY,
FY76 10,000 STATISTICAL ANALYSIS, OPEN LAKE.

(D=NUTRIENTS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

142 A 139 D 57 h USEPA MAN,COL,NMRI FY75 63,500 EUTROPHICATION, PLAN. LAKE ONTARIO,
FY76 63,500 NEARSHORE, STATISTICAL ANALYSIS,
PLANKTON.

(D=NUTRIENTS 5=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

143 A 140 D 025 h USEPA,LLRS MAN,COL,NMRI FY75 56,862 EUTROPHICATION, LAKE HURON, SAGINAW BAY,
FY76 56,862 OPEN LAKE, LAKE ERIE, PLANKTON, OXYGEN.

(D=NUTRIENTS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

144	A	145	D 157	h	USEPA	OSU	FY74	150,000	EUTROPHICATION, LAKE ERIE, BIOTA,
							FY75	150,000	BENTHOS, PLANKTON, COMPUTER.
							FY76	150,000	
							FY77	150,000	
(C=NUTRIENTS 1=CHARACTERISTICS 5=METHOD DEV & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)									
145	A	165	G 5	c	USEPA	OSU, MSU, MIDNR	FY76	45,000	BIOTA, FISH, NEARSHORE, LAKE ERIE,
(G=THERMAL DISCHARGES 5=METHOD DEV & MODELING c=INDUSTRIAL SOURCE)									
146	A	183	J 356	g	USEPA	ERL-D	FY74	3,000,000	TOXICITY TESTING, BIOTA, FISH,
							FY75	3,000,000	WATERFOUL, BIOASSAY, DEGRADATION.
							FY76	3,000,000	ECOSYSTEM,
							FY77	3,000,000	
(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING 6=CRITERIA g=OTHER SOURCES)									
147	A	188	A 125	h	USEPA	ERL-D	FY74	0	DISTRIBUTION, PERSISTENCE,
							FY75	0	BIOACCUMULATION, BIOTA, FISH,
							FY76	0	
							FY77	0	
(A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)									
148	A	248	E 37	d	USEPA	ERL-D	FY74	240,000	DISINFECTION, CHLORINATION, SEWAGE,
							FY75	240,000	COST-BENEFIT, TOXICITY, ECOLOGY,
							FY76	240,000	DISTRIBUTION, BIOACCUMULATION,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)									
149	A	248	E 237	d	USEPA	ERL-D, U. MINN.	FY76	0	CHLORINATION, PH, DEGRADATION,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)									

150 A 156 J 35 C FUS, GLFL GLFL, GLFC FY76 127,000 THERMAL POLLUTION, TOXIC SUBSTANCES, BIOTA, FISH, PLANKTON, ZOOPLANKTON, ECOLOGY.

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING C=INDUSTRIAL SOURCE)

151 A 186 E 257 h FUS, GLFL GLFL, GLFC, IJC FY76 136,000 ANALYSIS, BIOTA, FISH DISTRIBUTION, TRENDS, DYNAMICS,

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

152 A 187 J 35 h FUS, GLFL GLFL FY76 57,000 BIOCHEMISTRY, TOXICITY, TOXIC SUBSTANCES, BIOTA, FISH,

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

153 A 204 A 27 h FUS NFRL FY76 11,000 PESTICIDES, LAMPRICIDES, FY77 11,000

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

154 A 205 A 234 g FUS NFRL, GLFC FY76 150,000 LAMPRICIDES, TOXICITY, BIOTA, FISH, WATERFOWL, DYNAMICS, DISTRIBUTION, BIOTRANSFORMATION, SOIL, WATER,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 4=HUMAN HEALTH EFFECTS 9=OTHER SOURCES)

155 A 444 A 7 g GLFC, FUS FUS FY76 0 LAMPRICIDES, BIOTA, FISH, REHABILITATION, HABITAT,

(A=TOXIC ORGANICS 7=MANAGEMENT 9=OTHER SOURCES)

041 C 125	A 5	H	DOE	NWRI	FY75	22,000	PESTICIDES, PCB'S, ANALYSIS, WATER,
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
042 C 125	A 5	H	DOE	NWRI	FY75	0	PESTICIDES, ANALYSIS, CHROMATOGRAPHY,
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
043 C 126	A 5	H	DOE	NWRI	FY75	0	PESTICIDES, ANALYSIS, CHROMATOGRAPHY,
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
044 C 126	A 5	H	DOE	NWRI	FY75	0	PESTICIDES, ANALYSIS, CHROMATOGRAPHY,
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
045 C 127	A 5	H	DOE	NWRI	FY75 FY76	0 0	NITROGEN, PHOSPHORUS, PESTICIDES, ANALYSIS, WATER,
(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)							
046 C 127	A 025	C	DOE	NWRI	FY75	72,600	DISTRIBUTION, AQUATIC ENVIRONMENTS, WATER, SEDIMENTS, PERSISTENCE, MIXING ZONE, OPEN LAKE, NEARSHORE, PESTICIDES, BIOACCUMULATION,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELING C=INDUSTRIAL SOURCE)							

035 C 120	E 5	g	DOE	NWRI	FY75 FY76	0 ANALYSIS, WATER QUALITY, 0 INSTRUMENTATION,
(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING g=OTHER SOURCES)						
036 C 121	E 5	g	DOE	NWRI	FY75 FY76	0 WATER QUALITY, ANALYSIS, 0 INSTRUMENTATION,
(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING g=OTHER SOURCES)						
037 C 121	B 5	g	DOE	NWRI	FY75 FY76	0 ANALYSIS, METALS, WATER, 0
(B=TOXIC METALS 5=METHOD DEV & MODELING g=OTHER SOURCES)						
038 C 122	E 5	h	DOE	NWRI	FY75 FY76	0 INSTRUMENTATION, ANALYSIS, WATER, 0 SEDIMENTS,
(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						
039 C 122	B 5	h	DOE	IND	FY76	17,000 ANALYSIS, METALS, SEDIMENTS, COMPLEXATION, PRECIPITATION, SORPTION, SILICA.
(B=TOXIC METALS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						
040 C 123	E 5	h	DOE	ORF	FY75	69,954 ASBESTOS FIBERS, ANALYSIS, WATER,
(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						

Q19 C 112 J 12 h DOE NWRI FY74 0 DISTRIBUTION, DISPERSION, NITROGEN,
FY75 0 SULFUR, WATER, SEDIMENTS.
FY76 0
FY77 0

(J=SEVERAL 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

Q20 C 112 B 2 h DOE NWRI FY75 5.000 GEOCHEMISTRY: PRECIPITATION,
PARTICULATES, METALS,
ORGANIC CONTAMINANTS, SORPTION,
LAKE ERIE, LAKE ONTARIO.

(B=TOXIC METALS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

Q31 C 115 J 7 h DOE NWRI FY74 0 ADVISORY, SURVEILLANCE, OPEN LAKE,
FY75 0
FY76 0
FY77 0

(J=SEVERAL 7=MANAGEMENT h=UNSPECIFIED SOURCES)

Q32 C 116 I 57 h DOE U WAT. LWD FY75 8.896 WATER QUALITY, SURVEILLANCE,
FY76 8.896 DISTRIBUTION, TEMPORAL VARIATION,

(I=UNSPECIFIED 5=METHOD DEV & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

Q33 C 118 D 5 h DOE NWRI FY75 0 DATA QUALITY, PHOSPHORUS, NITROGEN,
FY76 0 AMMONIA, ANALYSIS.

(D=NUTRIENTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

Q34 C 120 E 5 g DOE NWRI FY75 0 WATER QUALITY, ANALYSIS,
FY76 0 INSTRUMENTATION,

(E=CONTAMINANTS GEN 5=METHOD DEV & MODELING g=OTHER SOURCES)

* COMPILED FROM GREAT LAKES BIR INNOLOGY LABORATORY (GLBL)

023 C 92 H 2 h DOE NWRI FY75 0 DISPERSION, STREAMS, HYDRAULICS,
 (H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

024 C 92 H 2 h DOE NWRI FY74 FY75 0 DISPERSION, STREAMS, RIVERS, MORPHOLOGY,
 (H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES) 0 CURRENTS,

025 C 93 H 5 h DOE NWRI FY75 FY76 FY77 0 STREAMS, RIVERS, HYDROLOGY, HYDRAULICS,
 (H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES) 0 ENVIRONMENTAL SIMULATION, MODELS,
 0

026 C 104 A 02 h DOE U. WAT. FY75 7,986 METHANE, DISTRIBUTION, GROUNDWATER,
 (A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

027 C 110 D 2 h DOE MCGILL U. FY75 24,983 DYNAMICS, LAKES,
 (D=NUTRIENTS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

028 C 111 J 02 i DOE U. WAT., GLFRB * FY75 2,620 NITROGEN, PHOSPHORUS,
 ENVIRONMENTAL SIMULATION, EPIPLIMNION,
 HYPOLIMNION, SEDIMENTS,
 INTERACTIVE EFFECTS, DREDGING,
 PESTICIDES,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT i=SEVERAL SOURCES)

017 C 76 J 37 b DOE HURI 0 MARSH, LAKE ST. CLAIR, WATER QUALITY,
52,200 SEDIMENTS, WASTE MANAGEMENT,
0
0
FY74
FY75
FY76
FY77

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT b=DREDGING)

018 C 77 E 5 h DOE HURI 0 DYNAMICS, WATER QUALITY,
(E=CONTAMINANTS, GEN 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

019 C 77 H 56 h DOE HURI 0 DYNAMICS, WATER QUALITY,
(H=OTHER 5=METHOD DEV & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

020 C 84 E 02 h DOE IWD 100,000 LAKE HURON, RIVERS, ST. MARYS RIVER,
SURVEILLANCE, WATER QUALITY,
DISTRIBUTION,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

021 C 88 E 02 h DOE IWD 94,000 LAKE ONTARIO, RIVERS, NIAGARA RIVER,
DISTRIBUTION, TEMPORAL VARIATION,
WATER CHEMISTRY,

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

022 C 89 J 02 h DOE HURI 60,000 RIVERS, ST. LAWRENCE RIVER,
WATER QUALITY, DISTRIBUTION,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

* FORMERLY KNOWN AS CANADA CENTRE FOR INLAND WATERS BRANCH (CCIW)

011 C 68 E 0 h DOE IWD* FY75 0 LAKE ERIE, SURVEILLANCE, WATER QUALITY,
 FY76 0
 FY77 0

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

012 C 71 J 0 h DOE IWD FY75 0 LAKE ONTARIO, SURVEILLANCE,
 FY76 0

(J=SEVERAL 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

013 C 73 F 06 h DOE MWRI FY75 0 SURVEILLANCE, BACTERIA, TRENDS,
 LAKE ERIE, LAKE ONTARIO,

(F=PATHOGENS 0=SOURCE AND LOADING 6=CRITERIA h=UNSPECIFIED SOURCES)

014 C 73 J 235 i DOE MWRI FY75 45,500 BIOTA, BACTERIA, SURVEILLANCE,
 MIXING ZONE, NUTRIENTS,
 INDUSTRIAL SOURCE, MUNICIPAL SOURCE,

(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)

015 C 74 E 03 h DOE MWRI FY75 0 TRENDS, EUTROPHICATION, WATER QUALITY,
 SURVEILLANCE, LAKE ERIE, LAKE ONTARIO,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

016 C 75 E 0 h DOE IWD FY75 0 ORGANIC CONTAMINANTS, NTA, SURVEILLANCE,
 LAKE ONTARIO, HARBOUR,

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

005 C 50 H 2 h DOE, U W1 NURI FY75 0 DISPERSION, TEMPERATURE,
SUSPENDED MATERIALS, LAKES,

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

006 C 51 J 25 h DOE NURI FY75 0 TOXIC SUBSTANCES, TEMPERATURE,
NEARSHORE, DISPERSION,

(J=SEVERAL 2=FATE AND TRANSPORT 3=METHOD DEV. & MODELLING h=UNSPECIFIED SOURCES)

007 C 51 H 5 h DOE NURI FY74 FY75 0 INSTRUMENTATION, CURRENTS, TEMPERATURE,
OXYGEN, NEARSHORE, DYNAMICS,
WATER QUALITY, SURVEILLANCE,

(H=OTHER 3=METHOD DEV. & MODELLING h=UNSPECIFIED SOURCES)

008 C 60 J 2 h DOE NURI FY75 16,200 TRENDS, DISTRIBUTION,
TEMPORAL VARIATION, WATER QUALITY,
EUTROPHICATION, OXYGEN, CHLOROPHYLL,
PARTICULATES, PHOSPHORUS,

(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

009 C 62 J 23 h DOE NURI FY74 FY75 0 LAKE SUPERIOR, WATER QUALITY, OPEN LAKE,

(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

010 C 66 E 27 h DOE NURI FY75 107,800 PROGRAM DEVELOPMENT, SURVEILLANCE,
WATER QUALITY, OPEN LAKE, LAKE HURON,
GEORGIAN BAY,

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

* FORMERLY KNOWN AS CANADA CENTRE FOR INLAND WATERS BRANCH (CCIW)

102 A 31	H 2	F	ACE	ACE	FY74 FY75 FY76	0 0 0	WAVES. INFORMATION. TRENDS.
(H=OTHER 2=FATE AND TRANSPORT F=NON-POINT SOURCE)							
193 A 33	H 7	A	ACE	ACE	FY76 FY77	100,000 100,000	PROGRAM DEVELOPMENT, WAVES, METHODOLOGY, TEMPERATURE, AIR.
(H=OTHER 7=MANAGEMENT A=ATMOSPHERIC SOURCE)							
001 C 39	H 2	H	DOE	NWRI*	FY75	27,300	CURRENTS, NEARSHORE, LAKE ONTARIO,
(H=OTHER 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)							
002 C 45	H 2	H	DOE	NWRI	FY75 FY76	34,600 0	LAKE HURON, LAKE SUPERIOR, PHYSICAL LIMNOLOGY, CIRCULATION, TEMPERATURE, TEMPORAL VARIATION, GEORGIAN BAY,
(H=OTHER 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)							
003 C 49	H 25	H	DOE	NWRI	FY75	0	DISPERSION,
(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)							
004 C 50	G 27	H	DOE	NWRI	FY76	0	NEARSHORE, OFFSHORE, CURRENTS, TEMPERATURE, DISPERSION,
(G=THERMAL DISCHARGES 2=FATE AND TRANSPORT 7=MANAGEMENT H=UNSPECIFIED SOURCES)							

186 A 16 H 25 a NOAA GLERL FY76 0 METHODOLOGY, STATISTICAL MODELLING, EVAPORATION, HYDROLOGY, WATER QUANTITY, LAKE ERIE, LAKE SUPERIOR,

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)

187 A 18 H 5 a GLERL FY76 0 PRECIPITATION, METHODOLOGY, STATISTICAL ANALYSIS, HYDROLOGY,

(H=OTHER 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)

188 A 21 H 5 g NOAA GLERL FY76 0 ICE, MODELS, TEMPERATURE

(H=OTHER 5=METHOD DEV & MODELING g=OTHER SOURCES)

189 A 22 H 2 g GLERL FY76 0 ICE, DISTRIBUTION, INFORMATION, ADVISORY,

(H=OTHER 2=FATE AND TRANSPORT g=OTHER SOURCES)

190 A 23 H 7 g NOAA GLERL FY76 0 ICE, LAKES, CHEMICAL CHARACTERIZATION, PROGRAM DEVELOPMENT,

(H=OTHER 7=MANAGEMENT g=OTHER SOURCES)

191 A 25 G 3 h ACE FY76 50,000 TEMPERATURE, ICE,

(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

180 A 8 C 0 a USEPA U MI U MINN FY75 40,000 PRECIPITATION, LAKE MICHIGAN.
 FY76 40,000
 FY77 40,000

(C=PHOSPHORUS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

181 A 8 C 0 a USEPA UM.OMOE.MI DNR FY75 30,000 ATMOSPHERIC DEPOSITION, LAKE HURON.
 FY76 30,000
 FY77 30,000

(C=PHOSPHORUS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

182 A 9 A 02 a USEPA DEPAUL U. FY76 10,125 PCB'S, AIR, PRECIPITATION, PARTICULATES,
 LAKE MICHIGAN,

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

183 A 10 B 0 a USEPA USEPA.MI DNR FY75 0 PRECIPITATION, AIR,

(B=TOXIC METALS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

184 A 23 H 25 g GLERL GE FY75 26,000 ICE, NEARSHORE,
 FY76 26,000 ENVIRONMENTAL SIMULATION, MODELS.

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING g=OTHER SOURCES)

185 A 31 H 2 a GLERL GLERL FY74 0 WAVES, ANALYSIS, INTERACTIVE EFFECTS,
 FY75 0 AIR.
 FY76 0
 FY77 0

(H=OTHER 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

174 A 304	E 2	h	USEPA	UM	FY76	28,400	ORGANIC MATTER, ORGANIC CONTAMINANTS, DISTRIBUTION, SEDIMENTS, TEMPORAL VARIATION, LAKE HURON.
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
175 A 313	E 37	b	USEPA, COE	NW, U.	FY74 FY75 FY76	62,400 62,400 62,400	WASTE MANAGEMENT, WATER QUALITY, SUSPENDED SOLIDS,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT b=DREDGING)							
176 A 317	J 2	b	USEPA	UM	FY75 FY76	43,000 43,000	PHOSPHORUS, CARBON, METALS, SEDIMENTS, WATER, RIVERS, OPEN LAKE.
(J=SEVERAL 2=FATE AND TRANSPORT b=DREDGING)							
177 A 7	E 0	a	NOAA, U. WI.	U. WI.	FY76 FY77	7,573 7,573	AEROSOL, PARTICULATES, MODELS, ATMOSPHERIC DEPOSITION, ORGANIC CONTAMINANTS, LAKE MICHIGAN.
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)							
178 A 4	J 8	i	NOAA	SUNY	FY75 FY76	50,000 50,000	LAKE ONTARIO, LAND USE, WAVES, TEMPERATURE, CHEMICAL CHARACTERIZATION, BIOTA, PHYSICAL LIMNOLOGY.
(J=SEVERAL 8=OTHER i=SEVERAL SOURCES)							
179 A 7	H 025	a	USEPA	GSU, USGS	FY75 FY76 FY77	83,000 83,000 83,000	ATMOSPHERIC DEPOSITION AEROSOL MODELS, LAKE MICHIGAN,
(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING a=ATMOSPHERIC SOURCE)							

168 A 61 I 7 h GLBC GLBC, USEPA FY76 15,000 PROGRAM DEVELOPMENT PLAN,
FY77 15,000 WATER QUALITY DATA COLLECTION.

(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)

169 A 252 F 7 h USEPA U CINN FY74 23,000 DISINFECTION WASTEWATER TREATMENT,
FY75 23,000
FY76 23,000

(F=PATHOGENS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

170 A 254 I 4 h USEPA U CINN FY75 91,371 HAZARD ASSESSMENT, SEWAGE,
FY76 91,371

(I=UNSPECIFIED 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

171 A 255 I 57 d USEPA MO CO PWA FY75 300,000 URBAN RUNOFF, SEWAGE, DISINFECTION,
FY76 300,000 WASTEWATER TREATMENT, MODELS.

(I=UNSPECIFIED 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

172 A 303 E 2 h USEPA, DOE IL GS, NURI FY76 99,900 SEDIMENTS, GEOCHEMISTRY, DISTRIBUTION,
GREEN BAY, LAKE MICHIGAN,

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

173 A 304 J 2 h USEPA UM FY74 34,500 NUTRIENTS, METALS, RADIOACTIVITY,
FY75 34,500 ACCUMULATION, SEDIMENTS,
FY76 34,500 BOTTOM SUBSTRATES, SAGINAW BAY,
LAKE HURON.

(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

162 A 117 I 7 9 GLERL GLERL,LLRS,MURI FY74 0 DATA QUALITY, ANALYSIS,
FY75 0
FY76 0

(I=UNSPECIFIED 7=MANAGEMENT 9=OTHER SOURCES)

163 A 391 D 235 h GLERL GLERL FY75 25,000 BIOTA, PLANKTON, PHYTOPLANKTON, ECOLOGY,
FY76 25,000 TEMPORAL VARIATION, LIGHT, TEMPERATURE,
FY77 25,000

(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

164 A 400 D 5 h GLERL GLERL FY75 0 ECOSYSTEM, LAKE ONTARIO, BIOTA,
FY76 0 PLANKTON, CARBON, NITROGEN PHOSPHORUS,

(D=NUTRIENTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

165 A 403 I 23 h GLERL GLERL FY75 20,000 BIOTA, PLANKTON, ZOOPLANKTON, ECOLOGY,
FY76 20,000 TEMPORAL VARIATION, ALGAE,
FY77 20,000 LAKE MICHIGAN,

(I=UNSPECIFIED 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

166 A 452 I 5 h GLERL GLERL FY74 0 ECOLOGY, BIOTA, BENTHOS, LAKE ONTARIO
FY75 0 ECOSYSTEM,
FY76 0
FY77 0

(I=UNSPECIFIED 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

167 A 452 H 3 h GLERL GLERL FY76 0 TEMPERATURE, BIOTA, PLANKTON,
FY77 0 ZOOPLANKTON,

(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

TEMPORAL VARIATION, NEARSHORE,
ECOSYSTEM, BIOTA, ECOLOGY, PLANKTON,
ZOOPLANKTON, ALGAE, FISH, PRODUCTIVITY,
ADVISORY.

132,000

FY76

GLFL

GLFL

D 27

h

156 A 391

(C=NUTRIENTS 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

BIOTA, BENTHOS, ICE,

65,000

FY76

GLFL,ACE

GLFL

G 3

157 A 451

(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

BIOTA, FISH, PRODUCTIVITY, ECOLOGY,
NEARSHORE, HABITAT, LAKE ERIE.

186,000

FY76

GLFL,GLFC

GLFL

E 37

158 A 423

(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT i=SEVERAL SOURCES)

BIOTA, FISH, SURVEILLANCE, NEARSHORE,
HABITAT, REHABILITATION, LAKE ONTARIO.

80,000

FY76

GLFL,GLFC

GLFL

I 37

159 A 425

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT i=SEVERAL SOURCES)

BIOTA, FISH, PHYSIOLOGY, METHODOLOGY,
PRODUCTIVITY, TEMPERATURE, OXYGEN.

152,000

FY76

GLFL,GLFC,WIDNR

GLFL

H 35

160 A 432

(H=OTHER 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

BIOTA, BENTHOS, NEARSHORE, DISTRIBUTION,
PRODUCTIVITY, ST. MARYS RIVER,
DREDGING, SHIPPING, MUNICIPAL SOURCE,
INDUSTRIAL SOURCE.

52,700

FY76

GLFL,ACE

GLFL

I 3

161 A 450

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

047 C 128 A 5 h DOE NWRI FY75 0 ANALYSIS, CHROMATOGRAPHY, METHODOLOGY, ORGANIC CONTAMINANTS.

(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

048 C 128 A 5 h DOE NWRI FY75 7,500 ANALYSIS, WATER, LAMPRICIDES,

(A=TOXIC ORGANICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

049 C 129 A 15 h DOE NWRI FY75 0 ANALYSIS, PESTICIDES, BIODEGRADATION,
FY76 0 TOXICITY,

(A=TOXIC ORGANICS I=CHARACTERISTICS S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

050 C 129 A 5 c DOE NWRI FY75 0 ANALYSIS, WATER,

(A=TOXIC ORGANICS S=METHOD DEV & MODELING c=INDUSTRIAL SOURCE)

051 C 130 H 5 g DOE NWRI FY75 0 ANALYSIS, ORGANIC CONTAMINANTS, WATER,

(H=OTHER S=METHOD DEV & MODELING g=OTHER SOURCES)

052 C 130 H 5 h DOE ORF FY75 139,988 ORGANIC CONTAMINANTS, ANALYSIS, WATER,

(H=OTHER S=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

053 C 131 I 25 h DOE NWRI FY76 0 WATER QUALITY, SURVEILLANCE, REMOTE SENSING, DISTRIBUTION, TEMPORAL VARIATION,

(I=UNSPECIFIED 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

054 C 131 I 5 h DOE NWRI, NORA FY75 0 WATER QUALITY, INSTRUMENTATION, SATELLITES,

(I=UNSPECIFIED 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

055 C 132 I 7 i DOE NWRI FY74 0 ADVISORY, REMOTE SENSING, FIELD SUPPORT, FY75 0 FY76 0 FY77 0

(I=UNSPECIFIED 7=MANAGEMENT i=SEVERAL SOURCES)

056 C 132 H 5 h DOE NWRI FY75 0 REMOTE SENSING, PHYSICAL LIMNOLOGY, INSTRUMENTATION, SUSPENDED SOLIDS, PRODUCTIVITY,

(H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

057 C 133 H 5 a DOE MCN. AS. YORK U. FY75 13,324 INSTRUMENTATION, EQUIPMENT, REMOTE SENSING,

(H=OTHER 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)

058 C 133 H 5 h DOE CHATHAM ASSOC. FY75 8,400 DATA COLLECTION, EQUIPMENT,

(H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

059 C 134 J S h DOE NWRI FY74 0 HEAVY METALS, OXYGEN, LIGHT, PH,
FY75 0 TEMPERATURE, INSTRUMENTATION,
SURVEILLANCE,

(J=SEVERAL S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

060 C 135 I S g DOE NWRI FY74 0 EQUIPMENT,
FY75 0
FY76 0

(I=UNSPECIFIED S=METHOD DEV. & MODELING g=OTHER SOURCES)

061 C 135 I S h DOE NWRI FY75 0 EQUIPMENT, INSTRUMENTATION,

(I=UNSPECIFIED S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

062 C 136 I S h DOE NWRI FY74 0 INSTRUMENTATION, SURVEILLANCE,
FY75 0
FY76 0
FY77 0

(I=UNSPECIFIED S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

063 C 139 C 25 h DOE NWRI FY76 0 EUTROPHICATION, PHOSPHORUS, NITROGEN,
PRODUCTIVITY, BIOTA, ALGAE,
AVAILABILITY, SEDIMENTS, ZOOPLANKTON,

(C=PHOSPHORUS 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

064 C 141 D 235 h DOE NWRI FY75 125,700 EUTROPHICATION, AQUATIC SYSTEMS,
DYNAMICS, PRODUCTIVITY, BIOTA,
PLANKTON, BACTERIA, SEDIMENTS,
PARTICULATES, OXYGEN, HYPOLIMNION,

(D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS S=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

065 C 146 D 23 h DOE NWRI
 FY74 0 LAKE ERIE
 FY75 30,600
 FY76 0
 FY77 0

D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES

066 C 147 D 23 h DOE NWRI
 FY74 0 BAY OF QUINTE, LAKE ONTARIO, SEDIMENTS,
 FY75 34,800 RESUSPENSION, DYNAMICS, ECOSYSTEM,
 PRODUCTIVITY,

D=NUTRIENTS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES

067 C 149 C 5 g DOE NWRI
 FY75 0 BIOSASSAY, BIOTA, ALGAE, BACTERIA,
 FY76 0

C=PHOSPHORUS 3=METHOD DEV & MODELING g=OTHER SOURCES

068 C 153 E 235 c DOE NWRI
 FY74 0 RADIOACTIVITY, ATMOSPHERIC DEPOSITION,
 FY75 62,000 DISPERSION, LAKE ONTARIO,
 FY76 0
 FY77 0

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING c=INDUSTRIAL SOURCE)

069 C 160 J 3 c DOE M.T. GEILING FY75 10,500 NUTRIENTS, THERMAL POLLUTION, ECOSYSTEM,
 BIOTA, PLANKTON, ZOOPLANKTON.

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)

070 C 161 J 2 h DOE NWRI FY76 0 DYNAMICS, NEARSHORE, PHYSICAL LIMNOLOGY,
 DISPERSION, THERMAL POLLUTION,
 SUSPENDED MATERIALS, LAKES, RIVERS,
 HYDRAULICS, AIR, WATER.

(J=SEVERAL 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

071 C 168 G 37 C DOE MAC.LTD. FY74 16,420 LAKES,
 (G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT C=INDUSTRIAL SOURCE)

072 C 173 A 12 h DOE NWRI.OMOE FY75 113,800 OIL, AQUATIC ENVIRONMENTS, PERSISTENCE,
 EVAPORATION,
 (A=TOXIC ORGANICS 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

073 C 173 A 25 h DOE U.TOR.,DOE FY75 9,800 OIL, BIODEGRADATION, BIOTA, BACTERIA,
 ALGAE,
 (A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

074 C 174 A 35 h DOE NWRI FY75 0 OIL, ECOLOGY, MICROORGANISMS, BIOTA,
 (A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

075 C 174 A 2 h DOE NWRI FY74 0 OIL, TEMPORAL VARIATION, TRENDS,
 ECOLOGY, BIOTA, BACTERIA, PLANKTON,
 WATER CHEMISTRY, NITROGEN, SILICA,
 PHOSPHORUS,
 (A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

076 C 176 A 67 h DOE NWRI FY74 0 OIL, EQUIPMENT, RIVERS,
 FY75 0
 (A=TOXIC ORGANICS 6=CRITERIA 7=MANAGEMENT h=UNSPECIFIED SOURCES)

077 C 176 A 5 h DOE NWRI FY75 0 OIL, DISPERSION,

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

078 C 177 A 2 h DOE NWRI FY76 0 OIL, WATER, RIVERS,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

079 C 184 J 026 h DOE NWRI FY76 0 ADVISORY, DYNAMICS, BIODEGRADATION,
AQUATIC ENVIRONMENTS,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 6=CRITERIA h=UNSPECIFIED SOURCES)

080 C 184 E 3 h DOE U.TOR. FY75 0 TOXIC SUBSTANCES, ADVISORY,

(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

081 C 189 A 2 h DOE NWRI FY75 0 TOXIC SUBSTANCES, PERSISTENCE,
BIOACCUMULATION,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

082 C 192 A 23 h DOE CWS, NWRI FY75 70,000 WATERFOWL, ACCUMULATION, LAKE SUPERIOR,
LAKE HURON, LAKE ERIE, LAKE ONTARIO,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

083 C 193	A 3	h	DOE	CWS, MWRI	FY75 FY76	0 15,700	ACCUMULATION, WATERFOWL, TOXICITY, PCB'S.
(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
084 C 197	A 37	d	DOE	MWRI	FY74 FY75	0 0	PCB'S, DEGRADATION, ULTRAVIOLET, SEWAGE,
(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)							
085 C 202	A 3	h	DOE	MWRI	FY75 FY76	0 0	PESTICIDES, ANALYSIS,
(A=TOXIC ORGANICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
086 C 203	A 2	g	DOE	MWRI	FY75	3,000	SURFACTANTS, BIODEGRADATION, LAKES,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT g=OTHER SOURCES)							
087 C 204	A 25	i	DOE	MWRI	FY75	0	SURFACTANTS, ANALYSIS, WATER, SEWAGE, BIODEGRADATION, DISTRIBUTION, ACCUMULATION,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)							
088 C 209	B 35	h	DOE	U. GUE.	FY75	5,354	CADMIUM, LEAD, LIGHT, PLANKTON, ZOOPLANKTON,
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							

089 C 209 B 3 h DOE U GUE FY75 5,000 LEAD, TOXICITY TESTING, PHYSIOLOGY, BIOTA, FISH,

(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

090 C 210 J 35 h DOE NWRI FY75 0 TOXIC METALS, TOXIC ORGANICS, FY76 0 BIOCHEMISTRY, BIOASSAY, PHYSIOLOGY,

(J=SEVERAL 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

091 C 211 B 13 h DOE, CCIV U. WAT. FY74 12,500 COMPLEXATION, MERCURY, CADMIUM, FY75 12,500

(B=TOXIC METALS 1=CHARACTERISTICS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

092 C 212 B 23 h DOE U. TOR., NWRI FY74 9,000 COPPER, NICKEL, TOXICITY, BIOTA, ALGAE, CARBON, COMPLEXATION, SEWAGE,

(B=TOXIC METALS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

093 C 213 B 12 h DOE NWRI, GLFRB FY76 0 COMPLEXATION, LAKES, ORGANIC CONTAMINANTS, TOXICITY, PRODUCTIVITY,

(B=TOXIC METALS 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

094 C 216 B 2 b DOE NWRI FY75 0 MERCURY, AQUATIC ENVIRONMENTS, SEDIMENTS,

(B=TOXIC METALS 2=FATE AND TRANSPORT b=DREDGING)

095 C 218 E 02 h DOE NWRI FY74 0 ASBESTOS FIBERS, DISTRIBUTION, BIOTA,
FY75 15,000 FISH, LAKE HURON,
(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=UNSPECIFIED SOURCES)

096 C 219 E 07 c DOE NWRI-DMOE FY74 0 ASBESTOS FIBERS, WATER,
FY75 0 WASTE MANAGEMENT.

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 7=MANAGEMENT c=INDUSTRIAL SOURCE)

097 C 222 E 023 i DOE NWRI FY75 25,100 RADIOACTIVITY, ATMOSPHERIC SOURCE,
FY76 0 INDUSTRIAL SOURCE,
ATMOSPHERIC DEPOSITION, DISTRIBUTION,
SEDIMENTS, LAKE HURON, RIVERS,

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

098 C 222 E 02 c DOE NWRI FY74 0 RADIOACTIVITY, DISTRIBUTION, WATER,
FY75 39,700 SEDIMENTS, BIOTA, PLANKTON, FISH,
LAKE HURON, LAKE SUPERIOR,

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING 2=FATE AND TRANSPORT c=INDUSTRIAL SOURCE)

099 C 226 J 037 i IWD FY74 0 INFORMATION, ECOLOGY,
FY75 0
FY76 0
FY77 0

(J=SEVERAL 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT i=SEVERAL SOURCES)

100 C 226 E 57 i DOE IWD FY74 0 COST-BENEFIT,
FY75 0
FY76 0
FY77 0

(E=CONTAMINANTS, GEN 5=METHOD DEV. & MODELING 7=MANAGEMENT i=SEVERAL SOURCES)

101 C 232	E 7	DOE	INF LTD.	FY75	0	ECONOMICS,
(E=CONTAMINANTS, GEN 7=MANAGEMENT I=SEVERAL SOURCES)						
102 C 239	E 7	DOE	K S. WAPPLER	FY75	10,200	WASTEWATER TREATMENT, INDUSTRIAL SOURCE, MUNICIPAL SOURCE,
(E=CONTAMINANTS, GEN 7=MANAGEMENT I=SEVERAL SOURCES)						
103 C 239	E 7	DOE	J. W. PIKE	FY75	9,000	WASTEWATER TREATMENT, INDUSTRIAL SOURCE, MUNICIPAL SOURCE,
(E=CONTAMINANTS, GEN 7=MANAGEMENT I=SEVERAL SOURCES)						
104 C 246	E 1	C DOE	ORF	FY75	9,965	WATER,
(E=CONTAMINANTS, GEN 1=CHARACTERISTICS C=INDUSTRIAL SOURCE)						
105 C 246	E 1	0 DOE	J. DAGG	FY75	5,100	ANALYSIS, DATA COLLECTION,
(E=CONTAMINANTS, GEN 1=CHARACTERISTICS e=SHIPPING)						
106 C 246	E 7	0 DOE	S. JEWELL	FY75	2,900	DISINFECTION,
(E=CONTAMINANTS, GEN 7=MANAGEMENT e=SHIPPING)						

107 C 246 E 7 e DOE A LUCOWSKI FY75 7,500 DISINFECTION,

(E=CONTAMINANTS, GEN 7=MANAGEMENT e=SHIPPING)

108 C 250 G 27 d DOE U WAT ,NWRI FY74 10,311 ORGANIC CONTAMINANTS, CHLORINATION,
FY75 10,311

(G=THERMAL DISCHARGES 2=FATE AND TRANSPORT 7=MANAGEMENT d=MUNICIPAL SOURCE)

109 C 252 I 27 d DOE NWRI FY75 10,000 CHLORINATION, LIGHT,
(I=UNSPECIFIED 2=FATE AND TRANSPORT 7=MANAGEMENT d=MUNICIPAL SOURCE)

110 C 253 E 27 i DOE NWRI FY75 0 ORGANIC CONTAMINANTS, PERSISTENCE,
DECOMPOSITION, LIGHT, ULTRAVIOLET,

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 7=MANAGEMENT i=SEVERAL SOURCES)

111 C 253 E 27 h DOE NWRI FY75 0 ORGANIC CONTAMINANTS, LIGHT,
ULTRAVIOLET, METALS,

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

112 C 257 H 5 d DOE NWRI FY74 0 URBAN RUNOFF, ENVIRONMENTAL SIMULATION,
FY75 0
FY76 0

(H=OTHER 5=METHOD DEV & MODELING d=MUNICIPAL SOURCE)

113 C 260 H 5 h DOE F PENICKA FY75 9,700 RUNOFF, TEMPORAL VARIATION.
(H=OTHER C=METHOD DEV & MODELING R=UNSPECIFIED SOURCES)

114 C 265 H 67 d DOE MWRI FY74 0 SEWAGE, URBAN RUNOFF
FY75 17,080
FY76 0

(H=OTHER C=CRITERIA 7=MANAGEMENT d=MUNICIPAL SOURCE)

115 C 266 E 1 c DOE DRF FY75 3,629 ANALYSIS,
(E=CONTAMINANTS, GEN 1=CHARACTERISTICS C=INDUSTRIAL SOURCE)

116 C 267 E 1 c DOE UNIROVAL LTD. FY75 4,846 PESTICIDES,
(E=CONTAMINANTS, GEN 1=CHARACTERISTICS C=INDUSTRIAL SOURCE)

117 C 272 E 1 h DOE MWRI, MRC FY74 0 BIODEGRADATION, ORGANIC CONTAMINANTS,
FY75 0 FIBRILS, MICROBIOLOGY,
FY76 0 STRUCTURE-ACTIVITY,
FY77 0

(E=CONTAMINANTS, GEN 1=CHARACTERISTICS R=UNSPECIFIED SOURCES)

118 C 276 E 2 c DOE U. WAT., OMOE FY74 26,000 SORPTION, SOIL.
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT C=INDUSTRIAL SOURCE)

119 C 286	B 17 h	DOE	U. TOR.	FY75	7,488	WASTE MANAGEMENT, AGRICULTURE.
(E=TOXIC METALS 1=CHARACTERISTICS 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
120 C 291	H 5 h	DOE	NWRI	FY75	12,328	SEWAGE, DATA COLLECTION, METHODOLOGY.
(H=OTHER 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						
121 C 292	I 7 h	DOE	B. PRESTED	FY75	16,675	IRON, WASTE MANAGEMENT, METHODOLOGY.
(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
122 C 293	H 17 h	DOE	NWRI	FY75 FY76	0 0	SEWAGE.
(H=OTHER 1=CHARACTERISTICS 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
123 C 293	H 7 h	DOE	COR. PUB. SER. LTD	FY75	34,500	WASTE MANAGEMENT, INFORMATION.
(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
124 C 297	E 25 h	DOE	NWRI	FY74 FY75 FY76 FY77	0 0 0 0	SEDIMENTS, LAKES, DISTRIBUTION, DISPERSION, TRENDS.
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)						

125 C 298 H 2 9 DOE GSO.U WAT FY74 0 SEDIMENTS, PALEOLIMNOLOGY, LAKES.
 FY75 9,500
 FY76 0
 FY77 0

H=OTHER I=FATE AND TRANSPORT G=OTHER SOURCES

126 C 300 H 012 9 DOE NWRI FY74 0 SEDIMENTS, NEARSHORE, DISTRIBUTION,
 FY75 60,000 LAKES,
 FY76 0
 FY77 0

(H=OTHER O=SOURCE AND LOADING I=CHARACTERISTICS 2=FATE AND TRANSPORT G=OTHER SOURCES)

127 C 302 J 012 I DOE NWRI FY75 0 SEDIMENTS, GEOCHEMISTRY, DISTRIBUTION,
 FY76 14,900
 FY77 0

(J=SEVERAL O=SOURCE AND LOADING I=CHARACTERISTICS 2=FATE AND TRANSPORT I=SEVERAL SOURCES)

128 C 302 H 0 I DOE NWRI.U WAT, GSC FY74 0 SEDIMENTS, ACCUMULATION, LAKE ERIE,
 FY75 35,000 LAKE HURON, LAKE SUPERIOR,
 FY76 0 GEOCHEMISTRY,
 FY77 0

(H=OTHER O=SOURCE AND LOADING I=SEVERAL SOURCES)

129 C 303 J 125 h DOE NWRI FY75 0 NUTRIENTS, TOXIC METALS, PHOSPHORUS,
 FY76 23,300 IRON, SEDIMENTS, WATER, ANALYSIS,
 INTERACTIVE EFFECTS, LAKES.

(J=SEVERAL I=CHARACTERISTICS 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)

130 C 307 E 25 h DOE NWRI FY75 0 ORGANIC MATTER, ANALYSIS, SEDIMENTS,
 LAKES, EUTROPHICATION, DISTRIBUTION.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)

209 C 399 E 235 M DOE MURI FY75 0 MICROBIOLOGY, ECOLOGY, AQUATIC SYSTEMS, BIOTA, BACTERIA, ALGAE, INTERACTIVE EFFECTS, POLLUTION, BIOLOGICAL CONTROL.

1-E=CONTAMINANTS, GEN 2-CATE AND TRANSPORT 3-ENVIRONMENTAL IMPACTS 5-METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

210 C 390 M 9 M DOE BEAK FY75 7,540 BIOTA, PLANKTON, PHYTOPLANKTON,

(M=OTHER 3=UNSPECIFIED h=UNSPECIFIED SOURCES)

211 C 454 I 3 M DOE MURI FY75 0 BIOTA, BENTHOS, HABITAT, WATER CHEMISTRY, PALEOIMNOLOGY, EUTROPHICATION, STREAMS, LAKES.

1=UNSPECIFIED 3-ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

212 C 360 F 06 M DOE MURI FY74 FY75 0 MICROBIOLOGY, DATA COLLECTION, WATER CHEMISTRY, LAKE SUPERIOR, LAKE MICHIGAN, GEORGETOWN BAY

(P=PATHOGENS 0=SOURCE AND LOADING 6=CRITERIA h=UNSPECIFIED SOURCES)

213 C 390 F 5 M DOE MURI FY75 0 BACTERIA, EQUIPMENT.

1=P=PATHOGENS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

214 C 391 F 5 M DOE MURI FY75 FY76 FY77 0 INFORMATION, METHODOLOGY.

(P=PATHOGENS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

203 C 212 B 23 h DOE GLFRB FY76 15,600 METHYLATION, LEAD, SELENIUM,
MICROORGANISMS, ALGAE, BACTERIA,
ENVIRONMENTAL SIMULATION, TOXICITY,
BIOACCUMULATION.

(B=TOXIC METALS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

204 C 213 E 23 h DOE GLFRB, U WAT FY75 7,700 ORGANIC CONTAMINANTS,
SUSPENDED MATERIALS,
AQUATIC ENVIRONMENTS, TOXICITY,
MICROORGANISMS.

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

205 C 291 H 5 h EPS WTC FY75 22,000 SEWAGE, DATA COLLECTION, METHODOLOGY,
(H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

206 C 292 H 7 h OMDE, DOE OMDE, WTC FY75 50,000 IRON, PRECIPITATION, SEWAGE,
(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

207 C 384 F 0 d DOE Y KOTY FY75 4,760 SEWAGE,
(F=PATHOGENS 0=SOURCE AND LOADING d=MUNICIPAL SOURCE)

208 C 384 F 23 h DOE U.GUE. FY75 26,275 BIOTA, FISH,
(F=PATHOGENS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

197 C 395 D 3 h DOE GLFRB-UNNR FY75 31,700 BIOTA, MACROPHYTES, ALGAE, PLANKTON, ZOOPLANKTON, ECOLOGY, BENTHOS, BAY OF QUINTE, LAKE ONTARIO.

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

198 C 399 D 35 h DOE GLFRB FY75 26,400 BIOTA, ECOLOGY, PHYSICAL LIMNOLOGY, (D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

199 C 401 I 23 h DOE GLFRB FY75 10,200 BIOTA, PLANKTON, ZOOPLANKTON, TEMPORAL VARIATION, DISTRIBUTION, (I=UNSPECIFIED 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

(H=OTHER 3=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

200 C 401 H 5 h DOE GLFRB FY75 7,800 BIOTA, PLANKTON, ZOOPLANKTON, TEMPERATURE, BAY OF QUINTE, LAKE ONTARIO.

(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

201 C 453 H 2 h DOE GLFRB FY75 10,400 PARTICULATES, BIOTA, BENTHOS, OPEN LAKE, BOTTOM SUBSTRATES, LIGHT, TEMPERATURE.

(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

202 C 455 H 3 h DOE BIOSYSTEMS CONS FY75 3,000 BIOTA, BENTHOS, LAKE ONTARIO.

0 RIVERS, STREAMS, WATER QUALITY,
0 STATISTICAL ANALYSIS, LAKES, SEDIMENTS,
0 TEMPORAL VARIATION.

FY74
FY75
FY76

NURI

DOE

J 02 f

191 C 334

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

0 SEDIMENTS, CHEMICAL CHARACTERIZATION,

FY75

NURI,ACE,USEPA

DOE

I 1 b

192 C 318

(I=UNSPECIFIED 1=CHARACTERISTICS b=DREDGING)

0 SHORE, EROSION, TRENDS, DISTRIBUTION,
0 TEMPORAL VARIATION,
0

FY74
FY75
FY76

NURI

DOE

H 02 f

193 C 323

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

0 WAVES, SEDIMENTS, INTERACTIVE EFFECTS,
0 NEARSHORE, EROSION, LAKE ONTARIO,
0

FY76
FY77

NURI

DOE

H 02 f

194 C 330

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

0 SHORE, EROSION, GEOCHEMISTRY,
0 DISPERSION, SEDIMENTS, LAKES,
0

FY74
FY75
FY76

NURI

DOE

H 012 f

195 C 331

(H=OTHER 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

0 SURVEILLANCE, WATER CHEMISTRY,
INSTRUMENTATION,
0

FY75

NURI

DOE

D 5 g

196 C 134

(D=NUTRIENTS 5=METHOD DEV & MODELING g=OTHER SOURCES)

185 C 335 D 0 F DOE NWRI FY74 0 NITROGEN, CARBON, SHORE, EROSION.
FY75 0
FY76 0

D=NUTRIENT 0=SOURCE AND LOADING F=NON-POINT SOURCE

186 C 335 C 02 F DOE NWRI FY74 0 AVAILABILITY, BIOTA, SHORE, EROSION,
FY75 0 LAKES, SCORPTION,
FY76 0

C=PHOSPHORUS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT F=NON-POINT SOURCE

187 C 336 J 02 F DOE NWRI,DMOE FY74 0 RIVERS, SEDIMENTS, SUSPENDED MATERIALS,
FY75 0 LAKES, WATER QUALITY, SCORPTION,
FY76 0

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

188 C 331 H 012 F DOE NWRI,DMOE FY75 72,000 SHORE, EROSION, GROUNDWATER, SOIL,
LAKE ERIE,

(H=OTHER 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

189 C 332 H 15 F DOE R.M.QUIGLEY FY75 7,000 SHORE, EROSION,

(H=OTHER 1=CHARACTERISTICS 5=METHOD DEV. & MODELING F=NON-POINT SOURCE)

190 C 333 H 237 h DOE NWRI FY76 0 PROGRAM DEVELOPMENT, EROSION, SEDIMENTS,
SHORE, NEARSHORE, RIVERS, LAKES,
DYNAMICS, WAVES, WATER QUALITY.

(H=OTHER 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

179 C 379 D 25 h DOE NWRI FY75 0 BACTERIA, LAKES, WATER, BIOTA, ALGAE,
(D=NUTRIENTS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

180 C 338 E 02 h DOE NWRI FY74 0 REMOTE SENSING, SUSPENDED SOLIDS,
FY75 0 PLUMES, RIVERS, OPEN LAKE,
FY76 0 STATISTICAL ANALYSIS, WATER CHEMISTRY,
FY77 0
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

181 C 339 H 256 h DOE NWRI FY74 0 RIVERS, HYDRAULICS, INSTRUMENTATION,
FY75 0 SURVEILLANCE, DISTRIBUTION,
TEMPORAL VARIATION,
(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 6=CRITERIA h=UNSPECIFIED SOURCES)

182 C 342 H 2 f DOE ACRES FY75 45,000 SHORE, EROSION, VEGETATION,
(H=OTHER 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

183 C 348 E 02 f CCIV,DOE QUE.U.,OMOE FY75 46,000 WATER QUANTITY, WATER QUALITY, RIVERS,
LAND USE, MORPHOLOGY,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

184 C 334 J 03 f DOE NWRI FY74 0 SEDIMENTS, SHORE, EROSION, METALS,
FY75 0 ACCUMULATION, LAKES, WATER QUALITY,
FY76 0
(J=SEVERAL 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS f=NON-POINT SOURCE)

173 C 290 H 7 h EPS WTC FY75 15,000 SEWAGE, INFORMATION, ANALYSIS, ECONOMICS.

(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

174 C 290 H 7 c EPS WTC FY75 16,000 SEWAGE.

(H=OTHER 7=MANAGEMENT c=INDUSTRIAL SOURCE)

175 C 371 H 3 f DOE DOE FY76 45,000 LAND USE, VEGETATION, ECOSYSTEM, WATER QUALITY, WATER QUANTITY, HYDROLOGY, RUNOFF, PRECIPITATION.

(H=OTHER 3=ENVIRONMENTAL IMPACTS f=NON-POINT SOURCE)

176 C 374 E 2 f DOE HYD. CONS. LTD. FY75 86,763 DYNAMICS.

(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

177 C 376 H 5 f DOE GREG. GEOSC. LTD. FY75 20,966 REMOTE SENSING, SATELLITES, LAND USE.

(H=OTHER 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

178 C 379 H 5 h DOE MWRI FY74 0 BACTERIA, EUTROPHICATION, SURVEILLANCE, FY75 16,800 ECOLOGY, FY76 0 FY77 0

(H=OTHER 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

167 C 278 E 37 d DOE,ONOE WTC FY75 17,000 SEWAGE, WASTE MANAGEMENT,
(E=CONTAMINANTS, GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT d=MUNICIPAL SOURCE)

169 C 281 J 267 h EPS,ONOE WTC FY75 40,000 SEWAGE, AGRICULTURE, SOIL, BIOCHEMISTRY,
(J=SEVERAL 2=FATE AND TRANSPORT 6=CRITERIA 7=MANAGEMENT h=UNSPECIFIED SOURCES) COMPLEXATION,

169 C 283 D 27 h EPS WTC FY75 28,000 SEWAGE, AGRICULTURE, SOIL,
(D=NUTRIENTS 2=FATE AND TRANSPORT 7=MANAGEMENT h=UNSPECIFIED SOURCES)

170 C 288 I 7 h EPS WTC FY75 12,000 CHEMICAL MIXTURES, PRECIPITATION,
(I=UNSPECIFIED 7=MANAGEMENT h=UNSPECIFIED SOURCES) SEWAGE, EQUIPMENT,

171 C 289 C 7 h EPS WTC FY75 17,000 SEWAGE,
(C=PHOSPHORUS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

172 C 289 H 7 h EPS WTC FY75 3,000 SEWAGE, WASTE MANAGEMENT,
(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)

161 C 269 A 7 C EPS 10.250 TOXICITY, SEWAGE, WASTE MANAGEMENT, FY75

(A=TOXIC ORGANICS 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

162 C 270 H 7 C EPS 56,000 SEWAGE, FY75

(H=OTHER 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

163 C 273 J 7 C EPS 48,500 RADIOACTIVITY, CYANIDE, ARSENIC, WASTE MANAGEMENT, FY75

(J=SEVERAL 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

164 C 273 E 67 C EPS 7,000 RADIOACTIVITY, LEACHATES, WASTE MANAGEMENT, FY75

(E=CONTAMINANTS, GEN. 6=CRITERIA 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

165 C 274 J 7 C EPS 12,000 METALS, SUSPENDED SOLIDS, CYANIDE, PH, SEWAGE, RUNOFF, FY75

(J=SEVERAL 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

166 C 276 E 7 C EPS 2,000 CHLORINATION, SEWAGE, FY75

(E=CONTAMINANTS, GEN. 7=MANAGEMENT C=INDUSTRIAL SOURCE) WTC

155 C 244	D 7 c	EPS	WTC	FY75	11,075	NITROGEN, WASTE MANAGEMENT,
(D=NUTRIENTS 7=MANAGEMENT c=INDUSTRIAL SOURCE)						
156 C 244	E 7 e	EPS	WTC	FY75	44,400	WASTEWATER TREATMENT,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT e=SHIPPING)						
157 C 245	J 1 e	EPS	WTC	FY75	36,000	POLLUTION,
(J=SEVERAL 1=CHARACTERISTICS e=SHIPPING)						
158 C 249	E 7 d	EPS, OMGE	WTC	FY75	18,000	OZONE, DISINFECTION, ECONOMICS,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT d=MUNICIPAL SOURCE)						
159 C 251	E 7 d	EPS	WTC	FY75	5,000	ECONOMICS, OZONE, BIODEGRADATION,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT d=MUNICIPAL SOURCE)						
160 C 268	I 7 c	EPS	WTC	FY75	4,500	SEWAGE, WASTEWATER TREATMENT,
(I=UNSPECIFIED 7=MANAGEMENT c=INDUSTRIAL SOURCE)						

149 C 234	E 7 d EPS	WTC	FY75	24,000	BIOLOGICAL CONTROL
(E=CONTAMINANTS, GEN 7=MANAGEMENT d=MUNICIPAL SOURCE)					
150 C 238	J 7 d EPS, OMGE	WTC	FY75	60,000	WASTEWATER TREATMENT
(J=SEVERAL 7=MANAGEMENT d=MUNICIPAL SOURCE)					
151 C 239	E 7 i EPS, OMGE	WTC	FY75	25,000	TEMPERATURE, CARBON, WASTE MANAGEMENT, INDUSTRIAL SOURCE, MUNICIPAL SOURCE, ECONOMICS
(E=CONTAMINANTS, GEN 7=MANAGEMENT i=SEVERAL SOURCES)					
152 C 241	D 7 i EPS	WTC	FY75	5,000	NITROGEN, DENITRIFICATION, TEMPERATURE, OXYGEN, BIOLOGICAL CONTROL, WASTE MANAGEMENT
(D=NUTRIENTS 7=MANAGEMENT i=SEVERAL SOURCES)					
153 C 242	D 7 i EPS	WTC	FY75	44,000	PHOSPHORUS, NITROGEN, CARBON, DENITRIFICATION, TEMPERATURE, BIOLOGICAL CONTROL, WASTE MANAGEMENT
(D=NUTRIENTS 7=MANAGEMENT i=SEVERAL SOURCES)					
154 C 243	D 7 c EPS	WTC	FY75	5,000	AMMONIA
(D=NUTRIENTS 7=MANAGEMENT c=INDUSTRIAL SOURCE)					

143 C 164	G 3 C DOE	GLFRB	FY75	230,040	ECOSYSTEM,
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS C=INDUSTRIAL SOURCE)					
144 C 189	J 2 I DOE	GLFRB,IJC	FY75	129,950	TOXIC SUBSTANCES, BIOACCUMULATION, PERSISTENCE, ENVIRONMENTAL SIMULATION, WATER, SEDIMENTS, NON-POINT SOURCE, AGRICULTURE, DREDGING,
(J=SEVERAL 2=FATE AND TRANSPORT I=SEVERAL SOURCES)					
145 C 208	J 23 h DOE	GLFRB,U.WAT.	FY75	152,210	TOXIC METALS, TOXIC ORGANICS, TOXICITY TESTING, BIOTA, ALGAE, BENTHOS, FISH, PHYSIOLOGY, BIOCHEMISTRY, METHYLATION, SEDIMENTS,
(J=SEVERAL 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
146 C 208	B 35 h DOE	GLFRB	FY75	5,250	ZINC, BIOTA, FISH, PHYSIOLOGY,
(B=TOXIC METALS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)					
147 C 210	E 2 h DOE	GLFRB	FY75	30,760	ATMOSPHERIC DEPOSITION, BIOTA, LIGHT,
(E=CONTAMINANTS, GEN 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)					
148 C 206	E 7 C EPS,ONOE	WTC	FY75	1,500	TOXICITY, WASTE MANAGEMENT, TOXIC SUBSTANCES, STREAMS,
(E=CONTAMINANTS, GEN 7=MANAGEMENT C=INDUSTRIAL SOURCE)					

137 C 95 A 2 h DOE EPS FY75 0 RIVERS, ST. CLAIR RIVER, CURRENTS, OIL,
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

138 C 167 G 567 c DOE EPS FY75 45,000 PROGRAM DEVELOPMENT.
FY76 45,000
(G=THERMAL DISCHARGES 5=METHOD DEV. & MODELING 6=CRITERIA 7=MANAGEMENT c=INDUSTRIAL SOURCE)

139 C 245 J 7 e EPS EPS, ORF FY75 63,211 WASTEWATER TREATMENT,
(J=SEVERAL 7=MANAGEMENT e=SHIPPING)

140 C 115 J 7 h DOE GLFRB FY75 101,340 PROGRAM DEVELOPMENT, SURVEILLANCE.
(J=SEVERAL 7=MANAGEMENT h=UNSPECIFIED SOURCES)

141 C 147 D 03 h DOE GLFRB FY75 33,200 SURVEILLANCE, NEARSHORE, OFFSHORE,
EUTROPHICATION, BIOTA,
TOXIC SUBSTANCES, TRENDS,
(D=NUTRIENTS 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

142 C 158 G 3 c DOE GLFRB FY75 12,450 TOXICITY TESTING, BIOTA, BENTHOS,
PHYSIOLOGY,
(G=THERMAL DISCHARGES 3=ENVIRONMENTAL IMPACTS c=INDUSTRIAL SOURCE)

131 C 307	E 12 h	DOE	NWRI	FY75	0	SORPTION, SEDIMENTS, SUSPENDED SOLIDS.
(E=CONTAMINANTS GEN 1=CHARACTERISTICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)						
132 C 308	H 7 h	DOE	NWRI	FY75	0	SEDIMENTS, INFORMATION, METHODOLOGY, ANALYSIS, EQUIPMENT.
(H=OTHER 7=MANAGEMENT h=UNSPECIFIED SOURCES)						
133 C 308	H 2 h	DOE	NWRI	FY75	5,800	SEDIMENTS, BOTTOM SUBSTRATES, DISTRIBUTION, TEMPORAL VARIATION, STATISTICAL ANALYSIS.
(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)						
134 C 309	H 5 h	DOE	NWRI	FY75	0	BOTTOM SUBSTRATES, SEDIMENTS, EQUIPMENT.
(H=OTHER 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						
135 C 310	H 5 h	DOE	NWRI	FY74 FY75 FY76	0 0 0	SEDIMENTS, EQUIPMENT.
(H=OTHER 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)						
136 C 310	H 7 b	DOE	NWRI, GSC, NRC	FY76	0	DATA COLLECTION, FIELD SUPPORT, SEDIMENTS, LAKES, RIVERS.
(H=OTHER 7=MANAGEMENT b=OPERATING)						

215 C 362 F 567 I DOE NWRI FY75 0 ADVISORY, METHODOLOGY, SURVEILLANCE, MUNICIPAL SOURCE LOUPE, RIVER, SEWAGE.

(F=PATHOGENS S=METHOD DEV & MODELING 6=CRITERIA 7=MANAGEMENT 1=SEVERAL SOURCES)

216 C 384 F 0 2 DOE DMOH FY75 10,000 SEWAGE.

(F=PATHOGENS 0=SOURCE AND LOADING 4=MUNICIPAL SOURCE)

217 C 461 I 3 h DOE DUE.U. FY74 4,250 POLLUTION, BAY OF QUINTE, LAKE ONTARIO, FY75 4,250 BIOTA, MACROPHYTES, ALGAE, BENTHOS, DISTRIBUTION, ECOLOGY, LIGHT, TEMPERATURE.

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

218 C 274 B 27 c EPS WTC FY75 7,500 HEAVY METALS, WASTE MANAGEMENT, FY76 7,500

(B=TOXIC METALS 2=FATE AND TRANSPORT 7=MANAGEMENT c=INDUSTRIAL SOURCE)

219 C 175 A 7 h CCIM NWRI,EPS,USEG FY74 0 RIVERS, ST. CLAIR RIVER, DETROIT RIVER.

(A=TOXIC ORGANICS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

220 C 299 H 2 9 CCIM,IL,CS NWRI,IL,CS FY74 0 SEDIMENTS, PALEOLIMNOLOGY, FY75 0 LAKE SUPERIOR, LAKE MICHIGAN, FY76 0

(H=OTHER 2=FATE AND TRANSPORT 9=OTHER SOURCES)

221 C 110 D 2 H NRC U TOR FY75 0 DYNAMICS, SILICA, RIVER, SEDIMENT, WATER, LAKES.

(D=NUTRIENTS 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)

222 C 111 E 12 H NRC U GUE FY75 0 SORPTION, PARTICULATES, WATER, SEDIMENTS, LAKE SUPERIOR

(E=CONTAMINANTS GEN. 1=CHARACTERISTICS 2=FATE AND TRANSPORT H=UNSPECIFIED SOURCES)

223 C 141 C 5 H NRC U TOR FY75 0 WATER, LAKES.

(C=PHOSPHORUS S=METHOD DEV. & MODELING H=UNSPECIFIED SOURCES)

224 C 145 D 3 F NRC U WIN FY75 0 EUTROPHICATION, AGRICULTURE, RUNOFF, LAKE ST. CLAIR.

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS F=NON-POINT SOURCE)

225 C 148 D 23 H NRC U TOR FY75 0 EUTROPHICATION, LAKES, PLANKTON, PHYTOPLANKTON, WATER CHEMISTRY.

(D=NUTRIENTS 2=POINT AND TRANSPORT 3=ENVIRONMENTAL IMPACTS H=UNSPECIFIED SOURCES)

226 C 300 H 2 F NRC U GUE FY74 0 SHORE, LAKES.
FY75 0
FY76 0
FY77 0

(H=OTHER 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

227 C 432	I 3	h	NRC	U. GUE.	FY75	0	BIOTA, FISH, ECOLOGY,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
228 C 436	I 35	h	NRC	U. TOR.	FY75	0	BIOTA, FISH, ECOLOGY, PHYSIOLOGY,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)							
229 C 436	I 3	h	NRC	U. TOR.	FY75	0	BIOTA, FISH, AQUATIC ENVIRONMENTS,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
230 C 437	H 3	h	NRC	YORK U.	FY75	0	BIOTA, FISH, TEMPERATURE, LIGHT,
(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
231 C 437	I 3	h	NRC	U. GUE.	FY75	0	BIOTA, FISH, PHYSIOLOGY,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							
232 C 438	H 3	h	NRC	U. GUE.	FY75	0	BIOTA, FISH, ECOLOGY,
(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)							

233 C 438	1 3 h	HRC	U TRENT	FY75	0	TEMPERATURE, ECOLOGY, BIOTA, FISH.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
234 C 398	1 3 h	HRC	MCM U.	FY75	0	BIOTA, PLANKTON, PHYTOPLANKTON, ECOLOGY, PRODUCTIVITY.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
235 C 398	H 3 9	HRC	U WIN.	FY75	0	LIGHT, BIOTA, PLANKTON, ALGAE, PHYSIOLOGY.
(H=OTHER 3=ENVIRONMENTAL IMPACTS 9=OTHER SOURCES)						
236 C 399	C 23 h	HRC	QUE U.	FY75	0	DYNAMICS, PRODUCTIVITY, BIOTA, PLANKTON.
(C=PHOSPHORUS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
237 C 404	1 3 h	HRC	U TOR.	FY75	0	LAKES, BIOTA, PLANKTON, ZOOPLANKTON, ECOLOGY.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)						
238 C 424	1 3 i	HRC	U QUE.	FY74 FY75 FY76	5,333 5,333 5,333	BIOTA, FISH, ECOLOGY, HABITAT, NEARSHORE, ECOSYSTEM, PRODUCTIVITY, LAKE ERIE.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)						

239 C 301	H 2	h	NRC	QUE. U.	FY75	0	PALEOLIMNOLOGY,
(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
240 C 390	H 2	f	NRC	U. GUE., OMOE	FY74 FY75	8,000 8,000	SHORE, SOIL, ORGANIC MATTER,
(H=OTHER 2=FATE AND TRANSPORT f=NON-POINT SOURCE)							
241 C 383	F 2	h	NRC	U. GUE.	FY75	0	MICROBIOLOGY, SEDIMENTS,
(F=PATHOGENS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
242 C 390	I 9	h	NRC	U. GUE.	FY75	0	BIOTA, ALGAE,
(J=UNSPECIFIED 9=UNSPECIFIED h=UNSPECIFIED SOURCES)							
243 C 390	H 2	h	NRC	YORK U	FY75	0	BIOTA, ALGAE, PHYSIOLOGY, LIGHT,
(H=OTHER 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
244 C 390	I 9	h	NRC	U. TOR.	FY75	0	PHYSIOLOGY, BIOTA, ALGAE, BACTERIA,
(J=UNSPECIFIED 9=UNSPECIFIED h=UNSPECIFIED SOURCES)							

245 C 397	I 3 h	NRC	U. TOR	FY75	0 BIOTA, ALGAE, PHYSIOLOGY,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
246 C 397	I 3 h	NRC	U. WAT.	FY75	0 BIOTA, ALGAE, ECOLOGY, PRODUCTIVITY,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
247 C 438	F 3 h	NRC	U. GUE.	FY75	0 BIOTA, FISH,
(F=PATHOGENS 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
248 C 451	I 3 h	NRC	U. TRENT	FY75	0 OXYGEN, BIOTA, BENTHOS, LAKES,
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
249 C 453	I 3 h	NRC	U. WAT.	FY74 FY75	4,000 BIOTA, BENTHOS, DISTRIBUTION, ECOLOGY. 4,000 GEORGIAN BAY, LAKE HURON.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					
250 C 456	I 3 h	NRC	U. WAT.	FY75	0 BIOTA, DISTRIBUTION, PRODUCTIVITY, ECOLOGY.
(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)					

251 C 459 I 9 h NRC U.TOR. FY75 0 LAKES.
 (I=UNSPECIFIED 9=UNSPECIFIED h=UNSPECIFIED SOURCES)

252 C 461 I 9 h NRC QUE.U. FY75 0 MARSH, VEGETATION, MACROPHYTES, BIOTA.
 (I=UNSPECIFIED 9=UNSPECIFIED h=UNSPECIFIED SOURCES)

253 C 255 E 057 d EPS APWA FY74 28,250 URBAN RUNOFF, ECONOMICS.
 FY75 28,250
 (E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

254 C 256 I 7 d EPS FY75 5,000 URBAN RUNOFF, SEWAGE, REGULATIONS, SOIL.
 (I=UNSPECIFIED 7=MANAGEMENT d=MUNICIPAL SOURCE)

255 C 256 I 5 d EPS MAC.LTD .NURI FY74 101,500 ENVIRONMENTAL SIMULATION, URBAN RUNOFF.
 FY75 101,500 WATER QUANTITY, WATER QUALITY.
 (I=UNSPECIFIED 5=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

256 C 258 H 57 d EPS P&R LTD. FY75 14,000 INFORMATION, URBAN RUNOFF, COMPUTER.
 (H=OTHER 5=METHOD DEV. & MODELING 7=MANAGEMENT d=MUNICIPAL SOURCE)

257 C 258 I 5 d EPS,EMS GO. & STO. LTD. FY74 15,533 DATA COLLECTION, DATA QUALITY,
FY75 15,533 ENVIRONMENTAL SIMULATION, URBAN RUNOFF,
FY76 15,533 PRECIPITATION.

(I=UNSPECIFIED S=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

258 C 259 I 5 d EPS,EMS MAC LTD. FY74 5,950 DATA COLLECTION, WATER QUALITY,
FY75 5,950 WATER QUANTITY, URBAN RUNOFF,
WASTE MANAGEMENT.

(I=UNSPECIFIED S=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

259 C 260 I 5 d EPS M. M. DILLON FY74 24,500 DATA COLLECTION, URBAN RUNOFF,
FY75 24,500

(I=UNSPECIFIED S=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

260 C 262 H 5 d EPS,EMS NURI FY74 15,150 DATA COLLECTION, URBAN RUNOFF,
FY75 15,150 WATER QUANTITY, WATER QUANTITY,
PRECIPITATION.

(H=OTHER S=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

261 C 268 H 7 c EPS UTC FY75 1,500 SEWAGE, WASTEWATER TREATMENT.

(H=OTHER P=MANAGEMENT c=INDUSTRIAL SOURCE)

262 C 277 J 17 c EPS EPS,OMOE FY75 90,000 WASTE MANAGEMENT.

(J=SEVERAL I=CHARACTERISTICS 7=MANAGEMENT c=INDUSTRIAL SOURCE)

263 C 277 E 27 C EPS EPS FY74 13,000 TOXIC SUBSTANCES, SORPTION, SOIL.
FY75 13,000

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 7=MANAGEMENT C=INDUSTRIAL SOURCE)

264 C 282 E 27 C EPS EPS FY75 9,250 SORPTION, MOBILITY, SOIL, SEWAGE,
INTERACTIVE EFFECTS, POLLUTION,
GROUNDWATER.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 7=MANAGEMENT C=INDUSTRIAL SOURCE)

265 C 373 E 2 F EPS DOE FY74 53,500 LANDFILLS, LEACHATES, GROUNDWATER,
FY75 53,500 SURVEILLANCE, MUNICIPAL SOURCE,
NON-POINT SOURCE.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

266 C 60 I 2 h OM0E QUE U. NWPI FY75 20,000 NEARSHORE, WATER QUALITY, DISTRIBUTION,
TEMPORAL VARIATION, TRENDS,
STATISTICAL ANALYSIS.

(I=UNSPECIFIED 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

267 C 70 J 023 h OM0E OM0E FY75 0 TRENDS, WATER QUALITY, NEARSHORE
FY76 0 LAKE ERIE,

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

268 C 72 J 03 i OM0E OM0E FY75 0 TRENDS, WATER QUALITY, LAKE ONTARIO,
MUNICIPAL SOURCE, RIVERS,
TWELVE MILE CREEK.

(J=SEVERAL 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

269 C 74 E 257 h OMGE OMGE OMNR FY74 0 HARBOUR, WATER QUALITY, DYNAMICS
FY75 0 CURRENTS, TRENDS.
FY76 0
FY77 0

(E=CONTAMINANTS GEN 2=FATE AND TRANSPORT 5=METHOD DEV & MODELING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

270 C 75 E 37 h OMGE OMGE,OMNR,NWRI FY75 40,000 HARBOUR, OXYGEN, HYPOXIMION, AIR,
FY76 40,000 ACCUMULATION, EPILIMNION, HABITAT,
FY77 40,000 BIOTA, FISH, PLANKTON

(E=CONTAMINANTS GEN 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT h=UNSPECIFIED SOURCES)

271 C 76 I 5 h OMGE OMGE FY74 0 NEARSHORE, WATER QUALITY.
FY75 0
FY76 0
FY77 0

(I=UNSPECIFIED 5=METHOD DEV & MODELING h=UNSPECIFIED SOURCES)

272 C 81 E 0 h OMGE,DOE OMGE,OMNR FY75 13,000 TRENDS, RIVERS,
FY76 13,000

(E=CONTAMINANTS, GEN 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

273 C 84 I 07 h OMGE OMGE FY76 0 LAKE ST. CLAIR, RIVERS, ST. CLAIR RIVER.
WATER QUALITY, SURVEILLANCE.

(I=UNSPECIFIED 0=SOURCE AND LOADING 7=MANAGEMENT h=UNSPECIFIED SOURCES)

274 C 85 I 0 h OMGE OMGE,MI DNR FY75 0 LAKE ERIE, RIVERS, DETROIT RIVER.
FY76 0 SURVEILLANCE.

(I=UNSPECIFIED 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

275 C 86 F 0 h OMDE OMDE FY75 0 BACTERIA, LAKE ERIE, RIVERS,
DETROIT RIVER,

(F=PATHOGENS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

276 C 88 I 0 h OMDE OMDE,IND,USEPA FY76 0 RIVERS, NIAGARA RIVER, SURVEILLANCE,
LAKE ONTARIO,

(I=UNSPECIFIED 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)

277 C 90 J 02 h OMDE OMDE FY75 0 RIVERS, ST LAWRENCE RIVER, DISPERSION,
FY76 0 SEDIMENTS, BIOTA, BENTHOS,
FY77 0

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)

278 C 91 H 035 i OMDE OMDE FY75 0 RIVERS, GRAND RIVER, THAMES RIVER,
NON-POINT SOURCE, INDUSTRIAL SOURCE,
MUNICIPAL SOURCE, WATER QUALITY,

(H=OTHER 0=SOURCE AND LOADING 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING i=SEVERAL SOURCES)

279 C 91 H 256 i OMDE OMDE FY75 0 DISPERSION, RIVERS, MIXING ZONE,
FY76 0 MUNICIPAL SOURCE, INDUSTRIAL SOURCE,

(H=OTHER 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING 6=CRITERIA i=SEVERAL SOURCES)

280 C 196 A 23 h OMDE OMDE FY75 20,000 PCB'S, ACCUMULATION, BIOTA, ALGAE,
FY76 20,000 PLANKTON, ZOOPLANKTON, FISH,

(A=TOXIC ORGANICS 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

281 C 197 A 02 1 OMOE OMOE FY75 0 ACCUMULATION, PCB'S, NEARSHORE, WATER
SEDIMENTS, BIOTA, BENTHOS,
MUNICIPAL SOURCE, INDUSTRIAL SOURCE,
ATMOSPHERIC SOURCE

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 1=SEVERAL SOURCES)

282 C 217 J 023 B OMOE OMOE FY75 0 TRENDS, RIVERS, THAMES RIVER
FY76 0 LAKE ST. CLAIR, MERCURY, SEDIMENTS,
HEAVY METALS, NUTRIENTS, PESTICIDES

(J=SEVERAL 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 3=ENVIRONMENTAL IMPACTS 4=UNSPECIFIED SOURCES)

283 C 220 A 057 1 OMOE OMOE FY75 8,000 ARSENIC, GROUNDWATER, INDUSTRIAL SOURCE
NON-POINT SOURCE, PRECIPITATION

(A=TOXIC ORGANICS 0=SOURCE AND LOADING 5=METHOD DEV. & MODELING 7=MANAGEMENT 1=SEVERAL SOURCES)

284 C 236 F 7 1 OMOE OMOE,DOE FY74 0 BIOLOGICAL CONTROL, BACTERIA, SEWAGE,
FY75 0 MUNICIPAL SOURCE, INDUSTRIAL SOURCE

(F=PATHOGENS 7=MANAGEMENT 1=SEVERAL SOURCES)

285 C 237 E 7 1 OMOE OMOE FY74 5,000 SEWAGE, ORGANIC MATTER,
WASTE MANAGEMENT, MUNICIPAL SOURCE,
INDUSTRIAL SOURCE

(E=CONTAMINANTS, GEN. 7=MANAGEMENT 1=SEVERAL SOURCES)

286 C 247 I 37 1 OMOE,DOE WTC FY75 26,000 DISINFECTION, CHLORINATION, TOXICITY
BIOTA, FISH, SEWAGE

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS 7=MANAGEMENT 1=SEVERAL SOURCES)

227 C 351	E O	OMOE	OMAF	AG CAN	OMOE	FY75	20,200	ATMOSPHERIC SOURCE, NON-POINT SOURCE, AGRICULTURE, STREAMS, WATER QUALITY, WATER QUANTITY, PRECIPITATION SURVEILLANCE.
E=CONTAMINANTS GEN Q=SOURCE AND LOADING (=SEVERAL SOURCES)								
228 C 351	E O	F	OMOE	OMOE		FY74 FY75 FY76 FY77	225,250 225,250 225,250 225,250	POLLUTION, LAND USE, SURVEILLANCE.
E=CONTAMINANTS GEN Q=SOURCE AND LOADING F=NON-POINT SOURCE								
239 C 352	J O7	F	OMOE	OMOE	OMNR	FY74 FY75 FY76 FY77	336,700 336,700 336,700 336,700	POLLUTION, LAND USE, RIVERS, GRAND RIVER.
(J=SEVERAL Q=SOURCE AND LOADING 7=MANAGEMENT F=NON-POINT SOURCE)								
230 C 354	J O	F	OMOE	OMAF		FY76	12,000	LAND USE, AGRICULTURE.
(J=SEVERAL Q=SOURCE AND LOADING F=NON-POINT SOURCE)								
291 C 365	A O	F	OMOE	OMAF	OMOE	OMAF	FY76	15,000 PESTICIDES, PCB'S, STREAMS, AGRICULTURE.
(A=TOXIC ORGANICS Q=SOURCE AND LOADING F=NON-POINT SOURCE)								
292 C 265	H 7	H	OMOE		OMOE	FY75	14,000	WATER QUANTITY, SURVEILLANCE, INFORMATION, EQUIPMENT.
(H=OTHER 7=MANAGEMENT H=UNSPECIFIED SOURCES)								

293 C 278	E 67	h	OMOE	U GUE	FY74 FY75	117,250 117,250	SEWAGE AGRICULTURE WASTE MANAGEMENT
(E=CONTAMINANTS, GEN 6=CRITERIA 7=MANAGEMENT h=UNSPECIFIED SOURCES)							
294 C 305	A 2	h	OMOE,OMAF,IOC	OMAF,NMFI	FY76	9,000	PESTICIDES, PCB'S, ANALYSIS, SEDIMENTS, LAKE ONTARIO
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							
295 C 336	A 0	h	OMOE,OMAF	U GUE	FY76	15,000	SUSPENDED SOLIDS, ANALYSIS, RIVERS, STREAMS, CHROMATOGRAPHY, PESTICIDES, PCB'S
(A=TOXIC ORGANICS 0=SOURCE AND LOADING h=UNSPECIFIED SOURCES)							
296 C 370	H 5	f	OMOE	OMOE	FY75	0	WATER QUANTITY, HYDROLOGY, GROUNDWATER, LAND USE, ENVIRONMENTAL SIMULATION, STATISTICAL ANALYSIS
(H=OTHER 5=METHOD DEV & MODELING f=NON-POINT SOURCE)							
297 C 374	A 2	f	OMOE	U, WAT, OMOE	FY74	0	PESTICIDES, ANALYSIS, SOIL, WATER, GROUNDWATER, PH
(A=TOXIC ORGANICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)							
298 C 389	D 02	h	OMOE	OMOE	FY74 FY75 FY76 FY77	15,000 15,000 15,000 15,000	SURVEILLANCE, PLANKTON, PHYTOPLANKTON, NEARSHORE, ECOLOGY, PRODUCTIVITY, TRENDS, EUTROPHICATION
(D=NUTRIENTS 0=SOURCE AND LOADING 2=FATE AND TRANSPORT h=UNSPECIFIED SOURCES)							

GREAT LAKES RESEARCH REVIEW 1982 APPENDICES(U)
PETROLEUM REFINERY POINT SOURCE TASK FORCE WINDSOR
(ONTARIO) NOV 82

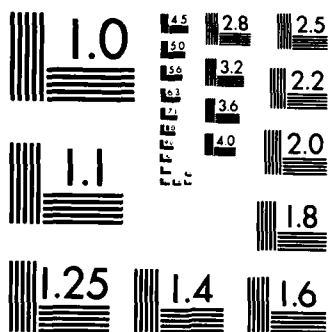
NL

F/G 8/8

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0115



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

299 C 392 C 3 d OMDE OMDE FY74 9,200 BIOTA, PLANKTON, PHYTOPLANKTON, ECOLOGY.
FY75 9,200 NEARSHORE, GEORGIAN BAY, LAKE HURON.
FY76 9,200
FY77 9,200

(C=PHOSPHORUS 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)

300 C 393 H 3 i OMDE OMDE, OMNR, ONT. H FY74 4,600 BIOTA, PLANKTON, PHYTOPLANKTON, ECOLOGY.
FY75 4,600 PRODUCTIVITY, NEARSHORE SURVEILLANCE.
FY76 4,600 LAKE ERIE, INDUSTRIAL SOURCE,
FY77 4,600 MUNICIPAL SOURCE.

(H=OTHER 3=ENVIRONMENTAL IMPACTS i=SEVERAL SOURCES)

301 C 394 C 3 d OMDE OMDE, OMNR FY74 9,200 DISTRIBUTION, BIOTA, PLANKTON,
FY75 9,200 PHYTOPLANKTON, ECOLOGY, PRODUCTIVITY,
FY76 9,200 BAY OF QUINTE, LAKE ONTARIO,
FY77 9,200

(C=PHOSPHORUS 3=ENVIRONMENTAL IMPACTS d=MUNICIPAL SOURCE)

302 C 396 D 35 h OMDE OMDE FY75 0 BIOTA, ECOLOGY, PRODUCTIVITY, OXYGEN,
FY76 0 RIVERS.
FY77 0

(D=NUTRIENTS 3=ENVIRONMENTAL IMPACTS 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

303 C 364 B 012 f AG. CAN. AG. CAN. FY75 45,300 COPPER, ZINC, LEAD, CADMIUM,
AGRICULTURE, BOTTOM SUBSTRATES,
SEDIMENTS, SOIL, ANALYSIS,
CHEMICAL CHARACTERIZATION, CARBON.

(B=TOXIC METALS 0=SOURCE AND LOADING 1=CHARACTERISTICS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

304 C 366 J 057 f AG. CAN. AG. CAN., OMDE FY75 9,900 PHOSPHORUS, NITROGEN, ORGANIC MATTER,
BACTERIA, AGRICULTURE, RUNOFF,
WATER QUALITY, WATER QUANTITY,
GROUNDWATER, MITIGATION.

(J=SEVERAL 0=SOURCE AND LOADING 5=METHOD DEV. & MODELING 7=MANAGEMENT f=NON-POINT SOURCE)

305 C 366 E 2 f AG CAN AG CAN FY75 18,750 AGRICULTURE, SOIL, POLLUTION, RIVERS, GROUNDWATER.

(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

306 C 350 E 02 f AG CAN .OMAF AG CAN .OMAF FY74 0 AGRICULTURE, RUNOFF, POLLUTION, SOIL.
FY75 0
FY76 0
FY77 0

(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

307 C 355 I 1 f AG CAN AG CAN .OMOE FY75 16,000 CHEMICAL CHARACTERIZATION, SEDIMENTS, AGRICULTURE, SOIL.

(I=UNSPECIFIED 1=CHARACTERISTICS f=NON-POINT SOURCE)

308 C 356 D 25 f AG CAN AG CAN FY75 96,550 NITROGEN, DENITRIFICATION, WATER, SOIL, HYDRAULICS, GROUNDWATER, ENVIRONMENTAL SIMULATION, AGRICULTURE.

(D=NUTRIENTS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

309 C 357 J 0 f AG CAN AG CAN, MRS, OMOE FY75 30,000 NUTRIENTS, HEAVY METALS, SEDIMENTS, AGRICULTURE.

(J=SEVERAL 0=SOURCE AND LOADING f=NON-POINT SOURCE)

310 C 214 B 2 f AG CAN AG CAN FY75 20,000 DISTRIBUTION, AGRICULTURE, ANALYSIS, SOIL, SEDIMENTS, SUSPENDED SOLIDS.

(B=TOXIC METALS 2=FATE AND TRANSPORT f=NON-POINT SOURCE)

311 C 214 B 25 f AG CAN. AG CAN. FY75 15,000 ORGANIC MATTER, SOIL, SEDIMENTS,
SUSPENDED SOLIDS, INTERACTIVE EFFECTS,
AGRICULTURE.

(B=TOXIC METALS 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

312 C 349 E 7 f AG CAN. D.R.COOTE FY75 30,000 PROGRAM DEVELOPMENT, ADVISORY,
AGRICULTURE, POLLUTION,

(E=CONTAMINANTS. GEN. 7=MANAGEMENT f=NON-POINT SOURCE)

313 C 349 I 7 f AG CAN. AG CAN. FY75 54,000 ADVISORY, INFORMATION, DATA QUALITY,
AGRICULTURE, POLLUTION,

(I=UNSPECIFIED 7=MANAGEMENT f=NON-POINT SOURCE)

314 C 360 H 025 f AG CAN. AG CAN .0MDE FY75 20,000 SEDIMENTS, EROSION, AGRICULTURE,
TEMPORAL VARIATION, HYDROLOGY,

(H=OTHER 0=SOURCE AND LOADING 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

315 C 369 H 0 a AG CAN. U.WIN. FY75 9,000 PRECIPITATION, RUNOFF, WATER CHEMISTRY,
FY76 9,000

(H=OTHER 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)

316 C 369 I 25 a AG CAN. U.WIN. FY75 2,000 PRECIPITATION, RUNOFF,
TEMPORAL VARIATION, WATER QUANTITY,

(I=UNSPECIFIED 2=FATE AND TRANSPORT 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)

317 C 375 H 2 F AQ CAN AG CAN FY75 22,500 SOIL, AGRICULTURE, GROUNDWATER,
(H=OTHER 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

318 C 231 I 57 I IWD IWD FY75 4,000 ECONOMICS, COST-BENEFIT,
(I=UNSPECIFIED 5=METHOD DEV. & MODELING 7=MANAGEMENT I=SEVERAL SOURCES)

319 C 346 E 02 F IWD IWD FY75 0 ECONOMICS, DEMOGRAPHY,
INTERACTIVE EFFECTS, POLLUTION,
TEMPORAL VARIATION,
(E=CONTAMINANTS, GEN. 0=SOURCE AND LOADING 2=FATE AND TRANSPORT F=NON-POINT SOURCE)

320 C 347 H 7 F IWD IWD FY75 0 REGULATIONS, ADMINISTRATION, LAND USE,
(H=OTHER 7=MANAGEMENT F=NON-POINT SOURCE)

321 C 476 H 7 I IWD IWD FY75 0 INFORMATION, AQUATIC ENVIRONMENTS,
FY76 0
(H=OTHER 7=MANAGEMENT I=SEVERAL SOURCES)

322 C 453 H 3 h IWD U. MAT. FY74 17,666 BIOTA, NEARSHORE, SHORE, DISTRIBUTION,
FY75 17,666 TEMPORAL VARIATION, LAKE ONTARIO,
FY76 17,666 LAKE ERIE, LAKE HURON, LAKE SUPERIOR,
(H=OTHER 3=ENVIRONMENTAL IMPACTS h=UNSPECIFIED SOURCES)

323 C 124 E 5 h NHW NHW,NWRI FY76 0 ORGANIC CONTAMINANTS, ANALYSIS, WATER,
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

324 C 124 E 5 h NHW NHW,NWRI,ONOE FY74 0 ORGANIC CONTAMINANTS, ANALYSIS, WATER,
FY75 0 SURVEILLANCE, SORPTION,
FY76 0
FY77 0
(E=CONTAMINANTS, GEN. 5=METHOD DEV. & MODELING h=UNSPECIFIED SOURCES)

325 C 201 A 5 d NHW NHW FY74 0 ANALYSIS, WATER, PESTICIDES,
FY75 0
FY76 0
FY77 0

(A=TOXIC ORGANICS 5=METHOD DEV. & MODELING d=MUNICIPAL SOURCE)

326 C 202 A 0 d NHW NHW,ONOE FY76 0 ANALYSIS, WATER, SURVEILLANCE,
(A=TOXIC ORGANICS 0=SOURCE AND LOADING d=MUNICIPAL SOURCE)

327 C 219 E 24 h NHW NHW,NWRI FY76 0 ASBESTOS FIBERS, EVAPORATION,
(E=CONTAMINANTS, GEN. 2=FATE AND TRANSPORT 4=HUMAN HEALTH EFFECTS h=UNSPECIFIED SOURCES)

328 C 251 E 7 d NHW NHW,NWRI FY76 0 ORGANIC MATTER, OZONE, WATER,
(E=CONTAMINANTS, GEN. 7=MANAGEMENT d=MUNICIPAL SOURCE)

329 C 337	H 0 F	OMNR	OMNR, U. GUE.	FY74 FY75 FY76 FY77	30,000 30,000 30,000 30,000	STREAMS, EROSION, SEDIMENTS, LAKES, SOIL ANALYSIS.
(H=OTHER 0=SOURCE AND LOADING F=NON-POINT SOURCE)						
330 C 5	H 5 a	DOE	NWRI	FY75	15,000	MODELS, WATER QUANTITY, LAKE ERIE, LAKE ONTARIO, LAKE HURON, LAKE ST. CLAIR.
(H=OTHER S=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)						
331 C 6	J 0 a	DOE	IND	FY75	50,000	NUTRIENTS, METALS, PH. PRECIPITATION, CHEMICAL CHARACTERIZATION.
(J=SEVERAL 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)						
332 C 9	I 05 a	DOE	NWRI, OMOE	FY75	92,100	ATMOSPHERIC DEPOSITION, PRECIPITATION.
(I=UNSPECIFIED 0=SOURCE AND LOADING S=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)						
333 C 11	D 0 a	DOE	NWRI	FY74 FY75 FY76 FY77	0 19,000 0 0	NITROGEN, SULFUR, PRECIPITATION.
(D=NUTRIENTS 0=SOURCE AND LOADING a=ATMOSPHERIC SOURCE)						
334 C 19	H 25 a	DOE	NWRI	FY75	0	EVAPORATION, AIR, WATER, HYDROLOGY, LAKES, RIVERS.
(H=OTHER 2=FATE AND TRANSPORT S=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)						

335 C 22	H 5 a DOE	INT. SAT. INF.	FY76	8,990	ICE, SATELLITES, REMOTE SENSING,
(H=OTHER 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)					
336 C 24	H 56 g DOE	NURI	FY75	0	ICE, RIVERS, MODELS,
(H=OTHER 5=METHOD DEV. & MODELING 6=CRITERIA g=OTHER SOURCES)					
337 C 27	H 5 g DOE	NURI	FY75	0	ICE, WAVES, LAKES, METHODOLOGY.
(H=OTHER 5=METHOD DEV. & MODELING g=OTHER SOURCES)					
338 C 27	H 5 g DOE	NURI	FY75	0	METHODOLOGY, INSTRUMENTATION, CURRENTS, ICE, RIVERS,
(H=OTHER 5=METHOD DEV. & MODELING g=OTHER SOURCES)					
339 C 33	H 7 f DOE	NURI	FY75	0	WAVES, SHORE, MITIGATION,
(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)					
340 C 11	D 2 a DOE	NURI	FY76	0	SULFUR, LAKES, PRECIPITATION, SEDIMENTS,
(D=NUTRIENTS 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)					

341 C 19 H 5 a DOE NWRI FY75 0 EVAPORATION, RIVERS, METHODOLOGY
TEMPERATURE, STREAMS.

(H=OTHER 5=METHOD DEV. & MODELING a=ATMOSPHERIC SOURCE)

342 C 28 H 7 f DOE NWRI FY75 0 ICE, SHORE, EROSION, MITIGATION,

(H=OTHER 7=MANAGEMENT f=NON-POINT SOURCE)

343 C 32 H 2 a DOE NWRI FY75 0 WAVES, AIR, WATER, INTERACTIVE EFFECTS,
TEMPERATURE, CIRCULATION, RESUSPENSION,
SEDIMENTS, EPILIMNION.

(H=OTHER 2=FATE AND TRANSPORT a=ATMOSPHERIC SOURCE)

344 C 32 H 5 f DOE NWRI FY75 0 WAVES, NEARSHORE, MODELS, DISTRIBUTION,
CURRENTS, OFFSHORE.

(H=OTHER 5=METHOD DEV. & MODELING f=NON-POINT SOURCE)

345 C 12 I 9 a DOE U.WO. FY75 19,466 PARTICULATES, AIR,

(I=UNSPECIFIED 9=UNSPECIFIED a=ATMOSPHERIC SOURCE)

346 C 12 I 3 a DOE AE SCI. CONS. FY75 5,000 ATMOSPHERIC DEPOSITION, ECOLOGY.

(I=UNSPECIFIED 3=ENVIRONMENTAL IMPACTS a=ATMOSPHERIC SOURCE)

347 C 17 M S I DOE ACE,DOE FY74 0 WATER QUANTITY, HYDROLOGY, METHODOLOGY,
FY75 0 EVAPORATION, PRECIPITATION, RUNOFF,
FY76 0 GROUNDWATER,
FY77 0

(M=OTHER S=METHOD DEV. & MODELING I=SEVERAL SOURCES)

348 C 20 M S F DOE CAN.RES.INST. FY75 25,000 INSTRUMENTATION, ICE,

(M=OTHER S=METHOD DEV. & MODELING F=NON-POINT SOURCE)

349 C 6 J O A OMDE U.WIN. FY75 9,000 NUTRIENTS, CHLORIDES, SUSPENDED SOLIDS,
FY76 9,000 PESTICIDES, PCB'S, HEAVY METALS,
PRECIPITATION, ANALYSIS,

(J=SEVERAL O=SOURCE AND LOADING A=ATMOSPHERIC SOURCE)

Appendix VII

Titles of Projects

- A. CURRENT RESEARCH PROJECTS
- B. HISTORICAL RESEARCH PROJECTS

A. CURRENT RESEARCH PROJECTS

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
001 A**	0300	ERL-D	Acute and Early Life Stage Toxicity Testing of Priority Pollutant Chemicals
002 A	0302	ERL-D	Develop Laboratory Toxicity Data for Field Evaluation of Criteria
003 A	0303	ERL-D	International Joint Commision
004 A	0306	ERL-D	Correlation of Chemical Toxicity with Effect Tissue Concentrations of Freshwater Fishes
005 A	0309	ERL-D	Biological Studies on Factors Affecting Toxicity
006 A	0310	ERL-D	Environmental Factors Affecting Toxicity
007 A	0319	ERL-D	Generic Toxicity Methodology Development
008 A	0506	ERL-D	Pilot Study to Determine Interactive Effects of Acid Precipitation and Deposition and Release of Metals in Aquatic Systems
009 A	0400	ERL-D	Develop Improved Qsar Models for Predicting Bioaccumulation and Toxicity of Chemicals
010 A	0402	ERL-D	Development of GC/MS Methods for Analysis of Chlorinated Dioxins and Furans in Fish
011 A	0403	ERL-D	Develop Qsar for Two Classes of Chemicals for Predicting Effects on Aquatic Organisms
012 A	0405	ERL-D	Feasibility of Free Wilson Approach, Benchmark and Pattern Recognition Methods
013 A	0406	ERL-D	The Joint Action of Multiple Toxicants on the Fathead Minnow
014 A	0409	MONT.SU.	Aquatic Toxicity Testing
015 A	0410	U.WI.	Chemical Residue Biomonitoring

* see Abbreviations

** A= United States Projects

C= Canadian Projects

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
016 A	0421	U.WI.	Aquatic Pollutant Hazard Assessments and Development of Hazard Prediction Technology by Quantitative Structure-Activity Relationships
017 A	0422	ERL-D	Changes in Measurable Bioelectric Activity of Fish as a Technique for Investigating Modes of Action and Assessing Toxicity of Organic Compounds According to Structure-Activity Relationships
018 A	0427	MONT.SU.	Effects Predication from Structure-Activity Relationships
019 A	0430	E.NAZ.COL.	Development of Molecular Connectivity for Estimation of Toxicity and Environmental Behavior of Organic Molecules
020 A	0431	ERL-D	Biological Availability of Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans to Fish
021 A	0209	ERL-D	Accumulation of Asbestos Fibers and Analogous Mineral Fibers in Fish Tissue
022 A	0213	ERL-D	Surveillance of Taconite Particles Transported in Western Lake Superior
023 A	0215	ERL-D	Develop Structure-Activity Relationships for Predicting Mineral and Synthetic Fiber Carcinogenicity
024 A	0216	ERL-D	Develop and Verify Fish Respiratory Endpoints for Predicting Chronic Toxicity and Relative Hazard of Leachates, Complex Mixtures
025 A	0103	ERL-D	Pesticides Toxicity in Outdoor Experimental Streams: Dursban
026 A	0104	ERL-D	Diazinon Toxicity in Outdoor Experimental Streams
027 A	0107	ERL-D	Influence of Pesticide-Particulates Interactions on Bioaccumulation

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
033 C	PC-11	OMOE	Trace Organics in Potable Water Supplies
034 C	PC-16	OMOE	Asbestos in Potable Water Supplies
035 C	PC-21	OMOE	Formation of Chlorinated Organics During Disinfection of Secondary Effluent
036 C	PC-23	OMOE	Screening for Priority Organic Contaminants and Heavy Metals in Digested Municipal Sludges
037 C	PC-24	OMOE	UV Disinfection of Secondary Effluent
038 C	PC-25	CANVIRO	Fate of Trace Organics in a Wastewater Treatment Plant
039 C	PC-28	AINL.ASSOC.	High Level Phosphorus Removal from Secondary Effluents
040 C	PC-29	CANVIRO	An Investigation of the Bio-Availability Phosphorus (BAP) in Municipal Wastewaters
041 C	PC-30	REG.MUN.OTT.CAR.	Kennedy-Burnett Urban Stormwater Runoff Treatment Study.(Part of the Rideau River Study)
042 C	PC-37	OMOE	Phosphorus Removal from Secondary Effluents
043 C	PL-1	OMOE,GO.STO.LTD.	Development of an Experimental Marsh Treatment Facility at Listowel, Ontario
044 C	PL-7	ORF	Characterization and Identification of Organic Substances in Drinking Water
045 C	PL-12	McM.U.	The Measurement of Total Organic Chlorine in Industrial Wastes.
046 C	PL-14	U.GUE.	Development of Non-Chemical Approaches To Pest Control (Sterile Male Onion Maggot Technique)
047 C	PL-20	LAKEHEAD U.	Review of Literature and Biological Testing Protocol Required for Multiple Toxicity Evaluation Pertaining to Hazardous Organic Compounds

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
019 C	AR-20	OMOE	Trace Organic Contaminants
020 C	HC-1	RESEARCH CONS.	Intra-Deritoneal Injection of Chemicals in Fish
021 C	LS-9	OMOE	U. V. Disinfection Study - Microbiological Aspects
022 C	LS-12	OMOE	Evaluation of Capillary GC for Routine Fish Contamination Monitoring
023 C	LS-13	OMOE	Development of Analytical Methodology for Analysis of Chlorodibenzofurans and Dioxins in Environmental Samples
024 C	LS-14	OMOE	Development of High Resolution Capillary G.C. Methodology for the Analysis of Chlorinated Industrial Organics
025 C	LS-15	OMOE	High-Performance Liquid Chromatographic Analysis of Polar Pesticides and Metabolites
026 C	LS-16	OMOE	Use of Automated Clean-Up System for PCB Analysis in Fish
027 C	LS-18	OMOE	Automated Extraction of Water for Analysis of Organochlorine Pesticides and Polychlorinated Biphenyls
028 C	LS-19	OMOE	Development of a Sensitive Screening Technique for TCDD Isomers in Complex Matrices Using a Triple Quadrupole Mass Spectrometer
029 C	LS-20	OMOE	Investigation of HCl Digestion/Extraction of Fish Tissues for the Analysis of PCB/OC
030 C	LS-31	OMOE	An In-Depth Review of the Entire Chlorophyll Procedure
031 C	PAC-17	OMOE	Toxicity of Herbicides to Rainbow Trout
032 C	PC-9	BEAK	The Effect of Hydraulic Characteristics and Effluent Chlorination on the Incidence of Microorganisms of Public Health Significance in Receiving Waters

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
002 C	021	GLFRB**, U.GUE.	Effects on Fish of Toxic Materials
003 C	022	GLFRB	Clinical Methodology for the Assessment of Fish Health
004 C	023	GLFRB, NWRI,	Preliminary Investigation of Quantitative Structure-Activity Correlations (QSAR) of Contaminants as Methods to Predict Contaminant Toxicity to Aquatic Biota
005 C	024	GLFRB	Effects of Organic Contaminants on Aquatic Organisms
006 C	200	GLFRB	Overhead and Support to Toxicology Program
007 C	036	U.TOR.	Great Lakes Phytoplankton: Physiological - Ecological Studies
008 C	005	GLFRB	Community Analysis of Lake Erie Benthos
009 C	034	GLFRB	Great Lakes Contaminants Surveillance
010 C	040	GLFRB, NWRI	Phycological Studies in the St. Lawrence Great Lakes
011 C	041	GLFRB, NWRI	Nannoplankton Dynamics in Canadian Lakes
012 C	050	GLFRB	Biological Tissue Archive
013 C	077	GLFRB	Toxic Effects of Dredge Spoils Upon Natural Phytoplankton and Zooplankton Assemblages
014 C	099	GLFRB	Long-Term Biological Index Monitoring
015 C	020	GLFRB	Effects of Nutrient Removal on Biological Production in the Bay of Quinte (Project Quinte)
016 C	051	GLFRB, DOE, OMNR	Long Range Transport of Atmospheric Pollutants
017 C	072	GLFRB	LRTAP Impact of Atmospheric Pollutants on Georgian Bay
018 C	AR-9	YORK U.	Satellite Images of Aerosol Distributions over the Great Lakes

* see Abbreviations

** Formerly known as Great Lakes Biolimnology Lab (GLBL)

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
179 A	E/T-2	U.MINN.	A Multidisciplinary Approach to the Study of a Regional Marine Environment with Implications for Community and Family Living
180 A	R/EM-1	OSU	Lake Erie Storm Surge Forecasting: Model Intercomparison of Western Basin Effects
181 A	T/CD-1	OSU	The Development and Implementation of a Curriculum for the Study of Marine Technology
182 A	E/CD-1	OSU	Coastal Engineering Curriculum Development
183 A	A/PE-1	OSU	Lake Erie Public Information through Radio Broadcasting
184 A	R/GB-18	U.WI.	The Contribution of Marshlands to the Green Bay Pelagic Food Chain
185 A	R/GB-19	U.WI.	Hydrodynamic and Water Quality Modeling for Lower Green Bay
186 A	R/MW-28	U.WI.	Atmospheric Concentrations and Transport of Organic Contaminants Across the Air-Water Interface in the Upper Great Lakes
187 A	R/MW-29	U.WI.	Status Reports on Priority Pollutants in the Great Lakes
188 A	R/MW-30	U.WI.	Detection of Mutagenic and Carcinogenic Effects of Environmental Pollutants in Aquatic Ecosystems
189 A	R/PS-30	U.WI.	Management of Great Lakes Water
190 A	711230	OSU	Limnological Investigations of Water Quality and Fish Larvae in Lake Erie
191 A	711486	OSU	Transport Properties of the Great Lakes Seiche-Affected River Mouths
001 C	019	U.WAT.	Effects of a Mixture of Metals on Natural Phytoplankton Communities in Lake Column

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
165 A	E/CCD-2	UM	Great Lakes Limnology Course
166 A	R/GLE-4	MSU	An Assessment of Great Lakes Studies Potential Based on User Interest and Priorities
167 A	R/GLF-4	UM	Identification of Current Spawning Grounds and Prediction of Potential Spawning Areas for Yellow Perch in Southeastern Lake Michigan, with Estimates of Associated Early Growth, Survival and Recruitment
168 A	R/GLF-7	MSU	Renewed Use of Underutilized Species of Great Lakes Fish for Animal Feed
169 A	R/GLF-2	MSU	PCBs, DDT Compounds and Dieldrin Levels in Carp
170 A	R/FPA-1	MSU	Incidence and Types of Stress Induced Diseases in Selected Fishes in the Great Lakes
171 A	R/TS-13	UM	Review of PCB Research in the Great Lakes Area
172 A	R/TS-12	UM	Contribution of Surface Microlayer to Air/Water Exchange of Organic Pollutants
173 A	R/TS-6	UM	Uptake, Accumulation and Removal of Polychlorinated Hydrocarbons (PCBs) by Great Lakes Phytoplankton and Zooplankton
174 A	R/TS-10	MSU	Implementation of the Toxic Substances Control Act
175 A	R/CW-8	UM	Sedimentation Rates in Michigan Coastal Wetlands
176 A	R/CW-6	UM	Wetland Development Options and Strategies and their Relative Environmental Impact
177 A	R/GLF-1	MSU	Atlas of Lake Michigan
178 A	R/C-2	U.MINN.	Sedimentation in Duluth-Superior Harbor

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
149 A	P-10	GLERL	Environmental Systems Studies and Applied Modeling
150 A	P-11	GLERL	Program Development
151 A	2	LAW.MAT.SK.ENG.	Ambient Levels of Selected Metals in New York State Waterbodies
152 A	00215	USFDA	Dioxins as Food Contaminants
153 A	1	U.WI.	Support for Great Lakes Research
154 A	2	UM	An Assessment of the Quality of Water Trace Metal Data for the Great Lakes and the Establishment of New Baseline Data
155 A	3	U.WI.	Effect of Increasing Sodium Chloride and Other Ions on the Phytoplankton in Offshore Waters of Lake Michigan
156 A	4	USEPA,MI.DNR	Chemical Composition of Lake Effect Precipitation
157 A	5	ERL-Q,U.MINN.	Atmospheric Deposition of Mercury in Northern Minnesota
158 A	6	GOV.SU	Calibration of Bulk Collector's Dry Deposition Collection Efficiency
159 A	7	IL.INST.TEC.	Evaluation of High-Performance Phosphorus Control POTWs in the Great Lakes Basin
160 A	8	USEPA,USCG	Ecological and Public Health Impacts of Vessel Ballast Water Discharges in the Great Lakes
161 A	9	AQ.TEC.ENV.CON.	An Evaluation and Refinement of a 96-Hour Sediment Bioassay Procedure
162 A	10	GLFL	Bioaccumulation of Toxic Substances During Dredging
163 A	P-8	GLERL	Lake Ice
164 A	E/GLE-2	UM	Evaluation of Three Units of the Sea Grant Curriculum Project

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
131 A	R/ER-1	OSU	Fish Community Structure, Movements, and Reproduction in Controlled and Uncontrolled Lake Erie Marshes
132 A	R/PA-1	BGSU	Effects of Asbestos on Survival of Invertebrates and Small Fish Typical of Lake Erie Waters
133 A	E/EO-1	OSU	Ohio Sea Grant Education Office
134 A	E/AID-1	OSU	Marine and Great Lakes Education: An Infusion Program for Ohio Schools
135 A	E/MP-1	OSU	Great Lakes Information Through Museum Programming
136 A	A/EP-1	OSU	Ohio Sea Grant Advisory Service
137 A	A/AV-1	OSU	Development of Audio-Visual Presentations for the Ohio Sea Grant Advisory Service Program
138 A	M/P-1	OSU	Administration and Development of the Ohio Sea Grant Program
139 A	1	NFRL	Biological Activity of Sediment from Five Sites in the Waukegan Boat Harbor, Waukegan, Illinois
140 A	2	NFRL	Formulation and Registration of Lampricides
141 A	P-1	GLERL	Water Movements and Temperature
142 A	P-2	GLERL	Prediction of Surface Waves, Water Level Fluctuations, and Overlake Winds
143 A	P-3	GLERL	Particle Dynamics
144 A	P-4	GLERL	The Cycling of Toxic Organics
145 A	P-5	GLERL	Ecological Succession and Trends of Great Lakes Biota
146 A	P-6	GLERL	Eutrophication and Nutrient Cycling
147 A	P-7	GLERL	Hydrologic Properties
148 A	P-9	GLERL	Environmental Information Services

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
117 A	AS/A-3	U.WI.	Earthwatch Public Service Radio Program
118 A	E/E-8	U.WI.	Development of Remote Sensing Course With Emphasis on the Coastal Resource of Green Bay
119 A	R/F-9	U.MINN.	Nutrients, Productivity and Water Quality in Lake Superior: A Mechanistic Approach to an Oligotrophic Food Web
120 A	R/CL-1	U.MINN.	Microcontaminant - Air, Water, Sediment, Biota Interactions in Lake Superior
121 A	R/CL-6	U.MINN.	Sediment Mass Movement on the Tailings Fan in Lake Superior at Silver Bay, Minnesota
122 A	R/CL-7	U.MINN.	Redistribution of Tailings Deposits in Lake Superior by Turbidity Currents
123 A	M/P-1	U.MINN.	Program Management
124 A	M/P-2	U.MINN.	Program Development
125 A	M/P-3	U.MINN.	Ship Time
126 A	R/GO-1	OSU	Processes Controlling the Character and Distribution of Organic and Terrigenous Sediment in the Western Basin of Lake Erie
127 A	R/MR-1	BGSU	Evaluation of Sand Resources in Western Lake Erie
128 A	R/OE-1	OSU	Coherent Turbulent Structures in the Benthic Boundary Layer; Phase 1: Development of an Ultrasonic Transducer for Direct Profiling of Sediment Concentration and Grain Size Distribution
129 A	R/OE-3	BGSU	Modular Block Analysis
130 A	R/CE-1	OSU	Beaches: Changes in Areal Distribution and Size Since the Mid-1870's Along the Ohio Shore of Lake Erie

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
103 A	R/AQ-11	U.WI.	Effects of Nutritional and Environmental Stresses on Resistance to Disease in Coolwater Fishes
104 A	R/GB-5	U.WI.	Green Bay Subprogram Coordination
105 A	R/GB-12	U.WI.	Physical-Chemical Characteristics and Dynamics of Green Bay
106 A	R/MW-20	U.WI.	An Assessment of Selected Organic Pollutants in the Lower Fox River and Green Bay
107 A	R/MW-21	U.WI.	Methodology for Assessing Pathways of Chemicals in the Lower Fox River/Green Bay Aquatic System
108 A	R/GB-15	U.WI.	Persistence of Pollutants in the Sediments of Lake Michigan's Green Bay
109 A	R/MW-23	U.WI.	Sources of Polychlorinated Biphenyls to Lake Michigan
110 A	R/MW-26	U.WI.	Modification of Xenobiotic Metabolizing Activity in Lake Michigan Fish by Environmental Pollutants
111 A	R/MW-24	U.WI.	Role of Particulate Matter in Controlling Toxic Element Behavior in Lake Michigan
112 A	R/MW-25	U.WI.	Transport of Toxic Substances into Lake Superior by Suspended Solids
113 A	R/MW-27	U.WI.	Polychlorinated Dibenzodioxins (PCDDs) and Dibenzofurans (PCDFs) Persistence and Toxicity in Freshwater Fish
114 A	R/PS-28	U.WI.	Transferable Discharge Permits: Implementation Studies
115 A	R/NA-7	U.WI.	Responses of Lake Superior Net Basin Supplies and Great Lakes Water Levels to Climate Variations
116 A	R/MN-1	U.WI.	Geophysical Assessment of the Hydraulic Connection Between Lake Michigan and the Groundwater Aquifers on its Western Boundary

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
088 A	A/FP-1	MSU	Marine Advisory Service
089 A	A/C-1	UM	Communications
090 A	E/GLE-3	UM	Great Lakes Seminar
091 A	R/GLF-11	UM	Examination of Spawning and Incubation Requirements, and Reproductive Biology of Lake Trout in Relation to Reestablishment of Self-Sustaining Stocks in the Great Lakes
092 A	R/TS-19	MSU	The Investigation of Ocular and Neural Lesions Observed in Rainbow Trout (<i>Salmo Gairdneri</i>) Following Exposure to Selected Organophosphate Esters
093 A	R/TS-21	UM	Lysosomal Enzyme Release as a Measure of Stress in Fish
094 A	R/TS-14	UM	The Role of <i>Mysis relecta</i> in the Transport of PCBs in the Lake Michigan Ecosystem
095 A	R/TS-22	UM	Transfer Mechanisms of PAHs in Great Lakes Zooplankton
096 A	R/CW-5	MSU	Nutrient Cycling and Hydrologic Processes in Great Lakes Coastal Marshes
097 A	R/ER-8	UM	Influence of Lake Michigan and Fox River Waters on the Water Quality of Green Bay
098 A	R/ER-12	UM	Study of the Effect of a Rural Clean Water Project in the Saline Valley
099 A	M/PM-1	UM	Program Administration and Management
100 A	R/LR-14	U.WI.	Alternative Management Strategies for Minimizing Polychlorinated Biphenyls in Lake Michigan Fishes
101 A	R/LR-19	U.WI.	Significance of <i>in situ</i> Nutrient Regeneration in Lake Michigan's Nutrient Budget
102 A	R/LR-23	U.WI.	Composition and Productivity of Aquatic Macrophyte Communities in Three Lake Michigan Bays

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
071 A	R/F-22	SUNY,COR. U.	A Study of Factors Influencing the Growth and Survival of Juvenile Hard Clams, <u>Mercenaria mercenaria</u> , in Great South Bay
072 A	R/S-16	SUNY,COR. U.	Containment of Dredged Sediment Under the Floor of the Lower Bay of New York Harbor
073 A	R/S-17	SUNY,COR. U.	Plan for the Containment of Dredged Sediments in Submarine Borrow Pits
074 A	R/E-10	SUNY,COR. U.	Assessment of Suitability of Coal Waste Blocks for Artificial Reefs in Lake Ontario
075 A	R/M-31	SUNY,COR. U.	Development of a Coastal Structures Construction Manual
076 A	R/M-34	SUNY,COR. U.	Wave Refraction and Diffraction
077 A	R/M-35	SUNY,COR. U.	An Evaluation of the Relative Importance of Mass Wasting Processes as a Mechanism of Lake Ontario Bluff Recession
078 A	R/M-38	SUNY,COR. U.	Dynamics of Nearshore Ice
079 A	R/M-39	SUNY,COR. U.	Technical Control of Local Beach Studies
080 A	A/S-1	SUNY,COR. U.	Advisory Services
081 A	C/P-1	SUNY,COR. U.	Communications: New York Sea Grant Institute
082 A	E/K-6	SUNY,COR. U.	Development of a Comprehensive K-6 Coastal Education Program for New York State
083 A	R/L-3	SUNY,COR. U.	Problems in Coastal Law
084 A	E/I-2	SUNY,COR. U.	Coastal Law Scholars
085 A	E/I-3	NOAA	Sea Grant Scholars
086 A	P/M-1	SUNY,COR. U.	Program Management
087 A	P/M-3	SUNY,COR. U.	New Initiatives

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
057 A	0634	UM	Atmospheric Transport of Toxaphene to Lake Michigan
058 A	0635	CR.INST.SC.	Transferral of Toxins from Sediments to Great Lakes Biota
059 A	0636	OSU	Lake Erie Sediment Resuspension and Transport Mechanisms: Nearshore Vertical Profiles and Flux Rates
060 A	8	U.WI.	Movements of Lake Trout Fry: Environmental and Genetic Factors
061 A	9	PRIVATE CONSUL.	Nonconsumptive Extra-Market Values for Great Lakes Ecosystem Rehabilitation
062 A	10	GLFC	Great Lakes Ecosystem Rehabilitation Studies
063 A	1300-83410-974-10	GLFL	Ecology and Limnology: Effects of Water Use Practices on Great Lakes Fishes
064 A	1300-83410-974-20	GLFL	Ecology and Limnology: Nutrient Cycling and Plankton-Benthos Productivity
065 A	1933-722-31	GLFL	Ecology and Limnology: Effects of Beach Nourishment on Nearshore Waters of Lake Huron Adjacent to the Lexington (Michigan) Harbor of Refuge
066 A	1933-722-38	GLFL	Ecology and Limnology: Ecological Effects of Breakwater Construction and Channel Dredging at West Harbor, Ohio (Western Lake Erie)
067 A	1300-83410-974-60	GLFL	Physiology and Behavior
068 A	1110-83410-750-50	GLFL	Contaminant Dynamics
069 A	1110-83410-750-70	GLFL	Contaminant Toxicology
070 A	R/E-16	SUNY, COR. U.	Secondary Metabolites of Marine Organisms

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
043 A	0613	CR.INST.SC.	Flux of Organic Toxins and Major Nutrients in the Great Lakes in Various Ecosystem Compartments
044 A	0614	COMP.SC.	Computer Support Program
045 A	0621	ERL-D	Flint River Waste Load Allocation Research Survey
046 A	0622	TEXAS A&M	Identification of PCBs in Commercial Mixtures and Environmental Samples
047 A	0624	ERL-D	Assessment of Relative Assimilative Capacities of Lake Michigan and Erie for Persistent Toxicants
048 A	0625	U.MINN.	Effects of Toxaphene on the Planktonic Food Chain in Lake Superior
049 A	0626	MTU	An Assessment of the Pollution of Green Bay (Lake Michigan) with Development of Loading Estimates for its Improvement
050 A	0627	LLRS	Sodium Chloride Ecological Effects in Great Lakes
051 A	0628	LLRS	Refinement of Phosphorus Management Options and Assessment of Cost-Effectiveness of Phosphorus Control Programs
052 A	0629	RES.TRIA.INST.	Determination of Polychlorinated Biphenyls and Other Halogenated Hydrocarbons in Human Biological Fluids
053 A	0630	LLRS	Transitional Transport and Impact of Toxic Substances in the Great Lakes - St. Louis Harbor, Lake Superior
054 A	0631	ERL-D	Ecosystem Risk and Hazard Assessment to Achieve Maximum Environmental Benefit
055 A	0632	ARG.NAT.LAB	Determine Relative Importance of Direct Uptake Versus Food Chain Uptake in Selected Great Lake Fish
056 A	0633	U.WI.	Polychlorinated Biphenyls in Lake Michigan Tributaries, Water, and Sediment

* see Abbreviations

<u>I JC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
028 A	0108	ERL-D	Toxicity Modification by Natural Environmental Factors
029 A	0509	U.MINN.	Development of the Susceptibility Criteria/Measures for Assessing Aquatic Resources at Risk from the Deposition of Airborne Pollutants
030 A	0600	ERL-D/LLRS	Development of an EPA Great Lakes Research Program Plan
031 A	0601	ERL-D/LLRS	Large Lake Research Program Development and Implementation
032 A	0602	ERL-D/LLRS	Atmospheric Input of PCBs and Other Halogenated Hydrocarbons to Lake Huron
033 A	0603	ERL-D/LLRS	Validation of Phosphorus Phytoplankton Model
034 A	0604	ERL-D/LLRS	Great Lakes Data Management and Model Maintenance
035 A	0605	U.CALIF.	Transport Of Contaminants in the Great Lakes
036 A	0606	ERL-D/LLRS	Hazardous Materials Fate Models
037 A	0607	MI.PUB.H.	Evaluation of Humans Exposed to Waterborne Chemicals in the Great Lakes
038 A	0608	U.MINN.	Changes in Zooplankton Communities Related to Reduction of Nutrient Loading in Saginaw Bay
039 A	0609	UM	Effects of Nutrient Loading Reduction on Phytoplankton in Saginaw Bay and Lake Huron
040 A	0610	CLARK.COL.	Bioassay Determination of Algal Available Phosphorus in Suspended Sediments of Great Lakes Tributaries
041 A	0611	DEPAUL U.	Polychlorinated Biphenyls in the Atmosphere and in Lake Michigan
042 A	0612	MAN.COL.	Mathematical Models of the Fate of Toxic Substances in the Great Lakes

* see Abbreviations

<u>I JC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
048 C	PL-21	LAKEHEAD U.	Aquatic Toxicity Studies of Multiple Organic Compounds
049 C	WR-10	OMOE	Toronto Harbour Study
050 C	WR-11	OMOE	Nanticoke: Currents and Water Quality
051 C	WR-13	OMOE	Great Lakes Program
052 C	WR-22	OMOE	Filamentous Algae Programme
053 C	WR-23	OMOE	Marshland Project
054 C	WR-24	OMOE	Algal Assay Methods for Evaluating Toxicity of Metals and Other Contaminants in Lakes
055 C	WR-26	OMOE	Phosphorus Removal Studies
056 C	WR-28	OMOE	Organic Compounds in Selected Sewage Treatment Plant Effluents and Organic Residues in Exposed Fish Populations
057 C	WR-29	OMOE	Cornwall Field Study
058 C	WR-30	OMOE	St. Clair River Industrial Organic Contaminants Survey
059 C	WR-31	OMOE	The Toxicity of Selected Organics to Fish by Intra-Peritoneal Injections
060 C	WR-34	OMOE	Nearshore Fish Contaminants Surveillance - Great Lakes
061 C	WR-35	LAKEHEAD U.	Aquatic Toxicity Studies of Multiple Organic Compounds
062 C	WR-36	OMOE	The Biological and Chemical Evaluations of Industrial Effluents and Their Receiving Waters
063 C	HC-2	LAKEHEAD U.	Aquatic Toxicity Studies of Multiple Organic Compounds
064 C	LS-10	OMOE	One-Step Fecal Coliform Isolation and Enumeration
065 C	LS-11	OMOE	Development of High Resolution Capillary Columns to Improve Current Analytical Techniques

* see Abbreviations

<u>I JC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
066 C	LS-32	OMOE	Investigation of Flow Injection Analysis (FIA) Systems and Methods
067 C	PAC-18	U.WO.	Influence of Environmental Factors on the Rate of Microbial Degradation of Pesticides in Soil and Water
068 C	PC-5	OMOE	A Survey of Water Quality in Distribution Systems
069 C	PC-6	ZENON ENV. ENT.	New Potable Water Treatment Method for Trihalomethane Precursor and Synthetic Organic Removal
070 C	PC-10	BRANTFORD P.U.C.	Organic Contaminant Removal from City of Brantford Drinking Water
071 C	PC-15	OMOE	Iron Sequestration
072 C	PC-22	OMOE	Arsenic Waste Treatability Study - Deloro
073 C	PC-27	OMOE	The Applicability of UV Disinfection Technology in Ontario Wastewater Treatment Plants
074 C	PL-6	INT. ENV. CONS.	Biomonitoring of Public Water Supplies
075 C	PL-11	REG.MUN.OTT.CAR.	Rideau River Storm Water Management Study, Ottawa, Ontario
076 C	PL-22	MCM.U.	Increased Disease Susceptibility after PCB Exposure
077 C	WR-9	OMOE	Hydrogeologic Mapping
078 C	WR-12	OMOE	Hamilton Harbour Study
079 C	WR-14	OMOE	Evaluation of Instream Management Practices (Stratford-Avon River Environmental Management Program)
080 C	WR-21	OMOE	Ontario Experimental Neutralization Study
081 C	WR-25	OMOE	(1) Urban Lakes, (2) Lake Restoration
082 C	WR-27	OMOE	Taxonomy and Ecology of Phytoplankton in Lake Acidification, Neutralization and Eutrophication Studies

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
083 C	WR-32	OMOE	The Effects of Elevated Levels of Aluminum and Manganese in Combination with Low pH on Survival of Early Life Development Phases of Fish
084 C	WR-33	OMOE	Factors Affecting Aluminum Toxicity to Fish at Low pH
085 C	011	GLFRB	Effects of Toxic Materials on Zooplankton Production
086 C	012	GLFRB	Metal Complexation and Toxicity
087 C	013	GLFRB, NWRI	Methylation of Tin Compounds in the Aquatic Environment
088 C	6605-1569 -54(N)	INST.ARM.-FRAP.	Recherche de virus entériques humains dans les eaux d'égout
089 C	6606-1781 -54(N)	U.OTT.	Virological Examination of Raw and Finished Waters in Ottawa-Hull and the Vicinity
090 C	6605-1649- 54(N)	INST.ARM.-FRAP.	Evaluation virologique des eaux potables
091 C	6606-1790 -54(N)	OMOH	Virological Survey of Selected Drinking Waters in Southern Ontario
092 C	6606-1852 -54(N)	U.WIN.	Environmental Surveillance of Pathogenic Amoebae in Ontario Waters
093 C	6605-1746 -54(N)	INST.ARM.-FRAP.	Recherche de virus entériques non poliomyélitiques dans les eaux d'égouts
094 C	1	LRRI, HRS	Plant Nutrient Losses and Water Flow through Tile Drains in Brookston Clay Soil
095 C	2	U.GUE., LRRI	Snowmelt Studies: Control of Soil Erosion in Hydrologically Active Agriculture Areas During Snowmelt and Spring Runoff
096 C	3	UTRCA	Factors Affecting the Suitability of On-Farm Remedial Measures for Non-Point Pollution Control in the Canadian Great Lakes Basin

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
097 C	4	LRRI	Land Use Practices and Water Quality
098 C	5	LRRI, INST. PED.	Resource Protection - A Study of Soil Erosion with Particular Attention to Ontario
099 C	6	LRRI	Soil and Water Management
100 C	7	LRC	1. Studies into Chemical and Microbial Degradation of Pesticides in Aqueous Systems, and in Soils 2. Movement of Pesticides within Soil to Ground Water 3. Integrated Pest Management
101 C	8	ARC	1. Nutrient Losses to Water Supplies and Accumulation in Soils; 2. Pollutant Transplant to Surface and Subsurface Waters in an Integrated Farm Operation
102 C	3	DAL. U.	Toxic Elements in Acid Rain
103 C	5	U. QUE.	Integrated Effects of 2,4-D on Benthic Organisms in a Pond Ecosystem
104 C	6	LAKEHEAD U.	Study of the Biodegradation of Man-Made Environmental Toxicants by Aquatic Fungi, Bacteria and Freshwater Algae
105 C	7	LAVAL U.	Origin of Iodine-131 in the St. Lawrence River and its Tributaries
106 C	8	McGILL U.	Denitrification and Related Processes in Aquatic Systems
107 C	9	McM. U.	Determination of Sediment and Pollutant Flux for the City of Hamilton, and Strategies for Minimizing Impacts on the Receiving Waters
108 C	12	U. QUE.	Paleolimnological Indices of Lake Water Acidification
109 C	13	QUE. U.	Sediment-Related Contaminant Transport in River Systems
110 C	15	U. TOR.	Behaviour Prediction of Aquatic Pollutants

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
111 C	16	U.WAT.	Transport of Hazardous Organic Solutes and Metals in Ground Waters at a Special Waste Disposal Site
112 C	10	McM.U.	Geochemical Processes, Emphasizing Protons, Relative to Time Trends of Water Quality in Softwater Systems
113 C	17	U.WAT.	Studies Related to Environmental Tetraalkyllead Synthesis
114 C	18	U.WAT.	Assessment of the Anisotropic Characteristics of a Fractured Porous Aquifer to Determine Potential Contaminant Migration Pathways
115 C	20	YORK U.	The Use of Hypolimnetic Aeration to Restore Kettle Lakes that have been Degraded by Agricultural Runoff
116 C	014	GLFRB	Persistent Contaminants
117 C	015	GLFRB	Effects of pH on Lead Methylation
118 C	016	GLFRB	Contaminant and Nutrient Dynamics in Experimental Ecosystems
119 C	018	GLFRB,NWRI	Effects of Zinc on Freshwater Algae
120 C	M407326	NHW	Dioxins as Food Contaminants
121 C	109	NWRI	Spawning/Nursery Ground Surveys
122 C	110	NWRI	Sediment/Water Interaction
123 C	210	NWRI	Prediction of Contaminant Hazard by QSAR
124 C	81-211	NWRI	Characterization of Individual Toxic PCB Compounds in Sediments from the Upper and Lower Niagara River and Adjacent Lake Ontario
125 C	82-211	NWRI	Calculations of Molecular Properties for SAR

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
126 C	212	NWRI	Organic Contaminant Sources and Sinks in Niagara R. and L. Ontario
127 C	213	NWRI	Chlorinated Hydrocarbons in Sediments and Biota of the Great Lakes
128 C	216	NWRI	Chemistry of Chlorinated Hydrocarbons at the Air/Water Interface
129 C	218	NWRI	Bioavailability of Organic Contaminants in Sediments
130 C	219	NWRI	Organochlorine Contaminants in Surface Microlayers of the Niagara R.
131 C	220	NWRI	Role of Suspended Solids in Benthos Uptake of Organics, Niagara R. Mouth
132 C	222	NWRI	Sediment-Water Partitioning of Toxic Organic Substances
133 C	230	NWRI	Chemical Speciation and Bioavailability of Toxic Elements
134 C	232	NWRI, GLFRB	Heavy Metal Methylation Processes in the Aquatic Environment
135 C	233	NWRI	Fate of Organotins in Aquatic Systems
136 C	234	NWRI	Heavy Metal Chemodynamics in the Niagara River and Plume
137 C	240	NWRI, GLFRB	Trends in Radioactive Contaminants in the Great Lakes
138 C	241	NWRI	Radium-226 Pathways - Port Granby Waste Management Site to Lake Ontario
139 C	242	NWRI	Radionuclide Pathways in the Niagara R. and L. Ontario
140 C	309	NWRI	Persistent Toxic Substances in Urban Runoff (GLWQA 1978)
141 C	310	NWRI	Effects of Urban Land Use on Runoff
142 C	349	NWRI	Shoreline Dredge Disposal Sites
143 C	353	NWRI	Persistent Toxic Substances in Urban Runoff

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
144 C	419	NWRI	Biogeochemical Processes in Great Lakes Sediments - Paleoenvironment
145 C	420	NWRI	Lake Erie Historical Oxygen and Phosphorus Trend Analysis
146 C	421	NWRI	Sedimentation Rates and Nutrient Processes in Lake Ontario, 1981
147 C	422	NWRI	Lake Erie; Past, Present and Future
148 C	423	NWRI	Benthic Invertebrates as Indicators of Environmental Change
149 C	425	NWRI	Production, Decomposition and Sedimentation in Lake Ontario
150 C	426	NWRI	Organic Material Production and Decomposition (Lake Erie)
151 C	428	NWRI	The Nepheloid Layer in Lake Ontario
152 C	430	NWRI	Bioavailability of Phosphorus
153 C	433	NWRI	Bioavailability of Phosphorus in Lake Water
154 C	475	NWRI	Nutrient Exchange Processes in Macrophyte Lakes
155 C	479	NWRI	Cladophora in the Great Lakes
156 C	494	NWRI	Lake Ontario Nutrient Assessment Study (LONAS)
157 C	495	NWRI	Sediment Bank - Great Lakes
158 C	497	NWRI	Lake Erie Surveillance Continuity
159 C	501	NWRI	Operational Water Quality and Contaminant Transport Models
160 C	503	NWRI	Coastal Exchange Dynamics
161 C	504	NWRI	Simulation of Toxic Contaminants Fate in Lake Ontario
162 C	505	NWRI	Statistical Analysis of Surveillance Data

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
163 C	506	NWRI	Coastal Exchange/Transport Model
164 C	508	NWRI	Vertically Profiling Current Meter and Temperature Sensor (GVAPS)
165 C	509	NWRI	Water Movements in the Central Basin of Lake Erie, Phase III
166 C	510	NWRI	Lake Ontario Physical Limnology Studies
167 C	511	NWRI, GLFRB	Assessment of the Present Surveillance Program and Future Strategy
168 C	540	NWRI	Spectro-Optical Modeling and Applications to Water Research
169 C	541	NWRI	Pollutant Transport Through Porous Media
170 C	572	NWRI	Water Quality Data Base Administration
171 C	573-574	NWRI	1. NWRI Branch Research Support - Data Management 2. Non-NWRI Branch Research Programming Support
172 C	576	NWRI	General Purpose Three Dimensional Graphics Software Development
173 C	599	NWRI	APSD - Capital Procurement
174 C	614	NWRI	To Provide Confirmation and Identification of Priority Pollutants in the Great Lakes Basin by HRGC/MS
175 C	615	NWRI	Methods Development and Identification of Persistent Contaminants in the Great Lakes Basin
176 C	619	NWRI	Dioxins and Benzofurans Methodology
177 C	627	NWRI	Microbial Testing for Mutagens
178 C	628	NWRI	Bacteriological Water Quality Surveillance Lower Lakes
179 C	653	NWRI	IJC Quality Assurance Study

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
180 C	670	NWRI	Computer Services for Water Management Research
181 C	22	EHC	Drinking Water
182 C	23	EHC	Environmental Criteria
183 C	24	EHC	Predictive Toxicology
184 C	25	EHC	Occupational Toxicology
185 C	26	EHC	Environmental Health Surveys
186 C	27	EHC	Pesticides
187 C	28	EHC	Long Range Transport of Air Pollutants
188 C	029/01	WTC,ACB	Biological N-Removal - Industrial Wastes
189 C	02	WTC	Treatment of Aqueous Wastes from Coal Gasification and Coal Liquefaction Processes
190 C	81-24/04	U.BC	Characterization and Treatment of Landfill Leachate
191 C	81-20/05	WTC,CANVIRO	Bioavailable Phosphorus in Municipal Wastewaters
192 C	79-27/06/07	WTC,CANVIRO	Anaerobic Treatment of High Strength Wastes
193 C	09	WTC,GO.STO.LTD.	Dynamic Operation of Anaerobic Packed Bed Reactors (APBR)
194 C	08	WTC	Assessment of Anaerobic Downflow Biofilm Reactors for Food Processing Wastes
195 C	80-11/10	RPF,CANVIRO	Thermophilic Anaerobic Fermentation of Feed Lot Wastes
196 C	78-9/11	IEC	Mixing Requirements for Anaerobic Digesters
197 C	082/13	WTC	Process Control of the Activated Sludge System
198 C	18	U.BC	Control of Biological Phosphorus Removal Processes

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
199 C	80-12/12	WTC	Design Variables and Operating Strategies for Secondary Clarification
200 C	80-14/34	WTC	Toxics Identification and Mobility in Sludges (TIMIS)
201 C	80-15/35	WTC	Process Evaluation of Computer Aided Designs (PECAD)
202 C	036A/36	WTC	Mechanisms Affecting Chemical Conditioning of Sewage Sludges
203 C	038/38	WTC	Leachability of Radioactive Constituents from Uranium Mine Tailings
204 C	39	WTC, DEARBORN	Power Generation - Characterization and Disposal Options for FGD Residues
205 C	40	WTC	Power Generation: Characterization and Disposal Options for FBC Residues
206 C	81-2/42	WTC	Power Generation: Contaminant Uptake in Recirculating Ash Transport Systems
207 C	81-3/43	WTC	Environmental Impact of Raw Sewage Sludge Incorporation into Agricultural Soil
208 C	81-4/44	WTC	Toxics Immobilization in Sludges by Solidification (TISS)
209 C	81-5/45	WTC, DEARBORN	Cost Effective Toxics Control via Incineration
210 C	81-6/46	WTC	Application of Sludge Treatment and Utilization Technology
211 C	81-7/47	WTC	Fate of Trace Organics in Sludge Applied to Land
212 C	81-8/48	WTC, CANVIRO	Effect of Sludge Conditioning/ Processing on Toxic Mobility
213 C	16	WTC	Assessment of Energy Saving by Manipulation of Aeration Control Variables
214 C	069/69	WTC	P/C Removal of Radium-226

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
215 C	79-4/71	WTC	Uranium Mine Effluent Treatment Technologies
216 C	80-7/73	WTC	Removal of Collodial Solids from Iron Mine Effluents
217 C	81-30/74	WTC,MUC	Physical/Chemical Process Development Studies-Montreal Urban Community (MUC)
218 C	81-34/76	WTC	Disinfection of Municipal Effluents
219 C	78	WTC	Coal Mine/Prep Plant - Wastewater Studies
220 C	79	WTC	Uranium Mine Effluent Treatment Technologies - Regulation Development
221 C	80	WTC	Uranium Mine Effluent Treatment Technologies-Scale-Up of a Radium-226 Removal Process
222 C	060/81	WTC,CANVIRO,KPA	Gold Mining Industry
223 C	80-10/37	WTC	Sludge Application Case Histories
224 C	17	WTC	Development of Protocols to Evaluate the Integrity of Online Instrumentation in Wastewater Treatment Plants
225 C	81-9/49	WTC,DEARBORN	PCP Control Technology
226 C	78-10/70	WTC	Water Pollution Control Technology for Power Generation Facilities
227 C	79-5/72	WTC,ZENON	Specific Contaminants Removal Technologies for Industrial Effluents
228 C	79-22	WTC	Biological Oxidation of Thiosalts - Brunswick Mining & Smelting
229 C	034CE	WTC	Disposal of Chemical Sludges on Land: Lysimeter Studies
230 C	78-7	WTC,MOLSON'S	Deep Shaft Process Performance Evaluation
231 C	81-21/03	WTC	Fate of Toxic Chemicals in Biological Treatment Systems

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
232 C	81-23/15	WTC	Application of Automated Process Control to Wastewater Treatment Systems
233 C	81-32/75	WTC	Process Control and Upgrading of Effluent Filtration Operations
234 C	81-35	WTC	Treatment of Blast Furnaces Scrubber Water
235 C	81-36/77	WTC	Treatment of "Wet Barker" Effluents
236 C	(0)-2	OMNR	Bay of Quinte Program
237 C	(0)-5	OMNR	Bay of Quinte - Special Monitoring
238 C	(S)-1	OMNR	Acid Rain Study
239 C	(P)-1	OMNR	Productivity of Boreal Forest Lakes
240 C	(A)-2	OMNR	Age and Growth in Acid Stressed Environments
241 C	(A)-3	OMNR	In Vitro Studies of Acid Impacts on Age and Growth of Fish
242 C	077	GLFRB	Effects of Dredge Spoils on Natural Phytoplankton
243 C	073	GLFRB,OMNR	Zooplankton - Georgian Bay and Lake Huron
244 C	082	GLFRB	Larval Walleye Survey, Bay of Quinte
245 C	028/098	GLFRB	Metabolism and Contaminant Dynamics in Lake Ontario Pontoporeia
246 C	001	GLFRB	Reproductive Success of Fish from Areas of the Niagara and Saginaw Rivers Receiving Chemical Contamination
247 C	007	GLFRB	Fish Health Assessment, Effects Monitoring
248 C	008	GLFRB	Reproduction in Great Lakes Lake Trout
249 C	042	GLFRB,NWRI	Assessment of Dredge Spoil Evaluation Technique
250 C	006	GLFRB	Community Analysis of Great Lakes Benthic Fauna

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
251 C	030	GLFRB	Joint Research - SSM and Others
252 C	065	GLFRB, GLFC	Adaptive Environmental Assessment Workshops
253 C	071	GLFRB	Production of Phytoplankton and Invertebrates in South Bay, Lake Huron (formerly Benthic Macroinvertebrate Production Dynamics)
254 C	99300	ONT.H.	Lakeview TGS Mobile Monitoring
255 C	99315	ONT.H.	Chlorine Plume Analysis
256 C	99316	ONT.H.	Aerosol and Precipitation Monitoring
257 C	99353	ONT.H.	Nanticoke TGS Tempering Elimination
258 C	99355	ONT.H.	Submerged Intake Screening
259 C	99358	ONT.H.	Discharge Attached Algae
260 C	99360	ONT.H.	Condenser Passage Ichthyoplankton Mortality
261 C	99365	ONT.H.	Ash Test Cell at A.E. Crookes Park
262 C	99366	ONT.H.	Ash and Coal Pile Runoff
263 C	99367	ONT.H.	Heavy Metal Emissions
264 C	99369	ONT.H.	Trace Organic and Radiation Emissions
265 C	99371	ONT.H.	Leachates from the J-C. Keith TGS Ash Lagoon
266 C	99372	ONT.H.	Acid Rain Effects
267 C	89373	ONT.H.	Social and Economic Effects of Emissions
268 C	99374	ONT.H.	Long Range Transport Modeling
269 C	99376	ACRES, ONT.H.	Acid Rain Deposition Modeling
270 C	99377	ONT.H.	Dioxin Studies
271 C	99378	ONT.H.	Intermittent Emission Controls

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>ORGANIZATION PROJECT NUMBER</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
272 C	1	ONT.H.	Once-through Cooling Studies
273 C	2	ONT.H.	Thermal Plume Studies in the Vicinity of Bruce Nuclear Power Development for Certificate of Approval to Discharge Waste Cooling Water from Bruce NGS 'B' into Lake Huron
274 C	3	ONT.H.	Verification of the BHWP Limited Use Zone (LUZ) for Hydrogen Sulphide (H ₂ S)

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
022 C	89	NWRI	St. Lawrence River Water Quality Survey
023 C	92	NWRI	Dispersion Process in Open Channels
024 C	92	NWRI	Dispersion in Open Channel Beds
025 C	93	NWRI	Mathematical River Response Model
026 C	104	U.WAT.	Carbon 14 Activities in Aqueous Carbonate and the Origin and Occurrence of Methane in Groundwaters
027 C	110	MCGILL U.	Studies on the Nutrient Dynamics of a Transboundary Lake
028 C	111	U.WAT., GLFRB**	Microbial Nitrogen and Phosphorous Cycles in Lake Column Simulators
029 C	112	NWRI	Distribution of the Stable Isotopes of Sulfur and Nitrogen in Waters and Sediments of the Great Lakes
030 C	112	NWRI	Inorganic Carbonate Geochemistry
031 C	115	NWRI	Surveillance Program - Design and Applied Research
032 C	116	U.WAT., IWD	Spatial and Temporal Water Quality Sampling
033 C	118	NWRI	Sampling and Sample Preservation
034 C	120	NWRI	The Development of Electrochemical Sensors Desirable for Environmental Studies
035 C	120	NWRI	The Development of Multiparameter, Automated Analysis and Monitoring Systems Utilizing Electrochemical Sensors
036 C	121	NWRI	The Development of the Methodology Employing Electrochemical Sensors in the Measurement of Water Quality Parameters
037 C	121	NWRI	Improved Methods of Analysis for Trace Metals in Water

* see Abbreviations

** Formerly known as Great Lakes Biolimnology Laboratory (GLBL)

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
001 C	39	NWRI**	Lake Current Climatology - Great Lakes
002 C	45	NWRI	Upper Lakes Compendia
003 C	49	NWRI	Distorted Physical Models
004 C	50	NWRI	Coastal Climatology Study
005 C	50	NWRI	Dispersion of Heat, Dissolved and Suspended Matter in Lakes
006 C	51	NWRI	Nearshore Advection/Dispersion Models
007 C	51	NWRI	Vertical Automatic Profiling System (VAPS)
008 C	60	NWRI	Trends and Variations Associated with Great Lakes Limnological Processes
009 C	62	NWRI	Lake Superior, Open - Lake Studies
010 C	66	NWRI	Lake Huron - Georgian Bay Studies
011 C	68	IWD	Lake Erie Surveillance
012 C	71	IWD	Lake Ontario Surveillance
013 C	73	NWRI	Continuing Water Quality Surveillance for Lower Great Lakes
014 C	73	NWRI	Microbiological Point Source Effluent Study on Lower Lakes
015 C	74	NWRI	Surveillance
016 C	75	IWD	WQ - 003 Lake and Harbour Monitoring
017 C	76	NWRI	Wetlands Studies
018 C	77	NWRI	Water Quality Model
019 C	77	NWRI	Computational Techniques and Verification Criteria
020 C	84	IWD	St. Marys River Water Quality Surveys
021 C	88	IWD	Niagara River Loading Surveys and Short Term Variation Study

* see Abbreviations

** Formerly known as Canada Centre for Inland Waters Branch (CCIW)

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
176 A	317	UM	Water Quality Impacts of Sediments Dredging in Large Lakes Systems
177 A	7	U.WI.	Air Pollution Inputs of Organic and Inorganic Substances to Lake Michigan Water
178 A	4	SUNY	Lake Ontario Environmental Atlas
179 A	7	GSU,USGS	An Experimental Study of Air Pollution Transport and Deposition in the Lake Michigan Basin
180 A	8	U.WI.,U.MINN.	Determination of Atmospheric Phosphorus Addition to Lake Michigan
181 A	8	UM,OMOE,MI.DNR	Southern Lake Huron: Input of Atmospheric Phosphorus
182 A	9	DEPAUL U.	Polychlorobiphenyls in the Atmosphere and in Precipitation in the Lake Michigan Basin
183 A	10	USEPA,MI.DNR	Atmospheric Input of Metal Pollutants to Upper Great Lakes
184 A	23	GE	Near Shore Ice Formation, Growth and Decay
185 A	31	GLERL	Surface Wave Observations, Analysis, and Prediction
186 A	16	GLERL	Lake Evaporation
187 A	18	GLERL	Lake Precipitation
188 A	21	GLERL	Ice Forecasting
189 A	22	GLERL	Lake Ice Distribution
190 A	23	GLERL	Lake Ice Characteristics
191 A	25	ACE	Thermal Regimes Disturbed by Man
192 A	31	ACE	Wave Information Project for the Great Lakes
193 A	33	ACE	Great Lakes Wave Hindcasting Techniques

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
159 A	425	GLFL, GLFC	Lake Ontario Fish Stocks
160 A	432	GLFL, GLFC, MI. DNR	Physiology and Behaviour
161 A	450	GLFL, ACE	Section - Ecology and Limnology Project - Benthos as Indicators of Habitat Quality
162 A	117	GLERL, LLRS, NWRI	IFYGL Chemical Intercomparison
163 A	391	GLERL	Phytoplankton Nutrient Competition in the Great Lakes
164 A	400	GLERL	Level 1 Ecological Model
165 A	403	GLERL	Culturing of Great Lakes Zooplanktonic Crustaceans
166 A	452	GLERL	Assessment of Lake Ontario Invertebrate Community
167 A	452	GLERL	Feeding Rates of Great Lakes Cyclopoids
168 A	61	GLBC, USEPA	Coordination of Data Collection, Data Storage, and Data Retrieval Programs for the Great Lakes (U.S.)
169 A	252	U.CINN.	Comparative Study of the Inactivation of Viruses in Wastewater
170 A	254	U.CINN.	Health Risks of Human Exposure to Wastewater
171 A	255	MO.CO.PWA.	Combined Sewer Overflow Abatement Program
172 A	303	ILL.GS., NWRI	Geochemistry of the Surface Sediments of Lake Michigan
173 A	304	UM	Southern Lake Huron: Deposition of Nutrients and Metals in the Sediments of Southern Lake Huron
174 A	304	UM	Southern Lake Huron: Resistant Organic Matter in Sediments
175 A	313	NW.U.	Engineering and Environmental Aspects of Confined Disposal of Dredge Spoil

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
143 A	140	MAN.COL.,NWRI	Mathematical Models of Water Quality in Large Lakes
144 A	145	OSU	Lake Erie Nutrient Control Program: An Assessment of its Effectiveness in Controlling Lake Eutrophication
145 A	165	OSU,MSU,MI.DNR	Fish Larvae Survey of Western Lake Erie
146 A	183	ERL-D	Development of Water Quality Criteria for Freshwater Fish, Other Freshwater Life, and Wildlife
147 A	188	ERL-D	Ecological Distribution of Persistent Xenobiotic Contaminants
148 A	248	ERL-D	The Environmental Impact of Disinfecting Municipal Effluents and Ecological Distribution of Contaminants And Bioconcentration
149 A	248	ERL-D,U.MINN.	Chlorination and Ozonation Products of Municipal Sewage and Their Environmental Impact
150 A	156	GLFL,GLFC	Section - Ecology and Limnology Project-Effects of Water-Use Projects
151 A	186	GLFL,GLFC,IJC	Contaminant Dynamics
152 A	187	GLFL	Contaminant Toxicology
153 A	204	NFRL	Development of Piscicides and Collecting Tools for Fishery Use
154 A	205	NFRL,GLFC	Development of Lampricides
155	444	FWS	Sea Lamprey Control, Great Lakes
156 A	391	GLFL	Nutrient Cycling and Plankton Productivity
157 A	451	GLFL,ACE	Section - Ecology and Limnology Project- Effects of Waste Heat for Ice Suppression
158 A	423	GLFL,GLFC	Lake Erie Fish Stocks

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
127 A	354	MSU,IJC	Felton-Herron Creek, Mill Creek Pilot Watershed Studies
128 A	358	MSU	Nitrate and Phosphorus Runoff Losses from a Watershed in the Great Lakes
129 A	365	MSU	Pesticide Runoff Losses from a Watershed in the Great Lakes Basin
130 A	381	USEPA	Review of Waterborne Disease Outbreaks
131 A	382	U.DET.	Study of Indicator Group of Bacteria for Detection of Human Fecal Coliforms
132 A	382	PUR.U.	Freshwater Quality - Monitoring and Methodologies Utilizing Salmonella
133 A	383	CHI.MED.SCH.	Methodology for Detection of Oncogenic and Nononcogenic Viruses
134 A	383	SYR.U.	Development of Methods for Quantitation of Adsorbed Viruses
135 A	383	U.WI.	Infectivity and Pathogenicity of Enteroviruses Ingested with Drinking Water
136 A	387	UM	Cladophora Measurements using Remote Sensing
137 A	387	U.WI.	Nutrition of Great Lakes Cladophora
138 A	393	UM,LLRS	Biological Response to Eutrophication in Saginaw Bay and Lake Huron
139 A	400	U.NY.	Zooplankton and Water Quality in Southern Lake Huron
140 A	402	UM,CR.INST.SC.	Zooplankton Studies in Saginaw Bay, Lake Huron
141 A	66	LLRS,IJC	Chemical Limnology of Lake Huron
142 A	139	MAN.COL.,NWR I	Application and Development of Eutrophication Planning Models for Lakes Ontario and Michigan

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
112 A	250	U.IL.	Virus Sensitivity to Chlorine Disinfection of Water Supplies
113 A	404	MIAMI U.	Evaluation of Sensitivity of Cladocerans to Copper, Chromium, and Zinc
114 A	431	U.WI.,ERL-D	Influence of Turbidity on Fish Abundance in Western Lake Superior
115 A	449	UM	Characteristics of Benthic Algal Communities in the Upper Great Lakes
116 A	457	U.WI.	Static Coal Storage, Biologic and Chemical Effects on the Aquatic Environment
117 A	326	U.MINN.,NOAA	Red Clay Turbidity in Western Lake Superior
118 A	333	GLBC,ACE,USSCS	Overview Determination of Pollutant Loadings from Shoreline Erosion
119 A	340	U.WI.	Role of Plant Roots in Retarding Red Clay Erosion
120 A	341	U.WI.	Effect of Vegetation Cover on Soil Water Content of Red Clay Soils and Erosion Control
121 A	341	U.WI.	Vegetational Cover Analysis
122 A	342	U.WI.,USEPA	Influence of Erosion Control Demonstration on Aquatic Life in the Nemadji River Basin
123 A	345	U.WI.,USSCS,USGS	Development and Implementation of a Sediment Control Ordinance or Other Regulatory Mechanism: Institutional Arrangements Necessary for Implementation of Control Methodology on Urban and Rural Lands
124 A	352	OSU	Maumee River Watershed Study - Ohio
125 A	353	U.WI.-WIDNR	Menomonee River Pilot Watershed Study
126 A	353	NYSDEC	Genesee River Watershed Study

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
095 A	159	U.MINN.	Winter Distribution of Fish in the Thermal Plumes of a Power Plant
096 A	164	MSU,OSU,DET.ED.	Mass Transport of Biological Materials Through a Once-Through Cooling System
097 A	184	U.IL.	Field Verification Industrial Hazardous Material Migration
098 A	185	CWR.U.	Dispersion and Fate of Hazardous Materials in Large Lakes
099 A	199	U.CINN.	Investigation of the Metabolism of Chlorinated Hydrocarbons
100 A	199	PUR.U.	Toxicity, Interactions, and Metabolism of Important Pesticides
101 A	200	U.WI.	Mechanisms of Pesticide Degradation
102 A	200	U.DAY.	Laboratory Evaluation of Thermal Decomposition of Pesticides
103 A	201	SYR.U.	Monitoring of Polynuclear Aromatic Hydrocarbons in Selected U.S. Waters
104 A	211	OSU	Effects of Different Forms of Selenium in Drinking Water on Selected Organisms
105 A	220	U.IL.	Health Effects of Human Exposure to Barium in Drinking Water
106 A	221	U.MINN.	Effect of Cyanide on Freshwater Fish and Invertebrates
107 A	221	U.MINN.	Continuous Flow Bioassays Using Natural Periphyton Communities with Emphasis on the Effects of Coal Leachate
108 A	234	U.WI.	Small Scale Waste Management
109 A	237	U.WI.	Experimental Use of Emergent Vegetation for the Biological Treatment
110 A	242	UM	Nitrification Studies
111 A	243	UM	Study of the Ion Exchange Process for Nitrate Removal from Water

* see Abbreviations

<u>IJC SERIAL NUMBER</u>	<u>PAGE NO. IN 1976 DIRECTORY</u>	<u>PERFORMING ORGANIZATION*</u>	<u>TITLE OF PROJECT</u>
078 A	67	CR.INST.SC.	Upper Lakes Reference Study
079 A	67	USEPA, GLERL, IJC	Mathematical Modeling of Saginaw Bay
080 A	81	GLBC	Identification and Evaluation of Existing River Mouth Loading Data
081 A	86	OSU, NASA, CWR.U.	Impact of Tributary Inputs on the Quality of Great Lakes Boundary Waters
082 A	116	UM	Optimal Sampling Strategies for Water Quality in Large Lakes
083 A	117	NASA	NASA/EPA Great Lakes Basin Program
084 A	119	U.WI.	Ion Exchange Membranes Applied to New Methods of Sampling, Enrichment, and Specification in Water Analysis
085 A	143	UM	Characteristics of Benthic Algal Communities in the Upper Great Lakes
086 A	143	UM	Biological Responses to Eutrophication in Saginaw Bay and Lake Huron
087 A	144	UM	Plankton and Nutrient Relationships in Southern Lake Huron
088 A	144	UM	Use of Nutrient Bioassay Procedures in the Great Lakes
089 A	146	SUCB, ACE, OSU	Lake Erie Nutrient Control Program-Eastern Basin
090 A	149	U.WI.	Non-Point Pollution in Relation to Eutrophication and Oxygen Depletion
091 A	150	U.WI.	Effects of Lake Restoration Methods on Nitrogen Availability
092 A	150	U.MINN.	Biomanipulation - An Ecosystem to Lake Restoration
093 A	150	PHIL.AC.NAT.SC.	Nitrilotriacetic Acid and Micronutrients/Aquatic Stream Communities
094 A	158	U.MINN.	Water Temperature Studies at the Monticello Field Station

* see Abbreviations

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062 A	474	U.WI.,U.ALB.	Water Management Institutions: Conceptual Problems and Practical Applications
063 A	475	U.WI.	An Investigation of a Cadastre (Land Interest Information System) for the Coastal Zone
064 A	480	U.WI.	Socio-Economic Problems of the Great Lakes Transportation System
065 A	481	U.WI.	Alternate Transportation Planning Policies for the Apostle Islands National Lakeshore Region
066 A	41	U.WI.,NWRI**	Whole-Basin Internal Oscillations of Lake Ontario
067 A	45	U.WI.	Lake Ontario Temperature Transects Continuously Repeated
068 A	46	SUNY,EV.HAM.INC.	Reanalysis of the Great Lakes Drogue Studies Data
069 A	61	USU,SUNY	Coordination of Data Collection, Data Storage, and Data Retrieval Programs for the Great Lakes (U.S.)
070 A	195	MED.COL.WI.	Elimination and Metabolism of PCBs by Lake Michigan Salmonids
071 A	205	MED.COL.WI.	Biotransformation and Disposition of Great Lakes Microcontaminants in Salmonids
072 A	388	UM,USEPA	Phytoplankton Associations in Lake Ontario
073 A	70	OSU	Ecological Processes and Components of a Freshwater Estuary
074 A	109	GLERL	Inorganic Carbon Dynamics
075 A	140	GLERL	Great Lakes Total Phosphorus Model
076 A	40	GLERL,NWRI	Lake Huron Winter Current Study
077 A	46	UM	Trans-Boundary Movement of Pollutants

* see Abbreviations

** Formerly known as Canada Centre for Inland Waters Branch (CCIW)

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047 A	475	SUNY	New York Sea Grant Advisory Service
048 A	332	U.WI.	Mechanics of Coastal Slumps in the Great Lakes
049 A	392	U.WI.	An Investigation of the Deep-Living Phytoplankton of Lake Michigan
050 A	402	U.WI.	The Ecology of Mysis Relicta (Loven) In Lake Michigan with Emphasis on Population Dynamics and Abundance
051 A	431	U.WI., ERL-D	Influence of Turbidity on Abundance of Lake Herring, Coregonus Artedii (Lesueur) in Western Lake Superior
052 A	232	U.WI.	Phosphorus Removal in the Wisconsin Lake Michigan Watershed: Policy Implications
053 A	240	U.WI., WIDNR	Monitoring and Treating Wastewater from Food Fish Production
054 A	299	U.WI.	Western Lake Michigan Sand and Gravel Assessment
055 A	324	U.WI., WIDNR	Computerized Shoreline Mapping from Aerial Photography
056 A	327	U.WI.	Shoreline Erosion in Lake Michigan - Rock Island to the Wisconsin-Illinois State Line
057 A	434	U.WI., WIDNR	Some Environmental Requirements of Juvenile Whitefish of Northern Lake Michigan
058 A	435	U.WI.	Application of Fish Growth Model
059 A	443	U.WI., WIDNR	Propagation of Perch and Walleye Pike Throughout the Year
060 A	443	U.WI., WIDNR	Raising Yellow Perch and Walleye Pike for Human Food Use
061 A	462	U.WI.	Species Composition, Abundance and Stability of the Coastal Plant Communities along Western Lake Michigan

* see Abbreviations

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033 A	48	U.WI.	Electromagnetic Measurements of Harbor Flushing
034 A	48	U.WI.	Mechanisms and Scales of Exchanges Between Urban-Industrial Harbor Systems and Coastal and Offshore Waters
035 A	162	U.WI.,WIEPC	Remote Sensing in the Coastal Zone of Lake Michigan
036 A	170	U.WI.	Power Plant Siting in the Coastal Zone: Interactive Gaming as an Aid To Citizen Participation in Siting Decisions
037 A	185	U.WI.	Surface Microlayer - Microcontaminant Interactions in Lake Michigan
038 A	188	U.WI.	Identification, Distribution and Transport of Halogenated Organic Microcontaminants in Southern Lake Michigan
039 A	190	U.WI.	Accumulation, Transport and Fate of Persistent Pesticides in Lake Michigan Food Chains
040 A	194	U.WI.	DDE and PCBs in a Green Bay Ecosystem
041 A	195	U.WI.	The Effects of PCBs and Other Chlorinated Hydrocarbons on the Early Development of Great Lakes Fishes
042 A	196	U.WI.	Responses of Primates to Polychlorinated Biphenyls
043 A	198	U.WI.	Dioxin Involvement in Chemical Toxicity of Pulp and Paper Mill Bleachery Effluent
044 A	199	U.WI.	Response of Primates To 2,3,7,8 - Tetrachlorodibenzo-p-Dioxin
045 A	215	U.WI.	Trace Metal Transport and Distribution in the River Mouth and Associated Nearshore Lake Michigan Areas for the Milwaukee and Fox Rivers
046 A	329	SUCB,ACE	Erosion-Deposition Balance, Great Lakes Shoreline, New York State

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016 A	319	ACRES AM.LTD.	Development of Procedures for Selecting and Designing Reusable Dredged Material Disposal Sites
017 A	324	MTU	Detailed Project Report for Shoreline Erosion Mitigation
018 A	325	MTU	Detailed Project Report of Shoreline - Presque Isle Harbor, Michigan Erosion Mitigation
019 A	325	MTU	Detailed Information Reports on Erosion Problems
020 A	397	SUCB,USEPA	Investigation of Planktonic Communities, Benthic Assemblages and Fisheries Associated with the Ashtabula Harbor Disposal Site
021 A	37	GLERL	Circulations in a Lake
022 A	37	W.H.OCEAN.INST.	Coastal Circulation in the Great Lakes
023 A	38	GLERL	A. Lake Scale General Circulation Model B. Limited Area Meso-Scale Model in the Lake
024 A	38	GLERL,CCIW	Lake Ontario Water Movements Scientific Report
025 A	40	GLERL	Currents and Oscillatory Flows in Southern Lake Michigan
026 A	41	GLERL	Oscillations of Lake Huron
027 A	53	GLERL	Great Lake Beginning-Of-Month Levels
028 A	53	GLERL	Water Levels and Flow Simulation
029 A	59	GLERL,USEPA	International Field Year for the Great Lakes
030 A	65	GLERL,NOAA	Chemical-Physical Variability in Southern Lake Michigan
031 A	89	GLERL	Characteristics of Oswego River Plume
032 A	109	GLERL	Analysis of IFYGL Oxygen Profiles

* see Abbreviations

B. HISTORICAL RESEARCH PROJECTS

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001 A	49	ACE	Great Lakes Inlet Studies
002 A	52	ACE,NOAA	Lake Level Forecasting & Regulation
003 A	54	ACE,NOAA	Evaluation and Testing of Profile Response Model
004 A	59	ACE	Near Real Time Acquisition of Water Quality Data in the Great Lakes Region
005 A	82	U.WI.	Environmental Inventory of the Lower St. Louis River Covering Proposed Improvements to the Duluth-Superior Harbor, Minnesota and Wisconsin
006 A	198	U.TEX.	Refinement of Current Disposal Criteria and Bioassay Procedures for Criteria Use
007 A	231	ACE,USEPA	Lake Erie Wastewater Management Study
008 A	297	ACE	Inner Continental Shelf Sediment Studies Program
009 A	313	U.WI.	Environmental Assessment Report On In-Lake Disposal of Dredged Material in Lake Superior
010 A	314	ACE,SUCB	Impact of Dredged Material Disposal on Aquatic Ecosystems, Lake Erie, Ashtabula, Ohio
011 A	314	ACE	Investigation of Water Quality and Physical-Chemical Sediment Parameters at the Ashtabula Harbor Disposal Site
012 A	315	SUCB	Ashtabula (Ohio) Field Study, Investigation of Planktonic Communities Benthic Assemblages, and the Fishery Associated with the Ashtabula Harbor Disposal Site
013 A	315	ACE	Monitoring of Diked Disposal Area
014 A	316	ACE	Monitoring of Diked Disposal Area
015 A	318	IND.BIO.T.LAB	Investigation of the Hydraulic Regime and the Physical Nature of Bottom Sedimentation Associated with the Ashtabula Harbor Disposal Site

* see Abbreviations

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038 C	122	NWRI	Atomic Spectroscopy for Analysis of Inorganic and Organic Contaminants
039 C	122	IWD	Easily Extractable Metals in Sediments
040 C	123	ORF	Development of Improved Methodology for the Determination of Asbestos as a Water Pollutant
041 C	125	NWRI	Extraction of Organochlorine Pesticides and PCB's from Natural Waters at Sub-PPB Levels Using XAD-2 Macroreticular Resin
042 C	125	NWRI	Determination of Organochlorinated Pesticides in Water by High Speed Liquid Chromatography
043 C	126	NWRI	Determination of Organophosphorus Pesticides by High Speed Liquid Chromatography (HSLC)
044 C	126	NWRI	Identification and Determination of Carbamate Pesticides by High Speed Liquid Chromatography
045 C	127	NWRI	Determination of Nitrogen and Phosphorus Containing Pesticides in Natural Waters by Twin-Cell Voltammetry
046 C	127	NWRI	Identification of Persistent Organics
047 C	128	NWRI	Analysis of Phthalate Esters by High Speed Liquid Chromatography
048 C	128	NWRI	Analysis of 3-Trifluoromethyl-4-Nitrophenol (TFM) in Natural Water
049 C	129	NWRI	Synthesis and Characterization of Some 1,4-Oxathiins
050 C	129	NWRI	Identification of Carbonyl Compounds and Determination of Metal Carbonyls
051 C	130	NWRI	Analysis of Natural Lignin Sulfonates in Water
052 C	130	ORF	Study of Losses of Organic Compounds in Solvent Extraction Processes

* see Abbreviations

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053 C	131	NWRI	Remote Sensing as Related to Water Quality Surveillance
054 C	131	NWRI,NOAA	Evaluation of Water Quality Instrumentation Using Satellite Data Collection Platform
055 C	132	NWRI	Remote Sensing Support of Process-Oriented Studies
056 C	132	NWRI	Improvements of Optical Studies in Both Process and Applied Research
057 C	133	McN.AS.,YORK U.	Airborne Spectroscopic Volume Reflectance Study
058 C	133	CHATHAM ASSOC.	Design of a Data Acquisition System for Ground Truth Measurements and Radiometric Profiling
059 C	134	NWRI	<u>In Situ</u> Water Quality Measurement Package
060 C	135	NWRI	Integrated Active Towed Body System Engineering
061 C	135	NWRI	T.R.O.V. Tethered Remotely Operated Vehicle
062 C	136	NWRI	Engineering Development of a Multichannel Environmental Data-Acquisition System for CCIW Environmental-Monitoring Applications
063 C	139	NWRI	Program: CCIW - Eutrophication (Lake Processes)
064 C	141	NWRI	Reaction - Response of Eutrophic Aquatic Communities to Input of Nutrients
065 C	146	NWRI	Lake Erie Process Studies
066 C	147	NWRI	Bay of Quinte Nutrient Study
067 C	149	NWRI	Methods for Estimation of Biomass in Water

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068 C	153	NWRI	Radioactive Emissions from Nuclear Power Stations
069 C	160	W.T. GEILING	Analysis of Government Supplied Water Samples for Biological Condition of Great Lakes Zooplankton Communities
070 C	161	NWRI	Program CCIW: Dispersion of Waste Heat, Dissolved and Suspended Matter in Lakes and Rivers
071 C	168	MAC.LTD.	Heated Discharge Control and Management Alternatives for Once-Through Systems in Large Water Bodies
072 C	173	NWRI, OMOE	Behaviour of Toxicants - Oil Studies
073 C	173	U.TOR., DOE	Biological Breakdown of Sunken Oil
074 C	174	NWRI	Responses of Natural Microbial Ecosystems to Complex Pollutants such as Crude Oil
075 C	174	NWRI	The Fate of Oil in Canadian Climatic Conditions
076 C	176	NWRI	Operation Preparedness - Hydraulic Oil Spill Control Criteria
077 C	176	NWRI	Oil Spill Model
078 C	177	NWRI	Oil/Water/Ice Systems
079 C	184	NWRI	Program: CCIW - Toxic Substances (Environmental Contaminants)
080 C	184	U.TOR.	Background Study of Aquatic Environmental Quality. Advice on Methods used Elsewhere to Deal with Research on the Increasing Number of Hazardous Chemicals. To Identify Actual or Potential Canadian Environmental Problems
081 C	189	NWRI	Behavior of Toxicants - Biomagnification
082 C	192	CWS, NWRI	Organochlorines Residue Levels and Reproductive Success of Herring Gulls in the Great Lakes

* see Abbreviations

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083 C	193	CWS,NWRI	Identifying Toxic Substances in Great Lakes Herring Gulls
084 C	197	NWRI	Product Assessment from Intensive Degradation of Polychlorinated Biphenyls
085 C	202	NWRI	The Analysis of Shellfish for PAH, Organochlorine, Phosphorus and Sulfur Containing Pesticides in Oysters
086 C	203	NWRI	Biodegradation of Nonionic Detergents
087 C	204	NWRI	Biodegradation and Characterization of Nonionic Surfactants
088 C	209	U.GUE.	Study to Measure the Effects of Cadmium and Lead on the Photo Responses of Freshwater Pelagic Microcrustaceans
089 C	209	U.GUE.	Measurement of Respiration and Pathological Changes in Specified Tissues of Lead Poisoned Fish
090 C	210	NWRI	Heavy Metals in Cells
091 C	211	U.WAT.	The Binding of Heavy Metal (Hg and Cd) Pollutants at Biologically Important Sites
092 C	212	U.TOR.,NWRI	Organo-Metals in Lake Water
093 C	213	NWRI,GLFRB	Characterization of Complexation in Lake Waters
094 C	216	NWRI	Behavior of Toxicants - Hg in Sediments
095 C	218	NWRI	Asbestos Fibres in Upper Lakes
096 C	219	NWRI,OMOE	The Removal of Asbestos Fibres from Surface Water
097 C	222	NWRI	Naturally Occurring Radionuclides in Great Lakes
098 C	222	NWRI	Radionuclides in Upper Lakes
099 C	226	IWD	Environmental Contaminants Inventory

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100 C	226	IWD	The Social Costs of Contaminants in the Environment
101 C	232	INF.LTD.	Forecast of Economic Activities in the Great Lakes Water Basin from the Present to 2020 A.D. Assess the Effect of Pollution Abatement Programs
102 C	239	K.S. WAPPLER	Studies Concerning Physical-Chemical Wastewater Treatment Processes
103 C	239	J.W. PIKE	Studies on Wastewater Treatment Processes
104 C	246	ORF	Assessment of Greywater on a Commercial Vessel
105 C	246	J. DAGG	Collection and Analysis of Wastewater Samples from Ships Operating on the Great Lakes
106 C	246	S. JEWELL	Research into Disinfection of Wastewater Samples from Great Lakes Ships Under Provisions of the Canada/U.S. Agreement
107 C	246	A. LUGOWSKI	Disinfection of Wastewater from Great Lakes Ships
108 C	250	U.WAT., NWRI	Oxychlorination of Organic Pollutants
109 C	252	NWRI	An Investigation of the Photochemical Processes Occurring in Chlorinated Municipal Effluents and Lagoons
110 C	253	NWRI	Photochemical Processes in Aqueous Systems
111 C	253	NWRI	Photooxidation and Photoelectrooxidation at Metal Oxide - Water Interfaces
112 C	257	NWRI	Verification of the Canadian SWM Model (COA Project)
113 C	260	F. PENICKA	Development of Automatic Techniques for the Real Time Prediction of Storm Surges
114 C	265	NWRI	Sewer Pipe Junctions

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115 C	266	ORF	Industrial Waste Characterization in Leather Tanneries Under Provisions of the Canada/U.S. Great Lakes Agreement
116 C	267	UNIROYAL LTD.	Industrial Waste Characterization in the Pesticide Industry Under Provisions of the Canada/U.S. Great Lakes Agreement
117 C	272	NWRI,NRC	Cellyloysis as it Relates to Pollution in Inland Waters
118 C	276	U.WAT.,OMOE	Liquid Industrial Waste Attenuation in Soil
119 C	286	U.TOR.	Determination of Heavy Metals Applied in Chemical Sewage Sludge to Agricultural Land Under Provisions of the Canada/Ontario Agreement on Great Lakes Water Quality
120 C	291	NWRI	Development of Sludge Sampling Techniques
121 C	292	B. PRESTED	Methods of Iron and Aluminum Recovery from Incineration Ash
122 C	293	NWRI	Dewatering and Recycling Water Treatment Plant Wastes
123 C	293	COR.PUB.SER.LTD.	Compilation of a Directory of Research and Development Projects in Solid Waste Management in Canada
124 C	297	NWRI	National Lake Sediment Inventory Program (Pilot Project)
125 C	298	GSU,U.WAT.	Sediment Palynology for Rates of Sedimentation, Palaeoclimatology and Paleoecology
126 C	300	NWRI	Nearshore Sedimentology of the Great Lakes
127 C	302	NWRI	Geochemical History of Representative Lake Sediments
128 C	302	NWRI,U.WAT.,GSC	Geochemical Budgets
129 C	303	NWRI	Characterization of Forms of P, Fe and Associated Elements in Lake Sediments

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130 C	307	NWRI	Determination of Purines and Pyrimidines in Sediments
131 C	307	NWRI	Identify Material Adsorbed on Surfaces of Sediments and Water Suspended Solids
132 C	308	NWRI	Manual of Physical Sedimentology
133 C	308	NWRI	Lake Bottom Studies - Grid Sampling
134 C	309	NWRI	Light Weight Corer
135 C	310	NWRI	Development of Geological Sampling Equipment
136 C	310	NWRI,GSC,NRC	Support Geophysics
137 C	95	DOE,EPS	St. Clair River 1975 Current Survey
138 C	167	EPS	Codes of Practice for Thermal Electric Generating Stations
139 C	245	EPS,ORF	Vessel Waste Source Characterization
140 C	115	GLFRB	Surveillance Design
141 C	147	GLFRB	Biological Surveillance and Assessment
142 C	158	GLFRB	Effect of Thermal Experience on the Survival of Selected Invertebrates
143 C	164	GLFRB	Impact of Thermal Power Plants, Effluent Characteristics and the Once Through Cooling Process
144 C	189	GLFRB,IJC	Biomagnification of Persistent Toxicants in Land Drainage
145 C	208	GLFRB,U.WAT.	Effects of Toxic Materials on Aquatic Biota
146 C	208	GLFRB	The Toxic Action of Zinc on Fish
147 C	210	GLFRB	Toxicants and the Effects of Naturally Occurring Environmental Stimuli on Life Cycles of Aquatic Invertebrates
148 C	206	WTC	Refinery Effluent Toxicity - Sarnia
149 C	234	WTC	Biological Treatment for Small Communities

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150 C	238	WTC	Physical/Chemical Treatment for Small Communities
151 C	239	WTC	Thermal Reactivation of Carbon
152 C	241	WTC	Biological Nitrification/ Denitrification - Nitrification Optimization
153 C	242	WTC	Fully Integrated C.P.N. Removal System
154 C	243	WTC	Removal of NH ₃ -NO ₃ from Industrial Effluents
155 C	244	WTC	Biological Nitrification of Industrial Wastes
156 C	244	WTC	Available Technology for Vessel Wastewater Pollution Control
157 C	245	WTC	Vessel Waste Source Characterization
158 C	249	WTC	Ozone for Effluent Disinfection
159 C	251	WTC	Upgrading Existing Sewage Treatment Plants in Ontario by Ozonation
160 C	268	WTC	Pulp and Paper Mill Effluent - Kraft
161 C	269	WTC	The Use of Aluminum Oxide for Toxicity Removal from Kraft Bleachery Effluent
162 C	270	WTC	Colour Removal Processes
163 C	273	WTC	Physical/Chemical Treatment of Mining Effluents
164 C	273	WTC	Leachability of Radioactive Products from Uranium Mine Tailings
165 C	274	WTC	Metal Finishing Industry Waste Treatment
166 C	276	WTC	Dechlorination of Chlor-Alkali Industry Effluent
167 C	278	WTC	A Survey of Ontario Sludge Disposal Practices

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168 C	281	WTC	Disposal of Chemical Sewage Sludges on Land - Lysimeter Studies
169 C	283	WTC	Sludge Cake Disposal on Agricultural Land
170 C	288	WTC	Anaerobic Digestion of Chemically Precipitated Sludges
171 C	289	WTC	Sludge Treatment Process Development Studies
172 C	289	WTC	Natural Freeze-Thaw for Sludge Conditioning
173 C	290	WTC	Sludge Dewatering Design Manual
174 C	290	WTC	Industrial Sludge Dewatering
175 C	371	DOE	Impact of Forest Management Practices on Forest Hydrologic Processes in Boreal Ecosystems
176 C	374	HYD.CONS.LTD.	Contaminant Migration from Ontario Landfill Sites
177 C	376	GREG.GEOSC.LTD.	An Investigation into Research Use of Computer Processing of Landsat Data for Canada Land Inventory Land Use Applications
178 C	379	NWRI	Heterotrophic Bacterial Populations Related to Trophic State in the Great Lakes
179 C	379	NWRI	A Continuous Culture Approach to Bacterial Metabolism in Lakewater
180 C	338	NWRI	Remote Sensing Contributions to Basin Management Studies
181 C	339	NWRI	Hydrographic Technique for Bed Load Discharge
182 C	342	ACRES	Vegetation Cover of Great Lakes Canadian Shoreline: Its Role in Controlling Rates of Erosion

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183 C	348	QUE.U.,OMOE	Update of Data Bank with Discharge and Water Quality Data for the Great Lakes Interconnecting Channels and Associated Tributaries
184 C	334	NWRI	Total Inorganic Chemical Composition Task D - PLUARG - Sub-Activity
185 C	335	NWRI	Total C and N Composition Task D - PLUARG - Sub-Activity
186 C	335	NWRI	Forms of P and Availability to the Boundary Waters Task D - PLUARG - Sub-Activity 1e
187 C	336	NWRI,OMOE	River Mouth Survey Task D - Sub-Activity 2B - PLUARG
188 C	331	NWRI,OMOE	Geotechnical Study of Eroding Bluffs
189 C	332	R.M. QUIGLEY	Consultation in Methods of Geotechnical <u>in situ</u> and Laboratory Exploration of Rapidly Eroding Bluffs
190 C	333	NWRI	Program CCIW: River and Coastal Management
191 C	334	NWRI	Evaluation of Existing Data (River Input) Task D - PLUARG - Sub-Activity 2a
192 C	318	NWRI,ACE,USEPA	Task Force 8, Effect of Land Disposal on Physico-Chemical Properties of Fine-Grained Dredge Spoil
193 C	323	NWRI	Summary of Shoreline Recession Task D - PLUARG - Sub-Activity 1a
194 C	330	NWRI	Wave/Sediment Interaction in the Nearshore Zone
195 C	331	NWRI	Bluff Stratigraphy and Mineralogy Task D - PLUARG - Sub-Activity 1b
196 C	134	NWRI	Development of Automated <u>in situ</u> Sensing Technology for Water Quality Parameters
197 C	395	GLFRB,OMNR	Effects of Nutrient Removal on Primary and Secondary Production in the Bay of Quinte

* see Abbreviations

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198 C	399	GLFRB	Community Structure Analysis
199 C	401	GLFRB	Zooplankton of the Great Lakes
200 C	401	GLFRB	Development Rates of Great Lakes Zooplankton
201 C	455	GLFRB	Biogeochemical Role of Bivalves
202 C	455	BIOSYSTEMS CONS.	Identification of Lake Ontario Bottom Fauna Samples
203 C	212	GLFRB	Methylation of Trace Metals in Algae and Bacteria
204 C	213	GLFRB,U.WAT.	Relations of Algal Detritus and Toxic Substances
205 C	291	WTC	Sludge Sampling Methodology Development
206 C	292	OMOE,WTC	Sludge Reduction and Precipitant Recovery
207 C	384	Y. KOTT	Concentration, Detection and Identification of Indicator Viruses in Municipal Waste Treatment Effluents Under Provisions of the Canada/Ontario Agreement on Great Lakes Water Quality
208 C	384	U.GUE.	Study of the Relationship Between the Incidence of Neoplasm in Fish and Polluted Waters and to Establish the Role of Viruses in This Relationship
209 C	388	NWRI	Algal Bacterial Interaction in Aquatic Ecosystems: Investigations on Natural Mechanisms
210 C	390	BEAK	Taxonomic Identification and Enumeration of Phytoplankton Samples
211 C	454	NWRI	Autecology of Shelled Invertebrates: Baseline Inventory
212 C	380	NWRI	Report to the IJC on Upper Lakes Microbiological Baseline Studies
213 C	380	NWRI	Studies on Heterotrophic and Autotrophic Bacteria

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214 C	381	NWRI	Evaluation of Health Oriented Indicator Bacteria
215 C	382	NWRI	Virological Methods, Developments, Plant, River and Lake Monitoring
216 C	384	OMOH	Examination of Sewage and Sewage Sludge for Enteroviruses
217 C	461	QUE.U.	The Growth of Aquatic Vascular Plants
218 C	274	WTC	Scavenging of Metal-Bearing Wastewaters Using Polyelectrolytes
219 C	175	NWRI, EPS, USCG	Ice Conditions and the Containment and Removal of Spilled Oil on St. Clair and Detroit Rivers
220 C	299	NWRI, IL.GS	Glacial and Post-Glacial Sediments in Lakes Superior and Michigan
221 C	110	U.TOR.	Nutrient Partitioning in Lake Systems: The Dynamics of Transfer of Silicon Among Organisms, Sediment, and Water
222 C	111	U.GUE.	Determination of Adsorption and Ion-Exchange on Clay Particles and Organic Matter at the Water-Sediment Interface and the Migration of Ions During Diagenesis in a Fresh-Water Environment (Lake Superior)
223 C	141	U.TOR.	Predicting Phosphorus Concentration in the Surface Waters of Lakes
224 C	145	U.WIN.	The Effect of Nutrients Derived from Agricultural Drainage on Eutrophication in Lake St. Clair
225 C	148	U.TOR.	Eutrophication of Lakes in Ontario. Phytoplankton and Water Chemistry
226 C	300	U.GUE.	Coastal Environments of the Great Lakes
227 C	432	U.GUE.	Environmental Influences on Fish Taxonomy, Ecology and Behaviour
228 C	436	U.TOR.	To Model and Measure Responses in Fish Communities to a Number of Natural and Cultural Stresses

* see Abbreviations

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229 C	436	U.TOR.	Fish Communities and Populations in Stressed Aquatic Environments
230 C	437	YORK U.	Preferred Temperature and Photoperiod Studies in Fish
231 C	437	U.GUE.	The Effects of Environmental and Internal Parameters on the Regulation of Endocrine and other Homeostatic Mechanisms in Teleost Fishes and other Vertebrates
232 C	438	U.GUE.	Social Behaviour of Salmonid Fishes in Relation to Ecological and Energetic Factors
233 C	438	U.TRENT	Ecology and Temperature Tolerance of Fish Eggs and Larvae
234 C	398	McM U.	The Study of Environmental Influences on Phytoplankton Populations, Photosynthesis, Productivity and Community Structure
235 C	398	U.WIN.	The Effect of Light Quality on Photosynthesis and Metabolism of Freshwater Plankton Algae
236 C	399	QUE.U.	Phosphorus Cycling and the Productivity of the Plankton
237 C	404	U.TOR.	Factors Affecting the Structure of Limnetic Crustacean Zooplankton Communities
238 C	424	U.GUE.	Fish Composition, Diversity and Ecological Production in Various Lagoons on Long Point, Lake Erie
239 C	301	QUE.U.	Paleolimnology and the Paleoecology of Lakes
240 C	340	U.GUE., OMOE	Studies of Mycorrhizal Fungi, Vegetation and Soil Relations in Sand Dunes of the Great Lakes
241 C	383	U.GUE.	Microbial Ecology of Sediments

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242 C	390	U.GUE.	Studies on Ontario Algae, Especially Desmidiaceae
243 C	390	YORK U.	Photosynthetic Metabolism of Blue-Green Algae
244 C	390	U.TOR.	Physiology of Extracellular Release in Algae and Bacteria
245 C	397	U.TOR.	Environmental Effects on the Metabolism of Algae
246 C	397	U.WAT.	Ecology, Productivity and Taxonomy of Freshwater Algae
247 C	438	U.GUE.	Infectious Pancreatic Necrosis (IPN) Virus: Studies on the Carrier State in Brook Trout (Salvelinus Fontinalis)
248 C	451	U.TRENT	Investigation of Oxygen Depletion in Freshwater Lakes and Respiration of Benthic Communities
249 C	453	U.WAT.	The Benthic Invertebrate Fauna of Parry Sound, Georgian Bay
250 C	456	U.WAT.	Factors Involved in the Distribution, Habitat Selection and Production Ecology of Freshwater Animals
251 C	459	U.TOR.	Limnological Researches
252 C	461	QUE.U.	Studies on Typha and Other Wetland Vegetation
253 C	255	APWA	Survey of the Pollution Problem in Great Lakes Canadian Urban Areas
254 C	256	EPS	Review of Municipal Practices in Regard to Problems within the Combined or Partly Combined Sewerage Systems in Ontario Project: 74-8-9
255 C	256	MAC.LTD.,NWRI	Research Program for the Development of a Storm Water Management Model (SWMM)
256 C	258	P&R LTD.	Workshop for Computer Modelling Technology Transfer

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257 C	258	GO.&STO.LTD.	Collection of Field Data in Hamilton, Ontario for the Verification of Storm Water Management Model
258 C	259	MAC.LTD.	Data Collection and Modelling at Brucewood, North York
259 C	260	M.M.DILLON	Collection of Field Data in Toronto, Ontario for the Verification of Storm Water Management Model
260 C	262	NWRI	Burlington Sewer Studies Data Collection
261 C	268	WTC	Pulp and Paper Mill Effluent Treatment - NSSC
262 C	277	EPS, OMOE	Industrial Waste Characterizations
263 C	277	EPS	Land Disposal of Industrial and Hazardous Wastes. Laboratory Studies
264 C	282	EPS	Soil-Waste Interaction Study, Phase I
265 C	373	DOE	Landfill Contaminant Migration
266 C	60	QUE.U., NWRI	An Evaluation of Historical Data on the Nearshore Water of the Great Lakes (Canada)
267 C	70	OMOE	Assessment of Water Quality Trends and Zones of Influence in Lake Erie
268 C	72	OMOE	Assesment of Water Quality Trends and Zones of Influence in Lake Ontario
269 C	74	OMOE, OMNR	Harbour Quality and Current Studies
270 C	75	OMOE, OMNR, NWRI	Hamilton Harbour Artificial Mixing
271 C	76	OMOE	Coastal Water Quality
272 C	81	OMOE, OMNR	Long Term Surveillance - Tributaries to the Great Lakes
273 C	84	OMOE	Water Quality Monitoring in the St. Clair River
274 C	85	OMOE, MI. DNR	Water Quality Monitoring of the Detroit River

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275 C	86	OMOE	Assessment of the Extent of Microbiological Contamination Along the Ontario Shoreline of the Detroit River
276 C	88	OMOE,IWD,USEPA	Water Quality Monitoring in the Niagara River
277 C	90	OMOE	Assessment of Zones of Influence in the St. Lawrence River
278 C	91	OMOE	Water Quality Models for Water Management in Ontario
279 C	91	OMOE	Effluent Dispersion Model for Southern Ontario River Systems
280 C	196	OMOE	PCB Contamination as a Model for Organic Pollution Effects on Receiving Water Biota
281 C	197	OMOE	Accumulation and Transport of PCBs in the Lower Great Lakes
282 C	217	OMOE	Updating Sediment Chemistry Status in the St. Clair System and Assessment of the Thames River Impact on Lake St. Clair
283 C	220	OMOE	Arsenic Precipitation from Mine Drainage
284 C	236	OMOE,DOE	Filamentous Bacteria Control
285 C	237	OMOE	Use of Fly-Ash in Wastewater Treatment
286 C	247	WTC	Effluent Chlorination and Disinfection Alternatives
287 C	351	AG.CAN.,OMOE	PLUARG - Task C - Agricultural Watershed Studies Phase 1 - Monitoring Programme Monitoring Of Agricultural Watersheds
288 C	351	OMOE	Pollution from Land Use Activities Reference Group (PLUARG) Task C - Activity 4
289 C	352	OMOE,OMNR	Pollution from Land Use Activities Reference Group (PLUARG) Task C - Activity 3

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290 C	354	OMAF	Land Use Survey in Eleven Agricultural Watersheds in Ontario
291 C	365	OMOE,OMAF	Monitoring Eleven Agricultural Watersheds in Ontario for Pesticides
292 C	265	OMOE	Users Manual for Flow Monitoring Techniques
293 C	278	U.GUE.	Land Application of Sewage Sludge
294 C	305	OMAF,NWRI	Analysis of Lake Ontario Sediments for Organochlorine Insecticides and PCBs
295 C	336	U.GUE.	Suspended Solids Taken from Mouths of River and Streams Entering Great Lakes
296 C	370	OMOE	Hydrologic and Hydrogeologic Models for Southern Ontario Drainage Basins
297 C	374	U.WAT.,OMOE	Monitoring Pesticide Migration from Waste Disposal Sites
298 C	389	OMOE	Great Lakes Inshore Phytoplankton Monitoring
299 C	392	OMOE	Phytoplankton of Penetang Bay and Adjacent Inshore Areas of Georgian Bay
300 C	393	OMOE,OMNR,ONT.H.	Phytoplankton of the Nanticoke Area of Lake Erie
301 C	394	OMOE,OMNR	Project Quinte (Phytoplankton of the Bay of Quinte)
302 C	396	OMOE	Ecological Model for Southern Ontario River Systems
303 C	364	AG.CAN.	PLUARG - Task C - Agricultural Watershed Studies Metal Storage and Transport Mechanisms in Soil and Sediment Within Watersheds
304 C	366	AG. CAN.,OMOE	PLUARG Task C - Agricultural Watershed Studies, Runoff Characteristics from Feedlots and Manure Storage Areas in Southwest Ontario

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305 C	366	AG.CAN.	PLUARG Task C - Agricultural Watershed Studies, Pollutant Transport to Subsurface and Surface Waters in an Integrated Farm Operation
306 C	350	AG.CAN.,OMAF	PLUARG Task C - Activity 1 (Canada) Agricultural Watershed Studies, Great Lakes Basin, Canada
307 C	355	AG.CAN.,OMOE	PLUARG - Task C - Agricultural Watershed Studies Mineralogical Characterization of Sediments Generated in Agricultural Watersheds
308 C	356	AG.CAN.	PLUARG Task C - Agricultural Watershed Studies Transformation and Transport of Nitrogen and Water in Agricultural Soils - Biochemical and Physical Characterization and Modelling
309 C	357	AG.CAN.,HRS,OMOE	PLUARG - Task C - Agricultural Watershed Studies Nutrient and Metal Content of Streams in an Agricultural Watershed
310 C	214	AG.CAN.	The Distribution of Heavy Metals in Agricultural Watersheds
311 C	214	AG.CAN.	The Role of Organic Matter in the Transport and Storage of Heavy Metals in Agricultural Watersheds
312 C	349	D.R. COOTE	Consultation, and Coordination of, Research on Agricultural Pollution in the Lower Great Lakes Basin
313 C	349	AG.CAN.	PLUARG - Task C - Agricultural Watershed Studies Coordination; Data Handling and Transfer; Quality Control
314 C	368	AG.CAN.,OMOE	PLUARG - Task C - Agricultural Watershed Studies Erosional Losses from Agricultural Land
315 C	369	U.WIN.	Quantitative Measurement of Precipitation - Ten PLUARG Watersheds
316 C	369	U.WIN.	Historical Frequency of Season Runoff of Various Amounts in Southern Ontario

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317 C	375	AG.CAN.	PLUARG - Task C - Soil Survey
318 C	231	IWD	A Simulation Study of the Economic Impact of Water Pollution Abatement Costs in Canada
319 C	346	IWD	Economic and Demographic Aspects of Pollution from Land Use Activities in the Great Lakes Basin from Present to 2020
320 C	347	IWD	Land Use Institutional Inventory for the Canadian Great Lakes Basin
321 C	476	IWD	Environmental Awareness
322 C	453	U.WAT.	Study of the Temporal and Spatial Distribution of Invertebrate Species in the Shallow Littoral Zone of the Great Lakes
323 C	124	NHW,NWRI	Development of Analytical Methodology for the Analysis of Dissolved Organic Substances in Drinking Water
324 C	124	NHW,NWRI,OMOE	Evaluation of the EPA Carbon Adsorption Method for the Monitoring of Canadian Public Drinking Water Supplies
325 C	201	NHW	Analysis of Toxic Organic Constituents in Ottawa Drinking Water
326 C	202	NHW, OMOE	Survey of Volatile Organohalides in Canadian Public Drinking Water Supplies
327 C	219	NHW,NWRI	Study of the Possible Transfer of Asbestos Fibres to Air on the Evaporation of Asbestos-Contaminated Water
328 C	251	NHW,NWRI	Study of the Effect of Ozonation on the Dissolved Organic Constituents of Drinking Water
329 C	337	OMNR,U.GUE.	Streambank Erosion Study
330 C	5	NWRI	Storm Surge Forecasting
331 C	6	IWC	Precipitation Chemistry

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332 C	9	NWRI, OMOE	Atmospheric Loading of Great Lakes Waters
333 C	11	NWRI	Stable Isotopes in Relation to Atmospheric Inputs of Sulfur and Nitrogen into the Great Lakes
334 C	19	NWRI	Tracer Measurement of Evaporation from Rivers
335 C	22	INT.SAT.IWF.	Transmission of Satellite Imagery for Ice Forecasting
336 C	24	NWRI	Criteria for Ice Cover Stability
337 C	27	NWRI	Formation of Frazil Ice in Water with Surface
338 C	27	NWRI	Frazil and Velocity Instrument
339 C	33	NWRI	Regular and Irregular Wave Criteria
340 C	11	NWRI	Stable Isotope Study of Sulfur Pollution Around Sudbury
341 C	19	NWRI	Tracer Measurement of Evaporation from Rivers
342 C	28	NWRI	Ice Piling on Lakeshores
343 C	32	NWRI	Field Observations and Analysis of Breaking Surface Waves
344 C	32	NWRI	Nearshore Wave Energy Transformation
345 C	12	U.WO.	Lidar Mapping and Observations on Atmospheric Particulates
346 C	12	AE.SCI.CON.S.	Assessment of the Ecological Effects of Long Term Atmospheric Material Deposition
347 C	17	ACE, DOE	Terrestrial Water Balance, International Field Year on Great Lakes
348 C	28	CAN.RES.INST.	Design, Fabricate and Test a Frazil Ice Measuring Instrument
349 C	6	U.WIN.	Chemical Analyses of Precipitation - Six PLUARG Watersheds

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