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NATIONAL WATER DATA EXCHANGE

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PUBLICATIONS RELATED TO THE NATIONAL WATER DATA EXCHANGE (NAWDEX)—1971-79

U.S. GEOLOGICAL SURVEY
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PUBLICATIONS RELATED TO THE NATIONAL WATER DATA EXCHANGE (NAWDEX)—1971-79

Compiled by Beverly M. Myers

U.S. GEOLOGICAL SURVEY
Open-File Report 79—1299



1979

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

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PUBLICATIONS RELATED TO THE NATIONAL WATER DATA
EXCHANGE (NAWDEX)--1971-79

Compiled by Beverly M. Myers

ABSTRACT

The National Water Data Exchange (NAWDEX), formally established in January 1976, is a national confederation of water-oriented organizations working together to improve access to water data. Its primary objective is to assist users of water data in the identification, location, and acquisition of needed water or water-related data. NAWDEX is coordinated by a central Program Office, located within the Water Resources Division of the U.S. Geological Survey, which provides data-exchange policy and guidelines to all participants in the program. In addition to the Program Office, there is a network of Assistance Centers located in 45 States and Puerto Rico which provides direct access to NAWDEX. Membership in NAWDEX is voluntary and open to any water-oriented organization that wishes to participate. This publication contains an alphabetical listing, by author, of the reports that have been produced by the NAWDEX Program Office since 1975, as well as reports from other sources that relate to the development of the NAWDEX program.

INTRODUCTION

The National Water Data Exchange (NAWDEX), formally established in January 1976, is a national confederation of water-oriented organizations working together to improve access to water data. Its primary objective is to assist users of water data in the identification, location, and acquisition of needed water or water-related data.

NAWDEX is coordinated by a central Program Office located within the Water Resources Division of the U.S. Geological Survey. This office provides data-exchange policy and guidelines to all participants in the NAWDEX program. It maintains close working relationships with the U.S. Geological Survey's Office of Water Data Coordination which implements guidelines for the coordination of Federal activities in the acquisition and storage of water data as prescribed by Circular A-67 issued by the Office of Management and Budget in 1964.

In addition to the Program Office, there is a network of Assistance Centers located in 45 States and Puerto Rico which provides direct access to NAWDEX and makes local-area expertise available to aid in identifying and locating needed data. A directory containing the names, addresses, and telephone numbers of all Assistance Centers is available free from the NAWDEX Program Office.

Membership in NAWDEX is voluntary and open to any water-oriented organization that wishes to take an active role. Membership includes organizations from Federal, State, interstate, and local governments, as well as from the academic and private sectors of the water-data community.

NAWDEX maintains two computerized data bases, the Water Data Sources Directory (WDSD) and the Master Water Data Index (MWDI). The WDSD is a directory which contains information about organizations that collect, store, and disseminate water data. This includes: the type of each organization, its major orientation of water-data activities; the names, addresses, and the telephone numbers of offices within each organization from which water data may be obtained; the types of data held by each organization and the geographic locations within which these data have been collected; and alternate sources of an organization's data.

The Master Water Data Index (MWDI) contains detailed information about sites at which water data are collected; the type of data-collection site; the organizations collecting data at each site; the current status of each site; the types of data available; the period of time for which data are available; the frequency at which these parameters are measured; and the media in which the data are available.

AVAILABILITY OF REPORTS

As coordinator of the National Water Data Exchange, the Program Office, located in the U.S. Geological Survey's National Center in Reston, Va., has produced numerous reports since its establishment. These include reports dealing with the administration of the NAWDEX program and which concern policies and procedures, program objectives, and status reports; descriptive reports which describe the contents of the computerized data bases; directories of the Assistance Center network and of the NAWDEX membership; and manuals which serve as guidelines for updating or accessing the NAWDEX data bases. Several reports have been published by the Office of Water Data Coordination, U.S. Geological Survey, which also relate to the NAWDEX program.

Most of the reports produced by NAWDEX have been published as open-file reports and were distributed to all NAWDEX member organizations, as well as other interested individuals who requested them. These reports were listed in the monthly publication entitled "New Publications of the Geological Survey," as they became available.

Copies of open-file reports published by NAWDEX prior to July 1979 are available only from the NAWDEX Program Office and may be obtained by writing to:

Program Office
National Water Data Exchange
U.S. Geological Survey
421 National Center
Reston, VA 22092
Telephone: (703) 860-6031
FTS: 928-6031

Open-file reports produced after July 1, 1979, will be submitted to the Geological Survey's Open-File Services Section (OFSS) distribution system at Denver, Colo. After the Program Office has made its initial distribution of open-file reports to its members, cooperators, and to the designated depositories, requests for these publications will be referred to OFSS where a charge will be made for each copy requested.

Some of the publications listed in this report are out of print and are no longer available for distribution. They are indicated by an asterisk (*) preceding the author's name. However, all of the reports listed herein are available for inspection in the NAWDEX Program Office or in the U.S. Geological Survey Library, both of which are located in the U.S. Geological Survey's National Center in Reston, Va.



LIST OF REPORTS

Edwards, M. D., 1975, The National Water Data Exchange -- How it will benefit you, in International Seminar and Exposition on Water Resources Instrumentation, 1975, Proceedings: Champaign, Ill., International Water Resources Association, v. 2, p. 28-32.

The National Water Data Exchange (NAWDEX) is being established by the U.S. Geological Survey as a coordinating facility to aid in the dissemination of water data. NAWDEX will be managed by a Systems Central located within the U.S. Geological Survey; however, major access to the system will be through a network of Local Assistance Centers. Data search assistance, referral and dissemination services will be provided. A master index of available water data will be maintained by Systems Central and made available to all users of NAWDEX. A directory of identifying sources from which water data may be obtained will also be made available. Whenever possible, interfaces between data bases of participating members will be provided.

Edwards, M. D., 1976, NAWDEX--The National Water Data Exchange: SSIE Science Newsletter, v. 5, no. 8, p. 5, June/July. Smithsonian Science Information Exchange, Washington, D.C. [Also published in the U.S. Geological Survey's Water Resources Review, December 1976, p. 14.]

Existing water data are becoming more important in matters related to the appraisal and management of available water resources, pollution surveillance and studies, monitoring of water quality criteria and standards, and the development of energy resources.

The National Water Data Exchange (NAWDEX) has been established to help users of water data to locate and acquire needed data. A variety of services are provided by NAWDEX such as: Identification of sources of water data; nationwide indexing of water data; and data search assistance. A central Program Office has been established in the U.S. Geological Survey, and a network of Local Assistance Centers has also been established to provide local and convenient access to NAWDEX and its services.

*Edwards, M. D., 1976, Status of the National Water Data Exchange (NAWDEX)--September 1976: U.S. Geological Survey Open-File Report 76-719, 23 p.

The National Water Data Exchange (NAWDEX) has been established to assist users of water data in the identification, location, and acquisition of needed data. During its first year of operation, a computerized Water Data Sources Directory was developed which identifies more than 300 organizations that collect water data, the types of data they collect, and the locations within these organizations from which data may be obtained. Also, a computerized Master

Water Data Index (MWDI) was created that currently identifies more than 61,500 sites for which data are available, the location of these sites, the hydrologic disciplines represented by the data, the media in which the data are available, and the organizations collecting the data. Work has also begun on the interfacing of the MWDI with the data files of two of our members, the Environmental Protection Agency (STORET System) and Texas Natural Resources Information System (TNRIS). NAWDEX is expanding its services and is establishing a nationwide network of Local Assistance Centers for local users' access to these services.

*Edwards, M. D., 1977, Program objectives for the National Water Data Exchange (NAWDEX) for Fiscal Year 1978: U.S. Geological Survey Open-File Report 77-791, 8 p.

The National Water Data Exchange (NAWDEX) Program of Operation calls for the Program Office to submit program objectives for the forthcoming fiscal year to the NAWDEX membership for review and comment. This is to provide participating members of NAWDEX the opportunity to participate in the development of program objectives and to comment on the operation and progress of the program. This also provides advance information on NAWDEX activities, thereby allowing the activities to be better integrated into the planning and operation of programs of member organizations. This report presents the objectives for the NAWDEX program for Fiscal Year 1978, October 1, 1977 to September 30, 1978.

Edwards, M. D., 1977, Program of operation for the National Water Data Exchange (NAWDEX): U.S. Geological Survey Open-File Report 77-708, 7 p.

The program of operation for the National Water Data Exchange (NAWDEX) is directed at providing guidelines to assure that all member organizations participate equally, that a climate of cooperation and open communication be established among participating members, and that these guidelines also create incentives for member organizations to work together through their designated NAWDEX representatives to improve access to water data, and to improve the technology of water-data handling and the transfer of data between the collector and user communities. Program operations will periodically be critically reviewed and modified, as needed, according to member-organization recommendations, to accurately reflect the evolving needs and missions of the program. Every effort will be made to maintain NAWDEX as a viable and effective program. The topics covered in this report are program coordination, program management and administration, and member participation.

Edwards, M. D., 1977, The National Water Data Exchange (NAWDEX): U.S. Geological Survey Open-File Report 77-259, 5 p.

The need for a viable program for the improvement of the transfer of data from collectors to users is acknowledged throughout the water-data

community. The National Water Data Exchange (NAWDEX) was established in 1976 in response to this need. The U.S. Geological Survey accepted the lead responsibility for implementing NAWDEX. NAWDEX is centrally managed by a Program Office located within the U.S. Geological Survey's Water Resources Division in Reston, Va. A directory of sources of water data and a nationwide index of available water data are maintained for storage and dissemination of information on available water data. Services are provided through the Program Office and a nationwide network of Local Assistance Centers located in 45 States and Puerto Rico.

Edwards, M. D., 1977, The National Water Data Exchange: EDS--Environmental Data Service, July 1977, p. 11-13. [This magazine published quarterly by Environmental Data Service, NOAA, Washington, D.C. This article also published in National Climatic Center News Letter: Asheville, N.C., National Oceanic and Atmospheric Administration, v. 1, no. 3, July 1977.]

Because existing water data are becoming more important in matters related to the appraisal and management of available water resources, pollution surveillance and studies, monitoring of water quality criteria and standards, and the development of energy resources, the National Water Data Exchange (NAWDEX) has been established to help users of water data to locate and acquire needed data. Membership in NAWDEX includes representation from the Federal, State, academic, and private sectors of the water-data community. Through its two computerized data bases, the Water Data Sources Directory and the Master Water Data Index, plus other indexes and reference sources made available by its members, NAWDEX assists its users in locating data of special interest.

Edwards, M. D., 1977, The National Water Data Exchange (NAWDEX) and its services, in Eleventh Biennial Ground Water Conference, Fresno, Calif., September 15-16, 1977, Proceedings: University of California Water Resources Center and State of California Department of Water Resources, p. 126-132.

The National Water Data Exchange (NAWDEX) was established in 1976 to assist users of water data to identify, locate, and acquire needed data. Services are provided through a National Program Office and a nationwide network of 53 Local Assistance Centers located in 45 States and Puerto Rico. A directory of sources of water data and a nationwide index of available water data are maintained to assist in providing these services. Large amounts of water data and water-related data are available through organizations that participate as members of the program.

Edwards, M. D., 1978, NAWDEX: A key to finding water data: U.S. Geological Survey, National Water Data Exchange, 15 p.

A brochure printed by the U.S. Government Printing Office which describes the National Water Data Exchange (NAWDEX) and its services. Details are given on the organization of NAWDEX, membership requirements, Local Assistance Center network, types of NAWDEX services and how to obtain them, and charges for NAWDEX services.

*Edwards, M. D., 1978, Status of the National Water Data Exchange (NAWDEX)--September 1977: U.S. Geological Survey Open-File Report 78-154, 26 p.

Major progress in the implementation of the National Water Data Exchange (NAWDEX) took place during Fiscal Year 1977 (October 1, 1976 through September 30, 1977). This report describes the status of the program at the end of this period. Program advancement is reported in the areas of administration, membership, Local Assistance Center facilities, development of the Water Data Sources Directory and the Master Water Data Index data bases, development of systems related to these data bases, and the coordination of services available through member organizations.

Edwards, M. D., 1978, Program objectives for the National Water Data Exchange (NAWDEX) for Fiscal Year 1979: U.S. Geological Survey Open-File Report 78-975, 7 p.

This report describes proposed program objectives for the National Water Data Exchange for Fiscal Year 1979. These objectives include increasing NAWDEX membership; improvement of communication within the areas of program administration, management, and coordination; expansion of NAWDEX services; emphasizing the identification of sources of water data; expansion of water data indexing; improved program and systems documentation; development of recommended methods for the handling and exchange of water data; increased training; and providing technical assistance to NAWDEX members, to the extent possible. Many of the program objectives reflect recommendations made at the first NAWDEX membership conference held in Denver, Colorado, May 9-11, 1978.

Edwards, M. D., 1979, Directory of Assistance Centers of the National Water Data Exchange (NAWDEX): U.S. Geological Survey Open-File Report 79-423 (Rev.), 10 p. [Supersedes USGS Open-File Reports 76-880 and 78-162 published in 1977 and 1978, respectively.]

The National Water Data Exchange (NAWDEX) is a nationwide program, managed by the U.S. Geological Survey, to assist users of water data or water-related data in identifying, locating, and acquiring needed data. NAWDEX services are available through a Program Office located at the U.S. Geological Survey's National Center in Reston, Virginia, and a nationwide network of Assistance Centers established in 45 States and Puerto Rico to provide local and convenient access to NAWDEX facilities. This directory provides the names of organizations and persons to contact, addresses, telephone numbers, and office hours for each of these locations.

Edwards, M.D., 1979, NAWDEX--A program to improve access to water data, in Quality Assurance of Environmental Measurements; National Conference sponsored by Hazardous Materials Control Research Institute of Information Transfer, Inc., November 27-29, 1978, Denver, Colo.: Silver Spring, Md., Information Transfer, Inc., p. 102-107.

The National Water Data Exchange (NAWDEX), implemented by the U.S. Geological Survey in January 1976, serves as a central focal point for the identification, location, and acquisition of large volumes of water data available from many organizations. NAWDEX is comprised of member organizations from all sectors of the water-data community including Federal, State, local governmental, interstate, academic, private, and foreign organizations. Membership is voluntary and open to any water-oriented organization that wishes to participate. The NAWDEX program is centrally managed by a Program Office located within the U.S. Geological Survey's Water Resources Division in Reston, Va. NAWDEX maintains two computerized data bases, the Water Data Sources Directory (WDSD) and the Master Water Data Index (MWDI). The WDSD identifies organizations that have water-data holdings, the locations within these organizations from which water data may be obtained, and the types of water data available. The MWDI identifies sites for which water data are available, their geographic location, the collecting organization, the types of data available, and the media in which the data are available. NAWDEX services are available to everyone. Requests may be directed by letter, telephone, or personal visit, to the Program Office in Reston, Va., or to any of its Assistance Centers located throughout the United States and Puerto Rico.

Edwards, M. D., 1979, Status of the National Water Data Exchange (NAWDEX)--September 1978: U.S. Geological Survey Open-File Report 79-330, 11 p.

The NAWDEX program continued to show significant growth during Fiscal Year 1978. Thirty-six new organizations became members of NAWDEX, a 43 percent increase in membership. This report describes the activities of NAWDEX during Fiscal Year 1978 (October 1, 1977 to September 30, 1978), and the status of the program at the end of that period. Topics discussed include program administration; NAWDEX services; identification of sources of water data; indexing of water data, and the development of systems to be used with the NAWDEX data bases, the Master Water Data Index (MWDI) and the Water Data Sources Directory (WDSD).

Edwards, M. D., and Myers, B. M., 1979, Identification codes for organizations listed in computerized data systems of the U.S. Geological Survey: U.S. Geological Survey Open-File Report 79-331, 80 p. [Supersedes USGS Open-File Reports 76-855 and 78-398 of the same title.]

Codes for the identification of public and private organizations listed in computerized data systems are contained in this report. These codes

are used by the U.S. Geological Survey's National Water Data Exchange (NAWDEX), the National Water Data Storage and Retrieval System (WATSTORE), the Office of Water Data Coordination (OWDC), and the National Cartographic Information Center (NCIC). The format structure of the codes is discussed and instructions are given for requesting new codes.

Edwards, M. D., and Nokes, J. M., 1979, Directory of member organizations of the National Water Data Exchange (NAWDEX): U.S. Geological Survey Open-File Report 79-1075. [In press. This report supersedes USGS Open-File Report 78-872 of the same title.]

This directory provides the names, addresses, telephone numbers and designated representatives of all organizations who are members of the National Water Data Exchange (NAWDEX). NAWDEX is a national confederation consisting of member organizations from all sectors of the water-data community including Federal, State, local governmental, academic, interstate, and private organizations. Foreign organizations are also invited to become affiliated with the program.

Edwards, M. D., and Thompson, G. L., 1979, Operational guidelines for Assistance Centers of the National Water Data Exchange (NAWDEX): U.S. Geological Survey open-file report. [In preparation.]

Guidelines are given for the operation of the various functions of NAWDEX. Emphasis is placed on communication between participants and the expeditious flow of water data from holder to user. These guidelines will be modified and supplemented, as needed, to accomodate new concepts and techniques that may be needed.

Federal Advisory Committee on Water Data, 1971, Design characteristics for a national system to store, retrieve and disseminate water data: U.S. Geological Survey, Office of Water Data Coordination, 31 p. [This report, prepared by the Federal Interagency Water Data Handling Work Group, is available from the U.S. Geological Survey, Office of Water Data Coordination, MS 417, National Center, Reston, VA 22092.]

This report, prepared by the Data Handling Work Group and endorsed by the Federal Advisory Committee on Water Data, presents the recommendations for the design characteristics of a national system that will facilitate the exchange of water data between collector and user organizations. It is recommended that such a system be known as the National Water Data Exchange (NAWDEX) and that it should be under the administrative direction of the U.S. Geological Survey's Office of Water Data Coordination. When fully operational, the degree of activity may justify the creation of a separate office to provide for the coordination of data-handling activities.

Knecht, W. A., and Edwards, M. D., 1978, Definitions of components of the Water Data Sources Directory maintained by the National Water Data Exchange: U.S. Geological Survey Open-File Report 77-775, 99 p.

The Water Data Sources Directory (WDSO) is a computerized data base developed and maintained by the National Water Data Exchange (NAWDEX) Program Office which contains information about organizations that collect, store, and disseminate water data. This includes: the type of each organization; the major orientation of water-data activities conducted by each organization; the names, addresses, and telephone numbers of offices within each organization from which water data may be obtained; the types of data held by each organization and the geographic locations within which these data have been collected; and alternate sources of an organization's data. This document contains a definition and description of each component of the WDSO data base. For simplicity, it is referred to as a data dictionary. It is intended, primarily, to assist those persons using the WDSO in understanding and clarifying information obtained from the data base. The WDSO is designed to be used independently, or in conjunction with, the Master Water Data Index (MWDI), which is also a computerized data base developed and maintained by the NAWDEX Program Office. The MWDI contains detailed information about sites at which water data are collected.

Myers, B. M., and Nokes, J. M., compilers, 1979, Proceedings of the first membership conference of the National Water Data Exchange, May 9-11, 1978, Denver, Colorado: U.S. Geological Survey Open-File Report 79-206, 217 p.

The National Water Data Exchange (NAWDEX) held its first membership conference May 9-11, 1978, in Denver, Colo. The purpose of the conference was to acquaint participants in the NAWDEX program with systems, data resources, and services available throughout the membership, and to serve as a forum for the exchange of ideas and expertise on matters relating to improving the operation of NAWDEX and identifying the needs of the water-data community. Eighty-four participants were registered at the conference. Sixteen papers were presented at the conference and are published in their entirety in the proceedings. Also included are the reports and conclusions of the four working panels dealing with the following subjects: (1) program administration, management, and coordination; (2) recommended standards for the handling and exchange of water data; (3) water data indexing and technical systems development; and (4) request, response, and service activities. A copy of the conference agenda and a list of attendees are included in the appendixes.

Office of Water Data Coordination, 1975, Catalog of information on water data, 1974 edition [21 volumes]: U.S. Geological Survey, Office of Water Data Coordination. [Available from the U.S. Geological Survey, Office of Water Data Coordination, MS 417, National Center, Reston, Va., 22092].

The Catalog of Information on Water Data contains information about water-data-acquisition activities, supplemented by station-location maps. It is a catalog of information about water-data-acquisition activities and not a file of the actual water data which must be obtained from the reporting agencies. Agencies that reported water data activities listed in this report and their identifying agency codes are shown in Table 1. Federal, State, and local agencies, and private organizations that acquire water data directly in the field and laboratory have contributed. The catalog is published in 21 volumes, and each volume is divided into three parts: A - streamflow and stage; B - quality of surface water; and C - quality of ground water. Each volume covers a water resources region as established by the Water Resources Council in July 1970.

Office of Water Data Coordination, 1977, Catalog of information on water data--Index to coastal areas (4 volumes): U.S. Geological Survey, Office of Water Data Coordination. [Available from the U.S. Geological Survey, Office of Water Data Coordination, MS 417, National Center, Reston, VA 22092.]

This special report provides information about water data stations located in the coastal areas. Four separate volumes present the information, respectively, for the Atlantic Coast (including Puerto Rico), and the Gulf Coast, the Pacific Coast (including Alaska, Hawaii, and other Pacific Islands), and the Great Lakes. This information should be useful both in planning for additional data needs and in planning for the best use of coastal resources. Each volume consists of three parts containing information about stations in a particular category, as follows: Part A - Streamflow and stage; Part B - Quality of surface water; and Part C - Quality of ground water.

Perry, R. A., and Lewis, C. J., 1978, Definitions of components of the Master Water Data Index maintained by the National Water Data Exchange: U.S. Geological Survey Open-File Report 78-183, 170 p.

The Master Water Data Index (MWDI) is a computerized data base, developed and maintained by the National Water Data Exchange (NAWDEX) Program Office, which contains information about water-data collection sites of NAWDEX members and participants. It contains information on the identification and location of sites for which water data are available, the type of data-collection site, the organizations collecting data at each site, the current status of each site, the types of data available, the period of time for which data are available, the major water-data parameters for which data are available, the frequency

at which these parameters are measured, and the media in which the data are available. This document contains a definition and description of each component of the Master Water Data Index (MWDI) data base. For simplicity, it is referred to as a data dictionary. It is intended, primarily, to assist those persons using the MWDI in understanding and clarifying information obtained from the data base. The MWDI is designed to be used independently, or in conjunction with, the Water Data Sources Directory (WDSD), which is also a computerized data base developed and maintained by the NAWDEX Program Office. The WDSD contains information about organizations that are sources of water data.

- *PRC Systems Sciences Company, 1974, Support in the overall design development of a National Water Data Exchange (NAWDEX)--Final Report: McLean, Va., PRC Systems Sciences Company Contract Report R-1696, 165 p. [Final report for period January-December 1973, prepared under the U.S. Geological Survey contract 14-08-0001-13499.]

A system design for NAWDEX was prepared based on previous efforts of the U.S. Geological Survey, internal expertise in water-data systems, and the results of a national survey of the water-data community. The NAWDEX design includes an organizational structure featuring a Systems Central with overall management responsibility for linking together participants from throughout the water data community. Systems Central will provide an index to water data and certain limited data services with the bulk of the actual data exchange being effected by member agencies.

- *PRC Systems Sciences Company, 1975, Support in the implementation of a National Water Data Exchange (NAWDEX)--Final Report, June 1974-May 1975): McLean, Va., PRC Systems Sciences Company Contract Report 1824. [Report prepared under contract 14-08-0001-1401 with the U.S. Geological Survey.]

This document is the final report of a study to support the U.S. Geological Survey in the implementation of a National Water Data Exchange (NAWDEX). The report is divided into three sections: Participation in NAWDEX; water data exchange (which presents the details of the Master Water Data Index (MWDI) and the Water Data Sources Directory (WDSD); and preliminary directory to allied water data.

- Thompson, G. L., 1978, Identification, indexing, and exchange of data on environmental pollutants, in Fourth Joint Conference on Sensing of Environmental Pollutants, New Orleans, November 6-11, 1977, Proceedings: American Chemical Society Proceedings, Paper 067, p. 238-240.

NAWDEX has amassed a large amount of environmental information on available water data and has access to extensive data resources and services available through its member organizations. Although NAWDEX is responding to environmental data needs primarily within the water-data community, the NAWDEX conceptual design could be expanded and

adapted to include other areas of environmental monitoring and data indexing, beyond that of water data. An expanded system design could provide a comprehensive mechanism that would be well suited for the overall accessibility of a wide spectrum of environmental data, and it could provide more effective support for activities related to the monitoring and sensing of environmental pollutants.

Preliminary Documents:

The following manuals were prepared as preliminary drafts for review. They are in the process of revision and update and will be published as open-file reports as they are completed.

Gillingham, G. G., 1978, Guidelines for the use of NAWDEX data systems: Reston, Va., U.S. Geological Survey, 80 p.

This report was prepared in order to identify the NAWDEX (National Water Data Exchange) data systems and their respective documentation. It discusses the operation of the systems, as well as tools that have been developed to enhance or facilitate their use.

Knecht, W. A., 1977, National Water Data Exchange (NAWDEX) System 2000 data retrieval manual: Reston, Va., U.S. Geological Survey, 280 p. [Prepared under contract by CACI, Inc.]

This training manual is designed to teach the reader how to retrieve data stored in a computer by using the System 2000 Data Base Management System. General instructions are given on using System 2000 to retrieve any type of data, and specific instructions are given on retrieving data from the U.S. Geological Survey's Water Data Sources Directory (WDSD) and Master Water Data Index (MWDI) data bases. The manual is divided into 5 major sections plus appendixes as follows: A--introductory material on purpose and scope of manual; B--basic instructions on retrieving and displaying data; C--more complex retrievals of data; D--explains efficient use of techniques developed in sections B and C; E--summarizes and discusses practical applications; and F--contains all appendixes required for reference.

Knecht, W. A., and Edwards, M. D., 1977, Instructions for the preparation of data for the Master Water Data Index: Reston, Va., U.S. Geological Survey, 140 p.

Instructions are provided for the updating of the Master Water Data Index (MWDI) by use of coding forms. Included are instructions for filling in, submitting, keypunching, and processing data encoding forms. This method is primarily used for relatively low-volume updating and for indexing files of water data that are not in computer-processable format. The manual is divided into 5 sections and is concluded by nine appendixes.

Knecht, W. A., and Harding, John, 1977, MWDI retrieval system user's manual: Reston, Va., U.S. Geological Survey, 58 p. [Prepared under contract by CACI, Inc.]

The Master Water Data Index (MWDI) is a computerized file developed and maintained by the National Water Data Exchange (NAWDEX) which identifies sites for which data are available, the location of these sites, the types of water data available, the periods of time for which data are available, and the frequency of measurement of each of the major parameters. The MWDI retrieval system extracts data from the MWDI data base; sorts the extracted records, if requested by the user; and displays the data either as a report or in plotted form.

Landwehr, J. M., and Edwards, M. D., 1978, The registration of organizations in the Water Data Sources Directory of the National Water Data Exchange: Reston, Va., U.S. Geological Survey, 53 p.

Instructions for the registration of organizations in the Water Data Sources Directory (WDS) of the National Water Data Exchange (NAWDEX) are contained in this manual. The WDS contains information about organizations that are collectors and sources of water data, major sources of water data collected by other organizations, major users of water data made available by other organizations, or that are active in programs related to water resources. Detailed instructions are presented for the encoding of forms necessary to complete the registration of an organization.

U.S. Geological Survey, 1977, Instructions for the submission of data to the Master Water Data Index: Reston, Va., U.S. Geological Survey, 28 p.

These instructions are provided for the computerized processing of data prepared for entry into the Master Water Data Index of the Geological Survey's National Water Data Exchange (NAWDEX), as discussed in the manual entitled "Instructions for the Preparation of Data for the Master Water Data Index." Two processing procedures are provided: (1) The preedit of data, and (2) the submission of data for storage in the Master Water Data Index. These instructions include both new data being submitted for storage and update transactions for data previously processed and stored.