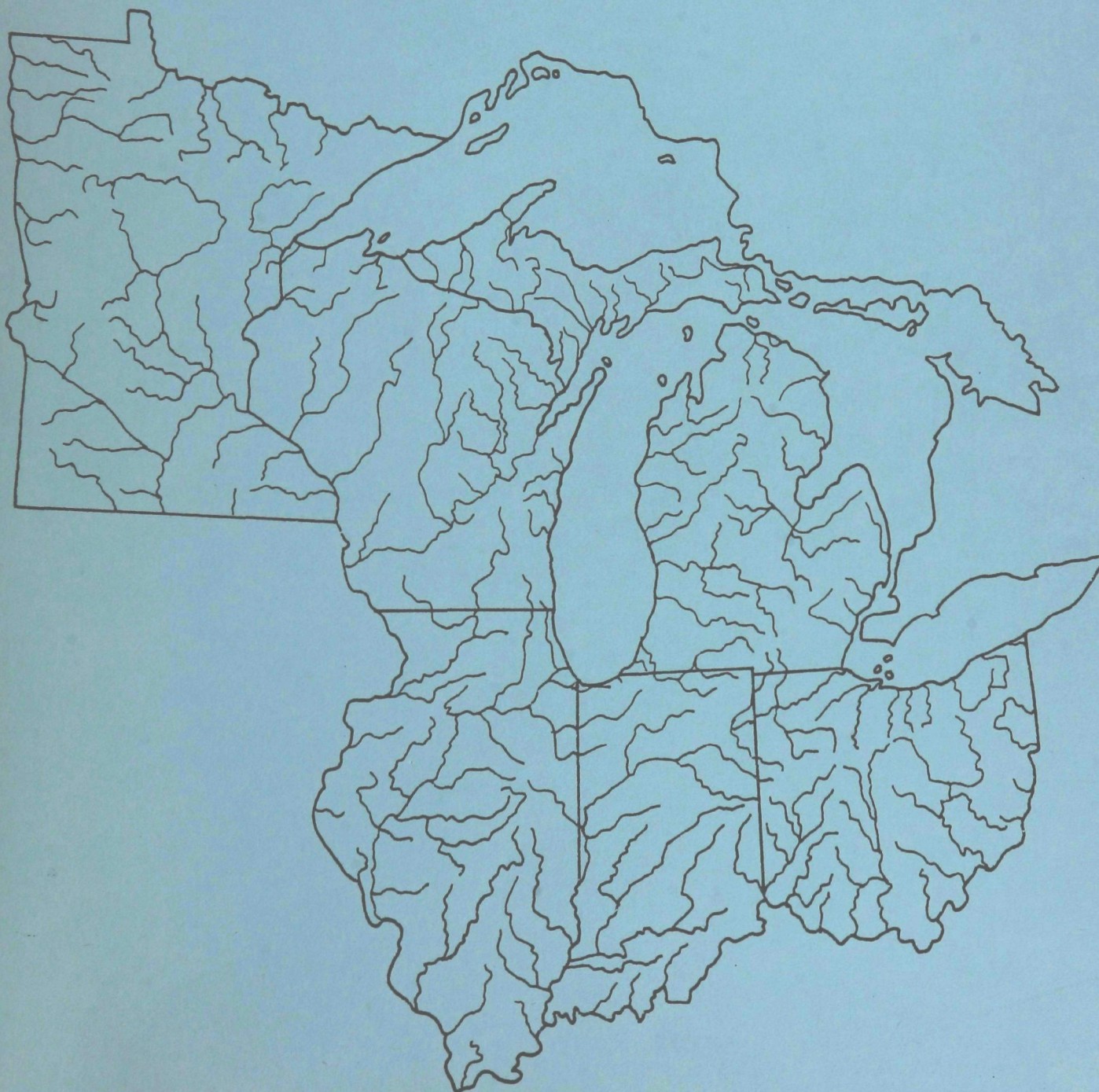




# Assessment of the Region 5 Water Monitoring Activities

## Appendix C



APPENDIX C  
ASSESSMENT OF REGION V WATER MONITORING ACTIVITIES  
July 1983

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## INTRODUCTION AND BACKGROUND

This report is an update to Appendix C of the report entitled, "Assessment of the Region V Water Monitoring Activities (EPA-905/4-81-001)".

In 1981 a review was completed of the water monitoring activities within the region to determine the adequacy of existing monitoring activities to meet program needs. The base year for this report was 1979 and the Basic Water Monitoring Program was used as a guideline. The result of this review was the report entitled, "Assessment of the Region V Water Monitoring Activities".

The base year for our update to this report is 1982 and the Program Guidance for Water Quality Monitoring and Wasteload Allocations is used as our guideline. Although the monitoring and wasteload allocation program guidance stresses the water quality-based control process focusing on high priority waterbodies, the basic objectives of the earlier document are continued.

## SCOPE

The report will discuss the State's ambient monitoring network and other agencies monitoring in the State. It will highlight the changes from 1979 to the present. It will also discuss intensive surveys, effluent monitoring, the proposed biological monitoring program, quality assurance and data interpretation and reporting.

## ASSESSMENT OF REGION V WATER MONITORING ACTIVITIES

### 1. PROGRAM GUIDANCE FOR WATER QUALITY MONITORING AND WASTE LOAD ALLOCATIONS, STATE ACTIVITIES

Each of the six States comprising Region V and the Federal monitoring entities located within the Region were evaluated with respect to the program guidance for Water Quality Monitoring and Waste Load Allocations. The results of these evaluations are described in succeeding paragraphs. The total monitoring effort in the Region, or even in any of the States, is widespread and very complex. To describe this effort, liberal use is made of tables and figures to detail the ambient monitoring being done. For each State, the basic network is displayed in a figure and tabulated by station listing. Figures are used to describe the State Ambient Network and the U.S. Geological Survey network. The figures consist of base maps of the States showing the principal streams and rivers, and all of the major dischargers in existence in 1983. To display the various networks, overlays are used with the base maps. Several networks may be displayed on one map. In this instance, the dischargers are also keyed by type and number. The number of each discharger is from a list of major dischargers described in Attachment 3, 5, 7, 10, 13, and 15. Each State assessment begins with an overview which summarizes the findings of the evaluation relative to the monitoring program. These findings are also summarized in a Table following this section.

a. ILLINOIS

(1) Overview

In Illinois there are three agencies involved in ambient monitoring: The Illinois Environmental Protection Agency (IEPA), the U.S. Geological Survey (USGS) and the U.S. Forest Service.

The coverage provided by these networks meets the explicit intent of the program guidance for water quality monitoring and wasteload allocations. The intent of the guidance is to provide a data base to detect trends in water quality.

Within the coverage provided by these networks, there is no duplication considering sampling parameters and frequency. Illinois' basic program has minor deficiencies in the ambient monitoring program.

(2) Assessment of the State Monitoring Program

a. State Monitoring Network

The State Monitoring Network consists of 208 stations of which 41 are "CORE" stations. The CORE Network has not changed since 1979.

Parameters analyzed are indicated in Attachment 1. These stations are shown on Table 1 and in Figure 1.

All minimum parameters are not sampled at the following CORE stations:

STATION NO.	NAME	PARAMETER NOT ANALYZED
05531500	Salt Creek at Western Springs	phosphorus, total
05536700	Calumet Sag Channel	phosphorus, total
05536195	Little Calumet River at Munster	phosphorus, total
05536000	North Branch Chicago River	phosphorus, total and conductivity
03612500	Ohio River at Dam 53 near Grand	COD and residue

The State Network was reviewed by IEPA in FY'83. This resulted in no changes in station locations. However, Illinois EPA did reduce sampling frequency from four week to six week intervals. The resources made available by operating under a six week sampling frequency has been directed toward additional special studies, intensive surveys and basin assessments.

Data availability in STORET from the CORE and State monitoring networks are six months behind because there is a time lag in the transfer of data from WATSTORE to STORET. WATSTORE is the USGS computer system. USGS is under contract to IEPA to obtain water quality data within the State.

b. Special Monitoring Agreements

The State has both formal and informal agreements with agencies to obtain water quality data within the State. In addition to the USGS, the State has a formal agreement with the City of Chicago for collection of data on Lake Michigan. Also, Metropolitan Sanitary District data for the Chicago area are used by the State, although they do not have a formal agreement with MSD.

c. Other Agencies Monitoring

Our discussion is based on STORET data available from other agencies for FY 1982. This discussion does not represent a summary of all water data being acquired in Illinois. It does, however, serve as a good indicator of the types of data currently in STORET. This information can be used to supplement trend data at the State network. It can also be used to develop cooperative monitoring programs. Specific information can be obtained by contacting the Water Monitoring Team.

1. USGS Monitoring Networks

The USGS operates two networks in Illinois. These are the (1) National Stream Quality Accounting Network (NASQAN), consisting of seven stations, (2) a USGS ambient water quality monitoring network consisting of a total of nine stations of which seven stations have samples collected by USGS but analyzed by the Illinois State Water Survey Laboratory. Two stations are on a special monitoring project in Fulton County, one station is on the Little Calumet River at the Illinois-Indiana State line at Munster, Indiana, where samples are collected by the USGS but analyzed by the Indiana State Board of Health. The two stations on the La Moine River, Stations No. 05585000 and 05584500, have been discontinued as National Water Quality Surveillance System Stations (NWQSS). However, Station No. 05585000 is continued as a "CORE" Station and Station No. 05584500 is continued as an Ambient Water Quality Network Station. See Figure 1.

The following stations were discontinued in 1982 as NASQAN stations but continued as "CORE" stations:

03378500	Wabash River, Near New Harmony, Indiana
03612500	Ohio River, East of Olmsted, Illinois
05420500	Mississippi River at Fulton, Illinois
05474500	Mississippi River at Keokuk, Iowa
05587550	Mississippi River, Corps of Engineers, Lock & Dam 26
07022000	Mississippi River at Thebes, Illinois

USGS NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 2. Analytical schedules are contained in Attachment 2.

## 2. U.S. Forest Service

There are four stations monitored by U.S. Forest Service in Williamson County. The purpose of the program is to monitor the fate of heavy metals. The stations are:

Sugar Creek below Palzo  
Station No. 080001

NE Palzo Seep (to Sugar  
Creek) #080002

NW Palzo Seep (to Sugar  
Creek) #080003

Sugar Creek above  
Palzo #080004

The U.S. Department of Agriculture, Forest Service, Harrisburg, Illinois purchased the abandoned strip mine site as a demonstration project in 1975 to reclaim the land. From 1975-1977, they transported 52 million gallons of sludge from the Chicago Metropolitan Sanitary District and incorporated the sludge into the soil. So far 82 acres have been treated. The monitoring program will continue indefinitely. A report on this area is being compiled by the U.S. Department of Agriculture and a copy will be sent to our Regional Clearing-house.

## 3. Quality Assurance Program

The State of Illinois has an approved Section 106 Quality Assurance (QA) Program Plan.

## 4. Intensive Surveys

Intensive survey needs for FY 1982 were identified and selected with the assistance of summary reports obtained from the ambient water quality network as well as fish, macroinvertebrate, and sediment analyses for toxics. A survey planning meeting was held to develop the detailed schedule for conducting the intensive surveys with a prioritized survey schedule. Chemical and biological data were collected to determine the cause of excursion values and the cause-effect findings will be used for permit, grant, standard, and/or enforcement follow-up. The following surveys were completed for FY 1982:

Biological Survey of Poplar Creek (Fox River Basin-Segment B-03)  
Biological Survey of Brush Creek (Sangamon River Basin--Segment A-04)

Biological Survey of Flat Branch (Sangamon River Basin--Segment A-04)

Biological Survey of an Unnamed Tributary of the Sangamon River  
(Sangamon River Basin--Segment B-01)  
Biological Survey of the South Fork of the Apple River  
Unnamed Tributary (Mississippi North River Basin--Segment  
A-01)

Abstracts were submitted to the Regional Clearinghouse.

For FY'83, the following surveys are proposed: The Fox River Basin, Lower Kaskaskia Basin, Des Plaines River Basin, and the DuPage River Basin.

#### 5. Effluent Monitoring Program

Illinois has 329 major dischargers, consisting of 164 municipal, 4 federal, and 161 industrial dischargers. Inspections planned and completed for FY'82 and projected for FY'83 are as follows:

	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
<u>CEI's (majors)</u>			
Municipal	0	20	50
Industrial	0	26	40
<u>CSI's (majors)</u>			
Municipal	107	82	57
Industrial	85	54	45
O&M Inspections (Mun.)	107	90	107
Grant Compliance Inspection (Mun.)	*	112	*
Operational Assistance (Mun.)	*	171	*
Toxic Sampling Surveys	*	2	7

\* No commitment

The State's effluent monitoring program is adequate. While they did not meet their commitments for CSI's and O&M inspections, they completed 46 major CEI's which were not planned. Projections for FY'83 indicate increases in CEI's and toxic sampling surveys; and a decrease in the number of CSI's. Commitments were not made for grant compliance inspections or operational assistance visits, but the O&M activity report for the first half of FY'83 indicates commendable efforts in these areas.

All proposed CEI's, CSI's, and O&M inspections are for facilities on the Compliance Monitoring Priority List (CMPL).

#### 6. Biological Monitoring Program

The State of Illinois conducted fish and macroinvertebrate sampling at 38 core network stations in 1982 and plans to continue this activity in 1983. The fish samples are collected by the Illinois State Conservation Department and analyzed by the State Department of Public Health. The macroinvertebrates are collected and analyzed by IEPA.

During 1983, intensive surveys will be conducted on the Des Plaines and Du Page Rivers and will include biological sampling. On the Des Plaines River, fish, chemistry, sediment and some macroinvertebrates will be collected. The intensive survey of the Du Page River will be a cooperative effort with USGS and will include a wasteload allocation and modeling study. Eighteen sites, on the Du Page River, have been selected from which fish have already been collected, and from which macroinvertebrates and periphyton will be collected this summer.

#### 7. Data Interpretation and Reporting

##### Ambient Data

Data coverage at the CORE network has improved since 1982. All but 5 of the 41 CORE stations sample for all minimum parameters. The last quarterly report showed 7 CORE stations did not sample for all minimum parameters, and 3 stations had no data.

The data are six months behind because there is a time lag in the transfer of data from WATSTORE to STORET.

##### Effluent Data

For FY'82, the State submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division.

##### Intensive Survey Data

Abstracts were submitted for FY'82. Water quality data from intensive surveys are in STORET.

##### Section 305(b) Report

Utilizing the section 305(b) reporting process, the state prepares, and submits bi-annually, a report to the U.S. EPA describing the status of the waters of the State. The latest report submitted was for the years 1980-1981.

MINIMUM PARAMETERS

Table 1

STATE AMBIENT NETWORK,  
ILLINOIS FISCAL YEAR 1983

Numbers under minimum parameters indicate  
year and quarter of last record

STATION	AGENCY	C O P	C M T	T Y P	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	MINIMUM PARAMETERS											
									W	F	C	D	C	P	H	K	N	P	F	T
									A	L	O	.	O	H	S	J	O	H	E	I
									T	O	N	D	.	I	L	.	S	A	S	
									E	W	.	.	L	D	U	N	.	T	C	
									P	.	.	O	U	H	.	.	.	.	.	.
									T	W	E	N	C							
05470370	112WRD	057	ST	BIG CREEK NEAR BRYANT, IL		40 27 32.0	090 08 00.	31	31	31	24	31	24				24		21	
05470380	112WRD	057	ST	SLUG RUN NEAR BRYANT, IL		40 28 24.0	090 08 37.	31	31	31	23	31	24				23		21	
05468800	112WRD	175	ST	INDIAN CREEK NEAR WYOMING, IL		41 01 06.0	089 50 07.	24	24	24	24	24	24				24		23	
05468005	112WRD	179	ST	MACKINAW RIVER BELOW GREEN VALL		40 26 51.0	089 41 28.	24	24	24	24	24	24				24		23	
05467516	112WRD	179	ST	MACKINAW RIVER BELOW CONGERVILL		40 35 12.0	089 16 42.	24	24	24	24	24	24				24		24	
05463525	112WRD	143	ST	KICKAPOO CREEK AT BARTONVILLE,		40 39 18.0	089 38 52.	24	24	24	24	24	24				24		21	
05456500	112WRD	011	ST	BIG BUKEAU CREEK AT PRINCETON,		41 21 55.0	089 29 55.	23	23	23	24	23	24				24		23	
05457000	112WRD	011	ST	WEST BUKEAU CREEK AT WYANET, IL		41 21 54.0	089 34 08.	24	24	24	24	24	24				24		23	
05455950	112WRD	099	ST	LITTLE VERMILION RIVER AT LA SA		41 20 00.0	089 04 51.	23	23	23	23	23	23				23		23	
05454490	112WRD	105	ST	VERMILION RIVER AT MC DOWELL		40 49 50.0	088 34 29.	23	23	23	23	23	23				23		23	
05455300	112WRD	099	ST	VERMILION RIVER NEAR LEONORE, I		41 12 30.0	088 55 51.	24	23	23	23	23	23				23		23	
05442000	112WRD	063	ST	MAZON RIVER NEAR CUAL CITY, IL		41 17 10.0	088 21 35.	24	24	24	24	24	24				24		24	
05441710	112WRD	063	ST	AUX SABLE CREEK NEAR MORRIS, IL		41 25 07.0	088 20 51.	24	24	24	24	24	24				24		24	
05462010	112WRD	179	ST	FARM CR AT CAMP ST BRIDGE AT EA		40 40 16.0	089 31 48.	24	24	24	24	24	24				24		23	
05455000	112WRD	111	ST	FOX RIVER AT ALGONQUIN, IL		42 09 59.0	088 17 25.	24	24	24	24	24	24			24	24	24	24	
									24	24	24	24	24			24	24	24	24	
054551000	112WRD	089	ST	FOX RIVER AT SOUTH ELGIN, IL		41 59 40.0	088 17 40.	24	24	24	24	24	24			24	24	24	24	
05449600	112WRD	111	ST	FOX RIVER AT RUPTONS BRIDGE, IL		42 16 44.0	088 13 31.	24	24	24	24	24	24			24	24	24	24	
05446700 *	112WRD	097	ST	FOX RIVER NEAR CHANNEL LAKE, IL		42 28 45.0	088 10 42.	24	24	24	24	24	24			24	24	24	24	
05451540 *	112WRD	089	ST	FOX RIVER AT MONTGOMERY, IL		41 43 46.0	088 20 19.	23	23	23	23	23	23			23	23	23	23	
05452500 *	112WRD	099	ST	FOX RIVER AT DAYTON, IL		41 23 14.0	088 47 21.	23	23	23	23	23	23			23	23	23	23	
05451995	112WRD	099	ST	SOMONAU CREEK AT SHERIDAN, IL		41 32 37.0	088 41 12.	23	23	23	23	23	23			23	23	23	23	
05451700	112WRD	093	ST	BLACKBERRY CREEK NEAR YORKVILLE		41 40 18.0	088 26 29.	23	23	23	23	23	23			23	23	23	23	
05450500	112WRD	031	ST	POPLAR CREEK AT ELGIN, IL		42 01 35.0	088 15 20.	23	23	23	23	23	23			23	23	23	23	
05448280	112WRD	111	ST	HIPPERSINK CREEK NEAR SPRING GR		42 26 37.0	088 14 51.	24	24	24	24	24	24			24	24	24	24	
05473650	112WRD	115	ST	SANGAMON RIVER NEAR NIANTIC		39 47 48.0	089 06 15.	23	23	23	23	23	23			23	21	23	23	
05473504	112WRD	115	ST	SANGAMON R. AT L DECATUR WATER		39 49 44.0	088 57 35.	23	23	23	23	23	23			23	23	23	23	
05473540	112WRD	115	ST	SANGAMON RIVER AT RT 48 AT DECA		39 49 52.0	088 58 35.	24	23	23	23	23	23			23	21	23	21	
05473800	112WRD	167	ST	SANGAMON RIVER AT POBY, IL		39 44 32.0	089 23 57.	23	23	23	23	23	23			23	21	23	21	
05478000	112WRD	129	ST	SANGAMON RIVER AT PETERSBURG, I		40 00 37.0	089 50 42.	24	24	24	24	24	24			24	21	24	21	
05480300 *	112WRD	125	ST	SANGAMON RIVER NEAR OAKFORD, IL		40 07 25.0	089 59 05.	24	24	24	23	24	24			24	24	24	23	
05476500 *	112WRD	167	ST	SANGAMON RIVER AT RIVERTON, IL		39 50 34.0	089 32 52.	23	23	23	23	23	23			23	23	23	23	
05475500	112WRD	021	ST	SOUTH FORK SANGAMON RIVER AT KI		39 34 44.0	089 23 31.	24	24	24	24	24	24			24	24	24	23	
05476250	112WRD	167	ST	SUGAR CREEK NEAR SPRINGFIELD, I		39 46 48.0	089 35 20.	23	23	23	23	23	23			23	23	23	23	
05475570	112WRD	021	ST	SANGCHRIS LAKE NEAR NEW CITY, I		39 39 00.0	089 28 40.	24	24	24	24	24	24			24	24	24	24	
05474500	112WRD	021	ST	FLAT BRANCH NEAR TAYLORVILLE, I		39 33 14.0	089 15 12.	24	24	24	24	24	24			24	21	24	21	
05427500 *	112WRD	197	ST	KANKAKEE RIVER NEAR WILMINGTON,		41 20 48.0	088 11 11.	23	23	23	23	23	23			23	23	23	23	
05420500 *	112WRD	091	ST	KANKAKEE RIVER AT HOMERCE, IL		41 09 36.0	087 40 07.	24	23	23	23	23	23			23	23	23	23	
05426000	112WRD	091	ST	IROQUOIS RIVER NEAR CHEBANSE, I		41 00 29.0	087 49 22.	24	23	23	23	23	23			23			23	
05425000	112WRD	075	ST	IROQUOIS RIVER AT IROQUOIS, IL		40 49 25.0	087 34 55.	24	23	23	23	23	23			23			23	
05425500	112WRD	075	ST	SUGAR CREEK AT MILFORD, IL		40 37 50.0	087 43 25.	24	23	23	23	23	23			23			23	
05428000	112WRD	097	ST	DES PLAINES RIVER NEAR GURNEE,		42 20 39.0	087 56 18.	23	23	23	23	23	23			23			23	
05427800	112WRD	097	ST	DES PLAINES RIVER AT RUSSELL, I		42 29 22.0	087 55 32.	24	24	24	24	24	24			24			24	
05472125 *	112WRD	147	ST	SANGAMON RIVER AT ALLERTON PARK		40 00 08.0	088 38 07.	23	23	23	23	23	23			23	23	23	23	
05470910	112WRD	019	ST	SANGAMON RIVER AT FISHER		40 18 40.0	088 19 20.	23	23	23	23	23	23			23	23	23	23	
05482000	112WRD	125	ST	SALT CREEK NEAR GREENVIEW, IL		40 08 01.0	089 44 08.	24	24	24	24	24	24			24	24	24	23	
05478500	112WRD	039	ST	SALT CREEK NEAR RUKELL, IL		40 06 54.0	089 02 57.	24	23	23	23	23	23			23	23	23	21	

STATE AMBIENT NETWORK  
ILLINOIS FISCAL YEAR 1983

STATION	E	AGENCY	Y	T P	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T	W	E	N	O	C	U	E
05598245		112WRD	077	ST	CRAB ORCHARD CREEK NEAR CARBOND		37 46 18.0	089 10 49.	23	23	23	23	23	23	23	23
05598050		112WRD	199	ST	CRAB ORCHARD C BL CRAB ORCHARD		37 42 51.0	089 09 04.	23	23	23	23	23	23	23	22
05597500		112WRD	199	ST	CRAB ORCHARD CREEK NEAR MARION,		37 43 52.0	088 53 21.	23	23	23	23	23	21	23	21
05597280		112WRD	077	ST	LITTLE MUDDY RIVER NEAR ELKVILL,		37 53 01.0	089 12 31.	23	23	23	23	23	21	23	21
05597040		112WRD	055	ST	POND CREEK AT WEST FRANKFORT, I		37 53 06.0	088 55 54.	23	23	23	23	23	21	23	21
05596400		112WRD	055	ST	MIDDLE FORK BIG MUDDY RIVER NEA		37 56 58.0	088 54 00.	23	23	23	23	23	21	23	21
05595830	*	112WRD	081	ST	CASEY FORK AT ROUTE 37 NEAR MT.		38 16 10.0	088 53 55.	23	23	23	23	23	23	23	23
05595730		112WRD	081	ST	RAYSE CREEK NEAR WALTONVILLE, I		38 15 14.0	089 02 23.	23	23	23	23	23	23	23	23
05591200	*	112WRD	029	ST	KASKASKIA RIVER AT COOKS MILLS,		39 35 01.0	088 24 50.	24	23	23	23	23	23	23	23
05593010		112WRD	027	ST	KASKASKIA RIVER BELOW CARLYLE		38 34 28.0	089 22 09.	23	23	23	23	23	23	23	23
05592500	*	112WRD	051	ST	KASKASKIA RIVER AT VANDALIA, IL		38 57 35.0	089 05 20.	23	23	23	23	23	23	23	21
05592100		112WRD	173	ST	KASKASKIA RIVER NEAR COWDEN, IL		39 13 50.0	088 50 33.	23	23	23	23	23	23	23	23
05592000		112WRD	173	ST	KASKASKIA RIVER AT SHELBYVILLE,		39 24 25.0	088 46 50.	23	23	23	23	23	23	23	23
05591300		112WRD	139	ST	KASKASKIA RIVER AT ALLENVILLE,		39 34 22.0	088 31 56.	24	24	24	24	24	24	24	24
05594100		112WRD	189	ST	KASKASKIA RIVER NEAR VENEDY STA		38 27 02.0	089 37 39.	24	24	24	24	24	24	24	23
05595400	*	112WRD	157	ST	KASKASKIA RIVER AT ROOTS, IL		38 00 58.0	089 57 14.	24	24	24	24	24	24	24	24
05590420		112WRD	041	ST	KASKASKIA RIVER NEAR TUSCOLA, I		39 51 53.0	088 21 52.	23	23	23	23	23	23	23	23
05595200		112WRD	163	ST	RICHLAND CREEK NEAR HECKER, IL		38 19 26.0	089 58 15.	23	23	23	23	23	23	23	23
05594450		112WRD	119	ST	SILVER CREEK NEAR TROY, IL		38 43 00.0	089 49 45.	23	23	23	23	23	23	23	23
05594800		112WRD	163	ST	SILVER CREEK NEAR FREEBURG, IL		38 24 22.0	089 52 26.	23	23	23	23	23	23	23	23
05594090		112WRD	027	ST	SUGAR CREEK AT ALBERS, IL		38 32 29.0	089 37 36.	24	24	24	24	24	24	24	23
05593800		112WRD	135	ST	SHOAL CREEK NEAR PANAMA, IL		39 02 25.0	089 33 03.	23	23	23	23	23	23	23	22
05594000		112WRD	027	ST	SHOAL CREEK NEAR BPEESE, IL		38 36 35.0	089 29 40.	24	24	24	24	24	23	24	24
05593505		112WRD	121	ST	CROOKED CREEK NEAR ODIN, IL		38 33 50.0	089 03 01.	23	23	23	23	23	23	23	23
05593520		112WRD	189	ST	CROOKED CREEK NEAR HOFFMAN, IL		38 30 25.0	089 16 24.	24	24	24	24	24	23	24	24
05592900		112WRD	121	ST	EAST FORK KASKASKIA RIVER NEAR		38 41 20.0	089 05 55.	23	23	23	23	23	23	23	23
05592930		112WRD	121	ST	NORTH FORK KASKASKIA RIVER NEAR		38 46 25.0	089 05 10.	23	23	23	23	23	23	23	23
05592800		112WRD	051	ST	HURRICANE CREEK NEAR MULBERRY G		38 55 21.0	089 14 14.	23	23	23	23	23	23	23	23
05592600		112WRD	051	ST	HICKORY CREEK NEAR BLUFF CITY,		38 55 30.0	089 02 20.	23	23	23	23	23	23	23	23
05592195		112WRD	051	ST	BECK CREEK AT HERRICK, IL		39 12 59.0	089 01 14.	23	23	23	23	23	23	23	23
05591700		112WRD	139	ST	WEST OKAW RIVER NEAR LOVINGTON,		39 43 52.0	088 39 43.	24	23	23	23	23	23	23	23
05591400		112WRD	139	ST	JONATHAN CREEK NEAR SULLIVAN, I		39 36 04.0	088 32 46.	24	24	24	24	24	24	24	23
05595280		112WRD	157	ST	PLUM CREEK NEAR BALDWIN, IL		38 08 48.0	089 50 35.	23	23	23	23	23	23	23	23
05591500		112WRD	139	ST	ASA CREEK AT SULLIVAN, IL		39 37 11.0	088 36 17.	24	24	24	24	24	24	24	24
05446500	*	112WRD	161	ST	ROCK RIVER NEAR JOSLYN, IL		41 33 35.0	090 10 55.	24	24	24	23	24	23	24	24
05443500		112WRD	195	ST	ROCK RIVER AT COMO, IL		41 47 00.0	089 44 58.	24	24	24	24	24	24	24	21
05440700		112WRD	141	ST	ROCK RIVER AT BYRON, IL		42 07 18.0	089 15 09.	24	24	24	24	24	24	24	24
05437500	*	112WRD	201	ST	ROCK RIVER AT ROCKTON, IL		42 26 55.0	089 04 11.	23	23	23	23	23	23	23	23
05442200		112WRD	141	ST	POCK RIVER AT GRAND DETOUR, IL		41 53 23.0	089 25 10.	24	24	24	24	24	24	24	24
05447100		112WRD	195	ST	GREEN RIVER NW DEER GROVE, IL		41 35 38.0	089 41 22.	24	24	24	24	24	24	24	23
05447500	*	112WRD	073	ST	GREEN RIVER NEAR GENESEO, IL		41 29 20.0	090 09 30.	24	24	24	24	24	24	23	24
05446100		112WRD	195	ST	POCK CREEK NEAR ERIE, IL		41 40 47.0	090 01 34.	23	23	23	23	23	23	23	23
05444000		112WRD	195	ST	ELKHORN CREEK NEAR PENROSE, IL		41 54 10.0	089 41 40.	24	24	24	24	24	24	24	22
05442020		112WRD	141	ST	KYTE PIVER AT DAYSVILLE, IL		41 59 10.0	089 17 41.	24	24	24	24	24	24	24	24
05438600		112WRD	201	ST	KISHWAUKEE R AB SOUTH BRANCH NW		42 12 06.0	088 58 43.	23	23	23	23	23	23	23	23
05438201		112WRD	007	ST	KISHWAUKEE R ATGP ROAD AT GARD		42 15 40.0	088 43 00.	23	23	23	23	23	23	23	23
05440000		112WRD	201	ST	KISHWAUKEE RIVER NEAR PERRYVILL		42 11 15.0	088 59 55.	23	23	23	23	23	23	23	23
05440520		112WRD	201	ST	KILLBUCK CREEK NEAR NEW MILFORD		42 09 36.0	089 04 32.	23	23	23	23	23	23	23	23

STATE AMBIENT NETWORK  
ILLINOIS FISCAL YEAR 1983

STATION	C U R	E	AGENCY	C N T Y	T P E	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T	W	E	N	P	F	T
03141920			112WRD	033	ST	WABASH RIVER AT HUTSONVILLE, IL		39 06 37.0	087 39 18.	23	23	23	23	23	23	23
03178500 *			112WRD	129	ST	WABASH RIVER AT NEW HARMONY, IN		38 07 55.0	087 56 25.	24	24	24	24	24	24	24
03178000			112WRD	185	ST	BONPAS CREEK AT BROWNS, IL		38 23 11.0	087 58 32.	24	24	24	24	24	24	24
03146550			112WRD	101	ST	EMBARRAS RIVER NEAR BILLET, IL		38 39 54.0	087 37 35.	23	23	23	23	23	23	23
03145500			112WRD	079	ST	EMBARRAS RIVER AT STE. MARIE, I		38 56 10.0	088 01 10.	24	23	23	23	23	23	23
03144000			112WRD	035	ST	EMBARRAS RIVER NEAR DIGNA, IL		39 20 40.0	088 10 15.	24	24	24	24	24	24	24
03143395			112WRD	041	ST	EMBARRAS RIVER AT CAMARGO, IL		39 47 59.0	088 10 13.	23	23	23	23	23	23	23
03146000			112WRD	033	ST	NORTH FORK EMBARRAS RIVER NEAR		39 00 37.0	087 56 47.	24	23	23	23	23	23	23
03142050			112WRD	033	ST	SUGAR CREEK AT PALESTINE, IL		39 00 16.0	087 35 50.	23	23	23	23	23	23	23
03141540			112WRD	045	ST	SUGAR CREEK NEAR ELBRIDGE, IL		39 29 53.0	087 33 11.	23	23	23	23	23	23	23
03141414			112WRD	165	ST	BROUILLETTS CREEK NEAR ST. BERN		39 40 53.0	087 31 16.	23	23	23	23	23	23	23
03139147			112WRD	183	ST	LITTLE VERMILION RIVER NEAR GEO		39 56 29.0	087 33 05.	23	23	23	23	23	23	23
03139000 *			112WRD	183	ST	VERMILION RIVER NEAR DANVILLE,		40 05 53.0	087 35 37.	24	23	23	23	23	23	23
03138780			112WRD	183	ST	NORTH FORK VERMILION RIVER NEAR		40 16 13.0	087 38 34.	23	23	23	23	23	23	23
03138097			112WRD	183	ST	SALT FORK NEAR OAKWOOD, IL		40 04 56.0	087 46 53.	23	23	23	23	23	23	23
03136900			112WRD	019	ST	SALT FORK NEAR ST. JOSEPH, IL		40 08 55.0	088 02 00.	24	23	23	23	23	23	23
03137700			112WRD	019	ST	SALINE BRANCH NEAR MAYVIEW, IL		40 07 59.0	088 06 15.	23	23	23	23	23	23	23
03136645			112WRD	183	ST	MIDDLE FORK VERMILION RIVER ABO		40 08 12.0	087 44 45.	24	23	23	23	23	23	23
03179600			112WRD	047	ST	LITTLE WABASH RIVER AT BLOOD, I		38 31 08.0	088 07 55.	24	24	24	24	24	24	24
03178900			112WRD	025	ST	LITTLE WABASH RIVER AT LOUISVIL		38 46 23.0	088 29 50.	23	23	23	23	23	23	23
03181495 *			112WRD	193	ST	LITTLE WABASH R AT MAIN ST AT C		38 05 32.0	088 09 22.	24	24	24	24	24	24	24
03178635			112WRD	049	ST	LITTLE WABASH RIVER NEAR EFFING		39 06 13.0	088 35 33.	24	24	24	24	24	24	24
03179500			112WRD	025	ST	LITTLE WABASH RIVER BELOW CLAY		38 38 05.0	088 17 50.	24	24	24	24	24	24	24
03181400			112WRD	193	ST	SKILLET FORK NEAR CARM, IL		38 09 12.0	088 09 55.	23	23	23	23	23	23	23
03180500			112WRD	191	ST	SKILLET FORK AT WAYNE CITY, IL		38 21 25.0	088 35 00.	24	24	24	24	24	24	24
03180350			112WRD	121	ST	SKILLET FORK NEAR IUKA, IL		38 31 10.0	088 43 39.	24	24	24	24	24	24	24
03179950			112WRD	191	ST	ELM RIVER NEAR TOMS PRAIRIE, IL		38 26 28.0	088 15 29.	24	24	24	24	24	24	24
05487060			112WRD	013	ST	ILLINOIS RIVER AT HARDIN, IL		39 09 37.0	090 36 55.	23	23	23	23	23	23	23
05463800 *			112WRD	179	ST	ILLINOIS RIVER AT PEKIN		40 34 23.0	089 39 17.	24	24	24	24	24	24	24
05458995			112WRD	123	ST	ILLINOIS RIVER AT LACON		41 01 30.0	089 25 02.	23	23	23	23	23	23	23
05456200			112WRD	155	ST	ILLINOIS RIVER AT HENNEPIN		41 15 26.0	089 20 45.	23	23	23	23	23	23	23
05443500 *			112WRD	099	ST	ILLINOIS RIVER AT MARSEILLES, I		41 19 40.0	088 43 10.	24	24	24	24	24	24	24
05459900 *			112WRD	143	ST	ILLINOIS RIVER AT WATER COMPANY		40 43 30.0	089 32 58.	24	24	24	24	24	24	24
05470520			112WRD	125	ST	ILLINOIS RIVER AT POWER COMPANY		40 16 49.0	090 04 53.	24	24	24	24	24	24	24
05486100 *			112WRD	149	ST	ILLINOIS RIVER AT VALLEY CITY		39 42 10.0	090 38 40.	24	24	24	24	24	24	24
05486690			112WRD	117	ST	MACOUPIN CREEK NEAR MACOUPIN, I		39 12 04.0	089 58 45.	24	24	24	24	24	24	24
05487000			112WRD	061	ST	MACOUPIN CREEK NEAR KANE, IL		39 14 03.0	090 23 40.	24	24	24	24	24	24	24
05486600			112WRD	061	ST	APPLE CREEK NEAR ELDRD, IL		39 27 11.0	090 32 46.	24	24	24	24	24	24	24
05486040			112WRD	171	ST	MAUVAISE TEPRE CREEK NEAR HERRI		39 43 53.0	090 24 26.	23	23	23	23	23	23	23
05485830			112WRD	149	ST	MCKEE CREEK AT CHAMBERSBURG, IL		39 49 04.0	090 39 09.	23	23	23	23	23	23	23
05485275			112WRD	017	ST	INDIAN CREEK AT ARENZVILLE		39 52 14.0	090 22 38.	23	23	23	23	23	23	23
05485000 *			112WRD	009	ST	LA MOINE RIVER AT RIPLEY, IL		40 01 31.0	090 37 55.	24	23	23	23	23	23	23
05484500			112WRD	109	ST	LA MOINE RIVER AT COLMAR, IL		40 19 45.0	090 53 55.	23	23	23	23	23	23	23
05483915			112WRD	169	ST	SUGAR CREEK NEAR FREDERICK, IL		40 05 49.0	090 24 16.	23	23	23	23	23	23	23
05488915			112WRD	095	ST	SPOON RIVER NEAR DAHINDA, IL		40 54 33.0	090 05 12.	23	23	23	23	23	23	23
05488775			112WRD	175	ST	SPOON RIVER NEAR WYOMING, IL		41 03 47.0	089 47 43.	24	24	24	24	24	24	24
05470000			112WRD	057	ST	SPOON RIVER AT SEVILLE, IL		40 29 10.0	090 20 34.	24	23	23	23	23	23	23
05469500			112WRD	057	ST	SPOON RIVER AT LONDON MILLS, IL		40 42 51.0	090 16 00.	24	23	23	23	23	23	23

### MINIMUM PARAMETERS

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

STATE AMBIENT NETWORK ILLINOIS FISCAL YEAR 1983							MINIMUM PARAMETERS											
C O R	C N T	T Y P	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T	A T E R	F U N D .	C O N D .	C O D -	P H -	R E L U N	K E L N	N O 2	P H	F E S	T E S U E
STATION	AGENCY	Y	E															
05439500	112WRD	037	ST	SOUTH BR KISHWAUKEE RIVER NP FA	42 06 40.0	088 54 00.	23		23	23	23	23	23		23			
05436250	112WRD	111	ST	COON CREEK AT RILEY, IL	42 10 58.0	088 38 28.	23		23	23	23	23	23		23			23
05435800	112WRD	201	ST	PECATONICA RIVER AT HARRISON, I	42 25 39.0	089 11 44.	23		23	23	23	23	23		23			23
05435500	112WRD	177	ST	PECATONICA RIVER AT FREEPORT, I	42 18 13.0	089 36 57.	23		23	23	23	23	23		23			22
05435680	112WRD	177	ST	YELLOW CREEK NEAR FREEPORT, IL	42 16 45.0	089 34 24.	23		23	23	23	23	23		23			23
03612500 *	112WRD	007	ST	OHIO RIVER AT DAM 53 NEAR GRAND	37 12 13.0	089 02 27.	31		31	24			31		31	31	31	24
03612000	112WRD	087	ST	CACHE RIVER AT FORMAN, IL	37 20 11.0	088 55 26.	23		23	23	23	23	23		23			23
03184450 *	112WRD	151	ST	LUSK CREEK NEAR EDDYVILLE, IL	37 28 20.0	088 32 50.	23		23	23	23	23	23		23	23	23	23
03182530	112WRD	059	ST	SALINE RIVER NEAR GINSONIA, IL	37 38 53.0	088 14 30.	23		23	23	23	23	23		23			23
03382325 *	112WRD	165	ST	NORTH FORK SALINE RIVER NEAR TE	37 53 18.0	088 23 06.	24		24	24	24	24	24		24	24	24	23
03382205 *	112WRD	165	ST	MIDDLE FORK SALINE RIVER NEAR P	37 42 28.0	088 29 31.	24		24	24	24	24	24		24	24	24	23
03382185	112WRD	165	ST	BANKSTON FORK NEAR DORRIS HEIGH	37 46 05.0	088 32 25.	24		24	24	24	24	24		24			24
03382100 *	112WRD	165	ST	SOUTH F SALINE RIVER NP CARRIER	37 38 16.0	088 40 40.	23		23	23	23	23	23		23	23	23	23
03382090	112WRD	199	ST	SUGAR CREEK NEAR STONEFORT, IL	37 39 19.0	088 45 48.	24		24	24	24	24	24		24			22
CWFP5A	* 21ILCH	998	LA	JWFP RADIAL LAKE SURVEY STATION L NICH	41 58 40.0	087 35 30.	31		31			31	31	31		31		31
SWFP5H	* 21ILCH	998	LA	SWFP RADIAL LAKE SURVEY STATION L NICH	41 49 30.0	087 26 50.	31		31			31	31	31		31		31
SWFP5J	* 21ILCH	998	LA	SWFP RADIAL LAKE SURVEY STATION L NICH	41 42 30.0	087 26 30.	31		31			31	31	31		31		31
TOTAL NUMBER OF SITES 208																		

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

Illinois Ambient Water Quality Monitoring Network

Water Column Parameters

Universal Parameters: pH (00400), temperature (00010), electrical conductivity (00094), dissolved oxygen (00300), total suspended sediment (00530), total volatile suspended sediment (00535), total ammonia nitrogen (00610), nitrite-nitrate nitrogen (00630), chemical oxygen demand (00335), fecal coliform (31616), and flow (00060 or 00061).

Total ICAP-OES Parameters\*: Barium (01007), boron (01022), cadmium (01027), chromium (01034), copper (01042), iron (01045), lead (01051), manganese (01055), nickel (01067), silver (01077), zinc (01092), calcium (00916), magnesium (00927), sodium (00929), potassium (00937), beryllium (01012), cobalt (01037), strontium (01082), and vanadium (01087), calculated Hardness (00900).

Special Basin Parameters:

Big Muddy River Basin: Copper (01042) and boron (01022).

Des Plaines - Lake Michigan Basin (only in segments A-7, A-8, A-9, A-10, A-12, A-13, A-14, A-15, and A-16): Boron (01022), copper (01042), and cyanide (00720).

Fox River Basin: Total phosphorus (00665), dissolved phosphorus (00666), total kjeldahl nitrogen (00625), copper (01042), and lead (01051).

Illinois River Basin: Copper (01042), mercury (71900), lead (01051), and iron (01045).

Kankakee River Basin: Copper (01042).

Kaskaskia River Basin: No special parameters.

Mississippi River Basin: Copper (01042), lead (01051), and mercury (71900).

Ohio River Basin: Cadmium (01027), chloride (00940), copper (01042), and cyanide (00720).

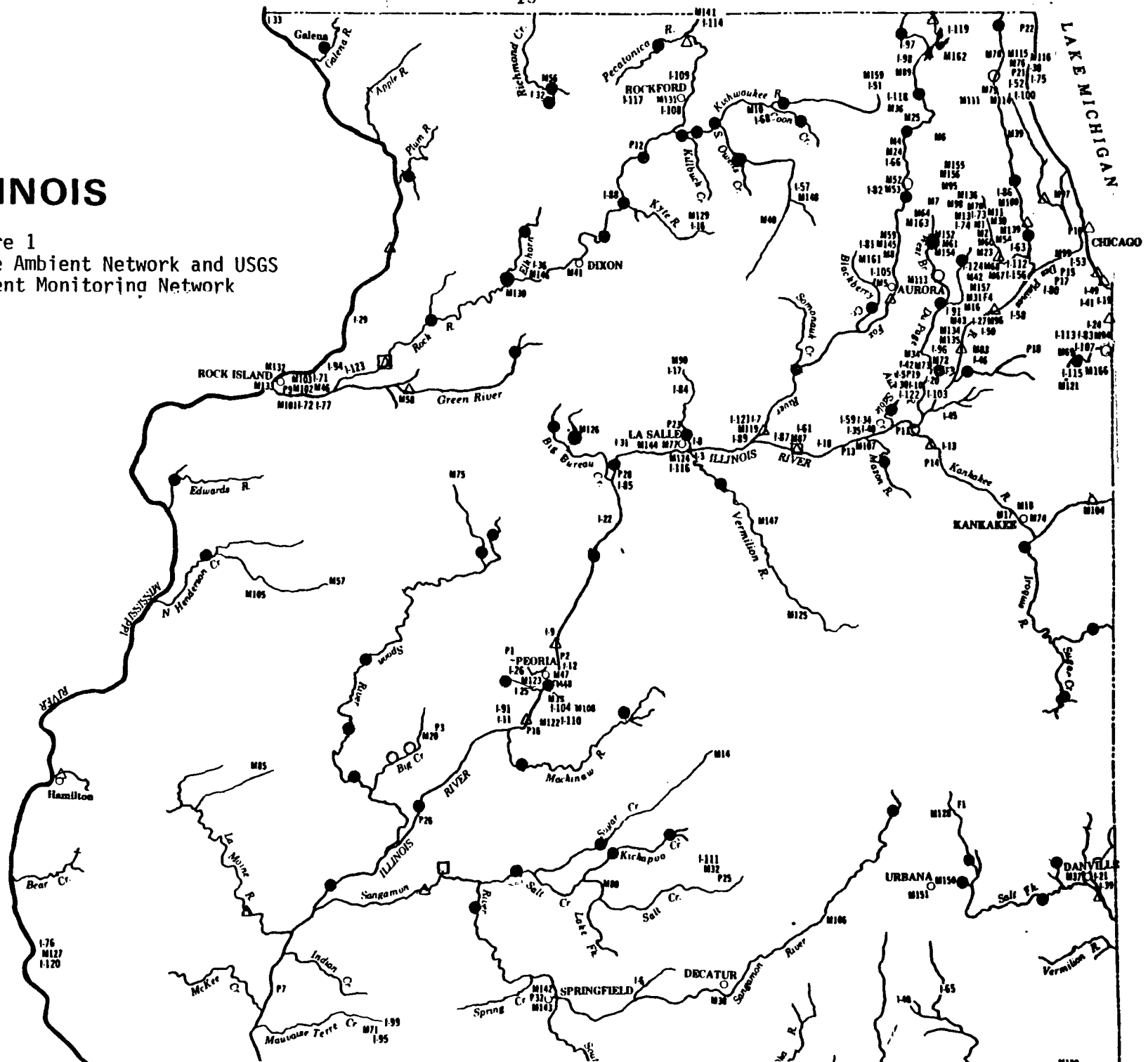
Sangamon River Basin: Copper (01042) and iron (01045).

Wabash River Basin: Chloride (00940), copper (01042), lead (01051), and mercury (71900).

\*Inductively Coupled Argon Plasma -- Optical Emission System

# ILLINOIS

Figure 1  
State Ambient Network and USGS  
Ambient Monitoring Network



# Major Dischargers:

- M - Municipal
- I - Industrial
- P - Power Plants
- F - Federal
- A - Agricultural

## LEGEND

- ▲ Dual Purpose CORE State Monitoring Station
- State Stations
- △ CORE Network
- USGS Ambient Water Quality Monitoring
- ⊗ Dual Purpose CORE & USGS Ambient Water Quality Monitoring Station
- ⊠ Dual Purpose NASQAN and CORE Stations

10 0 10 20 30 40 Miles

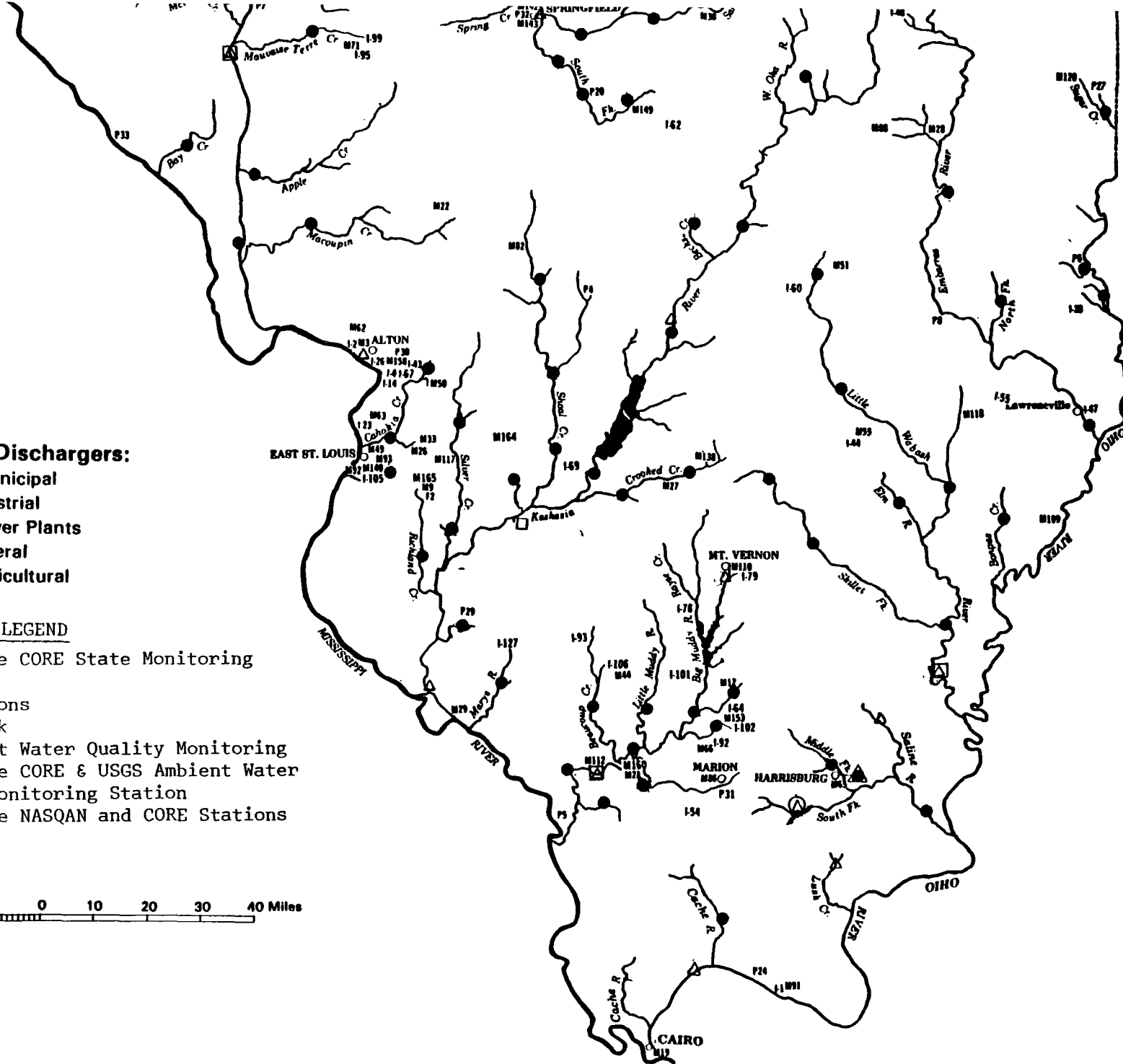


Table 2

NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY  
B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

----- STATE-ILLINOIS NETWORK-NASQAN -----							
STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
3381495	LITTLE WABASH RIVER AT MAIN ST. BRIDGE	B	6	2	4	0	NO
5446500	ROCK RIVER NEAR JOSLIN	Q	4	0	4	0	NO
5543500	ILLINOIS RIVER AT MARSEILLES	Q	4	0	4	0	NO
5583000	SAGANON RIVER AT OAKFORD	B	6	2	4	0	NO
5586100	ILLINOIS RIVER AT VALLEY CITY	Q	4	0	4	0	NO
5594100	KASKASKIA RIVER NEAR VENEDY STATION	B	6	2	4	0	NO
5599500	BIG MUDDY RIVER AT MURPHYSBORO	B	6	2	4	0	NO

U.S. Geological Survey Analytical Schedule FY'83

Illinois

NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO2+NO3 AS N  
NITROGEN, DIS. NH4 AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH4+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS.U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
PH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CACO3  
METALS, DIS. CHE-EXT

U.S. Geological Survey Analytical Schedule (Cont.)  
Illinois

COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. CaCO3
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

Attachment 2-1

ILLINOIS

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M1 Addison North	Addison	IL 0033812	10/19/83
M2 Addison South	Addison	IL 0027367	10/19/83
M4 Algonquin	Algonquin	IL 0023329	4/30/84
M3 Alton	Alton	IL 0027464	8/31/86
M5 Aurora S. D.	Aurora	IL 0020818	10/18/83
M6 Barrington	Barrington	IL 0021598	10/19/83
M7 Bartlett	Bartlett	IL 0027618	10/19/83
M8 Batavia	Batavia	IL 0022543	8/31/82
M9 Belleville Plant No. 1	Belleville	IL 0021873	5/01/83
M10 Belvidere	Belvidere	IL 0027685	9/30/82
M11 Bensenville Plant No. 1	Bensenville	IL 0021849	12/31/81
M12 Benton	Benton	IL 0022365	12/31/81
M13 Bloomingdale (South)	Bloomingdale	IL 0021130	6/30/83
M14 Bloomington-Normal S.D.	Bloomington	IL 0027731	7/01/82
M16 Bolingbrook	Bolingbrook	IL 0032689	10/19/83
M17 Bourbonnais	Bourbonnais	IL 0025275	12/31/83
M18 Bradley	Bradley	IL 0027766	10/18/83
M19 Cairo	Cairo	IL 0023825	6/30/83
M20 Canton (West)	Canton	IL 0027839	**
M160 Carbondale (N.W.)	Carbondale	IL 0027871	6/30/83
M21 Carbondale (S.E.)	Carbondale	IL 0027898	6/30/83
M22 Carlinville	Carlinville	IL 0022675	5/31/87
M23 Carol Stream	Carol Stream	IL 0026352	10/18/83
M24 Carpentersville	Carpentersville	IL 0027944	6/30/86
M25 Cary	Cary	IL 0020516	12/31/83
M26 Caseyville Township (East)	Caseyville Twp.	IL 0021083	12/30/83
M27 Centralia (Main)	Centralia	IL 0027979	**
M28 Charleston	Charleston	IL 0021644	**
M29 Chester	Chester	IL 0028045	**
M30 Citizen Utility Co.-Plt. #1	Addison	IL 0032727	**
M31 Citizen Utility Co.-Plt. #2	Bolingbrook	IL 0032735	**
M32 Clinton S.D.	Clinton	IL 0023612	8/31/82
M33 Collinsville	Collinsville	IL 0028215	6/30/83
M34 Crest Hill	Crest Hill	IL 0021121	6/30/83
M35 Creve Coeur	Creve Coeur	IL 0021237	6/30/83
M36 Crystal Lake	Crystal Lake	IL 0028282	10/19/83
M37 Danville S. D.	Danville	IL 0020788	6/30/82
M38 Decatur S. D. (Main)	Decatur	IL 0028321	**
M39 Deerfield	Deerfield	IL 0028347	10/19/83
M40 DeKalb S. D. (Main)	DeKalb	IL 0023027	6/30/83
M41 Dixon	Dixon	IL 0026450	3/31/87
M42 Downers Grove	Downers Grove	IL 0028380	1/01/82
M81 DuPage Co., Dept. Public Works (Lisle)	Lisle	IL 0028452	**
M43 DuPage Co. Dept. Public Works (Marion Brook)	Darien	IL 0028495	**

ILLINOIS

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M157 DuPage Co., Dept Public Works (Woodridge)	Woodridge	IL 0031844	7/31/82
M44 DuQuoin	DuQuoin	IL 0028517	4/30/86
M46 East Moline	East Moline	IL 0028550	12/30/83
M47 East Peoria #1	East Peoria	IL 0028576	6/30/83
M48 East Peoria #3	East Peoria	IL 0046213	7/01/85
M49 East St. Louis	East St. Louis	IL 0033472	6/30/83
M50 Edwardsville	Edwardsville	IL 0026310	7/31/86
M51 Effingham	Effingham	IL 0028622	**
M161 Elburn	Elburn	IL 0062260	1/31/86
M52 Elgin - North S. D.	Elgin	IL 0028665	9/30/82
M53 Elgin - South S. D.	Elgin	IL 0028657	6/30/84
M54 Elmhurst	Elmhurst	IL 0028746	**
M55 Flora	Flora	IL 0020273	**
M162 Fox Lake	Fox Lake	IL 0020958	10/19/83
M56 Freeport	Freeport	IL 0023591	6/30/86
M57 Galesburg S. D.	Galesburg	IL 0023141	1/31/82
M58 Geneseo	Geneseo	IL 0021814	6/30/83
M59 Geneva	Geneva	IL 0020087	5/31/82
M60 Glendale Heights	Glendale Heights	IL 0028967	6/30/83
M61 Glenbard Wastewater Authority	Glen Ellyn	IL 0021547	10/19/83
M62 Godfrey Township - Main STP	Godfrey Township	IL 0036421	8/31/85
M63 Granite City	Granite City	IL 0033481	9/30/83
M64 Hanover Park #1	Hanover Park	IL 0034479	5/31/84
M163 Hanover Park #2	Hanover Park	IL 0034487	1/31/84
M65 Harrisburg	Harrisburg	IL 0029149	3/31/82
M66 Herrin	Herrin	IL 0029165	6/30/83
M164 Highland	Highland	IL 0029173	8/31/86
M67 Hinsdale (McElwain Plant)	Burr Ridge	IL 0022586	4/30/84
M68 Hinsdale (Oak Brook)	Oak Brook	IL 0022594	**
M69 Homewood	Homewood	IL 0029211	6/30/83
M70 Itasca	Itasca	IL 0026280	3/31/86
M71 Jacksonville	Jacksonville	IL 0021661	11/30/81
M72 Joliet (East)	Joliet	IL 0022519	6/01/82
M73 Joliet (West)	Joliet	IL 0033553	9/16/87
M74 Kankakee	Kankakee	IL 0021784	3/31/86
M75 Kewanee	Kewanee	IL 0029343	11/30/81
M76 Lake County-Dept. of Public Works	New Century Town	IL 0022071	**
M78 Lake County DPW - Des Plaines River Plant	Lake County	IL 0022055	10/18/83
M77 LaSalle	LaSalle	IL 0029424	12/31/85
M79 Libertyville	Libertyville	IL 0029530	6/30/83
M80 Lincoln	Lincoln	IL 0029564	1/31/86
M82 Litchfield	Litchfield	IL 0020621	5/31/82
M83 Lockport	Lockport	IL 0029611	6/30/83

ILLINOIS

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M85 Macomb	Macomb	IL 0029688	11/30/82
M86 Marion	Marion	IL 0029734	4/30/87
M87 Marseilles	Marseilles	IL 0021059	8/31/87
M88 Mattoon	Mattoon	IL 0029831	11/30/82
M89 McHenry	McHenry	IL 0021067	12/31/83
M90 Mendota	Mendota	IL 0023221	5/31/87
M91 Metropolis	Metropolis	IL 0029874	3/31/82
M92 Metro East S.D. (Cahokia)	Cahokia	IL 0028606	6/30/83
M93 Metro East S.D. (Landsdowne)	Landsdowne	IL 0028592	6/30/83
M94 MSDGC - Calumet	Calumet	IL 0028061	6/30/82
M95 MSDGC - John E. Egan	Schaumburg Twp.	IL 0036340	4/30/84
M96 MSDGC - Lemont	Lemont	IL 0028070	2/28/82
M97 MSDGC - North Side	North Side	IL 0028088	1/31/87
M98 MSDGC - Hanover Park	Hanover Park	IL 0036137	2/28/82
M99 MSDGC - West Southwest	West Southwest	IL 0028053	10/31/86
M100 MSDGC - O'Hare	Des Plaines	IL 0047741	**
M101 Milan	Milan	IL 0020214	6/30/83
M102 Moline (South)	Moline (South)	IL 0029939	11/30/82
M103 Moline (North)	Moline	IL 0029947	11/30/81
M104 Momence	Momence	IL 0022179	10/31/84
M105 Monmouth	Monmouth	IL 0021253	6/30/83
Monmouth-Wilson	Monmouth	IL 0036218	**
M106 Monticello	Monticello	IL 0029980	3/31/82
M107 Morris	Morris	IL 0021113	11/30/81
M108 Morton Plant No. 2	Morton	IL 0030015	4/30/87
M109 Mount Carmel	Mount Carmel	IL 0030023	7/31/87
M110 Mount Vernon	Mount Vernon	IL 0027341	5/31/87
M111 Mundelein	Mundelein	IL 0022501	6/30/83
M112 Murphysboro	Murphysboro	IL 0023248	5/31/86
M113 Naperville (Springbrook)	Naperville	IL 0034061	10/31/83
M114 North Shore Sanitary Dist. (Clavey Road)	Clavey Road	IL 0030171	10/19/83
M115 North Shore Sanitary Dist. (Gurnee)	Gurnee	IL 0035092	**
M116 North Shore Sanitary Dist. (Waukegan)	Waukegan	IL 0030244	10/19/83
M117 O'Fallon	O'Fallon	IL 0021636	6/30/83
M118 Olney	Olney	IL 0048755	5/31/82
M119 Ottawa	Ottawa	IL 0030384	8/31/87
M120 Paris (South)	Paris	IL 0021377	3/31/82
M121 Park Forest South Utilities Co.	Park Forest South	IL 0024473	10/19/83
M122 Pekin	Pekin	IL 0034495	11/30/82
M123 Peoria - Greater Peoria S.D.	Peoria	IL 0021288	5/31/82

ILLINOIS

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M124 Peru	Peru	IL 0030660	11/30/82
M125 Pontiac	Pontiac	IL 0030457	**
M126 Princeton	Princeton	IL 0020575	8/31/87
M127 Quincy	Quincy	IL 0030503	3/31/86
M128 Rantoul (East)	Rantoul	IL 0022128	6/01/82
M129 Rochelle	Rochelle	IL 0030741	1/15/83
M130 Rock Falls	Rock Falls	IL 0026514	4/30/85
M131 Rockford S. D.	Rockford	IL 0027201	6/30/82
M132 Rock Island	Rock Island	IL 0030783	12/31/82
M133 Rock Island (Southwest)	Rock Island	IL 0036382	6/30/84
M134 Romeoville #1	Romeoville	IL 0030805	**
M135 Romeoville #2	Romeoville	IL 0048526	4/30/82
M136 Roselle	Roselle	IL 0030813	12/31/81
M138 Salem	Salem	IL 0023264	**
M139 Salt Creek Drainage Basin	Salt Creek	IL 0030953	2/29/84
M140 Sauget	Sauget	IL 0021407	6/30/83
M141 South Beloit	South Beloit	IL 0021156	1/31/83
M142 Springfield S.D.(Spring Creek)	Springfield	IL 0021989	3/31/87
M143 Springfield S.D.(Sugar Creek)	Springfield	IL 0021971	6/30/83
M144 Spring Valley	Spring Valley	IL 0031216	1/31/84
M145 St. Clair Township Lincolnshire	Belleville	IL 0048232	3/31/87
M145 St. Charles	St. Charles	IL 0022705	**
M146 Sterling (Elkhorn Creek)	Sterling	IL 0060569	9/30/84
M147 Streator	Streator	IL 0022004	11/30/83
M148 Sycamore (North)	Sycamore	IL 0031291	4/30/87
M149 Taylorville S.D.	Taylorville	IL 0031356	2/28/83
M166 Thorn Creek S.D. (Formerly Bloom Township)	Bloom Township	IL 0027723	10/19/83
M150 Urbana-Champaign S.D. (N.E.)	Champaign	IL 0031500	4/01/82
M151 Urbana-Champaign S.C. (S.W.)	Champaign	IL 0031526	4/01/82
M152 West Chicago	West Chicago	IL 0023469	4/30/82
M153 West Frankfort	West Frankfort	IL 0031704	**
M154 Wheaton S.D.	Wheaton	IL 0031739	10/19/83
M155 Wood Dale (North)	Wood Dale	IL 0020061	6/30/83
M156 Wood Dale (South)	Wood Dale	IL 0034274	10/19/83
M158 Wood River	Wood River	IL 0031852	1/31/86
M159 Woodstock (North)	Woodstock	IL 0031861	10/19/83

\* Semi Public STP

\*\* Expired prior to FY 1982. Expiration date will be listed when permit is issued.

ILLINOIS

## FY 1983 LIST OF MAJOR DISCHARGERS

## INDUSTRIAL

NAME	LOCATION	PERMIT NO.	EXPIRATION DATE
I52 Abbott Laboratories	North Chicago	IL 0001881	4-1-86
I53 Allied Chemical Corp.	Chicago	IL 0002640	1-1-84
I6 Allied Chemical Corp.	Metropolis	IL 0004421	5-30-80
I2 Alton Boxboard Co.	Alton	IL 0000213	3-31-81
I54 Amax Coal Co. (Delta Mine)	Crab Orchard	IL 0060402	12-31-80
I3 American Nickeloid Co.	Peru	IL 0001724	2-28-81
I55 AMF, Inc.	Olney	IL 0004146	6-30-81
I56 Amoco Chem. Corp.	Lyons	IL 0001627	3-31-81
I5 Amoco Chem. Corp.	Joliet	IL 0001643	3-31-81
I4 Amoco Oil Co.	Wood River	IL 0000035	9-30-80
I57 Anaconda Co- Wire & Cable Div.	Sycamore	IL 0003760	10-31-83
I58 Andrew Corp.	Orland Park	IL 0004952	3-31-86
I59 Armak Co.	Morris	IL 0026069	7-31-83
I60 Ashland Petroleum Co.	St. Elmo	IL 0032271	6-30-83
I61 Beker Industries Corp.	Marseilles	IL 0036463	3-31-81
I62 Bi-Petro Inc.-Pana Refining Div.	Pana	IL 0004758	9-30-82
I6 Borden, Inc. -Chemical Div	Illioopolis County	IL 0001350	8-31-81
I7 Borg Warner Corp.-Morse Chain Div.	Ottawa	IL 0001929	3-31-81
I63 Bunker-Ramo Corp.-Amphenol Conn.	Broadview	IL 0005061	10-1-79
I64 Cable Service Co.	West Frankfort	IL 0044652	5-1-78
I65 Cabot Corp.	Tuscola	IL 0004375	3-21-81
I66 Cargill, Inc.	Carpentersville	IL 0051977	6-30-81
I8 Carus Chemical Co.	LaSalle	IL 0002623	3-1-86
I9 Caterpillar Tractor Co.	Mossville	IL 0001414	12-14-78
I10 Caterpillar Tractor Co.	Joliet	IL 0001732	6-30-81
I11 Caterpillar Tractor Co.	Mapleton	IL 0001830	12-4-78
I12 Caterpillar Tractor Co.	East Peoria	IL 0002291	6-30-79
I13 Celotex Corp.	Quincy	IL 0003247	3-31-81
P1 Central Illinois Light Co.	Bartonville	IL 0001970	7-1-78
P2 Central Illinois Light Co.	East Peoria	IL 0001988	7-1-78
P3 Central Illinois Light Co.	Duck Creek (Peoria)	IL 0055620	5-1-85
P4 Central Ill. Public Serv. Co.	Coffeen	IL 0000108	10-1-79
P7 Central Ill. Public Serv. Co.	Meredosia	IL 0000116	9-30-80
P5 Central Ill. Public Serv. Co.	Grand Tower	IL 0000124	9-30-80
P6 Central Ill. Public Serv. Co.	Hutsonville	IL 0004120	9-30-80
P8 Central Ill. Public Serv. Co.	Newton	IL 0049191	8-31-80
I67 Chemetco Inc.	Hartford	IL 0025747	1-21-82
I68 Chrysler Corp.-Belvidere	Belvidere	IL 0003239	2-1-78
I69 Circle Smelting Inc.	Beckemeyer	IL 0005231	3-31-84
I14 Clark Oil and Refining Corp.	Hartford	IL 0001244	9-30-80
I70 Columbia Tool Steel Co.	Chicago Hts.	IL 0046612	3-1-85
P23 Commonwealth Edison Co.- LaSalle	Marseilles	IL 0048151	5-31-81
P12 Commonwealth Edison Co.- Byron	Byron	IL 0048313	4-1-81
P14 Commonwealth Edison Co.- Braidwood	Godley	IL 0048321	4-1-81
P13 Commonwealth Edison Co.- Collins	Morris	IL 0048143	4-1-81
P10 Commonwealth Edison Co.- Fisk	Chicago	IL 0002178	9-30-80
P15 Commonwealth Edison Co.- Crawford	Chicago	IL 0002186	9-30-80

ILLINOIS  
INDUSTRIAL (Continued)

NAME	LOCATION	PERMIT NO.	EXPIRATION DATE
P17 Commonwealth Edison Co.- Ridgeland	Stickney	IL 0002194	7-31-80
P18 Commonwealth Edison Co.- Will Co.	Joliet	IL 0002208	8-31-80
P19 Commonwealth Edison Co.- Joliet	Joliet	IL 0002216	7-31-80
P16 Commonwealth Edison Co.- Powerton	Pekin	IL 0002232	9-30-80
P22 Commonwealth Edison Co.- Zion	Zion	IL 0002763	8-31-80
P11 Commonwealth Edison Co.- Dresden	Morris	IL 0002224	8-31-80
P20 Commonwealth Edison Co.- Kincaid	Kincaid	IL 0002241	7-31-80
P21 Commonwealth Edison Co.- Waukegan	Waukegan	IL 0002259	9-30-80
P9 Commonwealth Edison Co.-Quad Cities	Hardin County	IL 0005037	9-30-80
I71 Deere, John & Co.-Foundry	East Moline	IL 0002992	6-30-81
I72 Deere, John and Co.	Moline	IL 0003000	6-30-81
I17 Del Monte Corp.	Mendota	IL 0003115	8-31-82
I16 Del Monte Corp.	Rochelle	IL 0003417	5-31-84
I18 DuPont de Nemours, E.I. and Co.	Seneca	IL 0001767	12-31-78
P24 Electric Energy Inc.	Joppa	IL 0004171	9-30-80
I73 Electronic Support Systems, Inc.	Wood Dale	IL 0055867	
I74 Escast, Inc.	Addison	IL 0038474	6-30-81
I75 Fan Steel Inc.	North Chicago	IL 0002411	6-30-81
I76 Firestone Tire & Rubber Co.	Quincy	IL 0003948	3-1-86
I77 Frank Foundries Corp.	Moline	IL 0003051	8-31-84
I78 Freeman United Coal Mining Co.	Waltonville	IL 0004707	1-31-81
I20 GAF Corp.	Joliet	IL 0002933	7-31-82
I79 General Tire & Rubber Co.	Mt. Vernon	IL 0035017	4-30-82
I21 GMC-Foundry	Danville Twp.	IL 0004138	9-30-80
I80 GMC-Fisher Body	Willow Springs	IL 0034401	6-30-81
I22 Goodrich, B.F. Co.	Henry	IL 0001392	6-30-82
I81 Goodrich, B.F. Co.	Saint Charles	IL 0033995	3-31-84
I23 Granite City Steel Co.	Granite City	IL 0000329	6-30-80
I82 Hoffer Plastics Corp.	South Elgin	IL 0004961	3-1-86
P29 Illinois Power Co.-Baldwin	Randolph County	IL 0000043	7-1-79
P30 Illinois Power Co.-Wood River	East Alton	IL 0000701	9-30-80
P26 Illinois Power Co.-Havanna	Havanna	IL 0001571	3-31-81
P27 Illinois Power Co.-Oakwood	Oakwood	IL 0004057	8-31-80
P28 Illinois Power Co.-Hennepin	Hennepin	IL 0001554	9-30-80
P25 Illinois Power Co.-Clinton	Clinton	IL 0036919	7-31-80
I24 Interlake, Inc.	Chicago	IL 0002101	7-1-78
I83 Interlake, Inc.	Riverdale	IL 0002119	9-30-81
I84 Joanna Western Mills Co.	Joanna	IL 0005151	9-30-83
I85 Jones and Laughlin Steel Corp.	Hennepin	IL 0002631	9-30-80
I86 K. A. Steel Chemicals	Des Plaines	IL 0022934	3-31-81
I87 Kaiser Aluminum & Chemical Co.	Marseilles	IL 0001708	11-30-79
I88 Kable Printing Co.	Mount Morris	IL 0003972	2-28-82
I25 Keystone Steel and Wire	Bartonville	IL 0002526	9-30-80
I26 Laclede Steel Co.-Alton	Alton	IL 0000612	9-30-80

ILLINOIS

INDUSTRIAL (Continued)

	NAME	LOCATION	PERMIT NO.	EXPIRATION DATE
I27	Lemont Mfg.	Lemont	IL 0001309	9-30-80
I89	Libbey-Owens-Ford Co.	Ottawa	IL 0001384	2-28-82
I90	Lignon Engineering	Plainfield	IL 0056006	6-30-81
I91	Lonza, Inc.	Mapleton	IL 0049697	***
I92	Magic Chef, Inc.	Herrin	IL 0004715	12-31-79
I28	Marathon Oil Co.	Robinson	IL 0004073	9-30-80
I93	MCA Distributing	Pinkneyville	IL 0000671	7-1-86
I94	McLaughlin Body Co.	East Moline	IL 0003859	
I29	Minnesota Mining & Mfg. Co.	Cordova	IL 0003140	3-31-81
I95	Mobil Chemical Co.	Jacksonville	IL 0000027	7-1-86
I31	Mobil Chemical Co.	DePue	IL 0032182	3-31-81
I96	Mobil Oil Corp. (Rexene)	Joliet	IL 0001619	3-31-81
I30	Mobil Oil Corp.	Joliet	IL 0002861	6-30-81
I32	Modern Plating Corp.	Freeport	IL 0003298	7-31-82
I97	Modine Mfg. Co.	Ringwood	IL 0001279	5-31-79
I98	Morton Chemical Co.	Ringwood	IL 0001716	3-31-81
I33	N-Ren Corp.	E. Dubuque	IL 0003930	1-31-85
I99	National Starch and Chem. Corp.	Morgan County	IL 0000621	6-30-81
I100	North Chicago Refiners & Smelters Div.	North Chicago	IL 0002755	3-31-80
I34	No. Ill. Gas Co.	Morris	IL 0026662	9-30-82
I35	Northern Petrochemical Co.	Morris	IL 0002917	5-31-80
I36	Northwestern Steel and Wire Co.	Sterling	IL 0003794	9-30-80
I101	Old Ben Coal Company Mine #2	Sesser	IL 0036625	9-30-82
I102	Old Ben Coal Company	West Franfort	IL 0054097	1-31-85
I37	Olin Corp.	East Alton	IL 0000230	6-30-81
I103	Olin Corp.	Joliet	IL 0002020	3-31-81
I38	Outboard Marine Corp. (Johnson Motors)	Waukegan	IL 0002267	6-30-86
I104	Pekin Energy Co.	Pekin	IL 0001953	6-30-84
I39	Peterson/Puritan, Inc.	Danville	IL 0004162	6-30-82
I105	Pfizer, Inc.	E. St. Louis	IL 0038709	3-31-81
I106	Phelps Dodge Cable & Wire Co.	DuQuoin	IL 0000744	5-31-82
I107	Phillips Petroleum Co.	Calumet City	IL 0035157	9-30-83
I108	Pierce Chemical Co.	Rockford	IL 0003191	8-1-77
I109	Progressive Steel Treating Co.	Loves Park	IL 0046566	9-30-84
I110	Quaker Oats Co.	Pekin	IL 0037729	5-31-80
I40	Reichold Chemicals, Inc.	Morris	IL 0034622	3-31-81
I41	Republic Steel Corp.	Chicago	IL 0002593	9-30-80
I111	Revere Copper & Brass, Inc.	Clinton	IL 0002356	6-30-81
I112	Reynolds Metals Co.	Brookfield	IL 0001341	6-30-81
I113	Richards, W.C. Co.	Blue Island	IL 0034002	12-31-79
I42	SCM (Glidden-Durkee)	Joliet	IL 0002038	1-31-83

ILLINOIS

INDUSTRIAL (Continued)

NAME	LOCATION	PERMIT NO.	EXPIRATION DATE
I43 Shell Oil Co.-Wood River	Roxana	IL 0000205	9-30-80
I114 Sonoco Products	Rockton	IL 0037583	3-31-81
P31 So. Ill. Power Coop.	Marion	IL 0004316	6-25-80
I44 Sparton Manufacturing Co.	Flora	IL 0004588	6-30-81
P32 Springfield Water, Light, & Power	Springfield	IL 0024767	4-30-86
I115 Stauffer Chemical Co.	Chicago Heights	IL 0035181	8-31-79
I45 Stepan Chemical Co.	Elmwood	IL 0002453	3-31-81
I116 Sunmark Industries	Peru	IL 0045420	10-31-84
I117 Sun Heat Treating Inc.	Rockford	IL 0046752	10-31-83
I118 T.C. Industries, Inc.	Crystal Lake	IL 0026816	3-31-84
I46 Texaco Inc. Refinery	Lockport	IL 0002305	9-30-80
I47 Texaco Inc. Refinery	Lawrenceville	IL 0004219	9-30-80
I119 Travenol Labs, Inc.	Round Lake	IL 0024074	6-30-81
I120 Tuscarora Plastics, Inc.	Quincy	IL 0003441	6-30-81
I121 Union Carbide Corp.	Ottawa	IL 0035351	12-31-84
I50 Union Oil Co. of Calif.	Lemont	IL 0001589	9-30-80
I48 U.S. Industrial Chem. Co.	Tuscola	IL 0000141	3-31-81
I122 U.S. Steel Corp.	Joliet	IL 0002674	5-1-85
I49 U.S. Steel Corp.-South Works	Chicago	IL 0002691	9-30-80
I123 Valspar Corp.	East Moline	IL 0003255	5-31-81
I124 Wescom, Inc.	Downers Grove	IL 0037095	6-30-83
I125 Western Electric Co.	Aurora	IL 0002321	12-31-83
P33 Western Illinois Power Co-op	Pearl	IL 0036765	6-25-80
I126 Westinghouse Air Brake Co.	Peoria	IL 0035211	6-30-81
I51 Woodstock Die Casting	Woodstock	IL 0033863	6-30-81
I127 World Color Press, Inc.	Sparta	IL 0000736	12-31-80

b. Indiana

(1) Overview

Three agencies in Indiana are involved in ambient monitoring: the Indiana State Board of Health, the U.S. Geological Survey, and the U.S. Forest Service. The coverage provided by these networks meet the explicit intent of the program guidance for water quality monitoring and wasteload allocations. The guidance is intended to provide a data base to detect trends in water quality. Within the coverage provided by these networks, there is no duplication considering sampling parameters and frequency. Indiana's Monitoring Program has minor deficiencies in the areas of quality assurance and data interpretation and reporting.

(2) Assessment of State Ambient Network

a. State Monitoring Network

The State ambient monitoring network consists of 92 stations of which 21 are "CORE" stations. In FY 1979, the State Ambient Network consisted of 97 stream stations of which 21 were "CORE" stations. The CORE stations have not changed. However, five state stations were discontinued. (See Figure 2 and Table 3.)

For FY 1983, calcium, magnesium, and dissolved reactive silica were added to stations IHC.1, TCI and BD.1.

Specific conductivity has been entered into STORET for the first quarter of 1982. However, data has not been entered since this time.

Fish tissue samples for toxics analysis and macroinvertebrate samples for quantitative and qualitative comparison were collected at nine CORE stations listed below.

<u>Station No.</u>	<u>Stream</u>	<u>Location</u>	<u>County</u>
WB 301	Wabash River	Lafayette (upstream)	Tippecanoe
WB 292	Wabash River	Lafayette (downstream)	Tippecanoe
WB 207	Wabash River	Terre Haute (upstream)	Vigo
WB 175	Wabash River	Terre Haute (downstream)	Vigo
IWC 6.6	West Fork White River	Indianapolis (upstream)	Marion
WR 205	West Fork White River	Indianapolis (downstream)	Morgan
EW 77	East Fork White River	Williams Dam	Lawrence
WR 48	White River	Petersburg	Pike
IHC 1	Indiana Harbor Canal	East Chicago	Lake

Fish tissue sample data have not been entered into STORET for FY'82.

In addition to the minimum parameters shown on Table 3, the following parameters are also sampled at these stations:

Alkalinity, ammonia, BOD, chloride, cyanide, fluoride, hardness, iron, lead, manganese, potassium, sodium, total solids, sulfate, TOC, calcium, magnesium, coliform-total. USGS flow data are used for this program.

The following toxic pollutants are also analyzed: arsenic, cadmium, chromium, chlordane copper, nickel and zinc. The State may, for selected stream segments, monitor for other toxic substances believed to be present. PCB monitoring is done on a special project basis aimed at areas and materials (water, sediments, sludge, fish, etc.) known or suspected to contain PCBs.

The data are six months behind because Indiana's ambient stream data are input into STORET via tapes by Region V ADP which causes slower data entry. The latest date for which data are available is November 1982.

#### b. Other Agencies Monitoring

Our discussion is based on STORET data available from other agencies for CY 1982. This discussion does not represent a summary of all water data being acquired in Indiana. It does, however, serve as a good indicator of the types of data currently in STORET. This information can be used to supplement trend data at the state network. Specific information can be obtained by contacting the Water Monitoring Team (see Tables 4, 6 and 7.)

##### (1) U.S. Geological Survey

Activities of an on-going monitoring nature operated by USGS in Indiana are as follows: (1) National Stream Quality Accounting Network (NASQAN) (2) Hydrologic Benchmark program (3) NASQAN Pesticides Subnetwork. Four of the five temperature and specific conductance stations which operated in 1979 were discontinued. Station No. 03354000, White River near Centerton is still operating. All of the sediment stations which operated in 1979 were discontinued. (See figure 3.)

##### a. NASQAN Program

The USGS operates 3 stations in the NASQAN network in Indiana. At these stations, the following tests are done 12 times per year: water temperature, specific conductance, instantaneous discharge, pH, dissolved oxygen, fecal coliform, fecal streptococci, suspended sediment and other common constituents including major nutrients. Also, at these stations, total organic carbon is run 8 times per

year; phytoplankton is run 7 times per year and trace elements, total recoverable silver and periphyton are run 4 times per year.

Station No. 04095000, Little Calumet River near McCool was discontinued in November 1980.

b. NASQAN Pesticides Subnetwork

In the NASQAN network, one station also serves as a NASQAN Pesticides Subnetwork. Water samples are collected 4 times per year in November, February, May and August. Bottom material samples are collected in November and May. Sample containers and sample analyses are provided by the EPA laboratory, NSTL Station, Mississippi.

c. Hydrologic Benchmark Water-Quality Program

There is one Hydrologic Benchmark station in Indiana. At this station, the following tests are done monthly: instantaneous discharge, specific conductance, water temperature, pH, dissolved oxygen, total coliform bacteria, fecal coliform bacteria, fecal streptococci bacteria, suspended sediment, and other common constituents.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

U.S. Geological Survey's NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 5. Analytical schedules are contained in Attachment 4.

(3) Intensive Survey Program

The 1983 intensive survey schedule was to be finalized by the Division's Water Monitoring Committee toward the end of the second quarter of the fiscal year. This will permit the schedule to reflect changes in priority and/or identified data needs that may have become apparent during the first six months of the fiscal year. All intensive surveys will be conducted during the hot, dry summer season.

Four stream reach surveys were conducted during FY'82:

<u>Segment</u>	<u>Stream Reaches Surveyed</u>
30	Walnut Creek and Tippecanoe River at Warsaw
4	Trail Creek at Michigan City
57	Eagle Creek at Indianapolis
43, 44, 45, 49, 51	Wabash River and Tributaries from Lafayette to Merom

Stream reach surveys consist of 24-hour sampling of all significant dischargers, receiving streams, and flowing tributaries within the reach being studied. Flow measurements, determination of stream slope, and other physical factors are also made during these surveys.

Selected stream reach surveys are conducted according to a priority established by the staff Monitoring Committee. Data obtained from these surveys are used in support of various activities including the preparation of stream models, wasteload allocations, basin plans, nonpoint source evaluation, and for compliance monitoring. Data are also provided for NPDES permit reissuance, for determining extent of compliance with existing water quality standards, to demonstrate cause and effect relationships, and for evaluating potential sites for future wastewater treatment facilities. These surveys also surface violations of NPDES permit limits or conditions and help determine the ability of a stream to support designated uses.

a. Stream Sediment Surveys

Various metals and certain organic contaminants concentrate in bottom sediments downstream from points of entry into a stream. Since most of these materials are persistent, a survey of stream sediments can indicate points where potentially toxic substances are being discharged or have been discharged in the past.

Two special stream sediment surveys were conducted during the fiscal year. Eleven samples were collected from the Salamonie River and tributaries. During another survey, 13 sediment samples were collected from the West Fork of the White River and 17 samples were collected from its major tributaries. These samples were analyzed for 6 heavy metals, 25 pesticides, and PCBs. The results are presently being evaluated.

b. Wolf Lake Surveys

Water, sediment, and fish samples were collected during two surveys of Wolf Lake in Lake County to determine the effect of urban runoff, combined sewer overflows, industrial discharges, and accidental spills on this urban water body.

c. Richland Creek Survey

A special survey was conducted in the vicinity of Neal's Landfill in Monroe County. Fish samples collected from two downstream stations contained PCBs in excess of the FDA action level of 5.0 ppm. The health departments of Monroe, Owen, and Greene Counties were advised of the findings.

(4) Quality Assurance Program

The State of Indiana has a conditionally approved quality assurance (QA) program plan. The State needs to expand their organics capabilities and complete documentation. The ISBH has committed to develop and document this capability during FY'83 in conjunction with projects that are being funded with FY 1982 205(j) funds.

Stream Modeling Projects  
Completed in FY'82

Portions of the following streams/ditches/rivers have been modeled using either U.S. EPA-adopted simplified or full-scale method, as the case may be, and wasteload allocation studies for communities, industrial dischargers, and other point source dischargers, along the stream have been conducted:

Croth Ditch (Segment 6)	Albion
Pipe Creek (Segment 60)	Alexandria
Yellow River (Segment 13)	Bremen
Yellow River (Segment 13)	Plymouth
Silver Creek (Segment 92)	Clarksville N
*White Creek (Segment 48)	Colfax
Big Indian Creek (Segment 96)	Corydon
Ballard Branch/Little Pigeon Creek (Segment 95)	Dale
W. F. of White Lick Creek (Segment 56)	Danville
Peter Creek (Segment 93)	Dillsboro
*Dunkirk Ditch (Segment 24)	Dunkirk
St. Joseph River (Segment 8)	Elkhart
St. Joseph River (Segment 8)	Proposed DNR Hatchery
St. Joseph River (Segment 8)	Mishawaka
St. Joseph River (Segment 8)	South Bend
*Brandywine Creek (Segment 79)	Greenfield
Haw Creek (Segment 74)	Hope
*Kent Ditch (Segment 15)	Kentland
Benkie Ditch (Segment 14)	Kouts
Marsh Ditch (Segment 14)	LaCrosse
Fly Creek (Segment 10)	LaGrange
Tr. Lick Creek (Segment 63)	Markleville
Berlin Court Ditch (Segment 5)	Nappanee
Sugar Creek (Segment 78)	New Palestine
Little Vermillion River (Segment 45)	Newport
Tr. Bend Ditch (Segment 52)	Oaktown
*Lick Creek (Segment 77)	Paoli
Carpenter Creek (Segment 15)	Remington
Lower Eagle Creek (Segment 57)	Speedway
Lower Eagle Creek (Segment 57)	Detroit Diesel Allison Co.
Lower Eagle Creek (Segment 57)	Bridgeport Brass Co.
Buck/Busseron Creek (Segment 51)	Sullivan #2
Mud Creek (Segment 60)	Summitville
*Jefferson Ditch (Segment 24)	Upland
Graham Creek (Segment 76)	Versailles #2
Walnut Creek (Segment 30)	Warsaw
Patoka River (Segment 54)	Winslow
Eagle Creek (Segment 57)	Zionsville
Eagle Creek (Segment 57)	Hoosier Retirement Center
Wildcat Creek (Segment 23)	Lockwood Real Estate Dev.
Gnaw Bone/North Fork Salt Creek (Segment 75)	Camp Moneto
Pipe Creek (Segment 32)	Grissom Air Force Base

\* Report submitted to the Regional Clearinghouse

(5) Water Quality Studies for Simplified Steady State Models

EPA generally requires sophisticated and resource intensive justification of waste treatment requirements in excess of secondary to ensure that public funds for water pollution abatement are spent in a cost-effective manner. This justification includes the use of water quality models incorporating data from at least two intensive surveys for calibration and verification, as well as a habitat evaluation study, to determine what existing and/or potential uses a given stream reach might support.

During this fiscal year, data required for AST justification were collected at the following 25 municipalities:

<u>Municipality</u>	<u>Receiving Stream</u>
Albany STP	Mississinewa River
Bloomington North STP	Stouts Creek
Brazil STP	Birch Creek
Brookston STP	Moots Creek
Bruceville	Smalls Creek
Columbia City STP	Blue River
Dale STP	Ballard Creek
Ft. Branch STP	West Fork Pigeon Creek
Goodland	Hunter Ditch
Haubstadt STP	West Fork Pigeon Creek
Holton	Otter Creek
Hymera STP	Sulphur Creek
Jasper-Mill Creek	Mill Creek
*Markleville	Lick Creek
Mooreland STP	Flatrock River
New Palestine	Sugar Creek
Orleans STP	Sinkhole to Lost River
Otterbein STP	Otterbein Ditch
Oxford STP	Lagoon Ditch
Remington STP	Carpenter Creek
Sanborn	Hill Ditch
Sellersburg STP	Silver Creek
Shakamak State Park STP	Branch Creek
*Sullivan STP	Buck Creek
Versailles STP	Laughery Creek

\*Report submitted to the Regional Clearinghouse

(6) Effluent Monitoring Program

Indiana has 222 major dischargers, consisting of 100 municipal, 118 industrial, and 4 federal dischargers. Inspections planned and completed for FY'82 and projected for FY'83 as follows:

<u>CEIs (majors)</u>	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
Municipal	( 20 )	0	6
Industrial	(Total)	1	0
 <u>CSIs (majors)</u>			
Municipal	( 50 )	41	25
Industrial	(Total)	21	15
O&M Inspections (major)	( 50 )	40	35
(Mun.) (minor)	(Total)	27	0
Grant Compliance Inspection (Mun.)	5	2	20
Operational Assistance (Mun.)	*	15	*
Toxic Sampling Surveys	5	5	5

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\* No commitment

The State's effluent monitoring program is satisfactory considering their limited resources. Except for major CEIs, they met or exceeded their commitments for FY'82. Projections for FY'83 indicate decreases in all areas except toxic sampling surveys, and grant compliance inspections. The reason for this is declining resources. A commitment was not made for operational assistance visits, but the State has performed these during the first half of FY'83.

(6) Biological Monitoring Program

In 1979, Indiana collected macroinvertebrates and fish samples at all 21 core network stations. The program was changed beginning in 1981 to alternating sampling at the northern half of the State one year and the southern half of the State the next. Fish and macroinvertebrate samples continue to be collected. In addition, phytoplankton sampling is conduc-

ted at 18 State stations. This is a program that has been underway in the State of Indiana for a number of years.

Wasteload allocation studies include chlorophyll and phytoplankton evaluations and BOD for modeling purposes. Six WLAs were completed in 1980-81, one in 1981-82 (Wabash River) and one projected for 1983 (White River).

Intensive surveys will on occasion include biology.

#### (7) Data Interpretation and Reporting

Using the Section 305(b) reporting process, the State submits biennially a report to the USEPA describing the quality of their waters. The latest report submitted was for the years 1981-1982.

##### Ambient Data

Indiana State Board of Health's ambient stream data are entered into the STORET system via tapes after laboratory analysis is completed. The tapes are sent to Region V Data Processing. This procedure causes a six month delay. Indiana is pursuing the possibility of direct STORET input for FY'84.

##### Effluent Data

For FY 1982 the State submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division.

##### Great Lakes Basin Effluent Data

The Great Lakes National Program Office (GLNPO) and the International Joint Commission (IJC) along with the Water Quality Analysis Branch of the Monitoring and Data Support Division (Headquarters) and the States have input the monthly operating report data of the NPDES dischargers in the Great Lakes Basin into STORET. The majority of the data entry work was done by several contractors.

The data are identified by the use of the NPDES number for the Station Number and EFINEPA for the agency code.

The initial purpose of inputting the data into STORET was for GLNPO to prepare the annual Great Lakes Water Quality Board Report. However, STORET users can perform all the standard STORET data manipulations as well as many specialized programs developed by the Water Quality Analysis Branch.

##### Intensive Survey Data

Preliminary reports were submitted for eight simplified steady state model studies to the Regional Clearinghouse.

Intensive Survey data are not entered into STORET.

LEGEND

- Indiana State Stations  
Sampled Monthly
- ⊕ Indiana State Stations  
Sample Quarterly
- ▲ Core Network

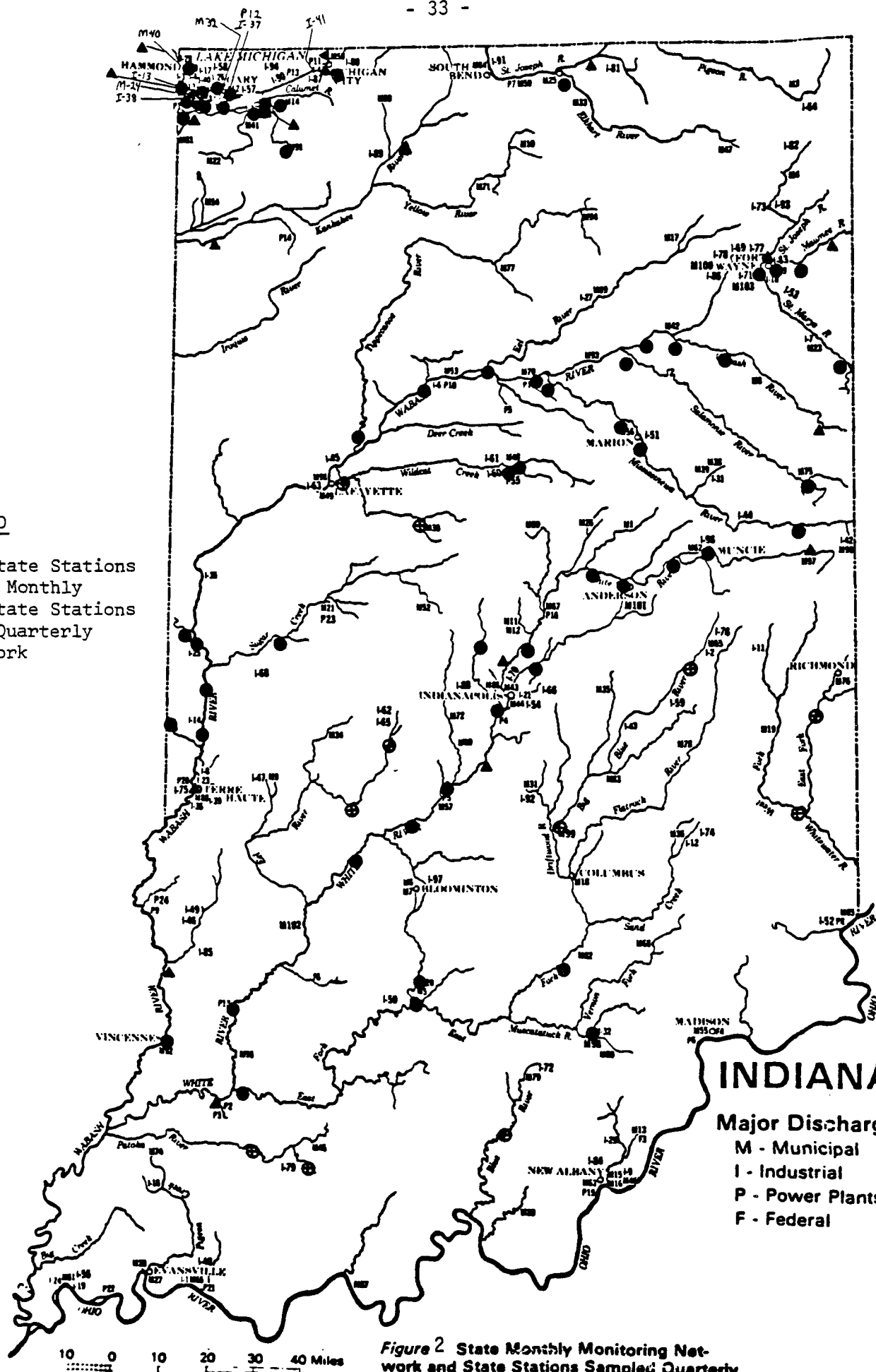


Figure 2 State Monthly Monitoring Network and State Stations Sampled Quarterly

Table 3

MINIMUM PARAMETERS

STATF AMBIENT/MONIT. STATIONS: IND FISCAL YEAR OF 1982										W A T E R	F L O W	C O N D .	D O .	C O D - L O W	P H S I D U N	R E J I L N	K E 2	N O H S T O C	P H S A L I T Y	T E S T I N G
STATION	COR	AGENCY	CNTY	TYPE	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T											
Numbers under minimum parameters indicate year and quarter of last record.																				
BD 0	*	21IND	127	ST	BURNS DITCH AT MOUTH LAKE MICH.	L MICH	41 37 54.5	087 10 36.	24					24	24	24	24	24	24	
BD 1		21IND	127	ST	BURNS DITCH TRUCK BRIDGE	L MICH	41 37 23.3	087 10 34.	24					24	24	24	24	24	24	
BD 2E		21IND	127	ST	BURNS DITCH CHISMAN ROAD SR 249	L MICH	41 36 54.9	087 10 25.	24					24	24	24	24	24	24	
BD 3W		21IND	127	ST	BURNS DITCH PORTAGE BOAT YARD	L MICH	41 36 09.3	087 11 18.	24					24	24	24	24	24	24	
BL .1		21IND	081	ST	BLUE R, HY 31 BRIDGE, EDINBURGH	OH R MAJOR B	39 21 17.0	085 59 03.	24					24		24	24	24	24	
BLW 53		21IND	175	ST	BLUE RIVER AT FREDERICKSBURG	OH R	38 26 04.0	086 11 33.	24					24		24	24		24	
EC 1		21IND	097	ST	EAGLE CK. AT INDIANAPOLIS	OH R	39 44 15.0	086 11 48.	24					24	24	24	24	24	24	
EC 21		21IND	097	ST	EAGLE CREEK, INDIANAPOLIS, IND.	OH R	39 54 38.0	086 17 07.	24					24	24	24	24	24	24	
ELL 7		21IND	017	ST	EEL RIVER NEAR LOGANSPOET	OH R	40 46 05.0	086 17 22.	24					24	24	24	24	24	24	
ER .3		21IND	039	ST	E. JACKSON ST., ELKHART	L MICH	41 41 16.0	085 58 17.	24	24				24		24	24	24	24	
EW 1		21IND	125	ST	EAST FORK WHITE RIVER AT Petersbur	WABASH	38 32 21.0	087 13 24.	24					24	24	24	24	24	24	
EW 77	*	21IND	093	ST	WHITE RIVER AT WILLIAMS	OH R	38 47 47.0	086 39 53.	24					24	24	24	24	24	24	
EW 94		21IND	093	ST	EAST FORK WHITE RIVER NR BEDFOR	WABASH R BAS	38 50 04.0	086 31 19.	24					24		24	24		24	
EW 167		21IND	071	ST	EAST FORK WHITE RIVER NR SEYMOU	WABASH R BAS	38 59 13.0	085 53 50.	24					24	24	24	24	24	24	
FC 7		21IND	000	ST	FALL CREEK AT INDIANAPOLIS	WABASH R BAS	39 30 50.0	086 22 48.	24					24	24	24	24	24	24	
GCR 34		21IND	089	ST	GRAND CALUMET R. AT HOHMAN AVE.	L MICH	41 37 28.8	087 31 04.	24					24	24	24	24	24	24	
GCR 41		21IND	089	ST	GRAND CALUMET & INDUSTRIAL HY.	L MICH	41 36 28.8	087 23 38.	24					24	24	24	24	24	24	
IHC 0	*	21IND	089	ST	IND. HARBOR CANAL, MOUTH LAKE MI	L MICH	41 40 04.0	087 26 27.	24					24	24	24	24	24	24	
IHC 1		21IND	089	ST	INDIANA HBR. CANAL AND DICKEY R	L MICH	41 39 19.2	087 27 33.	24					24	24	24	24	24	24	
IHC 35		21IND	089	ST	INDIANA HBR. CANAL & COLUMBUS D	L MICH	41 38 20.7	087 28 16.	24					24	24	24	24	24	24	
IHC 3W		21IND	089	ST	LAKE GEORGE CANAL & IND-PLS BLV	L MICH	41 38 47.8	087 28 51.	24					24	24	24	24	24	24	
IWC 6.6	*	21IND	097	ST	INDIANAPOLIS WATER CANAL FOR CT	OH R	39 52 16.0	086 08 33.	24					24	24	24	24	24	24	
KR 65	*	21IND	089	ST	KANKAKEE R. NEAR SHELBY, IND.	ILL R SYSTEM	41 10 57.5	087 22 25.	24					24	24	24	24	24	24	
KR 125	*	21IND	091	ST	KANKAKEE R. AT U.S. 6 BRIDGE	ILL R SYSTEM	41 28 38.8	086 36 15.	24					24	24	24	24	24	24	
LCR 13		21IND	000	ST	LITTLE CALUMET R. & HOHMAN AVE.	ILL R SYSTEM	41 34 39.4	087 31 19.	24					24	24	24	24	24	24	
LCR 39		21IND	127	ST	LITTLE CALUMET RIVER-PORTER	L MICH	41 37 04.0	087 07 32.	24					24	22	24	24	24	24	
LM EC		21IND	089	ST	EAST CHICAGO WATER PLANT INTAKE	L MICH	41 39 47.0	087 24 08.	24					24	24	24	24	24	24	
LM G		21IND	089	ST	GARY WEST WATER PLANT INTAKE	L MICH	41 38 30.0	087 20 30.	24					24	24	24	24	24	24	
LM H		21IND	089	ST	HAMMOND WATER PLANT INTAKE.	L MICH	41 42 15.0	087 29 05.	24					24	24	24	24	24	24	
LM M	*	21IND	091	ST	MICHIGAN CITY WATER INTAKE CRIB	L MICH	41 44 07.6	086 54 03.	24					24	24	24	24	24	24	
LM W	*	21IND	089	KE	WHITING PUBLIC WATER INTAKE CRI	L MICH	41 40 09.5	087 28 38.	24					24	24	24	24	24	24	
M 95	*	21IND	003	ST	MAUMEE RIVER NEAR WOODBURN	L ERIE	41 10 00.0	084 51 00.	24					24	24	24	24	24	24	
M 110		21IND	003	ST	MAUMEE RIVER AT NEW HAVEN	L ERIE	41 04 44.0	085 01 02.	24					24	24	24	24	24	24	
M 116		21IND	003	ST	MAUMEE RIVER AT FT. WAYNE	L ERIE	41 04 57.0	085 06 53.	24					24	24	24	24	24	24	
MC 17		21IND	119	ST	DEVORE; MILL CREEK, INDIANA	OH R	39 26 40.0	086 46 20.	23					23	23	23	23	23	23	
MC 35		21IND	063	ST	STILESVILLE; MILL CREEK INDIANA	OH R-05	39 38 36.0	086 39 06.	23					23	23	23	23	23	23	
MS 1		21IND	103	ST	MISSISSINAWA RIVER AT PERU	OH R	40 45 19.0	086 01 25.	24					24	24	24	24	23	24	
MS 35		21IND	053	ST	MISSISSINAWA RIVER AT MARION	OH R	40 34 34.0	085 39 34.	24					24	24	24	24	24	24	
MS 100		21IND	135	ST	MISSISSINAWA RIVER NEAR RIDGEVI	OH R	40 16 48.0	084 59 43.	24					24	24	24	24	24	24	
MU 25		21IND	175	T/	MUSCATATUCK R. SR 39 AT AUSTIN	OH R	38 46 05.0	085 56 09.	24					24		24	24	24	24	
P 33		21IND	051	ST	PATOKA R. 2 MI. W. ST. HIGHWAY	OH R	38 23 44.0	087 22 20.	24					24	24	24	24	24	24	
P 76		21IND	037	ST	PATOKA RIVER NEAR JASPER IND.	OH R	38 19 45.0	086 58 02.	24					24	24	24	24	24	24	
S 0		21IND	169	ST	SALAMONIE R. NEAR LAGRO, IND.	OH R BASIN	40 49 45.0	085 43 06.	24					24		24	24	24	24	
S 75		21IND	075	ST	SALAMONIE RIVER SW OF PORTAGE A	IND	40 25 30.3	085 01 22.	24				21	24	24	24	24	24	24	
SC 30		21IND	107	ST	SUGAR CK. AT STATE HY 234 BRIDGE	OH R	39 56 55.0	087 03 38.	24				21	24		24	24	23	24	
SJR 46	*	21IND	141	ST	ST. JOSEPH RIVER DARDEN BRIDGE	L MICH	41 43 34.7	086 16 08.	24					21	24	24	24	24	24	
SLC 12		21IND	127	ST	SALT CREEK AT VALPARISO	U MISS	41 29 56.0	087 08 29.	24					21	24	24	24	24	24	

Table 3 (cont.)

Table 3 (cont.)										MINIMUM PARAMETERS										
STATE AMBIENT/MONIT. STATIONS; IND FISCAL YEAR OF 1982										W A T E R	F L O W	C O N D .	D O -	C O D -	P H	R E D U N E	K J E L	N O 2	P H E S T O C	F E C U L T I S B U E
STATION	C O R E	AGENCY	C N T Y	T I P E	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T											
SLT 11		21IND	093	ST	SALT CREEK AT OOLITIC, INDIANA	OH R	38 54 11.0	086 31 29.	24		21	24	24	24	24	24	24	24	24	
STM 33		21IND	001	ST	MARY'S RIVER JUST NORTH OF	L ERIE	40 46 44.9	084 50 31.	24		21	24	24	24	24	24	24	24	24	
TC 3	*	21IND	091	ST	TRAIL CREEK AT MICHIGAN CITY	L MICH	41 43 21.0	086 54 19.	24		21	24	24	24	24	24	24	24	24	
TC 1		21IND	091	ST	TRAIL CREEK AT MICHIGAN CITY	L MICH	41 43 15.0	086 53 51.	24		21	24	24	24	24	24	24	24	24	
TR 6		21IND	015	ST	TIPPECANOE RIVER NEAR DELPHI	OH R	40 35 29.0	086 41 54.	24		21	24		24	24	23	24	24	24	
V 8		21IND	165	ST	VERMILLION W., CAYUGA, INDIANA	OH R	39 57 42.0	087 27 06.	24		21	24	24	24	24	24	24	24	24	
WB 128		21IND	083	ST	WABASH RIVER AT VINCENNES US 50	OH R MAJOR B	38 40 53.0	087 32 05.	24		21	24	24	24	24	24	24	24	24	
WB 175	*	21IND	153	ST	WABASH R. AT 1&M BREED GEN. STA	OH R BASIN	39 13 39.2	087 34 27.	24		21	24	24	24	24	24	24	24	24	
WB 207	*	21IND	167	ST	WABASH RIVER ABOVE TERRE HAUTE	OH R	39 30 33.0	087 24 47.	24		21	24		24	24	23	24	24	24	
WB 219		21IND	165	T/	WABASH RIVER SR 163 AT CLINTON	OH R	39 39 26.3	087 23 41.	24		21	24	24	24	24	24	24	24	24	
WB 228		21IND	121	ST	WABASH R. AT MONTEZUMA, IND.	OH R	39 47 33.0	087 22 30.	24		21	24		24	24	23	24	24	24	
WB 245		21IND	121	ST	WABASH RIVER AT CAYUGA, INDIANA	OH R	39 57 09.0	087 25 15.	24		21	24		24	24	24	24	24	24	
WB 292	*	21IND	157	ST	WABASH RIVER BELOW LAFAYETTE	OH R	40 24 43.0	087 02 09.	24		21	24	24	24	24	24	24	24	24	
WB 301	*	21IND	157	ST	WABASH R. AT LAFAYETTE, IND.	OH R	40 25 10.0	086 53 49.	24		21	24	24	24	24	24	24	24	24	
WB 336		21IND	017	ST	WABASH RIVER AT GEORGETOWN	OH R	40 44 19.0	086 30 10.	24		21	24	24	24	24	24	24	24	24	
WB 360		21IND	103	ST	WABASH RIVER NEAR PERU, IND.	OH R	40 44 32.0	086 05 48.	24		21	24		24	24	23	24	24	24	
WB 390		21IND	069	T/	WABASH RIVER SR 105 AT ANDREWS	OH R	40 52 18.8	085 36 09.	24		21	24		24	24	24	24	24	24	
WB 399		21IND	069	ST	WABASH R. NEAR HUNTINGTON, IND.	OH R	40 51 22.0	085 29 50.	24		21	24		24	24	24	24	24	24	
WB 409		21IND	069	ST	WABASH RIVER AT MARKLE	OH R	40 49 23.0	085 20 24.	24		21	24	24	24	24	24	24	24	24	
WB 452	*	21IND	001	ST	WABASH RIVER AT U.S. 27 BRIDGE	OH R	40 36 51.0	084 57 14.	24		21	24	24	24	24	24	24	24	24	
WC 1		21IND	157	ST	WILDCAT CREEK AT LAFAYETTE	OH R	40 27 23.2	086 51 01.	24		21	24	24	24	24	24	24	24	24	
WC 63		21IND	067	ST	WILDCAT CREEK NEAR KOKOMO	WABASH R BAS	40 28 37.0	086 09 54.	24		21	24	24	24	24	24	24	24	24	
WC 69		21IND	067	ST	WILDCAT CREEK AT KOKOMO	OH R	40 29 06.0	086 06 27.	24		21	24	24	24	24	24	24	24	24	
WCS 35		21IND	023	ST	WILDCAT CK., S. FORK, FRANKFORT	OH R	40 18 53.0	086 30 58.	24		21	24		24	24		24	24	24	
WHE 27		21IND	177	ST	WHITEWATER R., E. FORK, ABINGTON	OH R	39 43 57.0	084 57 35.	24		21	24	24	24	24	24	24	24	24	
WHW 24		21IND	047	ST	WHITEWATER R. NEAR BROOKVILLE.	OH R BASIN	39 24 25.0	085 00 45.	24		21	24		24	24		24	24	24	
WL 5L		21IND	089	ST	WOLF LAKE AT STATE LINE CULVERT	L MICH	41 39 45.2	087 31 30.	24		21	24	24	24	24	24	24	24	24	
WR 48	*	21IND	000	ST	WHITE RIVER AT PETERSBURG	OH R	38 43 40.0	087 16 56.	24	24	21	24	24	24	24	24	24	24	24	
WR 80		21IND	027	ST	WHITE RIVER NEAR EDWARDSPORT	WABASH R BAS	38 47 41.0	087 13 48.	24		21	24	24	24	24	24	24	24	24	
WR 166		21IND	119	ST	WHITE RIVER AT SPENCER	WABASH R BAS	39 16 48.0	086 45 41.	24		21	24	24	24	24	24	24	24	24	
WR 185		21IND	109	ST	WHITE R. SOUTH OF PARAGON	OH R BASIN	39 22 22.2	086 33 22.	24		21	24	24	24	24	24	24	24	24	
WR 197		21IND	000	ST	WHITE RIVER AT CENTERTON	OH R	39 29 13.0	086 25 10.	24		21	24	24	24	24	24	24	24	24	
WR 205	*	21IND	109	ST	WHITE RIVER AT HENDERSON BRIDGE	OH R BASIN	39 29 57.7	086 21 19.	24		21	24	24	24	24	24	24	24	24	
WR 249		21IND	097	ST	WHITE RIVER AT NORA	WABASH R BAS	39 54 36.0	086 06 19.	24	24	21	24	24	24	24	24	24	24	24	
WR 280		21IND	000	ST	WHITE RIVER AT PERKINSVILLE	OH R	40 08 49.0	085 57 45.	24		21	24	24	24	24	24	24	24	24	
WR 295		21IND	095	ST	WHITE RIVER AT ANDERSON	WABASH R BAS	40 06 19.0	085 40 15.	24		21	24	24	24	24	24	24	24	24	
WR 310		21IND	035	ST	WHITE RIVER AT YORKTOWN	WABASH R BAS	40 10 43.0	085 29 40.	24		21	24	24	24	24	24	24	24	24	
WR 319		21IND	035	ST	WHITE RIVER AT MUNCIE, INDIANA	OH R MAJOR B	40 10 43.0	085 24 30.	24		21	24	24	24	24	24	24	24	24	
WR 350	*	21IND	135	ST	WHITE R. AT U.S. 27, WINCHESTER	OH R BASIN	40 10 55.2	084 58 07.	24		21	24	24	24	24	24	24	24	24	
BL 61		21IND	065	ST	BLUE R. ON INTERSTATE 74	OH R	39 57 37.0	085 27 24.	24			24	24	24	24	24	24	24	24	
GCR 37		21IND	089	ST	GRAND CALUMET R. & KENNEDY AVE.	L MICH	41 36 49.9	087 27 41.	24			24	24	24	24	24	24	24	24	
STJ 0	*	21IND			ST. JOSEPH RIVER AT FORT WAYNE															
STJ 12	*	21IND			ST. MARY'S RIVER AT FORT WAYNE															
US 28	*	21IND			MUSSELSSINGA RIVER AT TAMPA															
STR 78	*	21IND			ST JOSEPH RIVER AT BRISTOL															

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

Table 4

U.S. GEOLOGICAL SURVEY CY 1982 WATER MONITORING SAMPLING SITES  
IN STORET (INDIANA)

<u>Counties</u>	<u>Rivers</u>	<u>Basin</u>	<u>No. of Sites</u>	<u>Beginning Dates</u> <u>Ending Dates</u>	<u>Reason for Study</u>
Boone	Finley CR.	Ohio	2	8/80 - ongoing	Assessment of water quality for the City of Indianapolis Dpt. of City Works
Marion	Fall CR. Eagle CR. White R.	Ohio	13	10/81 - 9/84	Water quality Assessment
Morgan	White River	Ohio	3	10/81 - 9/84	Water quality Assessment
Sullivan	Hooker	Ohio	1	10/81 - 9/84	Stream flow modelling study
Vermillion	Brouilletts Creek	Ohio	1	10/81 - 9/84	Coal hydrology effort (grab station)
Vigo	Wabash River	Ohio	2	7/81 - 9/84	Reaeration study

Table 5

## NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY

B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

----- STATE-INDIANA NETWORK-NASQAN -----							
STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UNHOS
3276500	WHITEWATER RIVER AT BROOKVILLE	Q	4	0	4	0	NO
3374100	WHITE RIVER AT HAZLETON	Q	4	0	4	0	NO
3378500	WABASH RIVER AT NEW HARMONY	Q	4	0	4	0	NO
----- STATE-INDIANA NETWORK-HYDROLOGIC BENCH-MARK NETWORK -----							
STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UNHOS
3276700	SOUTH HOGAN CR NR DILLSBORO	Q	4	2	2	1	NO

U.S. Geological Survey Analytical Schedule FY'83

Indiana  
NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO2+NO3 AS N  
NITROGEN, DIS. NH4 AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH4+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS.U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
pH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CAC03  
METALS, DIS. CHE-EXT

U.S. Geological Survey Analytical Schedule (Cont.)

Indiana  
COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. $\text{CaCO}_3$
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

Attachment 4-1

Table 6

U.S. ARMY CORPS OF ENGINEERS CY 1982 WATER MONITORING SAMPLING SITES  
IN STORET (INDIANA)

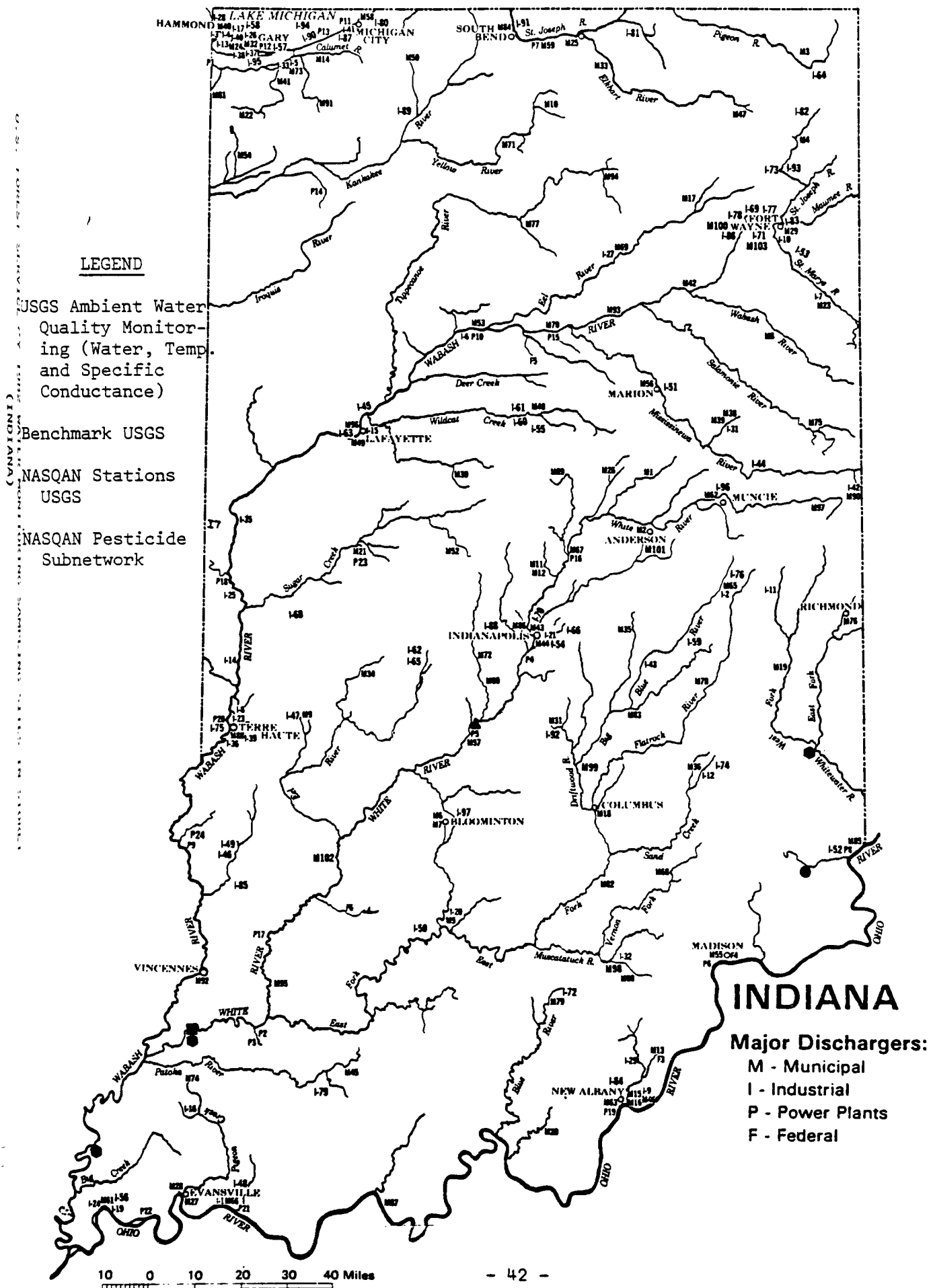
County	Rivers	Basin	No. of Sites	Beginning Dates Ending Dates	Reason for Study
DuBois, Orange	Patoka	Ohio	7	7/20/71-3/8/82	Samples before and after dam operations to see effects of dam operation on Patoka Dam
Franklin, Union	E. Fk White-water River, Brookville Lake, Silver Creek	Ohio	6	4/3/72-8/10/82	Environmental impact reports - before and after maintenance.
Grant, Hunting- ton, Wabash	Mississinewa Wabash Huntington Lk Salamonie Lk	Ohio	16	1/4/71-8/17/82	Environmental impact reports - before and after maintenance.
Park, Putnam	Big Racoon CR Harden Lake Mill Creek	Ohio	9	3/6/71-4/8/82	Water quality surveillance and maintenance

U.S. FOREST SERVICE CY 1982 WATER MONITORING SAMPLING SITES IN STORET  
(INDIANA)

<u>Counties</u>	<u>Rivers</u>	<u>Basin</u>	<u>No. of Sites</u>	<u>Beginning Dates Ending Dates</u>	<u>Reason for Study</u>
Lawrence	Jackie Br. L. Salt CR. Henderson CR. Tanyard Br.	Ohio main stem	4	5/20/81- ongoing	General purpose
Perry	Tipsaw Lk. Indian Lk. Celina Lk.	"	15	12/16/74 -ongoing	Determine effect of farm feed lots and human activity on Tipsaw Lake
Orange	Casino CR.	"	3	1/21/80 - ongoing	Set up to monitor timber sale
Crawford	L. Blue R. Otter CR. Bogard CR. Stinking CR.	"	10	1/27/75- ongoing	General purpose.
Brown	M Fk.Salt CR. Brown Branch	"	4	5/20/81 - ongoing	General purpose/ to monitor timber sale
Jackson	Salt CR.	"	3	5/20/81 - ongoing	General purpose
Monroe	Saddle CR Blackwell Spring	"	2	5/20/81 - ongoing	General purpose

Figure 3

## USGS Ambient Monitoring Network



INDIANA

FY 1982 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I44	Albany Plating	Albany	IN 0051462	*
I1	Aluminum Co. of Amer. (Alcoa)	Newburgh	IN 0001155	*
I45	Aluminum Co. of Amer. (Alcoa)	Lafayette	IN 0001210	*
I2	Allegheny Ludlum Steel	New Castle	IN 0045284	*
I46	Amax Coal Co.-Minnehaha Mine	Sullivan	IN 0044831	*
I47	Amax Coal Co.- Chinook Mine	Staunton	IN 0002402	*
I48	Amax Coal Co.- Wright Mine	Boonville	IN 0002437	*
I49	Amax Coal Co.- Chinook Mine	Staunton	IN 0031968	*
I3	American Maize- Products	Hammond	IN 0000027	12/31/84
I50	Amoco Chemicals	Seymour	IN 0001864	2/28/83
I4	American Oil (Amoco)	Whiting	IN 0000108	*
I51	Anaconda- Ericsson	Marion	IN 0002372	5/31/87
I52	Aurora Casket Co.	Aurora	IN 0031160	*
I53	B & B Custom Plating	Hoagland	IN 0052302	*
I5	Bethlehem Steel Corporation	Chesterton	IN 0000175	*
I54	Bridgeport Brass Co.	Indianapolis	IN 0001767	12/31/82
I6	Bunge Corporation	Clymers	IN 0037958	8/31/85
I55	Cabot Corp.- Stellite Div.	Kokomo	IN 0002607	10/31/85
I7	Central Soya	Decatur	IN 0000591	9/30/83
I8	C. F. Industries	Terre Haute	IN 0001546	12/31/83
I56	Chemetron Corp.	Mount Vernon	IN 0001970	*
I57	Chris Craft Ind.	Gary	IN 0043613	2/28/86
I58	Cities Service Oil	East Chicago	IN 0000159	11/30/86
I9	Colgate Palmolive	Jeffersonville	IN 0003638	*
P1	Commonwealth Edison Electric	Hammond	IN 0000221	*
I59	Container Corporation of America	Carthage	IN 0001350	2/28/87
I60	Continental Steel	Kokomo	IN 0002909	*
P23	Crawfordsville Elec. Light & Power	Crawfordsville	IN 0038806	*
I10	Dana Corporation	Fort Wayne	IN 0000388	11/30/87
I11	Dana Corporation	Hagerstown	IN 0001929	3/31/87
I61	Delco Electronics	Kokomo	IN 0001830	8/30/84
I12	Delta Faucet	Greensburg	IN 0032352	12/31/86
I62	Dow Chemical Co.	Zionsville	IN 0001104	12/31/83
I63	Duncan Electric	Lafayette	IN 0001074	*
I43	Duwell Metal Products, Inc.	Morristown	IN 0109541	*
I64	Eagle-Picher	Ashley	IN 0051799	8/31/87
I65	Economy Plating	Zionsville	IN 0025097	*
I13	E. I. duPont deNemours	East Chicago	IN 0000329	*
I66	Eli Lilly and Co.	Indianapolis	IN 0002836	2/28/86
I14	Eli Lilly and Co.	Clinton	IN 0002852	*
I15	Eli Lilly and Co.	Lafayette	IN 0002861	12/31/82
I67	Eli Lilly and Co.	Greenfield	IN 0002925	7/15/86
I16	Emge Packing	Fort Branch	IN 0001636	*
I17	Energy Cooperative, Inc.	East Chicago	IN 0000051	*
I68	Futurex Industries	Bloomington	IN 0044512	6/30/87

FY 1982 LIST OF MAJOR DISCHARGERS

INDUSTRIAL (Continued)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I69 General Electric Co.	Fort Wayne	IN 0000973	8/30/84
I19 General Electric Co.	Mount Vernon	IN 0002101	*
I21 General Motors Corp. (GMC-Detroit Diesel Allison)	Indianapolis	IN 0001813	*
I70 General Motors Corp. (GMC-Chevrolet)	Indianapolis	IN 0001902	8/15/86
I20 General Motors Corp. (GMC-Central Foundry)	Bedford	IN 0003573	*
I71 Gladieux Refinery	Fort Wayne	IN 0000949	7/2/84
I72 Goodrich, B. F.	Salem	IN 0001589	12/31/85
I73 Gridcraft, Inc. (GCI)	Huntertown	IN 0036072	*
I74 Gulf and West Metals Form- Bohn Aluminum	Greensburg	IN 0003140	11/30/85
I75 Hercules	Terre Haute	IN 0001601	11/30/87
P2 Hoosier Energy Division	Petersburg	IN 0004391	*
P24 Hoosier Energy Division	Merom	IN 0050296	7/31/86
I23 IMC Chemical	Terre Haute	IN 0003328	*
I24 Indiana Farm Bureau Coop.	Mount Vernon	IN 0002470	*
P6 Ind. & Ky. Electric	Madison	IN 0001759	*
P7 Ind. & Mich. Electric	Mishawaka	IN 0000493	10/31/86
P8 Ind. & Mich. Electric	Lawrenceburg	IN 0002160	*
P9 Ind. & Mich. Electric	Sullivan	IN 0002178	*
P3 Indianapolis Power & Light	Petersburg	IN 0002887	*
P5 Indianapolis Power & Light	Martinsville	IN 0004693	*
P4 Indianapolis Power & Light	Indianapolis	IN 0004685	*
I76 Ingersoll Johnson Steel Co.	New Castle	IN 0001953	9/30/82
I15 Inland Container Corp.	Newport	IN 0036447	*
I26 Inland Steel Company	East Chicago	IN 0000094	*
I77 International Harvester Co.	Fort Wayne	IN 0025691	2/29/84
I41 Inter Royal Corporation	Michigan City	IN 0032565	2/28/87
I78 ITT- Aerospace- Optical Div.	Fort Wayne	IN 0000655	*
I79 Jasper Wood Products	Jasper	IN 0051942	10/31/87
I80 Josam Manufacturing	Michigan City	IN 0045705	*
I81 Keene Products, Inc.	Middlebury	IN 0052400	*
I82 Kitchen-Quip	Waterloo	IN 0000540	*
I27 Laketon Asphalt Refining Lever Brothers	Laketon Hammond	IN 0001244 IN 0000264	* 12/31/82
I18 Logansport Electric Light	Logansport	IN 0041246	*
I29 Louisville Cement	Speed	IN 0002071	6/30/86
I83 Magnavox Co.	Fort Wayne	IN 0036145	*
I30 Mid-State Steel & Wire	Crawfordsville	IN 0002445	*
I31 Minnesota Mining & Mfg. (3 M)	Hartford City	IN 0002321	8/31/87
I32 Morgan Packing Company	Austin	IN 0021911	6/30/83
I84 George Moser Leather	New Albany	IN 0002666	*
I33 National Steel Corporation (Midwest Div.)	Portage	IN 0000337	12/31/82

FY 1983 LIST OF MAJOR DISCHARGERS

INDUSTRIAL (Continued)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
P11 Northern Ind. Publ. Service	Michigan City	IN 0000116	*
P13 Northern Ind. Publ. Service	Chesterton	IN 0000132	*
P12 Northern Ind. Publ. Service	Gary	IN 0000124	*
P14 Northern Ind. Publ. Service	Wheatfield	IN 0053201	*
I35 Olin Corporation	Covington	IN 0001414	*
I85 Peabody Coal Co.	Carlisle	IN 0003018	*
P15 Peru Electric	Peru	IN 0044130	*
I36 Pfizer and Company	Terre Haute	IN 0003581	*
I86 Phelps Dodge Magnet Wire	Fort Wayne	IN 0000442	*
I87 Phillips Drill Co.	Michigan City	IN 0000299	12/31/83
P18 Public Service Co. of Ind.	Cayuga	IN 0002763	*
P17 Public Service Co. of Ind.	Edwardsport	IN 0002780	*
P19 Public Service Co. of Ind.	Gallagher	IN 0002798	*
P16 Public Service Co. of Ind.	Noblesville	IN 0002801	*
P20 Public Service Co. of Ind.	Terre Haute	IN 0002810	*
I88 Rock Island Refining	Indianapolis	IN 0002364	2/07/84
I89 Roll Coater, Inc.	Kingsbury	IN 0038172	*
I42 Shelter Globe Corporation	Union City	IN 0003107	12/31/84
P21 So. Ind. Gas & Elec.	Newburgh	IN 0002259	*
P22 So. Ind. Gas & Elec.	West Franklin	IN 0052191	9/30/83
I37 Union Carbide Corp.	Gary	IN 0000035	11/15/84
I90 Union Carbide Corp.	Chesterton	IN 0043435	1-31-87
I91 Uniroyal	Mishawaka	IN 0000736	12/31/82
I92 Universal Oil Prod.	Franklin	IN 0045055	*
I93 Universal Tool and Stamping	Dutler	IN 0000639	9/30/82
I94 USS Lead Refinery	East Chicago	IN 0032425	*
I38 U.S. Steel Corp.	Gary	IN 0000281	*
I95 Vulcan Materials	Gary	IN 0000191	*
I96 Westinghouse Electric	Muncie	IN 0036544	7/20/86
I97 Westinghouse Electric	Bloomington	IN 0053384	*
I39 Weston Paper Company	Terre Haute	IN 0003026	*
I40 Youngstown Sheet & Tube (Jones and Laughlin)	East Chicago	IN 0000205	*

\* Dates will be determined following reissuance.

February 1983

INDIANA

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M1	Alexandria	Alexandria	IN 0020044	10/25/84
M2	Anderson	Anderson	IN 0032476	8/31/86
M3	Angola	Angola	IN 0021296	3/31/84
M4	Auburn	Auburn	IN 0020672	12/31/84
M98	Austin	Austin	IN 0025135	10/31/84
M5	Bedford	Bedford	IN 0025623	10/31/86
M6	Bloomington N	Bloomington	IN 0035726	7/31/87
M7	Bloomington S	Bloomington	IN 0035718	12/31/86
M8	Bluffton	Bluffton	IN 0022411	12/31/84
M9	Brazil	Brazil	IN 0021211	*
M10	Bremen	Bremen	IN 0020427	6/30/85
M11	Carmel N	Carmel	IN 0039284	3/31/85
M12	Carmel S	Carmel	IN 0022497	3/31/85
M13	Charlestown	Charlestown	IN 0020508	12/31/86
M14	Chesterton	Chesterton	IN 0022578	*
M15	Clarksville E	Clarksville	IN 0020621	12/31/84
M16	Clarksville S	Clarksville	IN 0020613	12/31/84
M17	Columbia City	Columbia City	IN 0022624	12/31/84
M18	Columbus	Columbus	IN 0032573	12/31/84
M19	Connersville	Connersville	IN 0032336	12/31/84
M20	Corydon	Corydon	IN 0020893	1/31/87
M21	Crawfordsville	Crawfordsville	IN 0032964	7/31/87
M22	Crown Point	Crown Point	IN 0025763	12/31/84
M23	Decatur	Decatur	IN 0039314	12/31/84
M40	East Chicago	East Chicago	IN 0022829	5/31/82
M99	Edinburgh	Edinburgh	IN 0020184	3/31/84
M25	Elkhart	Elkhart	IN 0025674	11/01/84
M26	Elwood	Elwood	IN 0032719	8/31/84
M27	Evansville E	Evansville	IN 0033073	12/31/84
M28	Evansville W	Evansville	IN 0032956	12/31/84
M29	Fall Creek	Fall Creek	IN 0049026	6/30/87
M30	Fort Wayne	Fort Wayne	IN 0032191	12/31/84
M100	Fort Wayne	Fort Wayne	IN 0053252	8/31/82 **
M31	Frankfort	Frankfort	IN 0022934	12/31/84
M32	Franklin	Franklin	IN 0021181	10/31/84
M33	Gary	Gary	IN 0022977	4/30/82
M34	Goshen	Goshen	IN 0025755	8/30/84
M35	Greencastle	Greencastle	IN 0021032	3/30/86
M36	Greenfield	Greenfield	IN 0020109	12/31/86
M37	Greensburg	Greensburg	IN 0020133	12/31/84
M38	Hammond	Hammond	IN 0023060	6/30/83
M39	Hartford City	Hartford City	IN 0021628	12/31/84
M40	Hobart	Hobart	IN 0023086	11/30/84

INDIANA

FY 1983 List of Major Dischargers (Continued)

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M41 Huntington	Huntington	IN 0023132	11/30/86
M42 Indianapolis N	Indianapolis	IN 0023183	1/30/85
M43 Indianapolis S	Indianapolis	IN 0031950	1/30/85
M101 Indiana State Reformatory	Pendleton	IN 0053031	*
M44 Jasper	Jasper	IN 0020834	9/25/84
M45 Jeffersonville	Jeffersonville	IN 0023302	11/30/84
M46 Kendallville	Kendallville	IN 0020656	8/30/84
M47 Kokomo	Kokomo	IN 0032875	12/31/86
M48 Lafayette	Lafayette	IN 0032468	9/30/84
M49 La Porte	La Porte	IN 0025577	8/31/85
M50 Lebanon	Lebanon	IN 0020818	12/31/86
M102 Linton	Linton	IN 0020575	4/20/86
M56 Logansport	Logansport	IN 0023604	9/30/87
M57 Lowell	Lowell	IN 0023621	9/10/84
M58 Madison	Madison	IN 0025666	8/30/84
M103 Main Aboite Township (Utility Center)	Fort Wayne	IN 0035378	6/30/86
M59 Marion	Marion	IN 0025585	5/31/87
M60 Martinsville	Martinsville	IN 0020303	3/31/87
M61 Michigan City	Michigan City	IN 0023752	3/31/86
M62 Mishawaka	Mishawaka	IN 0025640	1/31/87
M63 Mooresville	Mooresville	IN 0023825	3/31/85
M64 Mt. Vernon	Mt. Vernon	IN 0035696	12/31/84
M65 Muncie	Muncie	IN 0025631	*
M66 New Albany	New Albany	IN 0023884	9/30/84
M67 New Castle	New Castle	IN 0023914	11/30/84
M68 Newburgh	Newburgh	IN 0023892	12/31/84
M69 Noblesville	Noblesville	IN 0020168	12/08/84
M70 North Manchester	North Manchester	IN 0020362	12/31/84
M71 North Vernon	North Vernon	IN 0020451	8/31/85
M72 Peru	Peru	IN 0032328	12/31/84
M73 Plainfield	Plainfield	IN 0021202	3/31/87
M74 Plymouth	Plymouth	IN 0020991	*
M75 Portage	Portage	IN 0024368	3/31/87
M76 Portland	Portland	IN 0020095	12/9/84
M77 Princeton	Princeton	IN 0024392	12/31/84
M78 Richmond	Richmond	IN 0025615	8/31/86
M79 Rochester	Rochester	IN 0021661	1/31/87
M80 Rushville	Rushville	IN 0021270	11/30/82
M81 Salem	Salem	IN 0021644	11/25/84
M82 Schererville	Schererville	IN 0024457	6/30/85
M83 Scottsburg	Scottsburg	IN 0020397	3/31/82
M84 Seymour	Seymour	IN 0024473	12/31/86
M85 Shelbyville	Shelbyville	IN 0032867	1/31/87
M86 South Bend	South Bend	IN 0024520	4/30/85
M87 South Dearborn S. D.	South Dearborn	IN 0024538	1/31/85

INDIANA

FY 1983 List of Major Dischargers (Continued)

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M88 Speedway	Speedway	IN 0032972	7/31/87
M89 Tell City	Tell City	IN 0021016	4/30/87
M90 Terre Haute	Terre Haute	IN 0025607	8/30/84
M91 Tipton	Tipton	IN 0021474	11/25/84
M92 Union City	Union City	IN 0020982	6/30/82
M93 Valparaiso	Valparaiso	IN 0024660	9/30/84
M94 Vincennes	Vincennes	IN 0031020	8/15/84
M95 Wabash	Wabash	IN 0024741	2/28/85
M96 Warsaw	Warsaw	IN 0024805	9/30/87
M97 Washington	Washington	IN 0025658	*
M98 West Lafayette	West Lafayette	IN 0024821	3/31/85
M99 Winchester	Winchester	IN 0021024	12/31/84

FEDERAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
F3	U.S. Army Ammunition Plant- ICI F3	Charlestown	IN 0001163	8/31/87
F6	U.S. Navy-Crane Naval Ammunition Depot F6	Crane STP	IN 0021539	5/11/84
F4	U.S. Army, Jefferson Proving Grounds F4	Madison	IN 0024210	8/10/84
F5	U.S. Air Force, Grissom Air Force Base F5	Bunker Hill	IN 0024902	11/30/85

\* Dates will be determined following reissuance

\*\* Formerly Diversified Utilities, Inc., IN 0035378

c. Michigan

(1) Overview

There are three principal agencies in Michigan involved in ambient monitoring. They are the Michigan Department of Natural Resources (MDNR), the U.S. Geological Survey (USGS), and the U.S. Forest Service. The coverage provided by these networks meets the explicit intent of the Program Guidance for Water Quality Monitoring and Wasteload Allocations. The Guidance is intended to provide a data base to detect trends in water quality.

Considering sampling parameters and frequency, there is no duplication in these networks. However, Michigan's program has minor deficiencies with respect to the Program Guidance in effluent monitoring, quality assurance and ambient monitoring.

(2) Assessment of State Ambient Monitoring Program

a. State Monitoring Network

In FY 1979, Michigan's State Ambient Network consisted of 36 "CORE" stations and approximately 135 different sampling stations in the upper and lower peninsulas. The current fiscal situation has caused Michigan to reduce their state ambient monitoring program significantly. Currently, the only inland program is urban area monitoring. The urban areas monitoring program is designed to document the effect of Michigan's major urban centers on surface water quality. Samples are collected upstream and downstream of 11 urban areas which comprise more than two-thirds of the state's population. The Detroit River, which includes ten upstream and ten downstream stations, is sampled monthly throughout the year for 21 different chemical, physical, biological, and micro-biological parameters. Fifteen additional metal parameters are sampled once a year. Samples from upstream and downstream stations for a given study are collected on the same day to account for seasonal effects of weather and stream flow. See Figure 4.

In FY 1982 the State Ambient Network consisted of 50 stream stations of which 12 were "CORE" stations. In FY 1983 nine stations were dropped. They are:

<u>Station No.</u>	<u>Location</u>
700026	Grand River at mouth
*390079	Kalamazoo River at River Street
*390058	Kalamazoo River at "D" Avenue Bridge
580047	Huron River near mouth
580046	Raisin River at Era Dock
610029	White River at Fruitland
04040000	Ontomagon River near Rockland
04045500	Tahquamegon River near Tahquamegon
03159010	Pigeon River near Caseville

\*CORE Stations

Fecal coliform is the only minimum parameter not sampled at the ambient stations. Fecal coliform sampling will resume when the quality assurance issues are resolved.

Twenty-one of the State's Ambient Network stations have STORET data ending the 2nd quarter of FY 1983. Some Detroit River Monitoring stations have data ending the 1st quarter of FY 1983 because the Detroit River is sampled monthly between April and November. See Table 8.

## 1. U.S. Geological Survey

USGS sites in Michigan at which water quality data are collected on a routine repetitive basis have been separated into categories. They are (a) NASQAN Program, (b) NASQAN Radiochemical Subnetwork, (c) NASQAN Pesticides Subnetwork, (d) Hydrologic Benchmark Water Quality Program, and (e) programs operated in cooperation with MDNR. See Figures 4 and 5.

### a. NASQAN Program

The USGS operates 22 stations in the NASQAN network. One is operated as a NASQAN Radiochemical Subnetwork station, 5 are operated as Pesticides Subnetwork stations, and 1 is a Hydrologic Benchmark station. At these stations the following tests are done 12 times per year: water temperature, specific conductance, fecal streptococci, suspended sediment, and other common constituents including major nutrients. Also at these stations, total organic carbon is run 8 times per year, phytoplankton is run 7 times per year, and trace elements, total recoverable silver and periphyton are run 4 times per year.

### b. NASQAN Radiochemical Subnetwork

Radiochemical samples are collected 2 times per year at high and low flow periods.

### c. NASQAN Pesticides Subnetwork

Water samples are collected 4 times per year in November, February, May and August. Bottom Material samples are collected in November and May. Sample containers and sample analyses are provided by the EPA laboratory, NSTL station, Mississippi.

### d. Hydrologic Benchmark Water - Quality Program

There is one Hydrologic Benchmark Station in Michigan. This station is located in Washington CR at Windigo on Isle Royal. At this station the following tests are done bimonthly: instantaneous discharge, specific conductance, water temperature, pH, dissolved oxygen, total coliform bacteria,

fecal coliform bacteria, fecal streptococci bacteria, suspended sediment, and other common constituents.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

e. Programs Operated by USGS for MNDR

USGS operates the following stations in cooperation with the National Park Service for the Michigan Department of Natural Resources. During the period of August 1979 through June 1981 general chemical, physical and metal parameters were collected three times. In 1982 only sediment samples were collected.

<u>Station No.</u>	<u>River</u>
04044786	Sable Creek nr. Grand Marais
04044785	Hurricane River nr. Grand Marais
04044782	Sullivan Creek nr. Grand Marais
04044775	Sevenmity Creek nr. Grand Marais
04044762	Mosquito River nr. Melstrand
04044770	Beaver Creek nr. Melstrand
04044766	Spray Creek nr. Melstrand
04044765	Chapel Creek nr. Melstrand
04044755	Miners River nr. Munising
04044750	Miners River nr. Van Meer
04044744	Munising Falls Creek at Munising

USGS operates 74 stations in cooperation with Van Buren County and the Michigan Department of Agriculture. This 3 year project which began in the spring of 1980 ended August 1982.

Daily sediment stations were established at three locations-- at Hartford and at Paw Paw on the Paw Paw River, and near Bangor on the Black River. Monthly suspended sediment samples were collected at 18 sites; at 17 additional sites suspended sediment samples were collected about three times each year. Additional samples were obtained at all sites

during storm or rapid snow melt events. Determinations of particle size and organic matter content were made periodically.

Samples of water were obtained each month at daily and monthly suspended sediment stations for the analysis of ammonia, nitrite, nitrate, organic nitrogen, orthophosphorus, and phosphorus. Specific conductance, temperature, pH, and dissolved oxygen were measured in the field. During storm and rapid snow melt events, additional samples were collected. At selected times a sample splitter was used to obtain samples for analyzing the fraction of the nutrients transported in solution. During the project, samples were obtained at high and low flow for common dissolved substances, trace metals, and pesticides.

Thirty-one lakes were sampled. Analytical determinations for varied major dissolved substances and nutrients were determined on all samples. Pesticides and selected trace metals were determined as appropriate. Specific conductance, temperature, pH, and dissolved oxygen were measured in the field when samples were collected.

Precipitation and dry fallout samples were collected at three sites. Samples were analyzed routinely for ammonia, nitrite, nitrate, organic nitrogen, orthophosphorus, phosphorus, and sulfate. A few more detailed analyses were made. Specific conductance and pH were measured in the field.

U.S. Geological Survey's NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 9. Analytical schedules are contained in Attachment 6.

## 2. U.S. Forest Service

There are approximately 136 monitoring sites in Michigan operated by the U.S. Forest Service. The majority are well and lake sites ranging from Alger and Chippewa Counties to Schoolcraft County. The major objective is compliance monitoring of National Forest swimming water and potable waters. Parameter groups sampled are bacteria, inorganics, metals, nitrogen and physical properties.

### (3) Intensive Survey Program

Short Term Intensive Surveys -- Intensive surveys are conducted on river segments to determine waste assimilative capacities of water quality limited stream segments; the effects of discharges on the biological communities of receiving streams; and the amount of monetary damage to the resource. The segments are chosen after consulting with Michigan's planning, enforcement, and monitoring staff in consideration of these factors:

- a) date of previous survey
- b) population affected
- c) severity of degradation
- d) permit issuance need
- e) enforcement activity
- f) WWTP construction
- g) planning needs
- h) other special factors

In Fiscal Year 1983, waste assimilative capacity studies will be completed for the following stream segments for which field surveys were conducted in FY 1982:

Tittabawassee River at Midland  
Huron River at Flat Rock  
Cass River at Bridgeport  
Belle River at Imlay City  
Letts Creek at Chelsea

In addition, biological studies will be completed in FY 1983 for the following areas where field work was done in FY 1982:

Looking Glass River at Detroit  
Battle Creek at Charlotte  
Letts Creek at Chelsea  
Huron River below Belleville Lake  
Clam River at Cadillac  
Clinton River at Pontiac  
Black River at Croswell

The choice of survey segments for the Fiscal Year 1983 field season was to be made by April 1983.

#### (4) Effluent Monitoring Program

Michigan has 265 major dischargers, consisting of 90 municipal, 174 industrial, and 1 federal discharger. Inspections planned and completed for FY'82 and planned for FY'83 are as follows:

<u>CEIs</u>	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
Municipal	10	0	[ 33 ]
Industrial	48	15	[Total]
 <u>CSIs*</u>			
Municipal	30	28	[131 ]
Industrial	60	41	[Total]
O&M Inspections (Mun.)	55	35	25
Grant Compliance Inspection (Mun.)	19	12	**

<u>CEIs</u>	<u>Commitment</u>	<u>Actual</u>	<u>Projected</u>
Operational Assistance (Mun.)	**	206	**
Toxic Bioassays	5-10	8	30

\*Many of the CSI's include toxic sampling

\*\*No committment

Michigan did not meet their effluent monitoring program commitments for FY'82, except for O&M inspections, an increased effort is planned for FY'83. However, Michigan had not performed any O&M inspections through the third quarter of FY'83, and had performed only 6 municipal CSI's during the same period. Based on this record, it appears extremely unlikely that they will meet their FY'83 commitments due to reduced resources coupled with a recent reorganization.

#### (5) Biological Monitoring Program

The State of Michigan has discontinued the Basic Water Monitoring Program. The biological effort is concentrated in greater detail in habitat assessment and use attainment as it relates to 106 and 205(j) programs.

A functional bioassay laboratory is available for conducting static bioassay tests using both fish and macroinvertebrates as test species. Mobil bioassay trailers are also available for conducting static or flow-through testing in the field.

Data from fish tissue analyzed through 1981 are in STORET.

#### (6) Quality Assurance Program

The State of Michigan has not collated a total quality assurance (QA) program plan. The serious problem area is the completion of organic methods development and documentation. The State has made commitments and supplied a schedule to complete this task but the schedule has been skipped repeatedly. After the system evaluation for FY'83 which occurred in April, the Quality Assurance Office reports that they doubt that Michigan will be able to meet their August deadline. This problem, if not corrected, will cause a serious delay in the awarding of a FY'84 water program grant.

#### (7) Data Interpretation and Reporting

Michigan did not submit a 305(b) report for 1982. Last year's report entitled, "1981 Highlights of Water Quality and Pollution Control in Michigan" is considered the state's basic submittal for this year.

## Data Storage and Retrieval

### Ambient Data

Except for fish analysis, the State of Michigan submitted their ambient water quality data for storage into the STORET system. The data were submitted quarterly.

### Effluent data

For FY 1982 the state submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division.

### Great Lakes Basin Effluent Data

The Great Lakes National Program Office and the International Joint Commission (IJC) along with the Water Quality Analysis Branch of the Monitoring and Data Support Division (Headquarters) and the states have input the monthly operating report data of the NPDES dischargers in the Great Lakes Basin into STORET. The majority of the data entry work was done by several contractors.

The data are identified by the use of the NPDES number for the Station Number and EFMIEPA for the agency code.

The initial purpose of inputting the data into STORET was for GLNPO to prepare the annual Great Lakes Water Quality Board Report. However, STORET users can perform all the standard STORET data manipulations as well as many specialized programs developed by the Water Quality Analysis Branch.

### Intensive Survey Data

Abstracts were not submitted for FY 1982 for the intensive surveys completed.

Intensive survey data are entered into STORET.

## MICHIGAN (LOWER)

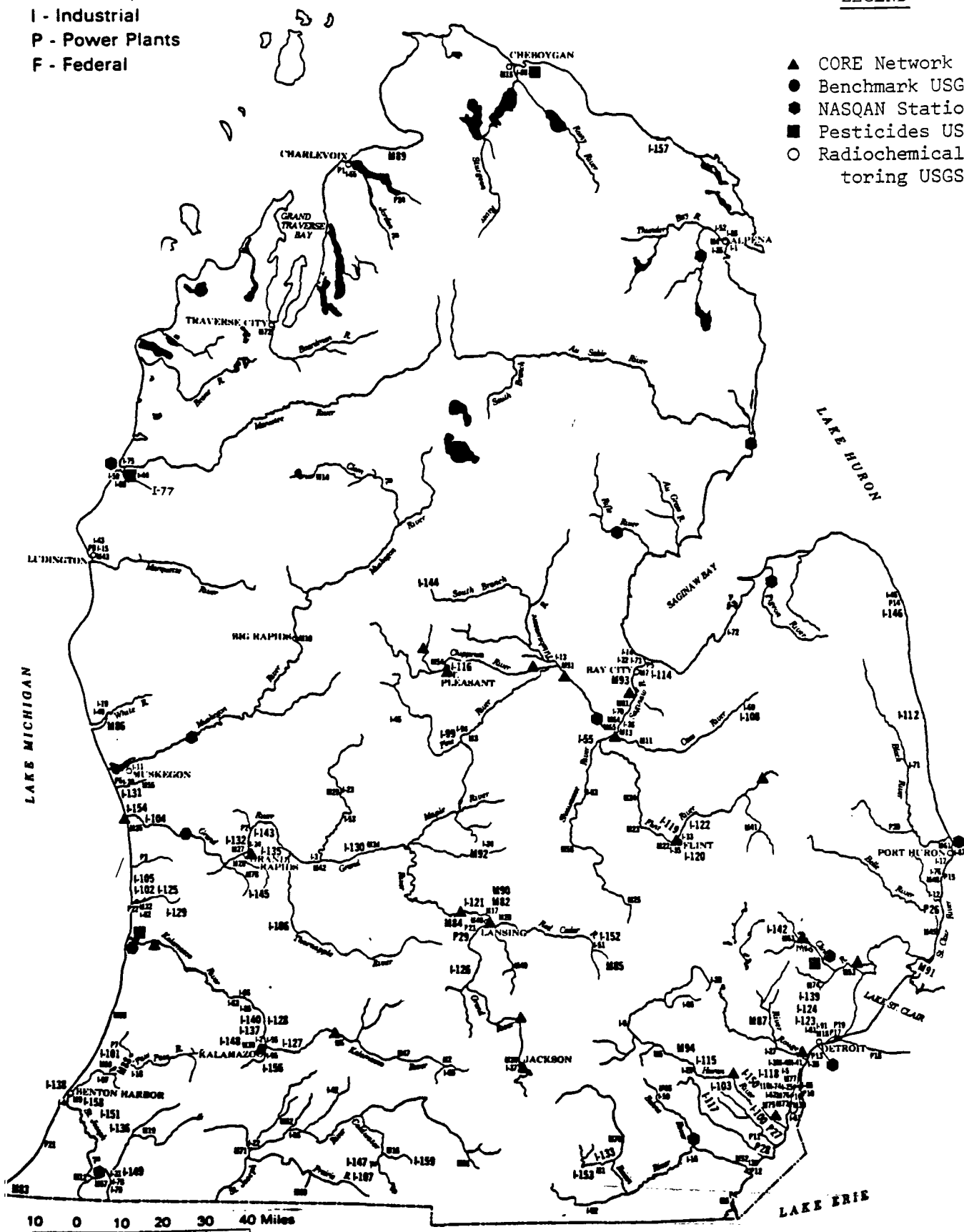
Figure 4 - State Ambient Network and USGS Ambient Monitoring Network

### Major Dischargers:

**M - Municipal**  
**I - Industrial**  
**P - Power Plants**  
**F - Federal**

### LEGEND

- ▲ CORE Network
- Benchmark USGS
- ◆ NASQAN Stations USGS
- Pesticides USGS
- Radiochemical Monitoring USGS

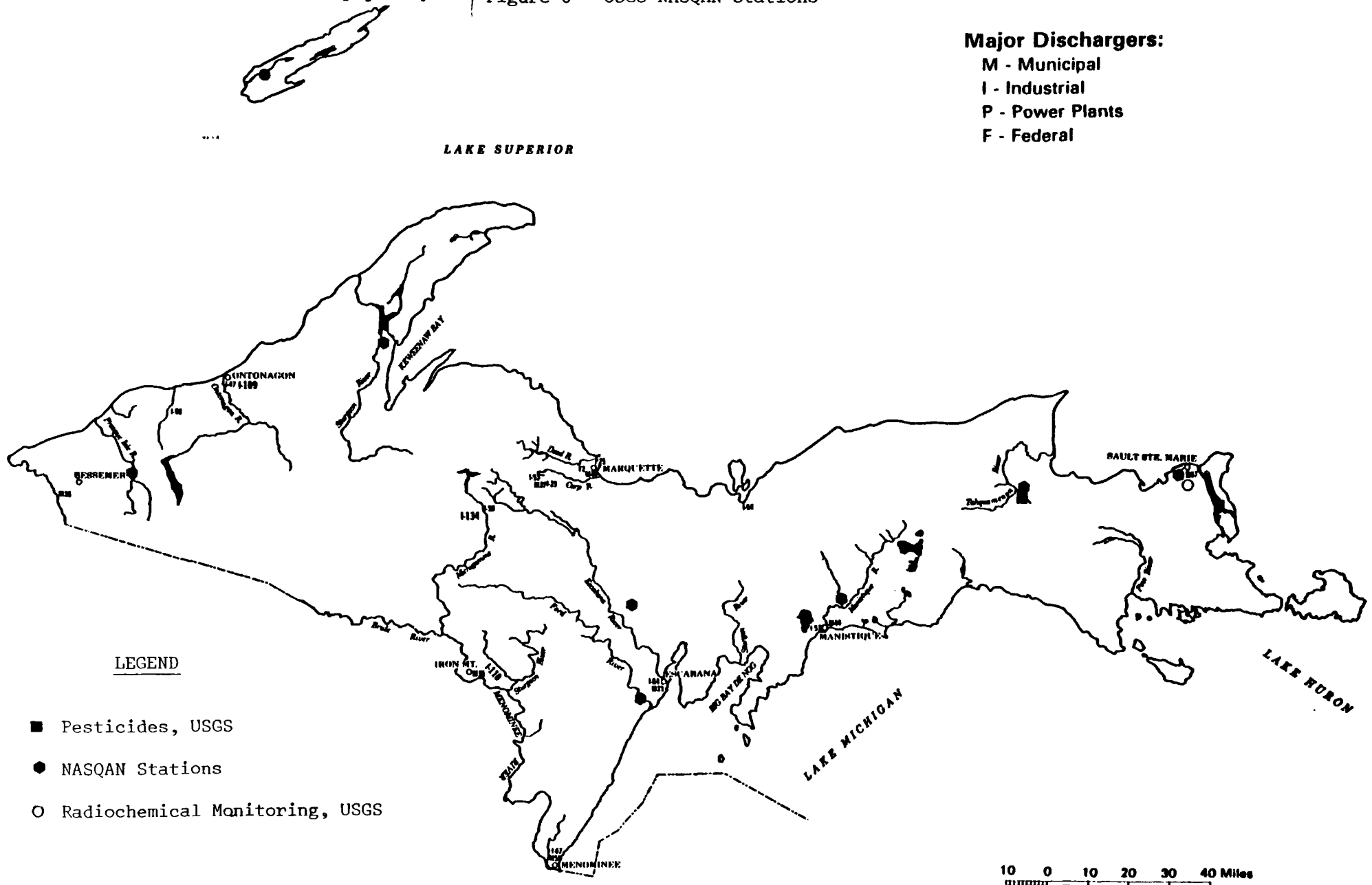


# MICHIGAN (Upper)

Figure 5 - USGS NASQAN Stations

## Major Dischargers:

- M - Municipal
- I - Industrial
- P - Power Plants
- F - Federal



### LEGEND

- Pesticides, USGS
- NASQAN Stations
- Radiochemical Monitoring, USGS

### MINIMUM PARAMETERS

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

Table 9

## NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY

B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

## ----- STATE-MICHIGAN NETWORK-NASQAN -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
4040000	ONTONAGON RIVER NEAR ROCKLAND	Q	4	0	4	0	NO
4043004	STURGEON RIVER NEAR CHASSELL	Q	4	0	4	0	NO
4045500	TAHUAMENON R NEAR TAHUAMENON PARADISE	Q	4	0	4	0	NO
4045580	ST MARYS RIVER ABOVE SAULT STE MARIE	Q	4	0	4	2	NO
4057004	HANISTIQUE RIVER ABOVE HANISTIQUE	B	6	2	4	0	NO
4059000	ESCANABA RIVER AT CORNELL	B	6	2	4	0	NO
4059500	FORD RIVER NEAR HYDE	Q	4	0	4	0	NO
4101500	ST. JOSEPH RIVER AT NILES	B	6	2	4	0	NO
4108690	KALAMAZOO RIVER AT SAUGATUCK	Q	4	0	4	0	NO
4119300	GRAND RIVER NEAR EASTMANVILLE	B	6	2	4	0	NO
4122030	MUSKEGON RIVER NEAR BRIDGETON	Q	4	0	4	0	NO
4126520	HANISTEE RIVER AT HANISTEE	B	6	2	4	0	NO
4132052	CHEBOYGAN RIVER AT CHEBOYGAN	B	6	2	4	0	NO
4135000	THUNDER BAY RIVER NEAR ALPENA	B	6	2	4	0	NO
4137500	AU SABLE RIVER NEAR AU SABLE	B	6	2	4	0	NO
4142000	RIFLE RIVER NEAR STERLING	Q	4	0	4	0	NO
4157000	SAGINAW RIVER AT SAGINAW	Q	4	0	4	0	NO
4159010	PICEON RIVER NEAR CASEVILLE	Q	4	0	4	0	NO
4159130	ST CLAIR RIVER AT PORT HURON	B	6	2	4	0	NO
4165500	CLINTON RIVER AT MT CLEMENS	Q	4	0	4	0	NO
4165700	DETROIT RIVER AT DETROIT	Q	4	0	4	0	NO
4176500	RIVER RAISIN NEAR MONROE	Q	4	0	4	0	NO

## ----- STATE-MICHIGAN NETWORK-HYDROLOGIC BENCH-MARK NETWORK -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
4001000	WASHINGTON CR AT WINDIGO ISLE ROYALE	Q	4	2	2	1	NO

U.S. Geological Survey Analytical Schedule

Michigan

NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO<sub>2</sub>+NO<sub>3</sub> AS N  
NITROGEN, DIS. NH<sub>4</sub> AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH<sub>4</sub>+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS. U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176 .

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
pH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CAC03  
METALS, DIS. CHE-EXT

Attachment 6

U.S. Geological Survey Analytical Schedule (Continued)  
Michigan

COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. CACO3
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M1 Adrian	Adrian	MI 0022152	12/31/81
M2 Albion	Albion	MI 0022161	6/30/83
M3 Alma	Alma	MI 0020265	3/31/87
M4 Alpena	Alpena	MI 0022195	1/31/85
M5 Ann Arbor	Ann Arbor	MI 0022217	3/31/82
M6 Battle Creek	Battle Creek	MI 0022276	3/31/82
M7 Bay City	Bay City	MI 0022284	3/31/82
M8 Bedford Township	Erie	MI 0020761	6/30/79
M9 Benton Harbor - St. Joseph	Benton Harbor	MI 0022322	6/30/87
M10 Big Rapids	Big Rapids	MI 0022381	12/31/78
M11 Bridgeport Township	Bridgeport	MI 0022446	3/31/82
M12 Buchanan	Buchanan	MI 0022489	1/31/85
M13 Buena Vista Township	Saginaw County	MI 0022497	3/31/82
M14 Cadillac	Cadillac	MI 0020257	3/31/87
M15 Cheboygan	Cheboygan	MI 0020303	4/30/86
M16 Coldwater	Coldwater	MI 0020117	6/30/83
M32 Delhi Township	Delhi Twp.	MI 0022781	3/31/82
M17 Delta Township	Delta Twp.	MI 0022799	3/31/82
M18 Detroit	Detroit	MI 0022802	6/30/77
M19 Dowagiac	Dowagiac	MI 0022837	12/31/86
M20 East Lansing	East Lansing	MI 0022853	1/31/85
M21 Escanaba	Escanaba	MI 0025381	5/31/87
M22 Flint	Flint	MI 0022926	6/30/83
M23 Flushing	Flushing	MI 0020281	3/31/82
M33 Galien River S.D.	New Buffalo Twp.	MI 0027987	12/30/86
M24 Genesee Co., District #2	Genesee Co.	MI 0022977	6/30/83
M25 Genesee Co., District #3	Genesee Co.	MI 0022993	6/30/83
M26 Grand Haven-Spring Lake	Grand Haven	MI 0021245	*
M34 Grand Ledge	Grand Ledge	MI 0020800	8/31/86
M27 Grand Rapids	Grand Rapids	MI 0026069	6/30/83
M28 Grandville	Grandville	MI 0023027	6/30/83
M29 Greenville	Greenville	MI 0020397	1/31/87
M30 Grosse Ile Twp.	Grosse Ile	MI 0026191	3/31/82
M31 Hillsdale	Hillsdale	MI 0022136	1/31/86
M32 Holland	Holland	MI 0023108	3/31/82
M35 Howell	Howell	MI 0021113	3/31/82
M34 Ionia	Ionia	MI 0021041	3/31/82
M35 Iron Mountain Kingsford	Iron Mountain	MI 0023205	1/31/85
M36 Ironwood	Ironwood	MI 0020125	3/31/82
M37 Ishpeming	Ishpeming	MI 0021369	3/31/82
M38 Jackson	Jackson	MI 0023256	3/31/82
M39 Kalamazoo	Kalamazoo	MI 0023299	3/31/82
M40 Lansing	Lansing	MI 0023400	1/1/87
M41 Lapeer	Lapeer	MI 0020460	4/30/87
M42 Lowell	Lowell	MI 0020311	1/31/87
M43 Ludington	Ludington	MI 0021334	5/31/87
M44 Manistique	Manistique	MI 0023515	6/30/86
M45 Marine City	Marine City	MI 0020893	1/31/85

\* Dates will be determined following reissuance

MICHIGAN

FY 1983 LIST OF MAJOR DISCHARGERS (Continued)

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M46 Marquette	Marquette	MI 0023531	3/31/82
M47 Marshall	Marshall	MI 0023540	9/30/82
M48 Marysville	Marysville	MI 0020656	1/31/85
M49 Mason	Mason	MI 0020435	4/30/82
M50 Menominee	Menominee	MI 0025631	1/31/86
M51 Midland	Midland	MI 0023582	3/31/82
M52 Monroe	Monroe	MI 0028401	6/30/83
M53 Mt. Clemens City	Mt. Clemens	MI 0023647	3/31/82
M54 Mt. Pleasant	Mt. Pleasant	MI 0023655	12/31/81
M55 Muskegon County	Muskegon County	MI 0027391	7/31/86
Muskegon Co.-Whitehall &	Whitehall	MI 0029173	6/30/83
M56 Montague			
M57 Niles	Niles	MI 0023701	3/31/82
M57 Oakland County - Huron	Walled Lake	MI 0024287	12/31/86
Rouge Sewage Dist. Sys.			
M58 Owosso	Owosso	MI 0023752	4/30/86
M58 Paw Paw	Paw Paw	MI 0021741	4/30/87
M59 Paw Paw Lake	Paw Paw Lake	MI 0023779	6/30/83
M57 Petoskey	Petoskey	MI 0023787	6/30/83
M60 Pontiac - Auburn Plant	Pontiac	MI 0023825	2/28/87
East Blvd. Plant			
M61 Port Huron	Port Huron	MI 0023833	2/28/87
M62 Portage Lake Water &	Portage Lake	MI 0020061	*
Sewer Authority			
M63 Rochester	Rochester	MI 0023931	3/31/82
M64 Saginaw	Saginaw	MI 0025577	*
M65 Saginaw Township	Saginaw County	MI 0023973	3/31/82
M66 Saline	Saline	MI 0024023	6/30/82
M67 Sault Ste. Marie	Sault Ste. Marie	MI 0024058	3/31/82
M68 South Haven	South Haven	MI 0020320	6/30/83
M90 South Clinton County	Dewitt	MI 0021008	3/31/82
M91 St. Clair County-Algonac	Algonac	MI 0020389	3/31/82
M92 St. Johns	St. Johns	MI 0026468	1/31/87
M69 Sturgis	Sturgis	MI 0020451	3/31/82
M70 Tecumseh	Tecumseh	MI 0020583	3/31/82
M71 Three Rivers	Three Rivers	MI 0020991	*
M72 Traverse City	Traverse City	MI 0027481	*
M73 Trenton	Trenton	MI 0021164	6/30/83
M74 Warren	Warren	MI 0024295	6/30/83
M75 Wayne County - Flat Rock	Flat Rock	MI 0024325	3/31/82
M76 Wayne County - Trenton	Trenton	MI 0024317	3/31/82
M77 Wayne County - Wyandotte	Wyandotte	MI 0021156	6/30/83
M93 West Bay County Regional	Bay City	MI 0042439	6/30/86
M78 Wyoming	Wyoming	MI 0024392	6/30/83

\*Dates will be determined following reissuance

MICHIGAN

FY 1983 LIST OF MAJOR DISCHARGERS (Continued)

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M94 Ypsilanti Community Utility Auth. :	Ypsilanti	MI 0042676	New Plant
M81 Zilwaukee	Zilwaukee	MI 0023981	6/30/83

FEDERAL

FM2 USAF - K.I. Sawyer	Marquette	MI 0021423	8/31/79
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FY 1983 LIST OF MAJOR DISCHARGERSINDUSTRIAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I 1	Abitibi Corporation	Alpena	MI 0002500	*
I 2	Allied Paper	Kalamazoo	MI 0000779	*
I 99	Alma Plastics	Alma	MI 0039632	3/31/81
I 100	Ash Stevens Inc.	Carleton	MI 0027235	*
I 3	Attwood Corp.	Lowell	MI 0001252	6/30/81
I 106	Auto Specialties	Hartford	MI 0002909	*
I 4	Auto Specialties	St. Joseph	MI 0002925	*
I 5	BASF Wyandotte(North Works)	Wyandotte	MI 0000540	*
I 102	BASF Wyandotte, Pigments Div.	Holland	MI 0000761	*
I 103	Belleville Plating	Belleville	MI 0004456	6/30/81
I 104	B&J Industrial Finishing	Nunica	MI 0039454	6/30/81
I 105	Bohn Aluminum & Brass Corp.	Holland	MI 0002704	*
I 106	Bradford White Corp.	Middleville	MI 0004405	6/30/81
I 107	Bronson Manufacturing & Plating	Bronson	MI 0000825	*
I 108	Brooks & Perkins	Caro	MI 0026310	*
I 109	Champion International (Hoerner-Waldorf)	Ontonagon	MI 0006122	6/30/81
I 110	Champion International	Quinnesec	MI 0042170	3/31/86
I 9	Chrysler Corp.	Ann Arbor	MI 0000523	6/30/81
I 10	Chrysler Corp.	Trenton	MI 0002356	6/30/81
P 7	Consumers Power	Palisades	MI 0001457	*
P 3	Consumers Power	West Olive	MI 0001422	*
P 2	Consumers Power	Comstock Twp.	MI 0001384	*
P 1	Consumers Power	Charlevoix	MI 0001431	*
P 6	Consumers Power	Muskegon	MI 0001520	*
P 5	Consumers Power	Essexville	MI 0001678	*
P 4	Consumers Power	Erie	MI 0001864	*
P 8	Consumers Power	Ludington	MI 0035912	5/31/85
I 11	CWC Textron, Casting Div.	Muskegon	MI 0002666	*
I 111	Detroit Coke Corp.	Detroit	MI 0004430	5/31/87
P 26	Detroit Edison - Belle River	China Twp.	MI 0038172	*
P 18	Detroit Edison	Belle River	MI 0001686	*
P 15	Detroit Edison	Marysville	MI 0001694	*
P 13	Detroit Edison	River Rouge	MI 0001724	*
P 19	Detroit Edison	Detroit	MI 0001775	*
P 17	Detroit Edison	Detroit	MI 0001783	*
P 16	Detroit Edison	Trenton	MI 0001791	*
P 11	Detroit Edison	Frenchtown Twp.	MI 0001830	*

\*Dates will be determined following reissuance

Michigan

FY 1983 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
P12 Detroit Edison	Monroe	MI 0001848	*
P14 Detroit Edison	Harbor Beach	MI 0001856	*
P27 Detroit Edison	Newport	MI 0037028	11/28/82
P28 Detroit Edison	Newport	MI 0039110	4/4/83
P9 Detroit Edison-Pennsalt	Riverview	MI 0001821	*
P20 Detroit Edison	Avoca	MI 0036978	*
I12 Diamond Crystal Salt	Saint Clair	MI 0001031	*
I112 Dott Mfg.	Deckerville	MI 0026689	1/31/84
I14 Dow Chemical	Bay City	MI 0000655	9/30/86
I13 Dow Chemical	Midland	MI 0000868	6/30/83
I15 Dow Chemical	Ludington	MI 0003026	3/31/81
I16 Dundee Cement	Dundee	MI 0002020	6/30/82
I17 Dunn Paper	Port Huron	MI 0003450	*
I19 Du Pont de Nemours, E.I.	Montague	MI 0000884	*
I18 Du-Wel Products	Bangor	MI 0000272	6/30/81
I114 Eltra Corp.	Bay City	MI 0002232	5/31/85
I21 Empire Iron Mining	Ishpeming	MI 0000094	12/31/81
I22 Essex Group, Inc., Wire & Cable Div.	Three Rivers	MI 0004561	6/30/81
I24 Federal Mogul Corp.	Saint Johns	MI 0002747	6/30/81
I115 Federal Mogul Corp.	Ann Arbor	MI 0002089	*
I23 Federal Mogul Corp.	Greenville	MI 0002836	4/30/87
I116 Ferro Mfg.	Mt. Pleasant	MI 0000213	*
I25 Firestone Steel Products Co.	Riverview	MI 0002348	6/30/81
I26 Fletcher Paper	Alpena	MI 0004146	6/30/87
I30 Ford Motor Co., Metal Stamping Plt.	Monroe	MI 0003247	*
I117 Ford Motor Co., Rawsonville Plt.	Ypsilanti	MI 0003263	1/31/84
I29 Ford Motor Co., Ypsilanti Plt.	Ypsilanti	MI 0003280	3/31/85
I27 Ford Motor Co., Rouge Complex	Dearborn	MI 0003361	6/30/81
I28 Ford Motor Co., Assembly Plt.	Wixom	MI 0028151	*
I118 Ford Motor Co., Valve Plt.	Northville	MI 0024643	*
I31 French Paper Co.	Niles	MI 0003093	3/31/81
I119 GMC, Chevrolet Mfg. Div.	Flint	MI 0001074	*
I120 GMC, Chevrolet Div., Van Slyke	Flint	MI 0001104	6/30/85
I32 GMC, Chevrolet Motor Div.	Bay City	MI 0001121	6/30/81
I36 GMC, Metal Casting Plt.	Saginaw	MI 0001139	5/30/81
I34 GMC, Rochester Products Div.	Wyoming	MI 0001236	6/30/81
I121 GMC, Oldsmobile	Lansing	MI 0001554	*
I35 GMC, Buick	Flint	MI 0001597	6/30/81
I122 GMC, Parts Div., Plt. #1	Flint	MI 0001627	*
I33 GMC, Fisher Body, Coldwater	Flint	MI 0025194	6/30/81

MICHIGAN

FY 1983 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I 123	GMC, Fisher Body Div.	Pontiac	MI 0027804	4/30/85
I 124	GMC Central Foundry	Pontiac	MI 0038903	*
I 37	Goodyear Tire & Rubber Co.	Jackson	MI 0001899	6/30/86
I 39	Great Lakes Steel (Rolling Mill)	Ecorse	MI 0002313	6/30/81
I 38	Great Lakes Steel (80" Mill)	River Rouge	MI 0026778	6/30/81
I 40	Great Lakes Steel (Zug Island)	River Rouge	MI 0026786	2/28/81
I 41	Great Lakes Steel (Michigan Plt.)	Ecorse	MI 0026794	*
I 42	Hanna Mining-Groveland Mine	Pine Creek	MI 0000116	12/31/81
I 43	Harbison Walker Refractories	Ludington	MI 0003620	6/30/84
I 44	Hardy Salt	Manistee	MI 0002461	*
I 88	Hartford Metal (DuWel)	Hartford	MI 0000281	6/30/81
I 45	Hercules Inc.	Harbor Beach	MI 0000876	12/31/82
I 125	Hexcel Corp.	Zeeland	MI 0004014	12/31/83
I 46	Hitachi Magnetics	Edmore	MI 0027812	*
P 22	Holland, City of (James deYoung Power Plt.)	Holland	MI 0001473	5/31/87
I 49	Hooker Chemical & Plastics	Montague	MI 0002631	12/31/81
I 126	Hoover Ball & Bearing	Charlotte	MI 0006009	*
I 50	Hoover Ball & Bearing	Saline	MI 0003239	6/30/81
I 52	Huron Cement-National Gypsum	Alpena	MI 0001988	6/30/85
P 21	Indiana & Mich. Power	Bridgman	MI 0005827	*
I 53	Indian Head Co.	Belding	MI 0002763	6/30/81
I 127	James River, Inc. Board & Carton Group	Kalamazoo	MI 0000191	2/21/85
I 128	James River, Inc, KVP Group	Parchment	MI 0000205	*
I 129	Kent-Holland Die Casting & Plating	Holland	MI 0000167	6/30/81
I 54	Kimberly Clark	Munising	MI 0000892	12/31/81
I 55	Lakeside Refining	Kalamazoo	MI 0003778	12/31/81
I 130	Lacks Industries	Saranac	MI 0041637	6/30/81
P 23	Lansing, Board of Water & Light	Lansing	MI 0004464	*
I 56	Lear Siegler	Mendon	MI 0004006	6/30/81
I 131	Leigh Products	Coopersville	MI 0002721	*
I 132	Lieberman & Gittlen Metal Co.	Grand Rapids	MI 0004901	2/28/85
I 57	Manistique Pulp & Paper	Manistique	MI 0003166	6/30/81
I 133	Marco Products Inc,	Adrian	MI 0036773	6/30/85
I 134	Marquette Iron Mining	Republic	MI 0000078	*
I 59	Martin Marietta Chemicals	Manistee	MI 0004154	*
I 62	McLouth Steel	Trenton	MI 0002399	6/30/81
I 61	McLouth Steel	Gibraltar	MI 0004227	6/30/81
I 63	Mead Corp.	Escanaba	MI 0000027	*
I 64	Mead Corp.	Otsego	MI 0000787	3/31/81
I 65	Medusa Portland Cement	Charlevoix	MI 0003158	4/30/85
I 66	Menasha Corp.	Otsego	MI 0003824	3/31/81
I 67	Menominee Paper Co.	Menominee	MI 0000060	*

MICHIGAN

FY 1983 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I135 Mich. Plating & Stamping	Grand Rapids	MI 0038130	7/31/81
I65 Mich. Seamless Tube	So. Lyon	MI 0001902	*
I70 Mich. Sugar Co.	Carrollton	MI 0002224	3/31/87
I69 Mich. Sugar Co.	Caro	MI 0002267	3/31/87
I71 Mich. Sugar	Croswell	MI 0002542	3/31/87
I72 Mich. Sugar	Sebewaing	MI 0002003	*
I136 Mich. Tube Co.	Eau Claire	MI 0004219	*
I137 Midwest Molded Plastics	Kalamazoo	MI 0029025	5/31/86
I138 Modern Plastics	Benton Harbor	MI 0005681	*
I73 Monitor Sugar Co.	Bay City	MI 0001091	8/31/81
I74 Monsanto Co.	Trenton	MI 0000558	12/31/85
I75 Morton Chemical Co.	Manistee	MI 0002470	*
I76 Morton Salt Co.	Marysville	MI 0001040	*
I77 Morton Salt Co.	Manistee	MI 0001503	*
I78 National-Standard Co.	Niles	MI 0039179	*
I79 National Standard Co.	Niles	MI 0027596	*
I139 National Twist Drill & Tool	Rochester	MI 0000591	9/31/82
I140 North American Aluminum	Parchment	MI 0025275	6/30/81
P24 No. Mich. Elec. Co.	Boyne City	MI 0003581	*
I141 Osceola Refining	Iosco Cnty.	MI 0004642	*
P29 Ottawa Board of Water & Light	Lansing	MI 0004472	*
I80 Packaging Corp. of America	Filer City	MI 0001171	*
I82 Parke-Davis & Co.	Holland	MI 0004715	*
I142 Parke-Davis & Co.	Avon. Twp.	MI 0025330	1/31/81
I83 Peet Packing	Chesaning	MI 0000311	6/30/87
I84 Pennwalt Corp.	Wyandotte	MI 0002381	*
I85 Plainwell Paper Co.	Plainwell	MI 0003794	3/31/81
I86 Port Huron Paper	Port Huron	MI 0002160	3/31/81
I87 Presque Isle Corp.	Alpena	MI 0003468	6/30/82
I88 Proctor & Gamble Products	Cheboygan	MI 0002496	*
I143 Production Aluminum Co.	Grand Rapids	MI 0039462	5/31/84
I144 Rensol Corp., Chemical	Farwell	MI 0003492	3/31/81
Specialties Div.			
I90 Revere Copper & Brass	Detroit	MI 0002372	6/30/81
I145 Reynolds Metals	Wyoming	MI 0003654	*
I146 Searle Laboratories	Harbor Beach	MI 0037141	1/31/86
I147 Scott & Fetzer Co. -			
Douglas Div.	Bronson	MI 0005738	*
I148 Shakespeare Automotive Prod.	Kalamazoo	MI 0002933	6/30/81
I149 Simplicity Pattern	Niles	MI 0000833	*
I150 Solder Craft	Plymouth	MI 0036081	1/31/86
I151 Sodus Hard Chrome	Sodus	MI 0037745	1/31/81
I152 Stanley Works, Stanley	Fowlerville	MI 0003727	4/30/87
Tool Div.			
I92 Stauffer Chemical	Weston	MI 0025135	6/30/84
I153 Stauffer Chemical(SWS Silicones)	Adrian	MI 0026034	12/31/82

MICHIGAN

FY 1983 LIST OF MAJOR DISCHARGERS - INDUSTRIAL (Cont.)

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I154	Technology Inc.	Grand Haven	MI 0027367	2/28/85
I155	Thomson Products Inc.	Saint Charles	MI 0026913	2/28/84
I93	Tilden Mining	Marquette Cnty.	MI 0038369	10/31/81
I156	Todd, A.M. Co.	Kalamazoo	MI 0038407	10/31/81
I94	Total Leonard	Alma	MI 0001066	*
I96	Upjohn Co.	Kalamazoo	MI 0002941	6/30/81
P25	Upper Peninsula Gen. Co.	Marquette	MI 0006106	12/31/84
I157	U.S. Steel Corp.	Rogers City	MI 0004111	9/30/81
I158	Vail Rubber Works	St. Joseph	MI 0000299	3/31/84
I159	Valley Industries, Inc.	Quincy	MI 0004669	*
I97	Watervliet Paper Co.	Watervliet	MI 0000817	3/31/81
I98	White Pine Copper Div. Copper Range Co.	White Pine	MI 0006114	6/30/81

d. Minnesota

(1) Overview

The State of Minnesota has three different agencies involved in ambient water monitoring within the State. These agencies are the Minnesota Pollution Control Agency (MPCA), the U.S. Geological Survey (USGS) and the U.S. Forest Service. The coverage provided by these networks meets the explicit intent of the Program Guidance for Water Quality Monitoring and Wasteland Allocations. The intent of the Guidance is to provide a data base to detect trends in water quality. Considering sampling parameters and frequency, there is no duplication in these networks. However, Minnesota's Monitoring Program is deficient in the area of quality assurance.

(2) Assessment of State Ambient Network

a. State Monitoring Network

The Ambient Water Quality Monitoring Program consist of 70 stations throughout the state. Monthly samples, except for the months of November, December, and February are collected at all station locations throughout the water/fiscal year. The program is designed to highlight specific basins and to increase the number of station locations to intensify the sampling of those highlighted basins. During Fiscal Year 1982, the lower portion of the Upper Mississippi River Basin, the Minnesota River Basin, the Des Moines River Basin, the Cedar River Basin, and the Missouri River Basin, were highlighted. Since FY 1979 there has been an increase of 25 stations. See Figure 6. A parameter list, which includes frequency of sampling for the Ambient Water Quality Monitoring Program is contained in Attachment 8 and shown in Table 10.

This program furnishes data for the 305(b) Report to Congress, the International Joint Commission, comparison above and below discharges, wasteload allocation studies, as well as providing the largest background data base in the state.

In FY 1982, the total number of stations was 70. For FY 1983, the total number of stations is still 70. However, 15 stations were dropped and 15 were added.

New Stations

Deleted Stations

<u>Station No.</u>	<u>Locations</u>	<u>Station No.</u>	<u>Locations</u>
09-0016	Sandy Lake	11-0055	Pavelgrit Lake
58-0024	Big Tamarack Lake	18-0207	Squaw Lake
38-0750	Christianson Lake	31-0315	Bass Lake
*UM-1172	Mississippi River at Jacobson	MI-212	Minnesota River
		WA-6	Watonwan River

\*=CORE Station

<u>New Stations</u>		<u>Deleted Stations</u>	
<u>Station No.</u>	<u>Locations</u>	<u>Station No.</u>	<u>Locations</u>
OT-49	Otter Tail River	CH-0.5	Chippewa River
RA-86	Rainy River at Rainer	YM-0.5	Yellow Medicine River
ROS-55	Roseau River at Caribou	CEC-13	Center Creek
ROS-121	Roseau River at Malung	*UM-1137	Mississippi River at Jacobson
WR-1	Winter Road River	EDM-6	Des Moines River
RP-0.1	Rapid River	WDM-3	Des Moines River
BF-0.5	Big Fork River	OK-20	Okahena Creek
RL-23	Red Lake River at Fisher	PC-1.5	Popestone Creek
SK-18	Snake River	RO-0	Rock River
TMB-19		BFC-0	Buffalo Creek

\*=CORE Station

STORET data are available through the 2nd quarter of FY'83.

#### b. Other Agencies Monitoring

Our discussion is based on STORET data available from other agencies for CY 1982. This discussion does not represent a summary of all water data being acquired in Minnesota. It does, however, serve as a good indicator of the types of data currently in STORET. This information can be used to supplement trend data at the state network. Specific information can be obtained by contacting the Water Monitoring Team.

#### 1. U.S. Geological Survey

The USGS operates three water quality networks in Minnesota. These are (1) an ambient water monitoring network, (2) the NASQAN network, and (3) the Hydrologic Benchmark network. These networks are shown in Figure 6 and are discussed in detail below.

##### a. Ambient Water Quality Monitoring Network

This network consists of 10 stations spread more or less evenly across the State. Parameter coverage and sampling frequency vary from station to station. Five stations were added since 1979 and 20 were discontinued.

##### b. NASQAN Network

The NASQAN Network consists of 10 stations, 4 of which are Pesticides Subnetwork stations.

There are extensive parameter coverage at all stations, including general chemistry, heavy metals, periphyton and phytoplankton.

For the Pesticide Subnetwork stations, pesticides are analyzed at the EPA laboratory in Bay St. Louis, Mississippi.

c. Hydrologic Benchmark Network

This network consists of two stations: the Kawishi River near Ely, and the North Fork Whitewater River near Elba.

At the station on the Kawishi River near Ely, an extensive variety of general chemistry parameters are analyzed. Also, at the station on the North Fork Whitewater river near Elba, parameters analyzed include general chemistry, heavy metals, toxic organics and radiochemical substances.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

U.S. Geological Survey's NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 11. Analytical schedules are contained in Attachment 9.

2. U.S. Forest Service (USFS)

Numerous stations were established near Cass Lake, Minnesota as part of a monitoring system in 1973 to determine if a spray irrigation waste treatment system worked.

The waste treatment system is at Norway Beach and is owned and operated by the USFS. It consists of four peat filter beds monitored at 2 depths, plus monitoring for effluent quality and for groundwater quality at several monitoring wells.

(3) Quality Assurance Program

Minnesota's first draft of a Quality Assurance Program Plan is due July 1. Based on a June 6, 1983 visit to MPCA by the Quality Assurance Office, this draft will not be approvable. However, Minnesota has committed to complete their QA program by the end of FY'83.

(4) Intensive Survey Program

Intensive water quality surveys provide information necessary for the development, reissuance, and/or possible modification of NPDES permits, and the justification of the need for the construction of advanced wastewater and advanced secondary treatment plants.

A major objective of each survey is to evaluate the applicable effluent standards for BOD5 and ammonia (N). For this reason, the intensive surveys are generally conducted during the two typically critical times of the year for dissolved oxygen, i.e., during July through September and during December through February.

Another objective of each survey is to evaluate the presence of the discharge of toxic materials such as heavy metals. This objective will particularly be emphasized in those areas where the toxic monitoring program has already detected problems. Some intensive surveys will not involve the level of work needed to calibrate and verify a mathematical model of the river by computerized techniques.

The 10 intensive surveys where the documentation was completed during FY 1982 are listed below.

<u>Location</u>	<u>Waterway</u>
1. Russell	Redwood River
2. Luverne	Rock River
3. Canby	Canby Creek
4. Windom	West Fork Des Moines River
5. Grove City	Tributary to Grove Creek
6. Glenwood	Lake Minnewaska
7. Worthington	Okabena Creek
8. Browns Valley	Little Minnesota River
9. Cook	Little Fork River
10. Hackensack	Boy River

None of the reports have been submitted to the Regional Clearinghouse.

Proposed Intensive Stream Surveys in FY 1983

Part 1: Listing of Surveys

<u>Location</u>	<u>Waterway</u>	<u>Reasons for Survey</u>
1. Mankato*	Minnesota River	Determine potential impact from new industrial dischargers
2. Gonvich	Lost River	Potential AST justification
3. Mabel	Riceford Creek	Determine impact on downstream trout waters
4. Starbuck	Outlet Creek	Define water quality impacts as requested by U.S. Fish and Wildlife Service
5. Bovey Coleraine	Trout Creek	Potential AST justification
6. Litchfield	Jewett Creek	Evaluate need for ammonia (N) limitation
7. Worthington	Okabena Creek	Additional data for permit (NPDES) hearing

\* Will only be conducted if there are low flows on the Minnesota River.

Waste Load Allocation Reports

<u>Location</u>	<u>Waterway</u>	<u>Reason for Report</u>	<u>Completion Date</u>
1. Mpls.-St. Paul	Minnesota River	Define effluent limits for Blue Lake and Seneca WWTP's as requested by EPA	June 1983
2. Starbuck	Outlet Creek	Define water quality impacts as requested by U.S. Fish and Wildlife Service	June 1983
3. Worthington	Okabena Creek	Additional data for permit hearing	June 1983
4. Litchfield	Jewett Creek	Evaluate need for ammonia (N) limitation	June 1983

## LAKE STUDIES

### 1) Intensive Surveys:

Intensive surveys of lakes are conducted to address specific instances of known or suspected point or nonpoint source pollution adversely affecting the trophic state, water and nutrient budgets, relative importance of point and nonpoint source nutrient contributions, and the efficacy of nutrient control alternatives. Surveys of lakes which were continued in FY 1982 were as follows:

<u>Lake</u>	<u>Reason for Survey</u>
Horseshoe Lake Chain, Stearns County	To evaluate the effects of point (Melrose) and nonpoint (Sauk River) nutrient contributions.
Bemidji, Wolf, Andrusia Lakes, Beltrami County	To evaluate the effects of interim phosphorus removal at Bemidji, Minnesota.
Alexandria Area lakes, Douglas County	To evaluate the effects of the operation of phosphorus removal system at Alexandria, Minnesota.
Lake Minnetonka Hennepin County	To further evaluate the impact of the discharge of wastewater from Maple Plain and the Painter Creek Watershed. Tributary sampling will also be conducted on Painter Creek (Lake Minnetonka) to evaluate rainfall events as nutrient contributors.

Adjustments in the number and scope of surveys may be made as appropriate.

Lakes will be sampled 36 times between June 1 and August 30. Analysis of lake water samples will be for the parameters shown in the Table below:

### Lake Intensive Surveys Parameter List

<u>Physical</u>	<u>Chemical</u>	<u>Biological</u>
Dissolved Oxygen	Alkalinity	Chlorophyll <u>a</u>
Turbidity	Chloride	Phytoplankton
Color	Total Phosphorus	identification
Temperature	Total Orthophosphate	enumeration
Secchi Disc	Organic Nitrogen	Zooplankton
	Ammonia Nitrogen	identification
	Nitrite + Nitrate	enumeration
	Total Kjeldahl Nitrogen	

Proposed Intensive Lake Surveys in FY 1983

Part 1: Listing of Lakes

<u>Lake (County)</u>	<u>Reason for Survey</u>
1. Little Stanchfield (Isanti Co.)	P-Variance request by City of Braham
2. Minnetonka (Hennepin)	Maple Plain permit development
3. Horseshoe, Cedar Island (Stearns)	Permit hearing request by Melrose

Part 2: Lake Survey Reports

<u>Lake (County)</u>	<u>Completion Date</u>
1. Minnetonka (Hennepin)	12/31/82
2. Mille Lacs	12/31/82
3. Worthington	6/30/83
4. Sewage Impacted Lake Study	12/31/82

Acid Rain Intensive Study Lakes

(Water chemistry [three times per year], fisheries assessment (MDNR), fish tissue analysis, plus continued water chemistry on FY 1982 lakes).

Squint	(Cook)
Dunnigan, Kane, East Chub	(Lake)
Hobson	(St. Louis)
Black Island, Nose	(Itasca)
Stevens	(Cass)
Papoose	(Crow Wing)
Sandy	(Carlton)
Five	(Kanabec)
Big Tamarack	(Pine)

(5) Effluent Monitoring Program

Minnesota has 106 major dischargers, consisting of 54 municipal, 47 industrial, and 5 agricultural dischargers. Inspections planned and completed in FY'82 and projected for FY'83 are indicated below:

	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
<u>CEI's</u>			
Municipal (majors)	1	0	0
Industrial (majors)	9	0	0
Municipal (minors)	*	126	100
Industrial (minors)	*	29	30
<u>CSI's</u>			
Municipal (majors)	47	51	80
Industrial (majors)	24	19	40
Municipal (minors)	*	18	15
Industrial (minors)	*	8	10
O&M Inspections (major mun.)	*	6	*
Grant Compliance Inspections (mun.)	*	9	30
Operational Assistance (mun.)	*	19	25
Toxic Sampling Surveys	5	0	0

\*No commitment

Minnesota's effluent monitoring program is considered adequate. While they met their commitment for major CSI's, they fell short of the commitment for major CEI's. For both FY'82 (actual) and FY'83 (planned), they indicate a considerable amount of activity for minor dischargers, with 181 surveys completed in FY'82. Through efforts of the Environmental Services Division, in FY'82 the State began completing a Form 7500 for each major municipal survey. Projections for FY'83 indicate a comparable program to FY'82 with less emphasis on CEI's and more emphasis on CSI's. Increases are also anticipated for grant compliance inspections and operational assistance visits. Minnesota plans no activity for major CEI's or toxic sampling surveys. Whereas the State made no commitment for O&M inspections with completion of Form 7500, the O&M activity report for the first half of FY'83 indicates that 15 O&M inspections have been completed.

(6) Biological Monitoring Program

The State of Minnesota collected fish and macroinvertebrates from all 19 core stations in 1979. Since 1979, no biological sampling has been done at the network stations. Special studies on streams and lakes are ongoing

and include fish and sediment analyses for mercury, PCB's, pesticides, metals, etc. All fish data analyzed through 1981 are stored in STORET.

Minnesota has an active bioassay program. In 1982, some sixty (60) static and four (4) flow-through bioassays using fathead minnows and daphnia were conducted. The State projects a similar bioassay program in 1983.

## (7) Data Interpretation and Reporting

### Ambient Data

The State of Minnesota submitted their ambient water quality data for storage into the STORET system. The data were submitted quarterly.

### Effluent Data

For FY 1982 the State submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division.

### Intensive Survey Data

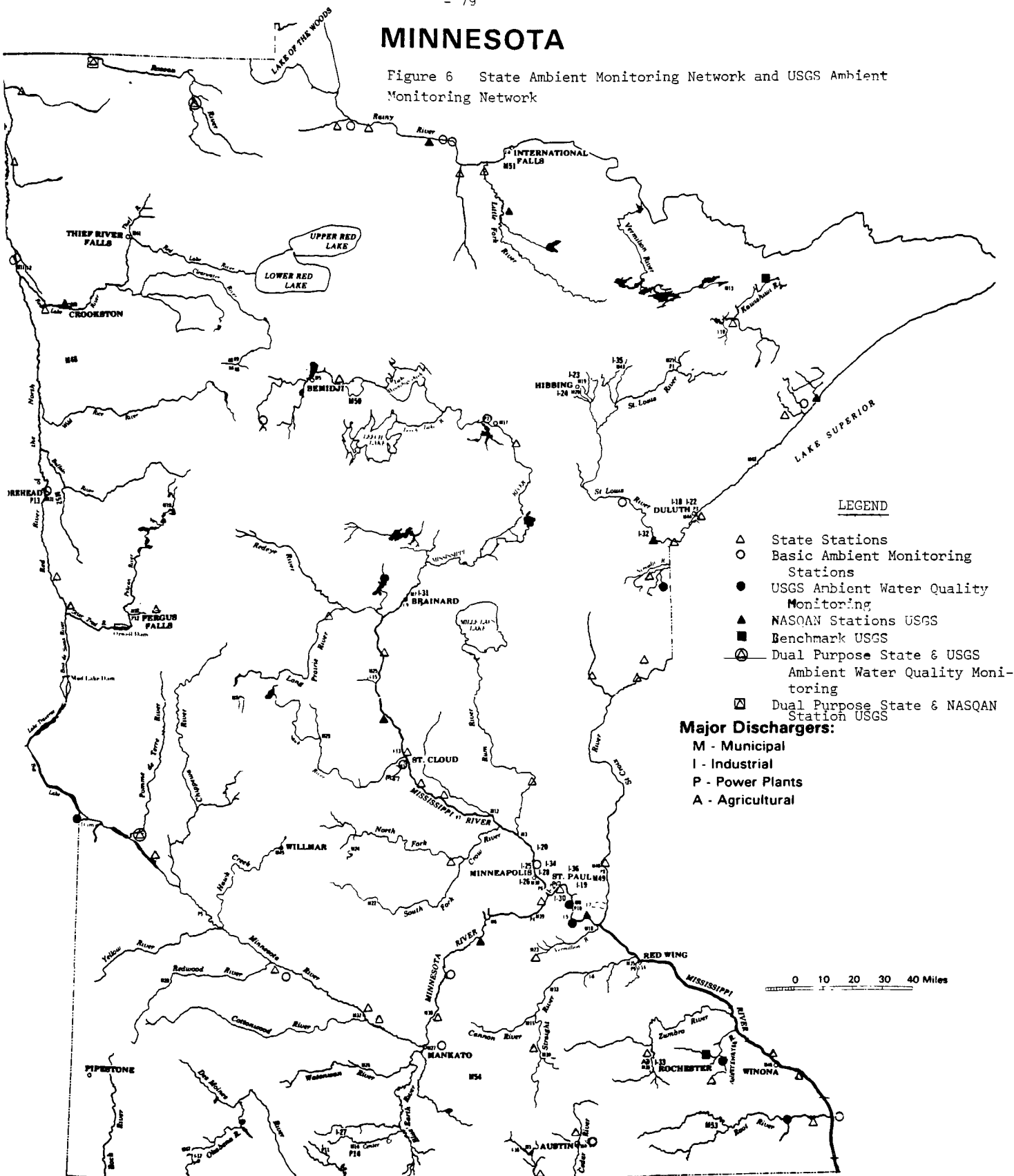
No abstracts were submitted for FY 1982 to the Regional Clearing-house. Some intensive survey data are available in STORET.

### Section 305(b) Report

Utilizing the Section 305(b) reporting process, the State completed and submitted biennially to the USEPA a report describing the status of the waters of the State. The latest draft report submitted was for the Water Year 1980-1981.

# MINNESOTA

Figure 6 State Ambient Monitoring Network and USGS Ambient Monitoring Network



### MINIMUM PARAMETERS

--- -- 1999 QUN QUARTER: 11=1991, 3RD QUARTER, 34= 1999, 4TH QUARTER

Table 10 (Cont.)

MINIMUM PARAMETERS

STATION	C O R E	AGENCY	C N T Y	T Y P E	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T	MINIMUM PARAMETERS											
										W A T E R	F L O W	C O N D.	D O D	C O D - L O N	P H	H E I G H T	K J E L D U N	N O 2	P H C A L C	F E S A L I N E S S A L I N E S S	T E M P E R A T U R E
CD-10	*	21MINN	099	ST	CEDAR RIVER 3 MI S. OF AUSTIN	U MISS	43 36 21.0	092 59 14.	32	32	32	32	32	32	32	32	32	32	32	32	32
SR-1.5		21MINN	047	ST	SHELLROCK R. W OF GORDONSVILLE	U MISS	43 30 42.0	093 16 21.	32	32	32	32	32	32	32	32	32	32	32	32	32
RE-300	*	21MINN	119	RT	RED RIVER AT GRAND FORKS	HUDSON BAY	47 54 20.0	097 01 32.	32	32	32	32	32	32	32	32	32	32	32	32	32
RE-403		21MINN	107	ST	RED RIVER CSAH-39 W. OF PERLEY	HUDSON BAY	47 10 47.0	096 49 27.	32	32	32	32	32	32	32	32	32	32	32	32	32
RE-452	*	21MINN	027	ST	RED RIVER MAIN & FIRST AT FARGO	HUDSON BAY	46 52 26.3	096 46 34.	32	32	32	32	32	32	32	32	32	32	32	32	32
RE-536		21MINN	167	ST	RED RIVER CSAH-18 AT BRUSHVALE	HUDSON BAY	46 22 06.0	096 39 21.	32	32	32	32	32	32	32	32	32	32	32	32	31
OT-1		21MINN	167	ST	OTTERTAIL RIVER AT BRECKENRIDGE	HUDSON BAY	46 16 02.0	096 35 23.	32	32	32	32	32	32	32	32	32	32	32	32	31
RL-0.2	*	21MINN	119	ST	RED LAKE RIVER-EAST GRAND FORKS	HUDSON BAY	47 55 24.0	097 01 00.	32	32	32	32	32	32	32	32	32	32	32	32	31
RA-12	*	21MINN	077	ST	RAINY RIVER BRIDGE AT BAUDETTE	HUDSON BAY	48 43 05.0	094 35 22.	32	32	32	32	32	32	32	32	32	32	32	32	32
RA-83	*	21MINN	071	ST	RAINY R. AT INTERNATIONAL FALLS	HUDSON BAY	48 36 29.0	093 24 13.	32	32	32	32	32	32	32	32	32	32	32	32	32
RA-86		21MINN	071	ST	RAINY R. AT OUTLET OF RAINY LAK	HUDSON BAY	48 36 58.0	093 21 13.	32	32	32	32	32	32	32	32	32	32	32	32	32
KA-10		21MINN	075	ST	KAWISHIWI R. BIRCH LAKE OUTLET	HUDSON BAY	47 48 57.0	091 44 10.	32	32	32	32	32	32	32	32	32	32	32	32	32
RO8-55		21MINN	069	ST	ROSEAU RIVER CR-53 AT CARIBOU	HUDSON BAY	48 58 59.0	096 26 57.	31	31	31	31	31	31	31	31	31	31	31	31	31
RO8-121		21MINN	135	ST	ROSEAU R. CSAH-2 BR AT MALUNG	HUDSON BAY	48 46 34.0	095 43 29.	32	32	32	32	32	32	32	32	32	32	32	32	31
WR-1		21MINN	077	ST	WINTER ROAD R. SH-11 BY BAUDETTE	HUDSON BAY	48 42 43.0	094 44 16.	32	32	32	32	32	32	32	32	32	32	32	32	31
RP-0.1		21MINN	077	ST	RAPID RIVER SH-11 AT CLEMENTSO	HUDSON BAY	48 41 33.0	094 25 40.	32	32	32	32	32	32	32	32	32	32	32	32	31
BF-0.5		21MINN	071	ST	BIG FORK RIVER 4 MI E OF LOMAN	HUDSON BAY	48 30 45.0	093 42 36.	32	32	32	32	32	32	32	31	32	32	32	32	31
LF-0.5		21MINN	071	ST	LITTLE FORK RIVER W. OF PELLAND	HUDSON BAY	48 31 21.0	093 35 06.	32	32	32	32	32	32	32	32	32	32	32	32	31
TOTAL NUMBER OF SITES 66																					

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

Minnesota's

PARAMETER LIST AND SAMPLING FREQUENCY FOR  
THE WATER QUALITY MONITORING PROGRAM  
ROUTINE STATIONS

Water Parameter (Units)	STORET Parameters Code	Sampling Frequency
Temperature (field) (C)	(00010)	monthly
D.O. (field) (mg/l)	(00300)	monthly
BOD (mg/l)	(00310)	monthly
Fecal Coliforms (MPN/100 ml)	(31615)	monthly
Organic Nitrogen (mg/l)	(00605)	monthly
Ammonia Nitrogen (mg/l)	(00610)	monthly
Nitrite + Nitrate Nitrogen (mg/l)	(00630)	monthly
Total Kjeldahl Nitrogen (mg/l)	(00625)	monthly
Total Phosphorus (mg/l)	(00665)	monthly
pH (standard units) (field and/or lab)	(00400)	monthly
Total Suspended Solids (mg/l)	(00530)	monthly
Conductivity (unhos/cm @ 25oC)	(00095)	monthly
Total Hardness	(00900)	yearly
Calcium	(00910)	yearly
Magnesium	(00920)	yearly
Alkalinity (field and/or lab)	(00410)	yearly
Chloride	(00940)	monthly at selected stations
Phenol	(32730)	monthly at selected stations
Cadmium*	(01027)	yearly
Chromium*	(01034)	yearly
Copper*	(01042)	yearly
Lead*	(01051)	yearly
Zinc*	(01092)	yearly
Mercury*		(71900)
Arsenic	(01002)	3 times/yr.

Table 11

## NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY

B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

## ----- STATE-MINNESOTA NETWORK-NASQAN -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
4014500	BAPTISH RIVER NEAR BEAVER BAY	Q	4	0	4	0	NO
4024000	ST LOUIS RIVER AT SCANLON	B	6	2	4	0	NO
5079000	RED LAKE RIVER AT CROOKSTON	B	6	2	4	0	NO
5112000	ROSEAU RIVER NEAR CARIBOU	Q	4	0	4	0	NO
5131500	LITTLE FORK RIVER AT LITTLEFORK	Q	4	0	4	0	NO
5133500	RAINY RIVER AT MANITOU RAPIDS	B	6	2	4	0	NO
5267000	MISSISSIPPI RIVER NEAR ROYALTON	B	6	2	4	0	NO
5330000	MINNESOTA RIVER NEAR JORDAN	Q	4	0	4	2	NO
5331570	MISSISSIPPI RIVER AT MINNINGER	Q	4	0	4	0	NO
5378500	MISSISSIPPI RIVER AT WINONA	Q	4	0	4	0	NO

## ----- STATE-MINNESOTA NETWORK-HYDROLOGIC BENCH-MARK NETWORK -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
5124480	KAWISHIWI R NR ELY	Q	4	2	2	1	NO
5376000	NORTH FORK WHITEWATER R NR ELBA	B	6	4	2	1	NO

U.S. Geological Survey Analytical Schedule

Minnesota  
NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO2+NO3 AS N  
NITROGEN, DIS. NH4 AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH4+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS. U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
pH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CaCO3  
METALS, DIS. CHE-EXT

U.S. Geological Survey Analytical Schedule (Cont.)  
Minnesota

COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. $\text{CaCO}_3$
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

MINNESOTA

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M1	Albert Lea	Albert Lea	MN 0030155	6/30/82
M48	Albert Lea	Albert Lea	MN 0041092	6/30/82 *
M2	Alexandria Sanitary Dist.	Alexandria	MN 0040738	9/30/84
M3	Anoka (MWCC)	Anoka	MN 0029921	3/31/82
M4	Austin	Austin	MN 0022683	3/31/82
M49	Bayport (MWCC)	Bayport	MN 0029912	6/30/84
M5	Bemidji	Bemidji	MN 0022462	3/31/86
M6	Blue Lake (MWCC)	Blue Lake	MN 0029882	3/31/82
M7	Brainerd	Brainerd	MN 0049328	9/30/82
M50	Cass Lake	Cass Lake	MN 0022331	9/30/84
M8	Cottage Grove (MWCC)	Cottage Grove	MN 0029904	3/31/82
M9	Crookston	Crookston	MN 0021423	6/30/86
M10	Detroit Lakes	Detroit Lakes	MN 0020192	3/31/87
M11	East Grand Forks	East Grand Forks	MN 0021814	3/31/87
M12	Elk River	Elk River	MN 0020788	3/31/87
M13	Ely	Ely	MN 0020508	5/31/82
M14	Fairmont	Fairmont	MN 0030112	5/31/83
M15	Faribault	Faribault	MN 0030121	3/31/84
M16	Fergus Falls	Fergus Falls	MN 0029807	6/30/83
M17	Grand Rapids	Grand Rapids	MN 0022080	6/30/83
M18	Hastings (MWCC)	Hastings	MN 0029955	3/31/83
M19	Hibbing - North	Hibbing	MN 0030627	6/30/82
M20	Hibbing - South	Hibbing	MN 0030643	6/30/82
M21	Hoyt Lakes	Hoyt Lakes	MN 0020206	6/30/81
M22	Hutchinson	Hutchinson	MN 0020265	3/31/84
M51	International Falls	International Falls	MN 0023761	6/30/84
M23	Lakeville-Farmington (MWCC)	Empire Township	MN 0045845	6/30/85
M24	Litchfield	Litchfield	MN 0023973	3/31/87
M25	Little Falls	Little Falls	MN 0020761	3/31/87
M26	Madelia	Madelia	MN 0024040	9/30/83
M27	Mankato	Mankato	MN 0030171	3/31/84
M28	Marshall	Marshall	MN 0022179	9/30/83
M29	Melrose	Melrose	MN 0020290	6/30/80
M30	Metro Plant (MWCC) St. Paul/Minneapolis		MN 0029815	6/30/82
M31	Moorhead	Moorhead	MN 0024236	10/31/83
M52	Moorhead	Moorhead	MN 0049069	12/31/86
M32	New Ulm	New Ulm	MN 0030066	12/31/83
M33	Northfield	Northfield	MN 0024368	3/31/84
M34	Owatonna	Owatonna	MN 0024457	6/30/84
M35	Red Wing	Red Wing	MN 0024571	3/31/84
M36	Rochester	Rochester	MN 0024619	12/31/83
M37	St. Cloud	St. Cloud	MN 0040878	3/31/87
M38	St. Peter	St. Peter	MN 0022535	9/30/86
M39	Seneca (MWCC)	Seneca	MN 0030007	3/31/82
M53	Stewartville	Stewartville	MN 0020681	6/30/84

MINNESOTA

FY 1983 LIST OF MAJOR DISCHARGERS (Continued)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M40 Stillwater	Stillwater	MN 0029998	12/31/83
M41 Thief River Falls	Thief River Falls	MN 0021431	9/30/83
M42 Two Harbors	Two Harbors	MN 0022250	9/30/86
M43 Virginia	Virginia	MN 0030163	3/31/84
M54 Waseca	Waseca	MN 0020796	9/30/84
M44 Western Lake Superior San. Dist. (WLSSD)	Duluth	MN 0049786	6/30/83
M45 Willmar	Willmar	MN 0025259	8/31/83
M46 Winona	Winona	MN 0030147	3/31/84
M47 Worthington	Worthington	MN 0031186	3/31/82

\* New plant not yet in service. Permit will  
be issued in near future.

MINNESOTA

FY 1983 LIST OF MAJOR DISCHARGERS (Continued)

AGRICULTURAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Permit Expiration</u>
A4	Nelson Quality Egg Farm	Bagley	MN 0045675	04-30-85
A5	Nelson Quality Eggs	Bagley	MN 0031682	04-30-85
A8	Weldon Nelson #1	Bagley	MN 0039764	06-30-84
A9	Weldon Nelson #2	Bagley	MN 0039772	06-30-84
A3	International Swine Inc.	Rochester	MN 0047473	09-30-81

MINNESOTA

FY 1983 LIST OF MAJOR DISCHARGERS

INDUSTRIAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I18 Alberta Gas Chemicals	Duluth	MN 0050544	12/31/86
I2 American Crystal Sugar	East Grand Forks	MN 0001937	10/31/83
I3 American Crystal Sugar	Moorhead	MN 0001945	10/31/83
I19 Ashland Petroleum	St. Paul Park	MN 0000256	6/30/81
I4 Boise Cascade	International Falls	MN 0001643	3/31/81
Erie Mining Co.	Hoyt Lakes	MN 0002208	5/31/86
I20 Federal Cartridge	Anoka	MN 0001848	5/31/80
I14 Foot, S.B., Tannery	Red Wing	MN 0038962	6/30/84
I22 Hallett Forge Co.	Duluth	MN 0049212	6/30/83
I23 Hanna Mining Co.	Hibbing	MN 0001465	1/31/87
I24 Hanna Mining Co.	Hibbing	MN 0047091	1/31/87
I25 Honeywell, Inc.	Golden Valley	MN 0003891	1/31/84
I26 Honeywell, Inc.	Minneapolis	MN 0042641	5/31/84
I17 Interstate Power Co.	Sherburn	MN 0000957	9/30/86
I5 Koch Refinery	Pine Bend	MN 0000418	12/31/82
I28 Magnetic Peripherals	Minneapolis	MN 0030864	1/31/84
I6 Minnesota Malting	Cannon Falls	MN 0001481	6/30/82
I7 Minnesota Mining & Mfg.	Cottage Grove	MN 0001449	12/31/81
P1 Minnesota Power	Hoyt Lakes	MN 0000990	6/30/81
P2 Minnesota Power	Cohasset	MN 0001007	6/30/81
P3 Minnesota Power	Duluth	MN 0001015	6/30/84
P13 Moorhead Power Plant	Moorhead	MN 0002755	9/30/81
I29 National Can	St. Paul	MN 0048917	12/31/82
8 Northern States Power	Oak Park Heights	MN 0000825	12/31/84
5 Northern States Power	Red Wing	MN 0000850	4/30/87
7 Northern States Power	Monticello	MN 0000868	6/30/82
6 Northern States Power	Minneapolis	MN 0000892	6/30/82
4 Northern States Power	Burnsville	MN 0000876	6/30/81
10 Northern States Power	St. Paul	MN 0000884	12/31/84
5 Northern States Power	Granite Falls	MN 0000906	12/31/83
11 Northern States Power	Becker	MN 0002186	12/31/83
9 Northern States Power	Red Wing	MN 0004006	6/30/85
I30 N-Ren St. Paul Ammonia Prod.	South St. Paul	MN 0000329	6/30/80
P12 Otter Tail Power	Fergus Falls	MN 0002011	6/30/81
I31 Pittsburgh Pacific	Crow Wing Cnty.	MN 0045781	3/31/86
I9 Potlatch Corp.	Brainerd	MN 0001422	1/31/87
I32 Potlatch Corp.- Northwest Div.	Cloquet	MN 0001431	1/30/84
P14 Public Utilities Commission	Fairmont	MN 0045691	6/30/83
I10 Reserve Mining	Babbitt	MN 0046981	3/31/86
I33 Rochester Dept. of Pub. Util.	Rochester	MN 0001139	12/31/80
I13 St. Regis Paper	Sartell	MN 0000973	6/30/82
I34 Temroc Metals	Minneapolis	MN 0044199	4/30/84
I35 U.S. Steel Corp.	Iron Mountain	MN 0003361	1/31/87
I36 Veltex Chemical Co.	St. Paul	MN 0001678	7/31/83
I37 Hennepin Paper	Little Falls	MN 0000302	6/30/87
I16 Wilson Foods	Albert Lea	MN 0000124	11/30/83
I17 Worthington Industrial	Worthington	MN 0031178	3/31/83

e. OHIO

(1) OVERVIEW

In the State of Ohio, there are four agencies involved in ambient monitoring. They are the Ohio Environmental Protection Agency (OEPA), the U.S. Geological Survey (USGS), the U.S. Department of Agriculture (DA) and the U.S. Forest Service. There is no duplication in these networks when sampling parameters and frequency are considered. However, when compared to the overall program within the State, Ohio has minor deficiencies in regards to ambient monitoring, and data reporting. The State Monitoring Programs are discussed in greater detail below.

(2) ASSESSMENT OF STATE AMBIENT MONITORING PROGRAM

a. State Monitoring Network

Ohio EPA has developed a 5 year monitoring strategy. The 5 year monitoring strategy is revised and updated annually. It serves as the primary mechanism for review of the fixed station network.

Since 1979 Ohio's fixed station monitoring program has changed significantly. In 1981 70 monthly and quarterly stations were discontinued. However, the Core network consisting of 39 stations remained the same.

In FY'82 Ohio's fixed station monitoring program consisted of 47 stations of which 39 are CORE station. Nine of these CORE stations are operated by U.S. Geological Survey as NASQAN stations. ORSANCO monitoring stations along the Ohio River are supported in part by the State. An evaluation of this effort is not included in this Report. For FY'83 the fixed station monitoring program has not changed. See Figure 12.

Parameter coverage for these stations is presented in Attachment 11. All minimum parameters are not entered into STORET at the CORE stations. Fecal Coliform data have not been entered into STORET at the following stations since December of 1981:

<u>Station No.</u>	<u>Stream Name</u>
501050	Huron River below Milan
500140	Maumee River at Antiwerp
500290	Auglaize River at Defince
501260	Vermilion River at Vermilion
504240	Oregon Water Supply Intake
500510	Portage River

Chemical oxygen demand and residue data are not in STORET at seven of the U.S. Geological Survey operated stations. See Table 12.

Forty of the 47 state ambient stations have STORET data through the 2nd quarter of FY'83. The other stations are monitored by U.S. Geological Survey and there is a time lag in the transfer of data from WATSTORE to STORET.

b. Other Agencies Monitoring

Our discussion is based on STORET data available from other agencies for CY 1982. This discussion does not represent a summary of all water data being acquired in Ohio. It does, however, serve as a good indicator of the types of data currently in STORET. This information can be used to supplement trend data at the state network. Specific information can be obtained by contacting the Water Monitoring Team.

1. U.S. Geological Survey

The USGS operates 3 water quality monitoring networks in the State of Ohio. These are (1) an ambient water monitoring network, (2) the NASQAN network, and (3) the Hydrologic Benchmark network. These networks are shown in Figure 7 and are discussed in detailed below.

a. Ambient Water Quality Monitoring Network

The USGS operated 26 ambient water quality monitoring stations in Ohio in 1979. All but two stations were discontinued.

b. NASQAN Network

The NASQAN Network consists of 9 stations. Monitor sites record four parameters; dissolved oxygen, conductivity, temperature, pH. An extensive variety of additional parameters are analyzed including heavy metals and general chemistry.

The nine NASQAN stations are designated as part of the Ohio EPA Ambient Quality Monitoring Program.

c. Hydrologic Benchmark Network

This network consist of 1 station: the Upper Twin Creek at McGaw.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

U.S. Geological Survey's NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 13. Analytical schedules are contained in Attachment 12.

## 2. Department of Agriculture

The U.S. Department of Agriculture has closed all except one agricultural/watershed which comprised the study sites in 1979. Watershed identification code J11 is still operating. This watershed is a 30-acre mixed pasture and forested watershed and is associated with the Waynesburg (No. 11) Coal Mine. It is located in southwestern Jefferson County.

The watershed is sampled on a storm event basis and analyzed for heavy metals, acidity, alkalinity, ammonia, bicarbonate, carbon dioxide, chloride, color, cyanide, fluoride, hardness, hydrogen sulfide, phenols, sulfate, and dissolved solids. Springs at this site are sampled weekly. Work solely supports the research needs of the Department of Agriculture, with no connection between Federal (EPA) or State networks.

## 3. U.S. Forest Service

The U.S. Forest Service has numerous monitoring sites throughout Ohio. The majority of sites are located in Lawrence County. The purpose of these sites is to monitor baseline water quality within stripmine areas. Parameter groups sampled are dissolved oxygen, inorganics, metals, nitrogen, phosphorus and physical properties.

### (3) QUALITY ASSURANCE PROGRAM

The State of Ohio has an approved Quality Assurance (QA) programs at both the Ohio Department of Health Laboratory and the Ohio EPA Laboratory. As the OEPA laboratory increases their analytical capabilities they are updating their QA plan to cover these activities. Updated test procedures will be provided to QAO in July. The Ohio EPA Officer has initiated an update of their Quality Assurance Program Plan which they will submit prior to the start of FY'84.

### (4) INTENSIVE SURVEY PROGRAM

The objective of Ohio's intensive survey program is to (1) provide data on specific issues such as WLA's for water quality limited segments for municipalities on the Construction Grant priority list (2) to assess stream use classification and (3) to determine water quality conditions by using aquatic communities as indicators.

Field survey work was planned and completed on the following stream segments during FY'82:

- Wierth Ditch, Kopp Creek (New Bremen)
- \*Little Yellow Creek, (Leipsic)
- \*Nettle Creek, (St. Paris)
- \*Bear Creek, (New Lebanon)

- \*Bokes Creek, (W. Mansfield)
- \*Silver/Eagle Creek, (Garrettsville, Hiram)
- Fourmile Creek, (Oxford)
- Killbuck Creek, (Wooster)
- Licking River, (Newark)
- Little Chippewa Creek, (Orrville)
- \*Sandusky River, (Tiffin)
- Rocky River, (N. Olmstead, Strongsville)
- Scioto River, (Columbus)
- Big Darby Creek, (Plain City)
- Cowles Creek, (Geneva)
- \*Elk Fork, (McArthur)
- E. Branch Vermilion River, (New London)
- Muddy Creek, (Mason)

\*Abstracts were submitted to the Regional Clearinghouse.

Technical reports are prepared for each intensive survey. Chemical/physical data are entered into STORET and are included as part of their 305b report.

PROPOSED FY'83 OEPA INTENSIVE SURVEY LIST (IN PRIORITY ORDER)

Muskingum River - P-01 (Rocky Fork, Black Fork and Mohican River)

Mahoning River - T-3 (Mosquito Creek only)

Muskingum River - P-04, 06, 08 (Tuscarawas River and Chippewa Creek)

Central Tributaries - S-02 (Cross Creek, Wells Run, and Wills Creek)

Maumee River - A-02 06 (Auglaize River)

Central Tributaries - S-94 (McMahon Creek, Sunfish Creek, and Captina Creek)

Scioto River - M-04 (Big Walnut Creek)

Maumee River - A-07 (Mill Creek and Auglaize River)

Scioto River - M-01 (Taylor Creek)

Great Miami River - H-10 (Sevenmile Creek and Elahms Run)

Great Miami River - H-11 (Indiana Run Creek, Whitewater River and Twomile Creek)

Little Miami River - K-4,5 (Gladys Run, Muddy Creek, Turtle Creek, Simpson Creek, and Sycamore Creek)

(5) EFFLUENT MONITORING PROGRAM

Ohio has 364 major dischargers consisting of 158 municipal, 201 industrial, and 5 federal dischargers. Inspections planned and completed for FY'82 and planned for FY'83 are as follows:

	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
<u>CEI's (majors &amp; minors)</u>			
Municipal	69	80	79
Industrial	42	49	38
<u>CSI's (majors &amp; minors)</u>			
Municipal	31	28	34
Industrial	26	27	28
O&M Inspection (mun.)	100	104	100
Grant Compliance Inspec. (mun.)	0	0	0*
Operational Assistance (mun.)	**	36	**
Toxic Sampling Surveys	0	0	10

\*Inspections will be done if EPA provides list of newly-completed facilities.

\*\*No commitment.

Ohio's effluent monitoring program is considered satisfactory. They met or exceeded their commitments for FY'82. Projections for FY'83 indicate a comparable program, with a decrease noted for industrial CEI's and an increase for toxic sampling surveys. Commitments were not made for grant compliance or operational assistance visits, but the O&M activity report for the first half of FY'83 indicates significant activity for operational assistance. In addition, the State has indicated they will conduct grant compliance inspections when EPA provides a list of facilities that have recently been completed.

(6) BIOLOGICAL MONITORING PROGRAM

The State of Ohio collects macroinvertebrates at 15 of its designated core network stations. The most significant amount of biological sampling is in intensive stream surveys. This becomes part of the State's Comprehensive Water Quality Report. No fish samples are being collected for organic chemistry analyses. The collection and analyses of phytoplankton and periphyton at core network stations has been discontinued.

A well equipped bioassay laboratory is available for conducting static bioassay tests using both fish and macroinvertebrates as test species.

## (7) DATA INTERPERATION & REPORTING

Using the Section 305(b) reporting process, the State of Ohio has submitted biennially a report to the USEPA describing the quality of their waters. The latest report submitted was for the year 1981.

### Ambient Data

Except for fish tissue data, the State of Ohio submitted the majority of their ambient water quality data for storage into the STORET system. Data are available within 90 days.

### Effluent Data

For FY'82 the state submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division.

### Great Lakes Basin Effluent Data

The Great Lakes National Program Office (GLNPO) and the International Joint Commission (IJC) along with the Water Quality Analysis Branch of the Monitoring and Data Support Division (Headquarters) and the States have input the monthly operating report data of the NPDES dischargers in the Great Lakes Basin into STORET. The majority of the data entry work was done by several contractors.

The data are identified by the use of the NPDES number for the Station Number and EFOHEPA for the agency code.

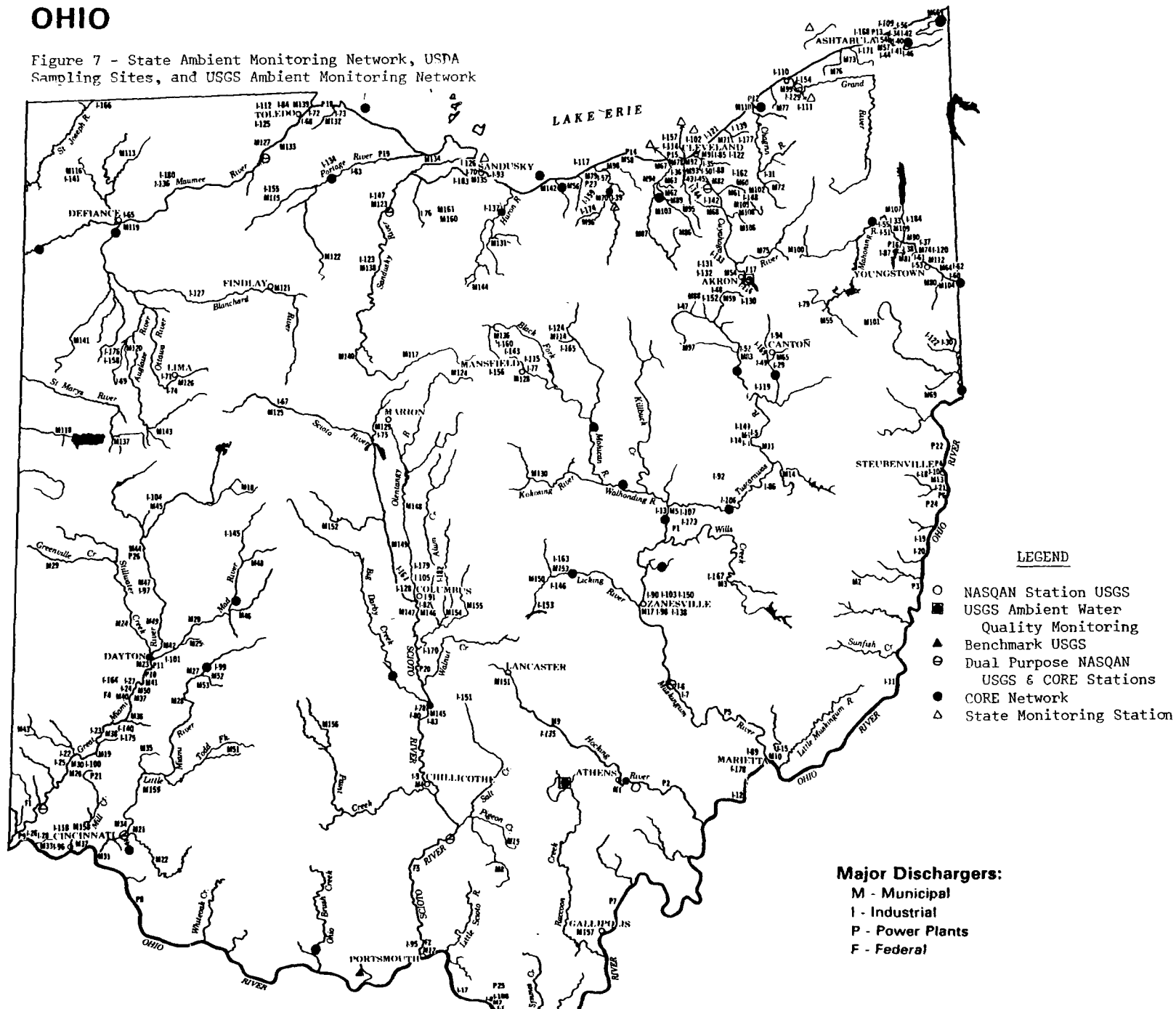
The initial purpose of inputting the data into STORET was for GLNPO to prepare the annual Great Lakes Water Quality Board Report. However, STORET users can perform all the standard STORET data manipulations as well as many specialized programs developed by the Water Quality Analysis Branch.

### Intensive Survey Data

Reports were submitted for FY'82. Intensive survey data are in STORET.

# OHIO

Figure 7 - State Ambient Monitoring Network, USDA  
Sampling Sites, and USGS Ambient Monitoring Network



### MINIMUM PARAMETERS

STATE AMBIENT/MONIT. STATIONS: OHIO FISCAL YEAR OF 1983										MINIMUM PARAMETERS												
STATION	COR	AGENCY	C N T Y	T P E	LOCATION	MAJOR BASIN	LATITUDE	LONGITUDE	T	A	F	C	D	C	P	R	K	N	P	F	T	
										E	I	O	O	H	E	J	O	H	I	S		
Numbers under minimum parameters indicate year and quarter of last record										R	W	N	D	-	I	L	D	U	N	-	S	
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STATE AMBIENT NETWORK  
ANALYTICAL PARAMETERS

PARAMETER	ABBREVIATION	M	Q	LF	AT
Acidity, Total, CaCO <sub>3</sub>	Acid CaCO <sub>3</sub> -T	-	-	-	X
Alkalinity, Total, CaCO <sub>3</sub>	Alkaline CaCO <sub>3</sub> -T	-	-	-	-
Aluminum, Total, Al	Al-T	-	-	-	X
Arsenic, Total As	As-T	-	-	-	X
Biological Oxygen Demand 5 day	BOD-5	-	-	-	X
Cadmium, Total, Cd	Cd-T	4	4	-	X
Carbon, Total Org., C	C-T-Org	-	-	-	X
Chemical Oxygen Demand	COD	12	4	1	-
Chloride, Cl	Cl	-	-	-	X
Chlorine, Total Residual	Cl <sub>2</sub> -T-R	-	-	-	X
Chromium, Hex, Cr	Cr-Hex	-	-	-	X
Chromium, Total Cr	Cr-T	4	4	1	X
Conductivity (field)	Micromho (field)	12	4	1	-
Copper, Total, Cu	Cu-T	4	4	1	X
Cyanide, Total, CN	CN-T	-	-	-	X
Dissolved Oxygen (field)	D.O. (field)	12	4	1	-
Fecal Coli, Total, MF	Fecal Coli-T-MF	12	4	1	-
Flow (USGS)	Flow (USGS)	12	4	1	-
Fluoride, Diss., F	F-Diss	-	-	-	X
Hardness, Total CaCO <sub>3</sub>	Hard CaCO <sub>3</sub> -T	4	4	1	X
Iron, Total, Fe	Fe-T	4	4	1	X
Lead, Total, Pb	Pb-T	4	4	1	X

a. Station Type and Sampling Frequency: Monthly (M); Quarterly (Q);  
Low Flow (LF); Additional Tests (AT)

STATE AMBIENT NETWORK  
ANALYTICAL PARAMETERS

PARAMETER	ABBREVIATION	M	Q	LF	AT
Manganese, Total, Mn	Mn-T	-	-	-	X
MBAS	MBAS	-	-	-	X
Mercury, Total, Hg	Hg-T	4	4	1	X
Nickel, Total, Ni	Ni-T	4	4	1	-
Nitrate, NO <sub>3</sub> as N	NO <sub>3</sub> -N-T	12	4	1	-
Nitrite, NO <sub>2</sub> as N	NO <sub>2</sub> -N-T	12	4	1	-
Nitrogen, Ammonia as N	NH <sub>3</sub> -N-T	12	4	1	-
Oil-Grease, Total	O+G-T	12	4	1	-
Organic Scan	OS	-	-	-	X
pH (field)	pH (field)	12	4	1	-
Phenolics	Phenolics	4	4	1	X
Phosphorus, Dissolved, P	P-Diss	-	-	-	X
Phosphorus, Total, P	P-T	12	4	1	-
Polychlorinated Biphenyls	PCB	-	-	-	X
Residue, Total Flt. (Diss)	TDS	-	-	-	X
Residue, Total Nflt. (Susp)	TSS	12	4	1	X
Silica, Total (Diss)	Si-T-Diss	-	-	-	X
Sulfate, SO <sub>4</sub>	SO <sub>4</sub> -T	-	-	-	X
Total Kjeldahl Nitrogen	Kjel-T-N	12	4	1	-
Water Temperature (field)	Temp (field)	12	4	1	-
Zinc, Total, Zn	Zn-T	4	4	1	X

a. Station Type and Sampling Frequency: Monthly (M); Quarterly (Q);  
Low Flow (LF); Additional Tests (AT)

ATTACHMENT 11-1

Table 13

## NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY

B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

## ----- STATE-OHIO NETWORK-NASQAN -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
3150000	MUSKINGUM RIVER AT MCCONNELLSVILLE	B	6	2	4	0	YES
3159510	HOCKING RIVER BELOW ATHENS	Q	4	0	4	0	NO
3234500	SCIOTO RIVER AT HIGBY	Q	4	0	4	0	NO
3245500	LITTLE MIAMI RIVER AT MILFORD	B	6	2	4	0	NO
3274600	GREAT MIAMI RIVER AT NEW BALTIMORE	B	6	2	4	0	NO
4193500	HAUMEE RIVER AT WATERVILLE	Q	4	0	4	0	NO
4198000	SANDUSKY RIVER NEAR FREMONT	Q	4	0	4	0	NO
4208000	CUYAHOGA RIVER AT INDEPENDENCE	Q	4	0	4	0	YES
4212200	GRAND RIVER NEAR PAINESVILLE	Q	4	0	4	0	YES

## ----- STATE-OHIO NETWORK-HYDROLOGIC BENCH-MARK NETWORK -----

STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
3237280	UPPER TWIN CR AT MCGAW	B	6	4	2	1	NO

U.S. Geological Survey Analytical Schedule

Ohio  
NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO<sub>2</sub>+NO<sub>3</sub> AS N  
NITROGEN, DIS. NH<sub>4</sub> AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH<sub>4</sub>+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS. U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176 .

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
pH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CaCO<sub>3</sub>  
METALS, DIS. CHE-EXT

Attachment 12

U.S. Geological Survey Analytical Schedule (Cont.)

Ohio

COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. $\text{CaCO}_3$
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

Attachment 12-1

OHIO

DATE: \_\_\_\_\_

INDUSTRIAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I84 Allied Chemical	Toledo	OH 0003191	*
I1 Allied Chemical	Ironton	OH 0007544	12-9-80
I85 Alloys & Chemicals	Clev. Heights	OH 0000078	12-15-79
I86 Alsco Anaconda	Gnadenhutten	OH 0007021	5-27-81
I87 Aluminum Billets	Niles	OH 0021769	*
I88 Aluminum Smelting & Refining	Maple Heights	OH 0052353	*
I89 American Cyanamid	Marietta	OH 0048623	5-5-81
I23 Armco Steel	Middletown	OH 0009997	12-21-81
I22 Armco Steel	New Miami	OH 0009989	12-29-79
I90 Armco Steel	Zanesville	OH 0006858	12-29-79
I91 Armstrong Furnace	Columbus	OH 0005142	11-15-80
I2 Ashland Oil	South Point	OH 0007714	3-11-85
I24 Ashland Petroleum	Canton	OH 0005657	3-23-80
I92 Baltic Rubber & Plastic	Baltic	OH 0031381	3-17-78
I93 Bechtel McLaughlin	Sandusky	OH 0000701	12-1-77
I94 Becton Dickinson & Co.	<b>CANTON</b>	OH 0028720	*
I95 Boston Coke Corp./Cyclops Corp.	Portsmouth	OH 0006068	*
I96 Brighton Corp.	Cincinnati	OH 0009547	6-30-81
I97 Brown-Bridge Mills	Troy	OH 0010626	3-31-81
I63 Brush Wellman Co.	Eden Twp.	OH 0002518	6-30-81
I98 Burnham Corp. Foundry	Zanesville	OH 0004901	2-1-79
I99 Carboline Co.	Xenia	OH 0031461	12-31-80
I100 Champion Intern.	Hamilton	OH 0010065	*
I31 Chase Bag Co.	Chagrin Falls	OH 0000400	10-19-80
I101 Chrysler Corp.	Dayton	OH 0009199	*
P8 Cincinnati Gas & Elec.	New Richmond	OH 0009865	3-23-82
P9 Cincinnati Gas & Elec.	North Bend	OH 0009873	3-23-82
I102 Cleveland, City of	Cleveland	OH 0000566	*
P14 Clev. Elec. Illum.	Avon Lake	OH 0001112	*
P13 Clev. Elec. Illum.	Ashtabula	OH 0001121	*
P12 Clev. Elec. Illum.	Willoughby	OH 0001139	*
P15 Clev. Elect. Illum.	Cleveland	OH 0001147	*
P1 Columbus & So. Ohio Elec.	Conesville	OH 0005371	9-21-81
P20 Columbus & So. Ohio Elec.	Lockbourne	OH 0054780	*
I103 Columbus Plant-Zinc Oxide Dept.	Zanesville	OH 0028355	*
I78 Container Corp. of America	Circleville	OH 0005681	3-31-81
I104 Copeland Refrigeration	Sidney	OH 0009768	12-5-81
I32 Copperweld Steel	Warren	OH 0011207	9-30-79
I105 Crane Plastics Mfg.	Columbus	OH 0006700	10-12-80
I106 Crown Zellerbach Corp.	Baltimore	OH 0004961	3-31-81
I25 Crystal Tissue Co.	Middletown	OH 0009539	3-31-81
I107 Cyclops Corporation	Coshocton	OH 0004260	9-30-80
I108 Dayton Malleable Iron	Ironton	OH 0006017	6-30-81
P2 Dayton Power & Light	Aberdeen	OH 0004316	*
P11 Dayton Power & Light	Dayton	OH 0009245	6-16-82
P10 Dayton Power & Light	Miamisburg	OH 0009261	6-16-82
I109 Detrex Chemical	Ashtabula	OH 0001872	9-1-78

OHIO

INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I110 Diamond Shamrock	Painesville	OH 0000639	7-1-79
I34 Diamond Shamrock	Ashtabula	OH 0029149	3-31-81
I111 Diamond Shamrock	Concord Twp.	OH 0045586	1-13-81
I3 Dover Chemical	Dover	OH 0007269	1-31-77
I35 Dupont de Nemours, E. I.	Cleveland	OH 0000990	*
I112 Dupont de Nemours, E. I.	Toledo	OH 0002534	*
I90 Dupont de Nemours, E. I.	Circleville	OH 0006327	10-30-80
I3c Ecological Services, Inc.	East Palestine	OH 0063223	*
I114 Elco Corp.	Cleveland	OH 0029009	*
I15 Elkem Metals (Union Carbide)	Marietta	OH 0004006	7-1-77
I115 Empire Detroit Steel (Cyclops)	Mansfield	OH 0006840	6-19-80
I5 Empire Detroit Steel	Dover	OH 0004910	9-20-80
I116 Firestone Tire	Akron	OH 0008265	*
I36 Ford Motor Co.	Cleveland	OH 0001228	1-11-83
I117 Ford Motor Co.	Lorain	OH 0001082	*
I118 Formica Corp.	Reading	OH 0009296	*
I38 General Elec. Corp.	Niles	OH 0011223	6-30-80
I37 General Elec. Corp.	Niles	OH 0011231	6-30-80
I119 Gen. Elec. Corp.	Dover	OH 0006793	*
I120 Gen. Elec. Corp.	Youngstown	OH 0011240	9-23-84
I121 Gen. Elec. Corp.	Willoughby	OH 0022713	4-20-80
I122 Gen. Elec. Corp.	Chesterland	OH 0023787	*
I123 Gen. Elec. Corp.	Tiffin	OH 0052442	7-31-79
I124 General Latex & Chemical	Ashland	OH 0006831	*
I65 GMC-Central Foundry	Defiance	OH 0002666	2-10-81
I39 GMC	Elyria	OH 0000272	10-30-80
I125 GMC	Toledo	OH 0002640	*
I126 GMC	Sandusky	OH 0000264	1-18-83
I127 GTE Sylvania	Ottawa	OH 0003204	3-1-79
I40 G&W Natural Resources	Ashtabula	OH 0000493	3-31-81
I41 General Tire & Rubber	Ashtabula	OH 0002283	3-31-81
I79 General Tire & Rubber	Newcomerstown	OH 0004430	12-31-78
I128 Georgia Pacific	Columbus	OH 0006742	*
I41 Glidden-Durkee (SCM)	Ashtabula	OH 0000523	3-31-81
I129 Glyco Chemicals	Painesville	OH 0000299	9-30-79
I130 Goodrich, B. F.	Akron	OH 0004774	9-9-84
I131 Goodyear Aerospace	Akron	OH 0005126	*
I132 Goodyear Aerospace	Akron	OH 0002011	*
I133 Goodyear Tire & Rubber	Akron	OH 0000337	12-29-79
I Goodyear Tire & Rubber	Luckey	OH 0002411	1-31-79
I135 Goodyear Tire & Rubber	Logan	OH 0004421	12-31-78
I136 Gould, Inc.	Napoleon	OH 0003051	11-26-78
I6 Gould, Inc.	McConnelssville	OH 0048372	6-30-81
I7 Gould, Inc.	McConnelssville	OH 0048364	6-30-81
I137 Gould, Inc.	Milan	OH 0053104	8-11-79
I138 Gould, Inc.	Zanesville	OH 0005231	7-31-74

OHIO

INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
Gulf Oil	Cleves	OH 0009326	2-23-80
Hall Chemical	Wickliffe	OH 0051390	3-25-80
Hamilton Mun. Power Plant	Hamilton	OH 0010413	5-11-80
Harding Jones Paper	Middletown	OH 0009130	3-21-81
Harshaw Chemical	Cleveland	OH 0000655	1-1-78
Hayes-Albion	Bryan	OH 0034380	6-30-80
Hooker Chemicals & Plastics	Kenton County	OH 0006769	3-20-80
Hukill Chemical	Bedford	OH 0063444	5-30-81
Ideal Electric & Mfg.	Mansfield	OH 0007625	10-28-78
IMC (Sobin Chemical Co.)	Ashtabula	OH 0000752	8-1-81
Ironton Coke	Ironton	OH 0007579	9-27-81
ITE Imperial	Parma	OH 0004626	11-24-77
ITE Imperial	Bellefontaine	OH 0009393	*
Jones & Laughlin Steel	Cleveland	OH 0000850	9-30-80
Kaiser Aluminum & Chemical	Heath	OH 0004014	1-31-79
Kingsway Rotor Plant	Fremont	OH 0001007	8-17-83
Libbey-Owens-Ford	Toledo	OH 0002445	6-30-82
Master Anodizers & Platers	Walton Hills	OH 0001741	*
Marlite, Div. of Masonite	Dover	OH 0004936	3-31-81
McGraw-Edison Power	Zanesville	OH 0007200	10-3-79
Mead Corporation	Chillicothe	OH 0004481	12-1-79
Miami Paper Co.	West Carrollton	OH 0009784	3-15-76
Midwest Fabricating	Amanda	OH 0005631	12-31-78
Midwest Rubber Reclaiming	Barberton	OH 0006319	12-31-78
Minster Machine Co.	Minster	OH 0003131	11-12-84
Mobay Chemical Corp.	Hebron	OH 0070441	*
Monsanto Co.	Addyston	OH 0009946	3-31-81
National Steel-Weirton	Steubenville	OH 0010774	1-12-79
Neff Perkins	Painsville	OH 0052302	3-31-79
N. L. Industries-Doehler Jarvis	Lucas County	OH 0002470	9-21-85
Ohio Brass Co.	Mansfield	OH 0004979	8-11-80
Ohio Decorative Products	Allen County	OH 0002852	6-30-81
Ohio Drum Reconditioning	Cleveland	OH 0028681	*
Ohio Edison Co.	Summit County	OH 0000210	4-13-82
Ohio Edison Co.	Stratton	OH 0011525	4-13-82
Ohio Edison Co.	Niles	OH 0011533	2-20-83
Ohio Edison Co.	Toronto	OH 0011568	4-14-82
Ohio Edison Co.	Shadyside	OH 0011592	4-13-82
Ohio Edison Co.	Lorain	OH 0051306	4-13-82
Ohio Electro Polishing	Venedocia	OH 0003697	6-30-81
Ohio Metallurgical Service	Elyria	OH 0029718	*
Ohio Power Co.	Muskingum Twp.	OH 0006149	6-27-80
Ohio Power Co.	Brilliant	OH 0012602	11-16-80
Ohio Power Co.	Brilliant	OH 0012581	11-30-81
Ohio Power Co.	Bloom	OH 0056944	8-19-78
Ohio Steel Tube	Shelby	OH 0008338	3-3-81
Ohio Valley Electric	Gallipolis	OH 0005282	3-23-82
Olin Corp.	Ashtabula	OH 0001376	3-31-81
Ormet Corp.	Hannibal	OH 0001550	5-18-80

OHIO

INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I82 Owens Illinois	Columbus	OH 0006971	6-30-80
I161 Pace Associates	Amlin	OH 0070475	6-30-81
I162 Pacific Coast Co.	Cuyahoga County	OH 0000841	*
I163 Pacific Resins	Newark	OH 0006041	1-31-81
I47 Packaging Corp. of America	Rittmann	OH 0006718	3-31-81
I164 P.H. Glatfelter (Bergstrom Paper)	West Carrollton	OH 0009377	3-31-81
I165 Philway Products	Ashland	OH 0007218	*
I166 Pioneer Transformer	Pioneer	OH 0057860	*
P26 Piqua Mun. Power Plant	Piqua	OH 0010421	*
I167 Plastic Compounders	Cambridge	OH 0005754	12-1-75
I83 PPG Industries	Circleville	OH 0004251	12-15-81
I48 PPG Industries	Barberton	OH 0005177	*
I168 Reliance Electric	Ashtabula	OH 0038431	*
I50 Republic Steel	Cleveland	OH 0000957	9-30-80
I49 Republic Steel	Canton	OH 0006912	9-30-80
I52 Republic Steel	Masillon	OH 0006939	9-30-80
I51 Republic Steel	Warren	OH 0011274	6-30-80
I53 Republic Steel	Youngstown	OH 0011282	6-30-80
I169 Republic Steel-South Works	Canton	OH 0006921	*
I170 Reynolds Metals	Ashville	OH 0003891	*
I171 RMI Co.	Ashtabula	OH 0002305	3-31-81
I54 RMI Co.	Ashtabula	OH 0002313	*
I172 Roshel Industries	East Palestine	OH 0051489	6-30-81
I70 Rough Packing	Sandusky	OH 0001643	12-19-81
I173 St. Regis Paper	Coshocton	OH 0005703	9-23-81
I12 Shell Chemical	Belpre	OH 0007030	6-24-81
I174 Stanadyne, Inc.	Lorain County	OH 0000426	6-30-81
I72 Standard Oil	Toledo	OH 0002461	11-24-79
I71 SOHIO	Lima	OH 0002623	12-30-77
I175 Sorg Paper Co.	Middletown	OH 0009717	11-17-79
I13 Stone Container	Coshocton	OH 0004235	3-31-81
I73 Sun Oil	Oregon	OH 0002763	3-15-78
I55 Thomas Strip Steel	Warren	OH 0011363	6-30-81
I176 Titanium Metals (N.L. Industries)	Toronto	OH 0010910	12-30-79
P18 Toledo Edison	Oregon	OH 0002925	4-2-77
P19 Toledo Edison	Oak Harbor	OH 0003786	3-8-82
I177 TRW	Euclid	OH 0000281	9-1-78
I14 Union Camp	Dover	OH 0007196	12-23-79
I56 Union Carbide	Ashtabula	OH 0000027	9-30-80
I178 Union Carbide	Marietta	OH 0003905	3-15-76
I179 Union Oil	Amlin	OH 0054739	6-15-81
I180 Universal Coop.	Napoleon	OH 0058874	*
I57 U.S. Steel	Lorain	OH 0001562	6-1-81
I181 U.S. Steel	Cuyahoga Height	OH 0002160	10-11-81
I17 U.S. Steel Chem.	Haverhill	OH 0007391	8-3-81
I182 Vinyl Improvement Products	Columbus	OH 0070505	6-30-81

OHIO

INDUSTRIAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
I74 Vistron Corporation	Lima	OH 0002615	9-5-79
I183 Vulcan Materials	Sandusky	OH 0001465	1-12-78
I134 Warren Tool	Warren	OH 0010928	*
I10 Wheeling Pittsburgh	Martins Ferry	OH 0011339	*
I21 Wheeling Pittsburgh	Steubenville N.	OH 0011347	*
I18 Wheeling Pittsburgh	Mingo Junction	OH 0011355	11-3-79
I19 Wheeling Pittsburgh	Yorkville	OH 0011371	3-15-76
I75 Whirlpool Corp.	Marion	OH 0007358	5-6-80
I76 Whirlpool Corp.	Clyde	OH 0000965	6-30-81
I77 White-Westinghouse Electric	Mansfield	OH 0004600	7-26-81
I61 Youngstown Sheet & Tube	Briar Hill	OH 0011312	*
I62 Youngstown Sheet & Tube (J&L)	Campbell	OH 0011321	*
I60 Youngstown Sheet & Tube	Struthers	OH 0063207	*

\* Date will be determined when permit is issued.

OHIO

FEDERAL

	<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
F1	U.S. DOE-Feed Materials Production Center	Fernald	OH 0009580	2/1/85
F2	U.S. DOE-Portsmouth Gaseous Diffusion Plant	Portsmouth	OH 0006092	7/31/85
F3	U.S. Department of the Air Force- Rickenbacker A.F.B.	Columbus	OH 0021512	9/1/84
F4	U.S. DOE Mound Facility	Miamisburg	OH 0009857	6/30/84
F5	U.S. DOE Gas Centrifuge Enrichment	Piketon	OH 0110931	6/30/83

OHIO

DATE: \_\_\_\_\_

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
<u>Southeast District</u>			
M1 Athens	Athens	OH 0023931	5/31/86
M2 Belmont County S.A. #1	Belmont County	OH 0049999	5/31/87
M3 Cambridge	Cambridge	OH 0024309	9/21/80
M4 Chillicothe Easterly	Chillicothe	OH 0024406	12/11/84
M5 Coshocton	Coshocton	OH 0024775	11/30/84
M6 Dover	Dover	OH 0024945	3/29/87
M157 Gallipolis	Gallipolis	OH 0029478	3/31/77
M7 Ironton	Ironton	OH 0025852	5/31/86
M8 Jackson	Jackson	OH 0020834	7/1/82
M9 Logan	Logan	OH 0023388	6/30/83
M10 Marietta	Marietta	OH 0026344	2/28/87
M11 New Philadelphia	New Philadelphia	OH 0026727	11/2/84
M12 Portsmouth	Portsmouth	OH 0027197	3/31/87
M13 Steubenville	Steubenville	OH 0027511	5/31/86
M14 Uhrichsville-Dennison	Uhrichsville	OH 0020079	8/15/83
M15 Wellston-North	Wellston	OH 0023507	*
M17 Zanesville	Zanesville	OH 0028240	7/13/87
<u>Southwest District</u>			
M18 Bellefontaine	Bellefontaine	OH 0024066	4/30/82
M19 Butler County Lesourdsville, S. D.	Liberty Township	OH 0049417	12/8/86
M158 Butler County-Upper Mill Creek	Sharonville	OH 0072087	5/20/87
M20 Clark County Southwest Regional	Medway	OH 0049794	3/31/87
M21 Clermont County Lower East Fork Regional	Miami Township	OH 0049379	6/30/87
M22 Clermont County Amelia- Batavia Regional	Batavia	OH 0049387	6/30/82
M23 Dayton	Dayton	OH 0024881	10/26/86
M24 Englewood	Englewood	OH 0025011	2/11/85
M25 Fairborn	Fairborn	OH 0025062	9/29/80
M26 Fairfield	Fairfield	OH 0025071	9/01/86
M27 Greene County- Beaver Creek	Beaver Creek Twp	OH 0025381	9/21/80
M28 Greene County- Sugar Creek	Sugar Creek Twp	OH 0040592	11/29/81
M29 Greenville	Greenville	OH 0025429	9/20/80
M30 Hamilton	Hamilton	OH 0025445	9/29/85
M31 Hamilton County, M.S.D.- Little Miami	Cincinnati	OH 0025453	10/22/85
M32 Hamilton County, M.S.D.- Mill Creek	Cincinnati	OH 0025461	6/14/86
M33 Hamilton County, M.S.D.- Muddy Creek	Cincinnati	OH 0025470	6/30/87
M34 Hamilton County, M.S.D.	Remington	OH 0025488	9/21/80
M35 Lebanon	Lebanon	OH 0021059	*

\* Dates will be determined following reissuance

OHIO

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Date</u>
M36 MCD, Franklin Area	Franklin	OH 0025275	1/20/85
M37 Miamisburg	Miamisburg	OH 0026492	8/05/86
M38 Middletown	Middletown	OH 0026522	5/22/85
M40 Montgomery County - Western Regional	Miami Township	OH 0026638	5/31/87
M41 Montgomery County - Eastern Regional	Kettering	OH 0026590	2/2/86
M42 Ohio Suburban Water Co. (Huber Heights, P.U.C.O.)	Wayne Township	OH 0049298	7/17/84
M43 Oxford	Oxford	OH 0026930	9/27/80
M44 Piqua	Piqua	OH 0027049	2/2/86
M45 Sidney	Sidney	OH 0027421	6/29/86
M46 Springfield	Springfield	OH 0027481	6/30/82
M47 Troy	Troy	OH 0027758	6/30/82
M48 Urbana	Urbana	OH 0027880	1/13/86
M49 Vandalia	Vandalia	OH 0027901	2/28/86
M159 Warren Cty- Lower Little Miami	Maineville	OH 0071692	6/02/86
M50 West Carrollton	West Carrollton	OH 0020133	11/29/83
M51 Wilmington	Wilmington	OH 0028134	9/29/80
M52 Xenia - Ford Road	Xenia	OH 0028193	9/20/80
M53 Xenia - Glady Run	Xenia	OH 0028207	9/20/80

Northeast District

M54 Akron	Akron	OH 0023833	9/19/80
M55 Alliance	Alliance	OH 0023868	6/30/83
M56 Amherst	Amherst	OH 0021628	6/30/85
M57 Ashtabula	Ashtabula	OH 0023914	9/26/80
M58 Avon Lake	Avon Lake	OH 0023981	8/31/86
M59 Barberton	Barberton	OH 0024007	5/31/82
M60 Bedford	Bedford	OH 0024040	5/31/83
M61 Bedford Heights	Bedford Heights	OH 0024058	9/19/80
M62 Berea	Berea	OH 0024104	9/29/80
M63 Brookpark	Brookpark	OH 0038024	5/31/80
M64 Campbell	Campbell	OH 0024325	6/30/83
M65 Canton	Canton	OH 0024350	9/27/80
M66 Conneaut	Conneaut	OH 0024767	6/30/83
M67 Cuyahoga County - Rocky River S.D. #6	Cuyahoga County	OH 0030503	6/30/83
M68 Cuyahoga County - Brecksville S.D. #13	Cuyahoga County	OH 0024856	7/31/84
M69 East Liverpool	East Liverpool	OH 0024970	6/30/77
M70 Elyria	Elyria	OH 0025003	9/20/80
M71 Euclid	Euclid	OH 0031062	6/30/82
M72 Geauga County - McFarland S.D.	Bainbridge Twp	OH 0043494	5/31/86
M73 Geneva Sub-area	Geneva	OH 0020109	6/01/85
M74 Girard	Girard	OH 0025364	6/30/82
M75 Kent	Kent	OH 0025917	9/22/80

OHIO

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M76 Lake County-Madison S.D.	Madison	OH 0036790	5/31/82
M77 Lake County-Mentor S.D.	Mentor	OH 0043559	6/13/87
M78 Lakewood	Lakewood	OH 0026018	12/02/85
M79 Lorain-East Side	Lorain	OH 0026093	9/20/80
M80 Mahoning County-Boardman S.D.	Boardman	OH 0037249	6/30/83
M81 Mahoning County-Meander S.D.	Mineral Ridge	OH 0045721	2/2/86
M82 Maple Heights	Maple Heights	OH 0026336	10/04/82
M83 Massillon	Massillon	OH 0020516	9/18/80
M86 Medina County S.D. #300	Hinckley Twp.	OH 0045748	2/01/84
M87 Medina County S.D. #500	Valley City	OH 0043567	9/29/83
M88 Medina County S.D. #2 - Wadsworth	Wadsworth	OH 0027936	9/29/83
M89 Middleburg Heights	Middleburg Heights	OH 0026506	9/28/80
M90 Niles	Niles	OH 0026743	6/30/82
M94 North Olmsted	North Olmsted	OH 0026778	5/31/83
M95 North Royalton "A"	North Royalton	OH 0026794	9/19/80
M91 Northeast Ohio Regional S.D. Easterly	Cleveland	OH 0024643	4/01/85
M92 Northeast Ohio Regional S.D. Westerly	Cleveland	OH 0024660	5/31/82
M93 Northeast Ohio Regional S.D. Southerly	Cuyahoga Hts	OH 0024651	9/19/80
M103 Northeast Ohio Regional S.D.-Strongsville A	Strongsville	OH 0033693	9/21/80
M96 Oberlin	Oberlin	OH 0020427	3/31/81
M97 Orrville	Orrville	OH 0020371	9/29/80
M98 OWDA (French Creek)	Sheffield	OH 0044512	5/15/82
M99 Painesville	Painesville	OH 0026948	9/29/83
M100 Ravenna	Ravenna	OH 0023221	5/31/82
M101 Salem	Salem	OH 0027324	9/20/80
M102 Solon - Central	Solon	OH 0027430	9/30/82
M104 Struthers	Struthers	OH 0027600	6/30/83
M105 Summit County S.D. #15	Macedonia	OH 0027642	9/26/80
M106 Summit County #6 - N.E.S.D.	Hudson	OH 0043397	6/30/79
M107 Trumbull County-Mosquito Creek	Howland Twp.	OH 0043401	6/30/83
M108 Twinsburg	Twinsburg	OH 0027863	10/30/81
M109 Warren	Warren	OH 0027987	6/30/82
M110 Willoughby - East Lake	Willoughby	OH 0028126	5/01/87
M111 Wooster	Wooster	OH 0028185	9/27/80
M112 Youngstown S.T.P.	Youngstown	OH 0028223	6/30/82

Northwest District

M113 Archbold	Archbold	OH 0020796	9/9/85
M114 Ashland	Ashland	OH 0023906	9/20/80

OHIO

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M160 Bellvue	Belvue	OH 0020672	4/29/85
M115 Bowling Green	Bowling Green	OH 0024139	6/25/83
M116 Bryan	Bryan	OH 0020532	11/12/81
M117 Bucyrus	Bucyrus	OH 0052922	9/01/86
M118 Celina	Celina	OH 0020320	6/30/83
M161 Clyde	Clyde	OH 0024686	7/15/83
M119 Defiance	Defiance	OH 0024899	6/29/85
M120 Delphos	Delphos	OH 0024929	6/24/84
M121 Findlay	Findlay	OH 0025135	6/30/82
M122 Fostoria	Fostoria	OH 0052744	6/30/82
M123 Fremont	Fremont	OH 0025291	9/28/80
M124 Galion	Galion	OH 0025313	1/28/86
M125 Kenton	Kenton	OH 0025925	11/13/82
M126 Lima	Lima	OH 0026069	1/20/85
M127 Lucas County - Maumee River WWTP	Manclova Twp.	OH 0034223	9/16/85
M128 Mansfield	Mansfield	OH 0026328	9/29/80
M129 Marion	Marion	OH 0026352	3/29/86
M130 Mount Vernon	Mount Vernon	OH 0026662	9/28/83
	Napoleon	OH 0020893	2/6/83
M131 Norwalk	Norwalk	OH 0052604	9/22/85
M132 Oregon	Oregon	OH 0052914	9/18/85
M133 Perrysburg	Perrysburg	OH 0021008	6/28/87
M134 Port Clinton	Port Clinton	OH 0052876	3/11/83
M135 Sandusky	Sandusky	OH 0027332	6/24/84
M136 Shelby	Shelby	OH 0023540	9/21/80
M137 St. Mary's	St. Mary's	OH 0021415	3/8/83
M138 Tiffin	Tiffin	OH 0052949	8/05/86
M139 Toledo	Toledo	OH 0027740	6/30/82
M140 Upper Sandusky	Upper Sandusky	OH 0020001	3/11/83
M141 Van Wert	Van Wert	OH 0027910	9/18/85
M142 Vermillion	Vermillion	OH 0023612	6/29/85
M143 Wapakoneta	Wapakoneta	OH 0027952	9/01/84
M144 Willard	Willard	OH 0028118	3/12/83

Central District

M145 Circleville	Circleville	OH 0024465	7/1/85
M146 Columbus - Jackson Pike	Columbus	OH 0024732	9/30/83
M147 Columbus - Southerly	Columbus	OH 0024741	9/30/82
M148 Delaware	Delaware	OH 0024911	3/29/85
M149 Delaware County - Sanitary Sub-District 1A	Liberty Twp.	OH 0054399	9/29/85
M150 Heath	Heath	OH 0025763	8/21/85
M151 Lancaster	Lancaster	OH 0026026	11/25/85

OHIO

MUNICIPAL (Cont.)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M152 Marysville	Marysville	OH 0020630	7/31/82
M153 Newark	Newark	OH 0026671	10/26/86
M154 Ohio Utilities Co. - Blacklick	Madison Twp.	OH 0036021	12/08/85
M155 Reynoldsburg	Reynoldsburg	OH 0027243	5/31/84
M156 Washington Court House	Washington Court	OH 0028002	2/25/85

f. WISCONSIN

(1) OVERVIEW

Four agencies are involved in ambient monitoring in Wisconsin. These agencies are the Wisconsin Department of Natural Resources (WDNR), the U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers (COE) and the U.S. Forest Service. Considering sampling parameters and frequency, there is no duplication in the network stations. The coverage provided by these networks meets the explicit intent of the Program Guidance for Water Quality Monitoring and Wasteload Allocations. The guidance is intended to provide a data base to detect trends in water quality. Wisconsin's Monitoring Program has minor deficiencies in the areas of effluent monitoring, ambient monitoring, and data reporting.

(2) ASSESSMENT OF THE STATE MONITORING PROGRAM

a. State ambient Monitoring Network

Wisconsin operates a 44 station ambient monitoring network. Twenty-nine of these stations are designated as "CORE" stations. Since 1979, the "CORE" stations have remained the same, however, seven state ambient stations were discontinued. They are:

<u>Station No.</u>	<u>Stream Name</u>	<u>Reason for Sampling</u>
543225	Badfish Creek	Impact of point source discharge
133044	Yahara River Near McFarland	Outlet of Madison Lake above Bedfish Creek
543226	Yahara River Near Fulton	Major Rock River Tributary, down- stream from Badfish Creek
053206	Fox River at Little Rapids	Impact of point source discharge
363069	Manitowoc River at Manitowoc	Agri. NPS, municipal facility loading to Lake Michigan
383002	Menominee River at Marinette	Clean water stream
023001	Bad River at Odana	General quality-loading to Lake Superior

In addition to the minimum parameters shown on Table 14, the following parameters are analyzed: BOD<sub>5</sub>, BOD<sub>6</sub>, soluble reactive phosphorus chloride, organic nitrogen, ammonia nitrogen, lead, calcium, sodium, sulfate and dissolved reactive silicate.

The following stations are not shown on Table 14 because samples were not taken in early FY'83.

<u>Station No.</u>	<u>Name</u>	
163002	Boris Brule River near Brule	82/06/14
513001	Flambeau River at Park Falls	82/04/22
513013	Flambeau River near Park Falls	82/04/22
*023002	Lake Superior at Ashland	82/06/14
263001	Montreal River near Saxon	82/06/14
*073002	Namekagon River near Riverside	82/06/14
*163003	Nimadji River near Superior	82/06/14

\*=CORE

All minimum parameters are sampled at the CORE stations. However, residue was overlooked at Station No. 053210, Fox River above DePere Dam. The latest data for residue at this station is 82/07/27.

Data is available at the majority of stations through the 2nd Quarter of 1983.

Internal problems had caused the discontinuance of sampling at the Northwest District Office stations. Sampling has now resumed.

Wisconsin also operates an automatic monitoring network on the Fox and Wisconsin Rivers; five stations are monitored on the Fox River and six on the Wisconsin. Each station is polled hourly from a central computer to record dissolved oxygen, temperature, pH, and conductivity. A monthly summary as well as annual and monthly plots of this data are prepared. The information is used in the development of the waste load allocations for the two rivers.

#### b. Other Agencies Monitoring

Our discussion is based on STORET data available from other agencies for CY 1982. This discussion does not represent a summary of all water data being acquired in Wisconsin. It does, however, serve as a good indicator of the types of data currently in STORET. This information can be used to supplement trend data at the state network. Specific information can be obtained by contacting the Water Monitoring Team.

##### 1. U.S. Geological Survey

The USGS operates two networks in Wisconsin. These are (1) the NASQAN network and (2) the Hydrological Benchmark Program.

These networks are shown in Figures 8 and are discussed in detail below.

a. NASQAN Stations

The USGS also operates a network of 10 NASQAN stations throughout Wisconsin. Water temperature and specific conductance are continuously recorded at 3 of the 10 stations. These water properties are measured once daily at the other seven stations. Also, 3 of the 10 stations are part of National Pesticide Monitoring Subnetwork. These 3 stations are monitored 4 times per year.

b. Hydrologic Benchmark Station

The USGS operates one Benchmark station in Wisconsin. This station is sampled 12 times annually for the following parameters: water temperature, specific conductance, pH, dissolved-oxygen concentration, and instantaneous water discharge. Water samples also are collected for the determination of fecal coliform and fecal streptococci bacteria.

The Sediment Station Network which operated in 1979 was discontinued.

All data are stored in WATSTORE (USGS computer system) through the various U.S. Geological Survey laboratories as the samples are analyzed. WATSTORE is merged with STORET approximately every six months.

U.S. Geological Survey's NASQAN and hydrological Benchmark network stations for FY 1983 are shown on Table 15. Analytical schedules are contained in Attachment 14.

2. U.S. Army Corps of Engineers

The Army Corps of Engineers sampling in Wisconsin is confined to just one area in the State, the Eau Galle River and Reservoir. Water quality data are collected on the Eau Galle River, both upstream and downstream of the Eau Galle Reservoir and 5 locations in the reservoir itself for the purpose of ecological modeling. There are a total of 9 stations. These stations are shown in Figure 8.

Parameters measured during the period from August 1978 to August 1982 were as follows:

<u>PARAMETER</u>	<u>RIVER DEPTH (ft.)</u>	<u>LAKE</u>
Temperature	.6	Profile
Specific Conductance	"	Surface & Bottom
Dissolved Oxygen	"	Profile
pH	"	" "

<u>PARAMETER</u>	<u>RIVER DEPTH (ft.)</u>	<u>LAKE</u>
Chlorophyll A	"	" "
Suspended Solids	"	" "
Particulate Organic Carbon	"	" "
Total Phosphorus	"	" "
Particulate Phosphorus	.6	Profile
Dissolved Phosphorus	"	" "
Nitrate	"	" "
Ammonia	"	" "
Subsurface Light	"	Near Bottom
Photosynthesis	---	Profile
Secchi Disc	---	" "

This Program will be completed June 30, 1983.

### (3) U.S. Forest Service

There are numerous monitoring sites in Wisconsin operated by the U.S. Forest Service. The majority are well sites in Forest and Oconto Counties.

Data acquisition objectives are to determine capability of riparian areas to provide National Forest uses. Parameter groups sampled are inorganic, metals, nitrogen, physical and solids.

### (4) Quality Assurance Program

#### Wisconsin

The State of Wisconsin has committed to a fully approved Quality Assurance (QA) program by the end of FY'83. A mutually agreeable schedule for completion was negotiated for the FY'83 grant. To date Wisconsin DNR has either met or been ahead of schedule in providing the necessary documentation for Phase I of a two phase schedule. Phase II outputs will be provided by the end of August along with a revision to their QA organization which was not acceptable in their Phase I package.

### (5) Intensive Survey Program

The following schedule of activities is provided for FY'83:

- Three surveys on Fox River below DePere
- One survey on Peshtigo River below DePere
- Model Fox River below DePere
- Model Peshtigo and Flambeau Rivers
- Verify Wisconsin River Model
- One survey on Flambeau River
- One survey on Oconto River

Previous Year's Work

In FY'82, 6 water quality surveys and 7 drague surveys for water currents were completed on the Fox River. Water Quality synoptic surveys were completed on the Rock River and the Peshtigo River. One month long dynamic survey was completed on the Wisconsin River.

Abstracts or Reports were not submitted to the Regional Clearing-house for the studies completed in FY'82.

(6) Effluent Monitoring Program

Wisconsin has 157 major dischargers, consisting of 81 municipal and 76 industrial dischargers. Inspections planned and completed for FY'82 and planned for FY'83 are indicated below:

	<u>FY'82 Commitment</u>	<u>FY'82 Actual</u>	<u>FY'83 Projected</u>
<u>CEI's (Majors)</u>			
Municipal	22*	17	15
Industrial	25*	14	0
<u>CSI's (Majors)</u>			
Municipal	22*	26	30
Industrial	25*	33	40
O&M Inspections (mun.)	0	0	0
Grant Compliance Inspec. (mun) (Federally financed plants)	**	50	70
Operational Assistance (mun.)	12	15	12
Toxic Sampling Surveys	0	0	15

\*Total commitments were 44 municipal surveys and 50 industrial surveys

\*\*No commitments

Wisconsin met or exceeded their commitments for FY'82. However, they did not commit to any O&M inspections with completion of Form 7500, and they do not complete the Form 7500 for construction grant compliance inspections. Projections for FY'83 indicate a comparable program, with increases noted for municipal and industrial CSI's, grant compliance inspections, and toxic sampling surveys. Wisconsin shows a decrease in effort for major CEI's, with no industrial surveys planned. However, the State plans to do 275 surveys at minor industrial facilities (both CEI and CSI). All of the major industrial CSI's planned are on the Compliance Monitoring Priority List (CMPL).

(7) Biological Monitoring Program

The proposed biological monitoring program has not been implemented by the State of Wisconsin since 1978. Data collected in past years was evaluated and, as a result, it was determined that the State would drop the program. Wisconsin has developed its own network of stations, some of which may be at or near the National Network stations. Biological data are collected from these stations as necessary to determine water quality assessment and use attainment. Macroinvertebrates and fish are the parameters used. Fish tissue data are entered into STORET.

Wisconsin reviewed their ambient network for FY'83 and decided to discontinue analysis of pentachlorophenol on fish tissue at 21 of the 29 "CORE" stations. This action was taken because a review of data for the past 5 years showed no detectable levels of pentachlorophenol.

Wisconsin has the capability to conduct static and flow-through bioassays and has performed bioassay studies at selected dischargers over the past two years. Biological sampling is also a part of intensive surveys as necessary.

(8) Data Interpretation and Reporting

Using the Section 305(b) reporting process, the State of Wisconsin has submitted biennially a report to the USEPA describing the quality of their waters. The latest report submitted was for the year 1982.

Ambient Data

Wisconsin submits their ambient water quality data quarterly for storage into the STORET system.

Effluent Data

For FY'1982 the state submitted a report of each sampling and/or evaluation inspection for major permittees to the Compliance Tracking Unit of the Water Division

Intensive Survey Data

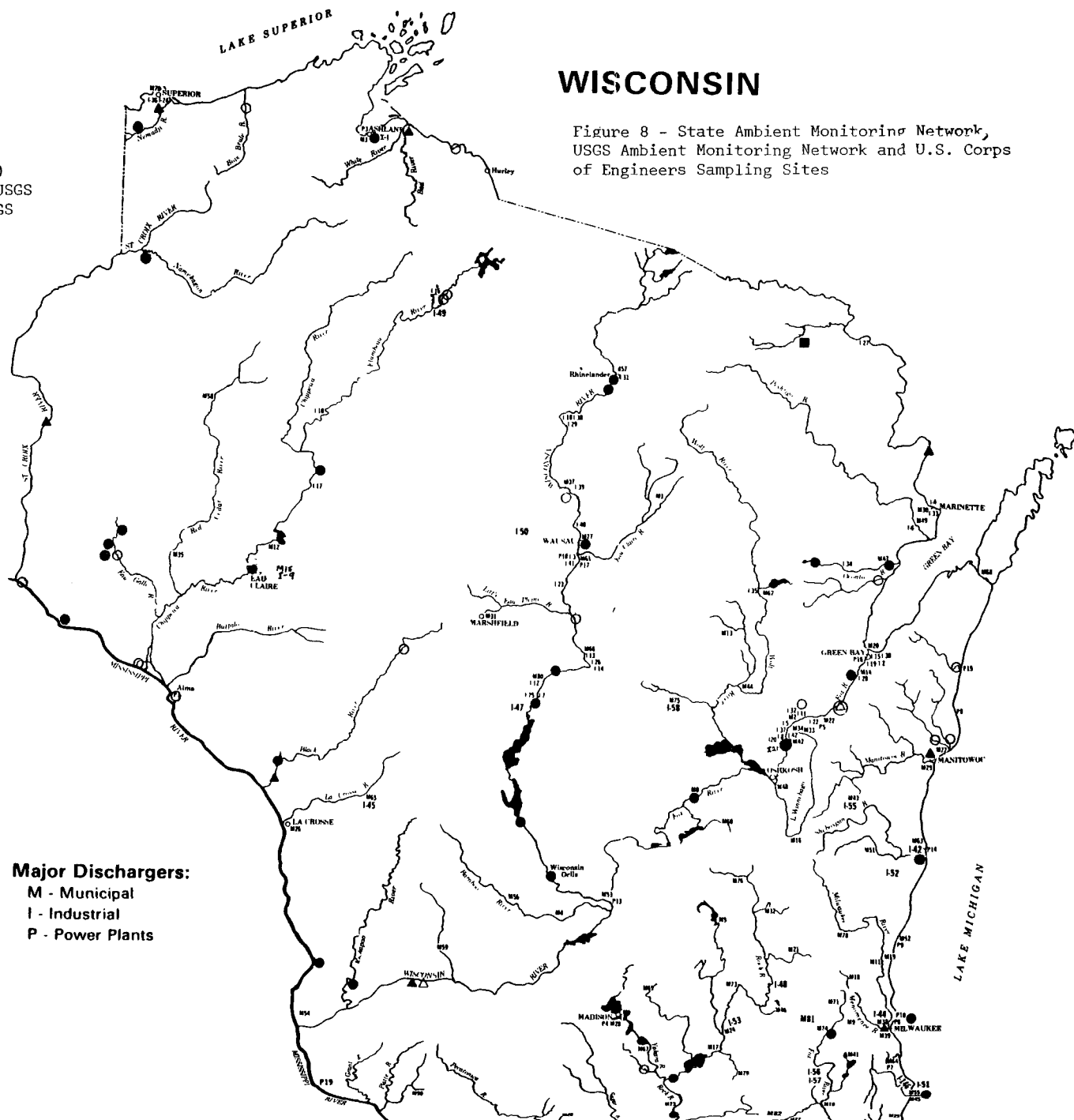
Abstracts were not submitted for FY 1982. Intensive survey data are in STORET.

# LEGEND

- CORE Network
- State Station(s)
- △ Pesticides Station(s)
- ⊗ Dual Purpose NASQAN USGS
- ▲ NASQAN Station(s) USGS
- Benchmark USGS

## WISCONSIN

Figure 8 - State Ambient Monitoring Network, USGS Ambient Monitoring Network and U.S. Corps of Engineers Sampling Sites



### MINIMUM PARAMETERS

YEAR & QUARTER I.E. 31= 1983, 1ST QUARTER; 32= 1983, 2ND QUARTER; 33=1983, 3RD QUARTER, 34= 1983, 4TH QUARTER

Table 15

## NASQAN AND HYDROLOGIC BENCH-MARK NETWORK FY 1983 SAMPLING FREQUENCIES FOR SITES AND ANALYTICAL SCHEDULES, SORTED BY STATE

NUMBERS UNDER SCHEDULES INDICATE THE MAXIMUM AUTHORIZED USAGE FOR INDICATED SCHEDULES IN FY 1983

Q DENOTES THAT SITES ARE TO BE SAMPLED QUARTERLY

B DENOTES THAT SITES ARE TO BE SAMPLED BIMONTHLY

----- STATE-WISCONSIN NETWORK-NASQAN -----							
STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
4024430	NENADJI RIVER NEAR SOUTH SUPERIOR	B	6	2	4	0	NO
4027595	BAD RIVER AT ODANAH	B	6	2	4	0	NO
4067500	MEMONINEE RIVER NEAR MCALLISTER	B	6	2	4	0	NO
4085000	FOX RIVER AT WRIGHTSTOWN	Q	4	0	4	0	NO
4085427	MANITOWOC RIVER AT MANITOWOC	Q	4	0	4	0	NO
4087000	MILWAUKEE RIVER AT MILWAUKEE	Q	4	0	4	0	NO
5340500	ST CROIX RIVER AT ST CROIX FALLS	Q	4	0	4	0	NO
5369500	CHIPPEWA RIVER AT DURAND	B	6	2	4	2	NO
5382000	BLACK RIVER NEAR GALESVILLE	B	6	2	4	0	NO
5407000	WISCONSIN RIVER AT MUSCODA	B	6	2	4	0	NO

----- STATE-WISCONSIN NETWORK-HYDROLOGIC BENCH-MARK NETWORK -----							
STATION NUMBER	STATION NAME	SITE SAMPLING FREQUENCY	SCHEDULE 86 (NUTRIENTS)	SCHEDULE 1904 (COMMON IONS)	SCHEDULE 176 OR 177 (COMMON/TRACE)	SCHEDULE 1703 (RADIOCHEM)	SPECIFIC CONDUCTANCE > 2,000 UMHOS
4063700	POPPLE R NR FENCE	Q	4	2	2	1	NO

U.S. Geological Survey Analytical Schedule  
Wisconsin

NUTRIENTS

SCHEDULE NUMBER 86

NAME

NITROGEN, DIS. NO2+NO3 AS N  
NITROGEN, DIS. NH4 AS N  
PHOSPHORUS, DIS. ORTHO AS P  
PHOSPHORUS, DIS.  
NITROGEN, NH4+ORG AS N  
PHOSPHORUS, TOTAL

RADIOCHEMICALS

SCHEDULE NUMBER 1703

NAME

POTASSIUM, DIS.  
FILTRATION GROSS-B  
GROSS ALPHA DIS. U-NA  
GROSS ALPHA SUS. U-NA  
GROSS-B, DIS. CS137  
GROSS-B, DIS. SR-90  
GROSS-B, SUSP. CS137  
GROSS-B, SUSP. SR-90  
RADIUM-226, DIS. RN  
U.DIS. FL-EXT. GR-W

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 176

NAME

ARSENIC, DIS.  
ALUMINUM, DIS.  
BARIUM, DIS.  
BERYLLIUM, DIS.  
CADMIUM, DIS.  
CHROMIUM, DIS.  
COBALT, DIS.  
COPPER, DIS.  
IRON, DIS.  
LEAD, DIS.  
LITHIUM, DIS.  
MANGANESE, DIS.  
MERCURY, DIS.  
MOLYBDENUM, DIS.  
NICKEL, DIS.  
SELENIUM, DIS.  
SILVER, DIS.

NAME

STRONTIUM, DIS.  
VANADIUM, DIS.  
ZINC, DIS.  
CALCIUM, DIS.  
MAGNESIUM, DIS.  
SODIUM, DIS.  
POTASSIUM, DIS.  
SILICA, DIS.  
SULFATE, DIS.  
FLUORIDE, DIS.  
CHLORIDE, DIS.  
ROE, DIS. AT 180 C  
pH, (LABORATORY)  
SP. CONDUCTANCE, LAB  
TURBIDITY, NTU  
ALK, TOT LAB CACO3  
METALS, DIS. CHE-EXT

Attachment 14

U.S. Geological Survey Analytical Schedule  
(Wisconsin)

COMMON CONSTITUENTS

SCHEDULE NUMBER 1904

NAME	NAME
CALCIUM, DIS.	ROE, DIS. AT 180C
MAGNESIUM, DIS.	SULFATE, DIS.
POTASSIUM, DIS.	ALK TOT LAB. $\text{CaCO}_3$
SILICA, DIS.	pH (LABORATORY)
SODIUM, DIS.	SP. CONDUCTANCE LAB
CHLORIDE, DIS	TURBIDITY (NTU)
FLUORIDE, DIS	

PHYSICAL PROPERTIES, COMMON AND TRACE DISSOLVED INORGANIC CONSTITUENTS

SCHEDULE NUMBER 177

NAME	NAME
ARSENIC, DIS.	VANADIUM, DIS.
ALUMINUM, DIS.	ZINC, DIS.
BARIUM, DIS.	CALCIUM, DIS.
BERYLLIUM, DIS.	MAGNESIUM, DIS.
CADMIUM, DIS.	SODIUM, DIS.
CHROMIUM, DIS.	POTASSIUM, DIS.
COBALT, DIS.	SILICA, DIS.
COPPER, DIS.	SULFATE, DIS.
IRON, DIS.	FLUORIDE, DIS.
LEAD, DIS.	CHLORIDE, DIS.
LITHIUM, DIS.	ROE, DIS. AT 180 C
MANGANESE, DIS.	pH, (LABORATORY)
MERCURY, DIS.	SP. CONDUCTANCE, LAB
MOLYBDENUM, DIS.	TURBIDITY, NTU
NICKEL, DIS.	ALK TOT. LAB
SELENIUM, DIS.	METALS, DIS. CHE-EXT
SILVER, DIS.	
STRONTIUM, DIS.	

Attachment 14-1

FY 1983 Major Discharger List  
Industrial  
(Pulp and Paper Mills)

	Name	Location	Permit No.	Major FY'81	Expiration Date
I1	American Can Co.	Ashland	WI-0003140-3	*	9-30-86
I2	American Can Co.	Green Bay	WI-0001261-2	*	12-31-86
I3	American Can Co.	Rothschild	WI-0003450-2	*	12-31-82
I5	Appleton Papers, Inc.	Combined Locks	WI-0000990-2	*	12-31-86
I6	Badger Paper Mills, Inc.	Peshigo	WI-0000603-3	*	12-31-86
I11	Consolidated Papers, Inc. (Appleton Division)	Appleton	WI-0001082-2	*	3-31-83
I12	Consolidated Papers, Inc. (Joint W.T.P.)	Wisconsin Rapids	WI-0037991-3	*	9-30-86
I13	Consolidated Papers, Inc. (Stevens Point Div.)	Stevens Point	WI-0003344-3	*	9-30-86
I14	Consolidated Paper, Inc. (Wis. Riv. Div.)	Whiting	WI-0003468-3	*	9-30-86
I16	Flambeau Paper Co.	Park Falls	WI-0003212-2	*	12-31-82
I15	Fort Howard Paper Co.	Green Bay	WI-0001848-2	*	12-31-86
I17	Genstar Building Materials Co.	Cornell	WI-0003034-3	*	12-31-86
I18	Georgia Pacific Corp.	Tomahawk	WI-0003603-3	*	9-30-86
I19	Green Bay Packaging, Inc.	Green Bay	WI-0000973-2	*	9-30-86
I31	Kervin Paper Co. (Div. of American Corp.)	Appleton	WI-0000591-2	*	12-31-86
I21	Kimberly-Clark Corp. (Lakeview Mill)	Neenah	WI-0000680-2	*	12-31-86
I20	Kimberly Clark Corp. (Joint W.T.P.)	Neenah	WI-0037842-2	*	12-31-86
I22	Midtec Paper Corp.	Kimberly	WI-0000698-2	*	12-31-86
I23	Mosinee Paper Corp.	Mosinee	WI-0003671-2	*	9-30-82
I26	Neenah Paper Co. (Whiting-Plover Mill)	Whiting	WI-0003611-3	*	9-30-86
I25	Nekoosa Papers Inc. (Joint WTP)	Nekoosa	WI-0003620-3	*	9-30-86
I27	Niagara of Wisconsin Paper Corp.	Niagara	WI-0000752-3	*	12-31-86
I28	Nicolet Paper Corp.	DePere	WI-0001473-2	*	12-31-86
I29	Owens-Illinois, Inc.	Tomahawk	WI-0002810-3	*	9-30-86
I8	P.H. Glatfelter Co. (Bergstrom Paper Div.)	Neenah	WI-0001121-2	*	12-31-86
I9	Pope and Talbot, Inc.	Eau Claire	WI-0003077-3	*	9-30-86
I10	Pope and Talbot, Inc.	Ladysmith	WI-0003204-3	*	9-30-86
I30	Procter and Gamble Paper Paper Products Co.	Green Bay	WI-0001031-2	*	9-30-86
I31	Rhineland Paper Co.	Rhineland	WI-0003026-2	*	3-31-83

FY 1983 Major Discharger List  
Industrial  
(Miscellaneous Categories)

Name	Location	Permit No.	Major FY'81	Expiration Date
I4 Ansul Co.	Marinette	WI-0001040-2	•	12-31-82
I43 Kohler Co.	Kohler	WI-0001309-2		6-30-82
I44 Milwaukee Solvey Coke	Milwaukee	WI-0026247-4		3-31-85
I24 Murphy Oil Corp. (Refinery)	Superior	WI-0003085-2	•	3-31-82
I45 Northern Engraving Co., Inc.	Sparta	WI-0002771-2		6-30-82
I46 Peter Cooper Corp.	Oak Creek	WI-0000779-4		6-30-83
I47 Vulcan Materials Co. - 47 (Chemicals Division)	Port Edwards	WI-0003565-3	•	6-30-82
I48 Oconomowoc Electroplating	Ashippin <sup>u</sup>	WI-0002241-2		EXTENDED Denied 12/31/8
I49 Phillips Plating	Phillips	WI-0041149-2		6-30-82
I50 Phillips Plastics	Madford	WI-0038466-2		6-25-80
I51 J. I. Case	Racine	WI-0000311-3		6-30-82
I52 James B. Downing	Adell	WI-0001236-2		12-31-82
I53 Ladish Maiting	Jefferson	WI-0002038-2		12-31-82
I54 Ladish Tri-Clover	Pleasant Prairie	WI-0004481-2		6-29-84
I55 Tecumseh Products	New Holstein	WI-0000230-3		12-31-86
I56 Trent Tube - Crucible-Plant #1	East Troy	WI-0034541-2		3-31-82
I57 Trent Tube-Crucible-Plant #2 & 3	East Troy	WI-0038938-2		3-31-82
I58 Waupaca Foundry #1	Waupaca	WI-0026379-2		3-31-82

FY 1988 Major Discharge List  
Industrial  
(Power Plants)

Name	Location	Permit No.	Major FY '81	Expiration Date
P1 Dairyland Power Coop. (Alma #6)	Alma	WI-0040223-3	*	6-30-84
P2 Dairyland Power Coop.	Genoa	WI-0003239-3	*	6-30-86
P4 Madison Gas & Electric Co.	Madison	WI-0001961-3	*	6-30-86
P5 Wis. Electric Power Co. (Commerce Street)	Milwaukee (35 MGN's & Oil & Gas Fired)	WI-0000892-3	*	3-31-86
P10 Wis. Electric Power Co. (Valley)	Milwaukee	WI-0000931-3	*	3-31-86
P7 Wis. Electric Power Co.	Oak Creek	WI-0000914-2	*	6-30-83
Wis. Electric Power Co. (Lakeside)	St. Francis (310 MGN's Oil & Gas Fired)	WI-0000906-3	*	3-31-86
P9 Wis. Electric Power Co. (Port Washington)	Port Washington	WI-0000922-2	*	6-30-83
P8 Wis. Electric Power Co. (Point Beach)	Two Rivers	WI-0000957-2	*	6-30-83
P11 Wis. Electric Power Co. (Pleasant Prairie)	Pleasant Prairie	WI-0041254-2	*	12-31-85
P14 Wis. Power & Light (Edgewater 1-4)	Sheboygan	WI-0001589-3	*	6-30-86
P19 Wis. Power & Light (Nelson Dewey)	Cassville	WI-0002381-3	*	6-30-86
P20 Wis. Power & Light (Blackhawk)	Beloit	WI-0002399-3	*	6-30-86
P12 Wis. Power & Light (Rock River)	Beloit	WI-0002402-3	*	6-30-86
P13 Wis. Power & Light (Columbia)	Portage	WI-0002780-3	*	6-30-86
P15 Wis. Public Service Corp.	Kewaunee	WI-0001571-2	*	6-30-83
P16 Wis. Public Service Corp. (Pulliam)	Green Bay	WI-0000965-3	*	6-30-86
P17 Wis. Public Service Corp. (Weston 1&2)	Rothschild	WI-0003131-3	*	6-30-86
P18 Wis. Public Service Corp. (Weston 3)	Rothschild	WI-0042765-2	*	12-31-85

WISCONSIN

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M 1 Antigo - City of, STP	Town of Rolling	WI-0022144-2	6/30/84
M 2 Appleton - City of, STP	Appleton	WI-0023221-2	8/31/84
M 3 Ashland - City of, STP	Ashland	WI-0030767-2	7/31/84
M 4 Baraboo - City of, STP	Baraboo	WI-0020605-2	11/30/82
M 5 Beaver Dam - City of, STP	Beaver Dam	WI-0023345-2	11/30/82
M 6 Beloit - STP	Beloit	WI-0023370-2	6/30/84
M 7 Beloit - Town of, STP	Beloit	WI-0026930-2	6/30/84
M 8 Berlin - City of, STP	Berlin	WI-0021229-2	12/31/82
M 9 Brookfield - City of, STP	Brookfield	WI-0023469-2	9/30/80
M 10 Burlington - City of, STP	Burlington	WI-0022926-2	5/31/84
M 11 Cedarburg - City of, STP	Cedarburg	WI-0020222-2	11/30/82
M 12 Chippewa Falls - City of, STP	Chippewa Falls	WI-0023604-2	9/30/82
M 13 Clintonville - City of, STP	Clintonville	WI-0021466-2	12/31/82
M 14 DePere - City of, STP	DePere	WI-0023787-2	6/30/84
M 15 Eau Claire - City of, STP	Eau Claire	WI-0023850-2	6/30/82
M 16 Fond du Lac - City of, STP	Fond du Lac	WI-0023990-2	6/30/84
M 17 Fort Atkinson - City of, STP	Fort Atkinson	WI-0022489-2	6/30/82
M 18 Germantown - Village of, STP	Germantown	WI-0020567-2	6/30/82
M 19 Grafton - Village of, STP	Grafton	WI-0020184-2	3/31/87
M 20 Green Bay - MSD STP	Green Bay	WI-0020991-2	3/31/84
M 21 Hartford - City of, STP	Hartford	WI-0020192-3	9/30/84
M 22 Heart of the Valley, MSD STP	Kaukauna	WI-0031232-3	9/30/84
M 23 Janesville - City of, STP	Janesville	WI-0030350-2	6/30/84
M 24 Jefferson - City of, STP	Jefferson	WI-0024333-2	6/30/82
M 25 Kenosha - City of, STP	Kenosha	WI-0028703-2	6/30/83
M 26 LaCrosse - City of, STP	LaCrosse	WI-0029851-2	3/31/84
M 27 Lake Geneva - City of, STP	Lake Geneva	WI-0021130-2	11/30/82
M 28 Madison - MSD STP	Madison	WI-0024597-2	6/30/82
M 29 Manitowoc - City of, STP	Manitowoc	WI-0024601-2	3/31/84
M 30 Marinette - City of, STP	Marinette	WI-0026182-2	3/31/84
M 31 Marshfield - City of, STP	Marshfield	WI-0021024-2	6/30/83
M 32 Mayville - City of, STP	Mayville	WI-0024643-2	9/30/82
M 33 Menasha - S.D. #4, East Side STP	Menasha	WI-0025909-2	6/30/84
M 34 Menasha - S.D. #4, West Side STP	Menasha	WI-0024686-2	6/30/84
M 35 Menomonie - City of, STP	Menomonie	WI-0024708-2	3/31/84
M 37 Merrill - City of, STP	Merrill	WI-0020150-2	3/31/84
M 38 Milwaukee - SWG, Comm-Jones Island STP	Milwaukee	WI-0024767-2	12/31/82
M 39 Milwaukee - SWG, Comm-South Shore STP	Milwaukee	WI-0024775-2	12/31/82
M 40 Monroe - City of, STP	Monroe	WI-0020362-2	6/30/82

WISCONSIN

FY 1983 LIST OF MAJOR DISCHARGERS

MUNICIPAL (cont'd)

<u>Name</u>	<u>Location</u>	<u>Permit No.</u>	<u>Expiration Date</u>
M41 Muskego N.W. Dist. STP	Muskego	WI-0021164-1	7/31/83
M42 Neenah-Menasha - SWG Comm STP	Neenah-Menasha	WI-0026085-8	9/30/84
M43 New Holstein - City of, STP	New Holstein	WI-0020893-2	9/30/82
M44 New London - City of, STP	New London	WI-0024929-2	3/31/84
M45 North Park - S.D. STP	North Park	WI-0022900-2	6/30/84
M46 Oconomowoc - City of, STP	Oconomowoc	WI-0021181-2	3/31/84
M47 Oconto - City of, STP	Oconto	WI-0022861-2	9/30/82
M48 Oshkosh - City of, STP	Oshkosh	WI-0025038-2	3/31/84
M49 Peshtigo - City of, WTR & SWR Util. STP	Peshtigo	WI-0030651-2	6/30/84
M50 Platteville - City of, STP	Platteville	WI-0020435-2	11/30/82
M51 Plymouth - City of, STP	Plymouth	WI-0030031-2	1/31/84
M52 Port Washington	Port Washington	WI-0020460-2	3/31/84
M53 Portage - City of, STP	Portage	WI-0020427-3	11/30/84
M54 Prairie du Chien - City of, STP	Prairie du Chien	WI-0020257-2	3/31/84
M55 Racine - City of, STP	Racine	WI-0025194-2	6/30/84
M56 Reedsburg - City of, STP	Reedsburg	WI-0020371-2	3/31/84
M57 Rhinelander - City of, STP	Rhinelander	WI-0020044-2	11/30/84
M58 Rice Lake - City of, STP	Rice Lake	WI-0021865-2	9/30/82
M59 Richland Center - City of, STP	Richland Center	WI-0020109-2	6/30/84
M60 Ripon - City of, STP	Ripon	WI-0021032-2	6/30/82
M61 Rothschild - City of, STP	Rothschild	WI-0030279-1	9/30/85
M62 Shawano Lake S.D. #1, STP	Shawano	WI-0028452-2	6/30/84
M63 Sheboygan - City of, STP	Sheboygan	WI-0025411-2	6/30/84
M64 South Milwaukee - City of, STP	South Milwaukee	WI-0028819-2	6/30/84
M65 Sparta - City of, STP	Sparta	WI-0020737-2	6/30/82
M66 Stevens Point - City of, STP	Stevens Point	WI-0029572-2	6/30/84
M67 Stoughton - City of, STP	Stoughton	WI-0020338-2	6/30/84
M68 Sturgeon Bay - City of, STP	Sturgeon Bay	WI-0021113-2	9/30/84
M69 Sun Prairie - City of, STP	Sun Prairie	WI-0020478-2	6/30/82
M70 Superior - City of, STP	Superior	WI-0025593-2	6/30/82
M71 Sussex - Village of, STP	Superior	WI-0025593-2	6/30/82
M72 Two Rivers - City of, STP	Two Rivers	WI-0026590-2	6/30/84
M73 Watertown - City of, STP	Watertown	WI-0028541-2	12/31/82
M74 Waukesha - City of, STP	Waukesha	WI-0029971-2	12/31/82
M75 Waupaca - City of, STP	Waupaca	WI-0036490-2	6/30/84
M76 Waupun - City of, STP	Waupun	WI-0022772-2	12/31/86
M77 Wausau - City of, STP	Wausau	WI-0025739-2	12/31/84
M78 West Bend - City of, STP	West Bend	WI-0025763-2	9/30/84
M79 Whitewater - City of, STP	Whitewater	WI-0020001-2	6/30/82
M80 Wisconsin Rapids - City of, STP	Wisconsin Rapids	WI-0025844-2	9/30/84
M81 Dale-Hart Water Pollution Control Facility	Delafield	WI-0031399-1	2/28/85
M82 Walworth County Metro Sew. Dist.	Elkhorn	WI-0031461-1	6/30/86

# IMPLEMENTATION OF THE PROGRAM GUIDANCE FOR WATER MONITORING AND WASTELOAD ALLOCATIONS STATE SUMMARY

Programs	Illinois	Indiana	Wisconsin	Minnesota	Michigan	Ohio
1	**	*	**	*	**	**
2	*	*	**	*	**	**
3	*	**	*	***	***	*
4	*	*	**	*	**	*
5	*	*	*	*	**	*
6	-	-	-	-	-	-
7	*	**	**	*	*	**

## Programs

1. National Ambient Monitoring Network
2. State Monitoring Network
3. Quality Assurance Program
4. Intensive Survey Program
5. Effluent Monitoring Program
6. Proposed Biological Monitoring Program (1)
7. Data Interpretation and Reporting

- \* Meets program guidance for water monitoring and waste load allocations
- \*\* Minor program deficiencies/differences
- \*\*\* Major program deficiencies/differences

(1) All states except Minnesota, Michigan and Wisconsin participated to some extent in the Proposed Biological Monitoring Program in 1982. The work that was done met the requirements of the guidance for water quality monitoring and waste load allocations.

## 2. PROGRAM GUIDANCE FOR WATER QUALITY MONITORING AND WASTE LOAD ALLOCATIONS, FEDERAL ACTIVITIES

The Federal role for implementation of the program guidance for water quality monitoring and waste load allocations is one of overview for all the elements except Data Interpretation and Reporting and Effluent Monitoring which are described below:

### a. Effluent Monitoring

The Federal effluent monitoring program is quite active in Region V. The principal areas of focus in selecting candidates for review under the NPDES permit compliance program are enforcement case development and support, priority NPDES permitting, self-monitoring quality assurance and compliance verification. Primary targets for inspection within the category of compliance verification are permittees which are on the State Compliance Monitoring Priority List (CMPL). These facilities, by mutual agreement, are to receive increased State and Federal attention during the year, due to their compliance histories. The following table is a reflection of the inspection activity of Region V in FY'82 and FY'83.

Region V Inspections

	<u>FY '82 (Actual)</u>	<u>FY '83 (Proposed)</u>
CEI	42	134
CSI (Toxics)	19	17
CSI (Mun.)	14	12
CSI (Non-Mun.)	5	35
PAI	9	38
Biosurveys	-	2
Special Investigations	14	
NPDES Permit Investigations	11	

b. Data Interpretation and Reporting

The Federal role in Data Interpretation and Reporting includes the following:

Headquarters assigns a STORET representative for each Region. This individual has the responsibility for establishing and implementing STORET policies, for determining which data should and should not be stored, who should or should not be using the system and what their usage allowance should be. This individual can provide direct assistance or questions pertaining to the use of STORET programs and other technically oriented matters. The Regional STORET Representative will store data for states when necessary. At the present time, data are stored for Indiana until such time as the state has hired sufficient staff and obtained appropriate equipment to allow direct data entry.

3. SECTION 208 AREAWIDE WASTE TREATMENT MANAGEMENT

The 1981 Amendments to the Clean Water Act did not reauthorize funding under Section 208. Congress did, however provide in Section 205(j) for up to 1% of State's available Construction Grants obligation or \$100,000 which ever is greater to be used for water quality management planning. In carrying out planning with these grants the State should give consideration and funding priority to local, regional and interstate entities and designated or undesignated areawide planning agencies.

Illinois

All monitoring work supported by Section 208 has been completed. The Illinois EPA is using Section 205(j) funds both directly and by contracting with area-wide agencies. The funds will be used by IEPA for water quality standards development, review and revision.

Three areawide planning agencies have contracts to carryout volunteer lake monitoring programs. The program will have interested citizen volunteers sampling lakes for at least six sampling periods to determine lake transparency. The number of lakes in each planning area is as follows:

Northeastern Illinois Planning Commission	- 15 lakes
Southwestern Illinois Metropolitan and Regional Planning Commission	- 3 lakes
Greater Egypt Planning and Development Commission	- 9 lakes

Reports for these lakes will be prepared at the end of the sampling period.

### Indiana

Monitoring work funded by 208 has been completed in Indiana. A 205(j) grant offer has been forwarded to the ISBH. The scope of the grant offer work program includes surveillance work that will support wasteload allocation revision for the Grand Calumet River - Indiana Harbor Ship Canal. The ISBH and its contractor will sample effluent, water quality, flow, benthic oxygen demand; sample sediment cores for EPA priority pollutants, excluding the 31 volatiles; survey physical stream characteristics; and directly determine stream reaeration rates. Finally, industrial dischargers that split compliance monitoring samples will analyze their samples for the appropriate parameters included in the study. In addition, the state and its contractor will determine physical stream characteristics, gather samples of core sediments for analysis of the EPA priority pollutants, excluding the 31 volatiles, and directly determine stream reaction rates by a tracer method in support of a wasteload allocation study for Trail Creek.

ISBH is also using 205(j) funds to analyze samples from the Wabash, Salamonie and White River Basin waters where there are potential toxicant problems. The samples will be gathered in accordance with the following:

- 30 industrial outfall water samples
- 13 municipal sewage treatment plant effluents
- 60 sediment samples
- 60 fish tissue samples
- 43 sludge samples

The above industrial effluent samples will be analyzed for those parameters expected to be present from their respective manufacturing processes. Fish flesh will be analyzed for 90 of the organic priority pollutants and ten toxic metals. The remainder of the organic priority pollutants, primarily purgeable compounds, will not be included for fish flesh analysis, nor will iron, manganese or aluminum. In addition, the ISBH will collect and analyze ambient water samples from an area of the Salamonie River watershed where agricultural runoff is expected to occur.

## Michigan

Michigan's 208 monitoring efforts are complete. EPA has awarded FY'82 205(j) funds for monitoring efforts in Michigan. Michigan DNR will measure the impact on aquatic life of chlorine and ammonia discharges from 10 municipal wastewater treatment plants. Water quality samples will be taken concurrently with benthic macroinvertebrate and fish community samples. The results will be used to determine NPDES permit effluent limits for these plants to develop refined permit limit calculation procedures applicable to all wastewater treatment plants in Michigan.

The Michigan Department of Public Health is using 205(j) funds to develop a systematic approach to, and investigation of, groundwater contamination threats to public health. The DPH will sample groundwater at the majority of 100 sites known to potentially threaten groundwater quality. The assessment will more precisely define the extent and degree of contamination at sampled sites, and help MDNR target response programs.

The Livingston County Health Department will coordinate a monthly program operated by lake association volunteers. Data will be used to determine the status of the lakes water quality.

The Genesee-Lapeer-Shiawasee Planning and Development Commission, in conjunction with MDNR, will test a pilot use attainability analysis procedure on two municipal dischargers. Testing of the procedures will include water quality sampling.

Minnesota

The MPCA is continuing to sponsor the ground and surface water monitoring portion of the Garwin Brook Rural Clean Water Project in Southeast Minnesota with the last of the 208 funds. The work is directed toward determining the quantity and impact of agricultural nonpoint source pollution, as well as assessing the effects of best management practices on its abatement. Monitoring is done at 2 sediment discharge sites, two flow gaging stations and two farm wells. MPCA intends to continue this effort with 106 or other funds after 208 funds are expended in the summer of 1983.

Minnesota is using a portion of its FY'82 205(j) funds to fund monitoring activities that support water quality program work. One part of their monitoring work will support a habitat assessment of the Metropolitan Twin Cities segment of the Mississippi River. Bottom dredge samples to determine physical structure and electroshocking to determine fish population composition will be analyzed. The habitat assessment will, in turn, provide support for the MPCA Twin Cities combined sewer overflow study.

MPCA is using 205(j) to fund a second, larger monitoring effort. The state will conduct the water quality, effluent, flow, fish monitoring and stream characteristic sampling, as needed to support 8 site specific water quality standards criteria investigations and 12 use attainability studies on waterways affected by communities with advanced treatment requirements. This work will then be used to revise water quality standards, as appropriate.

208 Revision

Ohio

With 205(j) funds Ohio EPA is sampling fish and macroinvertebrates at fifty four (54) stations to refine use designation criteria to revise water quality standards.

The Northeast Ohio Areawide Coordinating Agency (NOACA) is providing local support for the USGS streamflow gauge on the Chagrin River at Willoughby.

Wisconsin

The WDNR will conduct 3 synoptic water quality surveys in the Lower Fox River between the DePere dam and Green Bay to support development of the wasteload allocation for BOD and possibly ammonia. They will also use FY'82 205(j) funds to coordinate the ambient water quality monitoring network, compile data and prepare the 1984 305(b) report and the interim status report.

#### 4. HEADQUARTERS PROGRAM

##### a. Effluent Guidelines, Exposure/Risk and Dilution Studies (Priority Pollutants)

###### 1) State Role

No monitoring for priority pollutants is conducted.

###### 2) Federal Role

No priority pollutant samples were collected in 1979. In 1980 and 1981 samples were collected by the Eastern and Central District Offices with assistance from the Central Regional Laboratory. The sample analyses were done by the CRL or completed by contract laboratories. The Central District Office also collected samples in 1982. Reports have been written for all priority pollutant studies and the data are entered into STORET. This project is no longer being funded by Headquarters.

##### b. Hot Spot Studies

###### 1) State Role

No monitoring is conducted.

###### 2) Federal Role

EPA has completed 24 "hot spot" studies (7 in Region 5) of local areas projected to have toxics problems after BAT, as part of paragraph 12 of the NRDC Settlement Agreement. These studies will provide insights into the source of water quality problems in urban waters. This project is no longer being funded by Headquarters.

##### c. POTW/Toxics Project

###### 1) State Role

No monitoring is conducted.

###### 2) Federal Role

The POTW/Toxics Project is described in an interim report put out by the Effluent Guidelines Division entitled Fate of Priority Pollutants in Public Owned Treatment Works (EPA 440/1-80-301). Influent, effluent and sludge samples were collected from 50 selected locations throughout the country. This includes two pilot studies, one in Indianapolis and one in Cincinnati. The work is completed and a final report is written. The final report is entitled Fate of Priority Pollutants in Publicly Owned Treatment Works (EPA 440/1-82/303) September 1982. This work is also referenced in the Federal Register September 1982, Vol 47, Number 188, Page 42698.

## 5. OPERATION AND MAINTENANCE (O&M) PROGRAM

### a. State Role

The operation of the program in each of the States is described below, for FY'83.

#### 1) Illinois

The State is conducting the construction grant compliance inspection when construction is completed and reporting the results on Form 7500. The Corps of Engineers conducts periodic construction grant inspections. Forms 7500 are filled out for all major municipal sampling inspections conducted.

In addition, inspections are conducted without filling out Form 7500. These are mostly reconnaissance inspections conducted on minor dischargers.

Follow-up inspections are conducted on problem facilities, and technical assistance is being provided.

O&M manuals are reviewed in the Compliance Assurance Section.

#### 2) Indiana

Construction grant compliance inspections are conducted and results are reported on Form 7500. The Corps of Engineers conducts periodic and final construction grants inspections (without Form 7500).

Forms 7500 are filled out at every major municipal discharger which is inspected. Usually a CSI (with completion of Form 3560) is conducted at the same time,

Inspections are also conducted at majors and minors which are not reported on Form 7500, but are reported on a State form. These inspections far exceed the number of inspections conducted for any other purpose.

The state conducts follow-up inspections at problem facilities, and provides technical assistance, either from State staff or by referral to the private sector.

The Plan Review Section provides review of O&M manuals. The O&M program for Indiana was significantly expanded in FY'80.

#### 3) Michigan

The State plans to conduct construction grant compliance inspections after completion of construction. Results are reported on Form 7500. The Corps of Engineers is conducting periodic and final construction grants inspections (without Form 7500).

Resources are deficient now to carry out a full O&M program; however, O&M inspections are planned for FY'83.

Some inspections are performed that are not reported on Form 7500. These are usually related to operational assistance.

Finally, the state conducts follow-up inspections on an estimated 10% of the total inspections performed. Also, reviews of O&M manuals are performed.

#### 4) Minnesota

The State is conducting construction grant compliance inspections. The Corps of Engineers is conducting periodic and final construction grants inspections (without Form 7500).

Whenever a CEI or CSI is performed, at a major discharger, Form 7500 is completed along with the Form 3560. For minor dischargers, page 5 of the Form 7500 is completed along with the Form 3560.

Follow-up inspections are being performed, as well as technical assistance.

Also, the State reviews O&M manuals and approves start-up services and plans of operation for plants within its jurisdiction.

#### 5) Ohio

The State does not conduct construction grant compliance inspections. The State would conduct such inspections if EPA provided a list of those plants that have gone on line during the past year. The Corps of Engineers is conducting periodic and final construction grants inspections (without Form 7500).

The State conducts O&M inspections and reports the results on Form 7500. In addition, a Form 7500 is completed whenever a Form 3560 is filled out for compliance purposes.

The State conducts a great number of inspections other than those reported on Form 7500. Forms 7500 are completed for major dischargers only.

The State performs follow-up inspections and provides limited technical assistance to problem plants, including review of O&M manuals for plants in its jurisdiction.

#### 6) Wisconsin

For Federally funded projects, the State conducts a final audit on plants when construction is complete, but results are not reported on Form 7500. The Corps of Engineers conducts periodic inspections during construction of Federally funded projects. However, most projects are state-funded and inspected by State personnel.

The State performs O&M inspections, but results are not reported on Form 7500. State personnel write a narrative report for each inspection done.

The State performs follow-up inspections and technical assistance. They have at least one person in each District Office who performs O&M inspections in that district, plus any follow-up and technical assistance work.

Also, the State provides review of O&M manuals for plants in its jurisdiction.

b. Federal Role

The role of the USEPA in the O&M program is mainly one of overview. However, in those areas where the States cannot meet their commitments due to a lack of resources, the USEPA has been providing limited supplemental assistance. Assistance has mainly been provided in the area of conducting O&M inspections, and in providing limited technical assistance. The U.S. EPA has also been managing a Region-Wide O&M awards program which has recognized outstanding treatment plants in each state. The USEPA has also identified O&M deficiencies at 30 major municipal treatment plants in the Great Lakes Basin, and has provided assistance to 9 of these plants through the Great Lakes POTW Optimization Contract, completed in 1982.

6. RESOURCE CONSERVATION AND RECOVERY ACT PROGRAM (RCRA)

This activity is under the supervision of the Waste Management Division. Current information describing this program in Region V is contained in the document entitled "Guidance Fiscal Year 1984 Hazardous Waste Work Program," May 1983.

7. DRINKING WATER PROGRAM

a. State Role

States which have requested and have been granted primary enforcement responsibility (primacy) for the Safe Drinking Water Act (SDWA) regulations carry out monitoring with the Region providing an overview role. The primacy states in Region V are Illinois, Michigan, Minnesota, Ohio and Wisconsin. Indiana has not assumed primary enforcement responsibility but maintains a program which meets most SDWA monitoring needs for municipal systems.

Special issues exist in one state. Illinois has public water systems which exceed maximum containment levels for barium, fluoride and radium. Region V plays a lead role in working with the states to resolve issues of this nature.

b. Federal Role

The federal role of overview of State programs having primacy varies depending on the status of the State with regard to new Federal monitoring regulations. This is because the states vary in their mechanism for adopting new regulations and in their view toward the need for certain of the Federal regulations. Therefore, for new regulations the primary role for monitoring may remain with the Region for an interim period of time. For these interim periods, the Region places a high degree of emphasis on cooperative agreements whereby the State executes the extra monitoring voluntarily as part of its routine program.

In the case of Indiana, the Federal role includes receiving the monitoring data from the State and local laboratories and checking these data for compliance with SDWA regulations. Region V enforces all monitoring needs in Indiana with regard to all public water systems.

For all States, Region V plays a lead role in research need investigations, particularly those developed by Headquarters or the Region. Such investigations are also conducted by the states but on a more limited basis.

8. DREDGE AND FILL ACTIVITIES

a. State Role

Under section 404 (certification), states are required to review and certify any applicant's permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into navigable waters. Some monitoring may be done by states prior to certification.

b. Federal Role

No monitoring activities

9. ENVIRONMENTAL RESEARCH LABORATORY - DULUTH (ERL-D)

a. State Role

No monitoring activities

b. Federal Role

Historically, the major research emphasis at ERL-D has been on the effect of pollution on aquatic life. More recent efforts not only include continuous emphasis on the effects of waterborne toxic pollutants on aquatic life, but also on the effects of pollutants from atmospheric and solid residue sources.

10. LARGE LAKES RESEARCH STATION - GROSSE ILE (LLRS)

a. State Role

Funding of state monitoring activities is minimal. If states are sampling in an area of interest to the LLRS, funding may be allocated for the states to do additional work as needed.

b. Federal Role

The Large Lakes Research Station allocates funds to Universities, and to a lesser degree to states, to conduct water monitoring studies in Lake Huron and Saginaw Bay as well as other Great Lakes studies.