

The background of the entire cover is a teal-tinted photograph. The upper two-thirds of the image show a bright sky with scattered white clouds. A large, dark, horizontal band of land, likely a river valley, stretches across the middle of the image. Below this band, the lower third of the image shows a calm body of water, possibly a river or lake, reflecting the sky. The overall color scheme is monochromatic, using various shades of teal and blue.

OHIO RIVER

***WATER QUALITY
FACT BOOK*** 1986

Ohio River Valley Water Sanitation Commission

MEMBERS OF THE COMMISSION *

ILLINOIS

Richard J. Carlson, Director, Illinois Environmental Protection Agency
Richard S. Engelbrecht, Ph.D., Professor of Environmental Engineering,
University of Illinois
Cordell McGoy, Correctional Lieutenant, Vienna Correctional Center

INDIANA

Joseph H. Harrison, Attorney, Bowers, Harrison, Kent & Miller
Albert R. Kendrick, Jr., Safety & Environmental Protection Superintendent,
Monsanto Company
Nancy A. Maloley, Commissioner, Indiana Department of Environmental Management

KENTUCKY

Charlotte E. Baldwin, Secretary, Natural Resources and Environmental Protection
Cabinet
Gordon R. Garner, Executive Director, Louisville & Jefferson County Metropolitan
Sewer District
Ted R. Richardson, P.E., Cardinal Engineering Corporation

NEW YORK

Thomas A. Storch, Ph.D., Director, Environmental Resources Center, SUNY-Fredonia
Henry G. Williams, Commissioner, Department of Environmental Conservation
Vacant

OHIO

Lloyd N. Clausing, Consultant, Portsmouth
Pasquale V. Scarpino, Ph.D., Professor of Environmental Engineering, University
of Cincinnati
Warren W. Tyler, Director, Ohio Environmental Protection Agency

PENNSYLVANIA

Nicholas DeBenedictis, Secretary, Department of Environmental Resources
Paul Emler, Jr., Director of Field Operations, Living Lakes, Inc.
Gerald C. Smith, System Company President, American Water Works Service Company

VIRGINIA

Joseph S. Cragwall, State Water Control Board
Millard B. Rice, State Water Control Board
Robert C. Wininger, State Water Control Board

WEST VIRGINIA

Edgar N. Henry, Director, Water Development Authority
David K. Heydinger, M.D., State Director of Health
David W. Robinson, Chief, Division of Water Resources, Department of Natural
Resources

UNITED STATES

Jean M. Barren
Joseph D. Cloud
Jack E. Ravan, Regional Administrator, U.S. EPA Region IV

* As of April 1, 1986

OFFICERS

Paul Emler, Jr., Chairman
Joseph H. Harrison, Vice Chairman
Thomas A. Storch, Secretary/Treasurer
Leo Weaver, Executive Director and Chief Engineer

LEGAL COUNSEL

Leonard A. Weakley, Taft, Stettinius and Hollister

OHIO RIVER WATER QUALITY FACT BOOK

A Compendium of Information for Use in Water Quality
Analysis of the Ohio River

OHIO RIVER VALLEY WATER SANITATION COMMISSION
49 East Fourth Street, Suite #815
Cincinnati, Ohio 45202

April, 1986

FOREWORD

This book contains information on the Ohio River, its tributaries, and its drainage basin which has been assembled for use in water quality analysis. Many factors, both natural and man made, affect the quality of the water of the Ohio. In order to interpret the results of water quality studies, it is necessary to have some understanding of these factors. Much of the information presented herein is available in other Commission documents; the objective in preparing this book is to establish a single, accessible source of information for use in water quality analysis of the Ohio River.

The information is divided into four sections: Hydrology, Land Use, Water Use, and Water Quality. It is intended that this will be a dynamic document with periodic updating and supplementation as new information becomes available. Users of the document are encouraged to suggest other information for inclusion in subsequent editions.

In addition to Commission sources, much of the information has been developed by other agencies actively concerned with the Ohio River. These include the U.S. Army Corps of Engineers, the U.S. Geological Survey and the water pollution control agencies of the six states along the Ohio River--Illinois, Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia.

Acknowledgement is due Senior Environmental Engineer Peter A. Tennant of the Commission staff who was principally responsible for the compilation of the "Fact Book."

Leo Weaver
Executive Director

TABLE OF CONTENTS

<u>Item</u>	<u>Page</u>
Section I: Hydrology.....	I-1
United States Geological Survey Stream Flow	
Gages - Ohio River Main Stem.....	I-5
Ohio River Navigation Dams.....	I-6
Primary Tributaries to the Ohio River.....	I-7
Corps of Engineers Reservoirs in the Ohio River	
Basin Which Provide Flow Augmentation.....	I-9
Annual Climatic Data for Selected Cities -	
Ohio River Basin.....	I-11
Monthly Air Temperatures at Selected Cities -	
Ohio River Basin.....	I-12
Precipitation in Selected Cities - Ohio River	
Basin.....	I-13
Sunshine and Wind in Selected Cities - Ohio	
River Basin.....	I-14
Average Annual Evaporative Loss from the Ohio	
River by Navigation Pool.....	I-15
Critical Flows and Discharge Quantities.....	I-16
Ohio River Velocity-Mile Point Relationships.....	I-17
Ohio River Channel Geometry.....	I-18
Section II: Land Use.....	II-1
Land Use in Drainage Areas of Ohio River	
Locations.....	II-3
Land Use in Major Ohio River Tributary Basins...	II-4
Land Use by Segment - Ohio River and Minor	
Tributaries.....	II-5
Land Area and Population within the Ohio River	
Basin - ORSANCO Compact States.....	II-6
Population of Cities in Ohio River Basin,	
1970 and 1980.....	II-7
Standard Metropolitan Statistical Area	
Population, 1970 and 1980.....	II-8
River Mile Points of County Lines.....	II-9
Section III: Water Use.....	III-1
Summary of Ohio River Segments.....	III-9
Ohio River Municipal Water Supply Intakes.....	III-10
Industrial Water Intakes on the Ohio River	
Main Stem.....	III-11
List of Power Generating Facilities.....	III-15
Municipal Discharges to the Ohio River.....	III-17
Industrial Wastewater Discharges to the	
Ohio River.....	III-20
River Terminals Handling Petroleum Products	
and Hazardous Chemicals.....	III-32
Communities with Combined Sewer Systems.....	III-41

<u>Item</u>	<u>Page</u>
Section IV: Water Quality	IV-1
Commission Monitoring Locations and STORET Station Codes.....	IV-4
State Sampling Locations in the Ohio River Basin.....	IV-6
United States Geological Survey National Stream Quality Accounting Network Stations - Ohio River and Primary Tributaries.....	IV-13
Average Monthly Stream Flow - Ohio River Electronic Monitors.....	IV-14
Minimum Monthly Average Stream Flow - Ohio River Electronic Monitors.....	IV-15
Average Monthly Stream Flow - Ohio River Tributary Electronic Monitors.....	IV-16
Minimum Monthly Average Flow - Ohio River Tributary Electronic Monitors.....	IV-17
Average Monthly Temperature - Ohio River Electronic Monitors.....	IV-18
Maximum Monthly Average Temperature - Ohio River Electronic Monitors.....	IV-19
Average Monthly Temperature - Ohio River Tributary Electronic Monitors.....	IV-20
Maximum Monthly Average Temperature - Ohio River Tributary Electronic Monitors.....	IV-21
Average Monthly Specific Conductance - Ohio River Electronic Monitors.....	IV-22
Average Monthly Specific Conductance - Ohio River Tributary Electronic Monitors.....	IV-23

Appendices:

A:	Conversion Factors for Water Quality Analysis	A1
B:	Ohio River Valley Water Sanitation Commission Pollution Control Standards.	B1
C:	Directory of State Water Pollution Control Agencies.....	C1

Figure I:	Ohio River Basin with Major Tributary Watersheds.....	I-4
Figure II:	Ohio River Basin - Principal Cities.....	II-2
Figure III:	Municipal Water Intakes and Wastewater Discharges of Two MGD or Greater.....	III-3
Figure IV:	Commission Monitoring Locations.....	IV-3

SECTION I: HYDROLOGY

Hydrology is the branch of science dealing with the distribution of water on the surface of the earth and underground and with the cycle involving precipitation, evaporation and flow. For purposes of water quality analysis of rivers, the most important hydrologic factor is stream flow in terms of quantity and velocity. The quantity of flow in a river is a function of the amount of precipitation falling on the drainage basin and the runoff characteristics of the basin. Seasonal variations in precipitation result in similar variations in stream flow. In the Ohio River, flow is also influenced by operations of the Corps of Engineers which are undertaken to maintain year-round navigation on the river.

Long-term records of stream flow are maintained by the U.S. Geological Survey which operates gages on streams throughout the country. Twelve gages are operated on the Ohio River.

Navigation dams on the Ohio River have a significant impact on the velocity of the stream. The modern high lift dams have resulted in a deeper, slower moving river than existed previously. This could mean several changes in water quality: settling of certain materials would increase, resulting in lower turbidity, while atmospheric reaeration would decrease, resulting in lower dissolved oxygen. The year in which each high lift dam was constructed is therefore critical information in the interpretation of historic water quality data.

Most of the Ohio River Basin is drained by tributaries; less than five percent of the basin drains directly to the main stem. The runoff characteristics of the tributaries therefore determine the quantity of flow in the Ohio at any time.

The Corps of Engineers operates numerous reservoirs in the Ohio River Basin. Most were built for flood control purposes; many are also used to provide flow augmentation at critical periods. This has resulted in an increase in the quantity of flow which can be expected in the dry weather months.

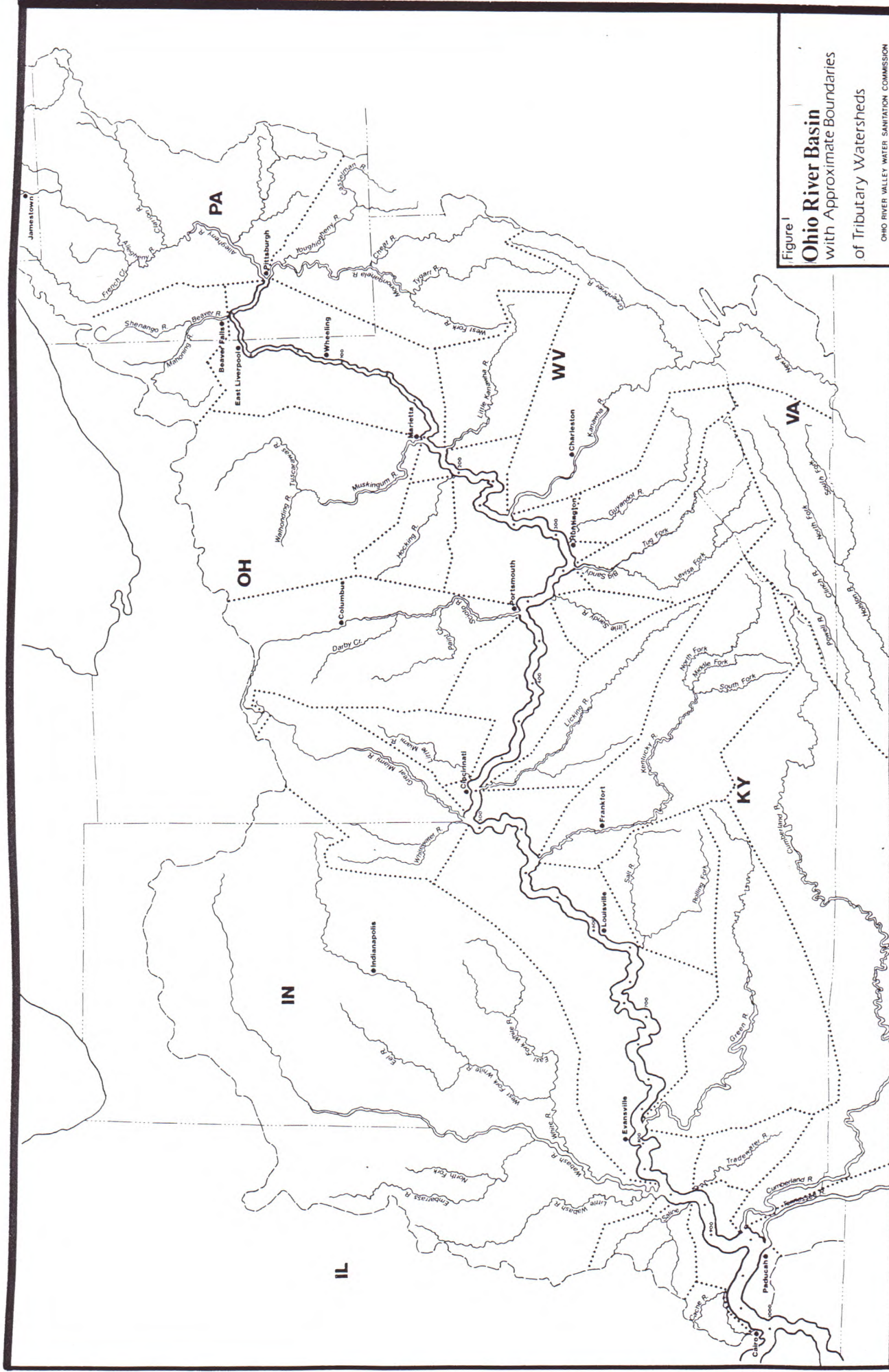
Climate is a major factor in determining the seasonal variation in stream flow. Precipitation is the most obvious factor. The form of precipitation--whether it is rain or snow--is also significant. Air temperature, besides determining the form of precipitation, is also the dominant factor determining water temperature. The amount of sunshine will affect the photosynthetic activity of aquatic organisms while wind speed can influence the surface turbulence of a large river which leads to atmospheric reaeration. Evaporation is a significant factor in the seasonal variation of stream flows. Inspection of the data presented shows that precipitation is lowest in February; due to the effects of evaporation, however, stream flow is lowest in September.

Because of the channelization of the Ohio River, it is possible to apply some basic hydraulic principles to estimate stream velocity and channel geometry. These principles cannot usually be applied to free flowing streams. A considerable amount of data on the cross-section of the river is available. Regression analysis has been applied to those data in order to obtain relationships for cross-sectional area, depth, and velocity at a base flow of 10,000 cubic feet per second. Under the assumption that the cross-sectional area does not vary greatly when the river is at pool stage, a direct relationship between flow and velocity can be inferred. This is the basis for time-of-travel estimates by the Commission which have proven fairly accurate in spill situations.

The lowest flow to be expected for seven consecutive days in a ten-year period has been established as the basis for water quality standards and associated treatment requirements for wastewater discharges. That flow on the Ohio River is determined to a large degree by the operations of the Corps of Engineers which are designed to maintain a minimum depth of nine feet for navigation purposes.

Figure 1
Ohio River Basin
 with Approximate Boundaries
 of Tributary Watersheds

OHIO RIVER VALLEY WATER SANITATION COMMISSION



UNITED STATES GEOLOGICAL SURVEY STREAM FLOW GAGES -
OHIO RIVER MAIN STEM

<u>Number</u>	<u>Location</u>	<u>Mile Point</u>	<u>Drainage Area Square Miles</u>	<u>Year Initiated</u>	<u>Comment</u>
0308600	At Sewickley, PA	13.3	19,500	1933	*COE
03111534	At Martins Ferry, OH	87.5	24,700	1978	COE
03150800	Near Marietta, OH	174.3	35,600	1968	COE; Gage height only
03159530	At Belleville Dam, WV	203.9	39,300	1974	
03201500	At Point Pleasant, WV	265.4	52,760	1977	COE; Gage height only
03206000	At Huntington, WV	311.6	55,900	1934	COE; Flows less than 50,000 cfs not recorded
03216600	At Greenup Dam, KY	341.5	62,000	1968	
03277200	At Markland Dam, KY	531.5	83,170	1970	
03294500	At Louisville, KY	607.3	91,170	1928	
03303280	At Cannellton Dam, KY	720.8	97,000	1975	
03322000	At Evansville, IN	792.3	107,000	1936	Low flows not recorded
03611500	At Metropolis, IL	944.1	203,000	1928	

* COE - Part of US Army Corps of Engineers Telemetry Network

Source of Information: U.S.G.S. Yearbooks for Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Illinois.

OHIO RIVER NAVIGATION DAMS

<u>Mile Point</u>	<u>Name</u>	<u>Normal Pool Elevation</u>	<u>Year Placed In Operation</u>
6.2	Emsworth	710.0	1922
13.2	Dashields	692.0	1930
31.7	Montgomery	682.0	1937
54.4	New Cumberland	664.5	1960
84.2	Pike Island	644.0	1964
126.4	Hannibal	623.0	1973
161.7	Willow Island	602.0	1973
203.9	Belleville	582.0	1966
237.5	Racine	560.0	1968
279.2	Gallipolis	538.0	1938
341.0	Greenup	515.0	1960
436.2	Meldahl	485.0	1963
531.5	Markland	455.0	1960
606.8	McAlpine	420.0	1962
720.7	Cannelton	383.0	1968
776.1	Newburgh	358.0	1970
846.0	Uniontown	342.0	1970
918.5	Smithland	324.0	1981
938.9	Lock and Dam 52	302.0	1930
962.6	Lock and Dam 53	290.0	1930

Information provided by the U.S. Army Corps of Engineers

PRIMARY TRIBUTARIES TO THE OHIO RIVER

<u>Tributary Name</u>	<u>Enters Ohio at Mile Point</u>	<u>Stream Length (Miles)</u>	<u>Drainage Area (Square Miles)</u>
Allegheny River (PA)	0.0 (N)*	325	11,700
Monongahela River (PA)	0.0 (S)	128	7,400
Chartiers Creek (PA)	2.5 (S)		277
Beaver River (PA)	25.4 (N)	21	3,130
Raccoon Creek (PA)	29.6 (S)		200
Little Beaver R. (PA)	39.5 (N)	51	510
Yellow Creek (OH)	50.4	34	240
Cross Creek (OH)	71.6	27	128
Buffalo Creek (WV)	74.7		160
Short Creek (OH)	81.4	29	147
Wheeling Creek (OH)	91.0	30	108
Wheeling Creek (WV)	91.0		300
McMahon Creek (OH)	94.7	28	91
Grove Creek (WV)	102.5		75
Captina Creek (OH)	109.6	39	181
Fish Creek (WV)	113.8		250
Sunfish Creek (OH)	118.0	31	114
Fishing Creek (WV)	128.3		220
Middle Island Creek (WV)	154.0		560
Little Muskingum River (OH)	168.3	70	315
Duck Creek (OH)	170.7	52	228
Muskingum River (OH)	172.2	112	8,040
Little Kanawha River (WV)	184.6	160	2,320
Little Hocking River (OH)	191.8	18	103
Hocking River (OH)	199.3	100	1,190
Shade River (OH)	210.6	38	221
Shady Creek (WV)	220.6		115
Mill Creek (WV)	231.5		230
Leading Creek (OH)	254.2	30	151
Kanawha River (WV)	265.7	97	12,200
Raccoon Creek (OH)	276.0	109	684
Symmes Creek (OH)	289.0	70	356
Guyandot River (WV)	305.2	66	1,670
Twelvepole Creek (WV)	313.2		440
Big Sandy River (WV-KY)	317.1	27	4,280
Little Sandy River (KY)	336.4		400
Pine Creek (OH)	346.9	48	185
Little Scioto River (OH)	349.0	41	233
Scioto River (OH)	356.5	237	6,510
Tygarts Creek (KY)	353.3		336
Kinniconnick Creek (KY)	368.1		253
Ohio Brush Creek (OH)	388.0	57	435
Eagle Creek (OH)	415.7	31	154
Whiteoak Creek (OH)	423.9	49	234
Little Miami R. (OH)	464.1	90	1,670

<u>Tributary Name</u>	<u>Enters Ohio at Mile Point</u>	<u>Stream Length (Miles)</u>	<u>Drainage Area (Square Miles)</u>
Licking River (KY)	470.2	320	3,670
Mill Creek (OH)	472.5	28	166
Great Miami River (OH)	491.1	161	5,400
Tanners Creek (IN)	494.8		136
Laughory Creek (IN)	498.7		350
Kentucky River (KY)	545.8	255	6,970
Little Kentucky River (KY)	546.5	35	147
Indian Kentucky River (IN)	550.5		150
Silver Creek (IN)	606.5		225
Salt River (KY)	629.9	125	2,890
Big Indiana Creek (IN)	657.0		249
Blue River (IN)	663.0		466
Sinking Creek (KY)	700.9		199
Anderson Creek (IN)	731.5		276
Blackford Creek (KY)	742.2		124
Little Pigeon Creek (IN)	773.0		415
Green River (KY)	784.2	370	9,230
Pigeon Creek (IN)	792.9		375
Wabash River (IN-IL)	848.0	475	33,100
Saline River (IL)	867.3	27	1,170
Tradewater River (KY)	873.5	110	1,000
Cumberland River (KY)	920.4	693	17,920
Tennessee River (KY)	934.5	652	40,910
Cache River (IL)	975.7		720

*(N) or (S) indicates tributary enters Ohio on North or South side

Drainage Area Summary

Total Ohio River Basin	-	203,940 square miles
Tributaries with drainage areas 1,000 square miles or more	-	182,370 square miles (89.4 percent)
Tributaries with drainage areas less than 1,000 square miles	-	12,692 square miles (6.2 percent)

CORPS OF ENGINEERS RESERVOIRS IN THE OHIO RIVER BASIN
WHICH PROVIDE FLOW AUGMENTATION

<u>Tributary Basin</u>	<u>Project</u>	<u>Year Completed</u>	<u>Drainage Area (Square Miles)</u>	<u>Storage Capacity (1000 Acre Feet)</u>
Allegheny	Kinzua Dam	1967	2,180	1180.0
	East Branch, Clarion R.	1952	72.4	84.3
	Woodcock Creek	1974	45.7	20.0
Monongahela	Youghiogheny	1948	434	254.0
	Stonewall Jackson	(UC)	102	74.6
Beaver	Berlin	1943	249	91.2
	Mosquito Creek	1944	97.4	104.1
	Shenango	1967	589	192.4
	M.J. Kirwan	1967	80.5	78.7
Little Kanawha	Burnsville	1978	165	65.9
Kanawha	Summersville	1964	803	413.4
	Sutton	1960	537	265.3
Guyandot	R.D. Bailey	1980	540	203.7
Big Sandy	Fishtrap	1969	395	164.4
	J.W. Flannagan	1963	221	145.7
	Paintsville	1983	92.5	73.5
	Yatesville	(UC)	208	87.0
Little Sandy	Grayson	1969	196	119.0
Scioto	Paint Creek	1974	573	145.0
Little Miami	Caesar Creek	1978	237	242.2
	East Fork	1978	342	294.8
Licking	Cave Run	1974	826	614.1
Great Miami	C.J. Brown	1974	82.0	63.7
Kentucky	Buckhorn	1961	408	167.4
	Carr Fork	1976	58.2	47.7
Salt	Taylorsville	1983	353	291.7
Green	Barren River	1964	940	815.2
	Nolin	1963	703	609.4
	Rough River	1960	454	334.4
	Green River	1969	682	723.2
Wabash	Huntington	1969	707	153.1
	Cecil M. Hardin	1960	216	132.8

<u>Tributary Basin</u>	<u>Project</u>	<u>Year Completed</u>	<u>Drainage Area (Square Miles)</u>	<u>Storage Capacity (1000 Acre Feet)</u>
Wabash (cont'd)	Mississinewa	1968	809	368.4
	Monroe	1966	441	441.0
	Patoka	1978	168	301.6
	Salamonie	1967	553	263.6
Cumberland	Martins Fork	1978	55.7	21.1

(UC) - Project under construction

Information provided by the U.S. Army Corps of Engineers

ANNUAL CLIMATIC DATA FOR SELECTED CITIES

OHIO RIVER BASIN

	Average Temperature °F	Average Wind Speed MPH	Average % Sunshine	Average No. Days with Precipitation	Annual Precipitation, Inches	Annual Snow and Ice, Inches
Charleston	54.8	6.4	49	152	42.43	31.8
Cincinnati	54.5	9.1	56	129	40.10	24.9
Columbus	51.7	8.7	51	136	36.97	28.6
Indianapolis	52.1	9.6	58	124	39.12	22.5
Louisville	56.2	8.4	57	124	43.56	18.0
Pittsburgh	50.3	9.3	49	151	36.29	45.3

Source: Statistical Abstract of the United States 1984,
U.S. Department of Commerce, Bureau of the Census

MONTHLY AIR TEMPERATURES AT SELECTED CITIES - OHIO RIVER BASIN

		Temperatures in Degrees Fahrenheit											
		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Charleston, WV	Record Max.	79	78	87	91	93	98	102	100	102	92	85	80
	Normal Daily Max.	41.8	45.4	55.4	67.3	76.0	82.5	85.2	84.2	78.7	67.7	55.6	45.9
	Normal Daily Mean	32.9	35.6	44.8	55.3	63.9	71.4	74.5	73.7	67.6	55.9	45.3	36.9
	Normal Daily Min.	23.9	25.8	34.1	43.3	51.8	59.4	63.8	63.1	56.4	44.0	35.0	27.8
	Record Min.	-12	-6	0	19	26	33	46	41	34	17	6	-2
Cincinnati, OH	Record Max.	69	73	83	89	93	97	100	102	98	88	80	70
	Normal Daily Max.	38.0	42.0	52.3	65.2	75.0	82.9	86.3	85.7	79.4	67.4	52.8	42.2
	Normal Daily Mean	30.3	33.5	43.0	54.7	64.3	72.4	76.1	75.0	68.5	56.7	44.6	34.9
	Normal Daily Min.	22.5	25.0	33.7	44.2	53.6	61.9	65.9	64.4	57.7	46.0	36.3	27.5
	Record Min.	-25	-10	-11	17	27	39	47	43	33	16	1	-11
Columbus, OH	Record Max.	74	73	85	89	94	102	100	100	100	90	80	72
	Normal Daily Max.	34.7	38.1	49.3	62.3	72.6	81.3	84.4	83.0	76.9	65.0	50.7	39.4
	Normal Daily Mean	27.1	29.8	40.0	51.4	61.4	70.2	73.8	72.4	65.8	53.9	42.1	32.1
	Normal Daily Min.	19.4	21.5	30.6	40.5	50.2	59.0	63.2	61.7	54.6	42.8	33.5	24.7
	Record Min.	-19	-13	-2	18	25	35	43	39	31	20	5	-10
Indianapolis, IN	Record Max.	71	74	85	89	93	102	104	100	100	90	81	70
	Normal Daily Max.	34.2	38.5	49.3	63.1	73.4	82.3	85.2	83.7	77.9	66.1	50.8	39.2
	Normal Daily Mean	26.0	29.9	40.0	52.4	62.5	71.6	75.1	73.2	66.6	54.8	41.8	31.5
	Normal Daily Min.	17.8	21.1	30.7	41.7	51.5	60.9	64.9	62.7	55.3	43.4	32.8	23.7
	Record Min.	-20	-19	-7	16	28	39	44	41	28	17	-2	-15
Louisville, KY	Record Max.	77	77	86	91	95	102	105	101	104	92	84	73
	Normal Daily Max.	40.8	45.0	54.9	67.5	76.2	84.0	87.6	86.7	80.6	69.2	55.5	45.4
	Normal Daily Mean	32.5	35.9	45.1	56.6	65.4	73.7	77.6	76.4	69.9	57.7	46.1	37.2
	Normal Daily Min.	24.1	26.8	35.2	45.6	54.6	63.3	67.5	66.1	59.1	46.2	36.6	28.9
	Record Min.	-20	-19	-1	24	31	42	50	49	33	23	-1	-9
Pittsburgh, PA	Record Max.	68	69	80	87	91	96	99	97	97	87	82	72
	Normal Daily Max.	34.1	36.8	47.6	60.7	70.8	79.1	82.7	81.1	74.8	62.9	49.8	38.4
	Normal Daily Mean	26.7	28.8	38.5	50.1	59.7	68.1	72.0	70.6	64.1	52.5	41.6	31.4
	Normal Daily Min.	19.2	20.7	29.4	39.4	48.5	57.1	61.3	60.1	53.3	42.1	33.3	24.3
	Record Min.	-18	-12	-1	15	26	34	42	40	31	16	-1	-7

Source: Statistical Abstract of the United States 1964, U.S. Department of Commerce, Bureau of the Census

PRECIPITATION IN SELECTED CITIES - OHIO RIVER BASIN

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Charleston, WV	16 3.48 10.4	14 3.11 8.4	15 4.00 4.9	13 3.52 0.3	13 3.68 T	11 3.32 -	13 5.36 -	11 4.15 -	9 3.01 -	10 2.63 0.2	12 2.90 2.6	14 3.27 5.0
Cincinnati, OH	12 3.09 7.8	11 2.58 5.3	13 3.83 4.8	13 3.71 0.4	11 4.07 T	11 3.83 -	10 4.04 -	9 3.45 -	8 3.11 -	8 2.47 0.1	11 3.03 2.6	12 2.89 3.9
Columbus, OH	13 2.75 8.6	12 2.18 6.1	14 3.23 4.6	13 3.41 0.7	13 3.76 T	11 4.01 -	11 4.01 -	9 3.70 -	8 2.76 T	9 1.91 T	11 2.64 2.8	12 2.61 5.8
Indianapolis, IN	12 2.65 6.0	10 2.46 5.0	13 3.61 3.6	12 3.68 0.5	12 3.66 T	10 3.99 -	9 4.32 -	9 3.46 -	8 2.74 -	8 2.51 T	10 3.04 2.1	11 3.00 4.9
Louisville, KY	12 3.38 6.2	11 3.23 4.3	13 4.73 3.8	12 4.11 0.1	11 4.15 -	10 3.60 -	11 4.10 -	8 3.31 -	8 3.35 -	7 2.63 T	10 3.49 1.4	11 3.48 2.2
Pittsburgh, PA	16 2.86 12.4	14 2.40 10.1	16 3.58 8.6	13 3.28 1.4	12 3.54 0.2	11 3.30 -	11 3.83 -	10 3.31 -	9 2.80 -	10 2.49 0.2	13 2.34 4.0	16 2.57 8.4
Days	- Number of days with .01 inch or more precipitation											
Precipitation	- Average monthly precipitation in inches											
Snow & Ice	- Average total snow and ice pellets in inches											
T	- Trace											

Source: Statistical Abstract of the United States 1984,
U.S. Department of Commerce, Bureau of the Census

SUNSHINE AND WIND IN SELECTED CITIES - OHIO RIVER BASIN

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Charleston, WV	Sun 7.6	37 7.8	44 8.5	50 7.8	56 6.2	59 5.6	62 5.1	59 4.4	59 4.8	54 5.3	37 6.8	30 7.2
Cincinnati, OH	Sun 10.6	44 10.5	50 11.1	55 10.8	60 8.8	66 8.0	68 7.2	66 6.7	66 7.4	58 8.1	44 9.6	38 10.2
Columbus, OH	Sun 10.3	42 10.3	44 10.8	51 10.1	56 8.5	60 7.6	61 6.8	61 6.5	61 6.8	57 7.8	38 9.4	31 9.9
Indianapolis, IN	Sun 11.0	50 11.0	51 11.8	55 11.3	61 9.5	67 8.6	67 7.5	70 7.2	66 7.9	63 8.9	43 10.4	39 10.5
Louisville, KY	Sun 9.6	48 9.7	49 10.4	55 9.9	60 8.0	65 7.5	66 6.7	67 6.4	65 6.8	62 7.2	47 8.9	42 9.3
Pittsburgh, PA	Sun 10.7	38 10.7	45 10.9	48 10.5	51 9.0	57 8.2	58 7.5	56 7.1	58 7.5	53 8.5	39 9.9	29 10.5

Sun - Average percentage of possible sunshine
Wind - Average wind speed, miles per hour

Source: Statistical Abstract of the United States 1984, U.S. Department of Commerce,
Bureau of the Census

AVERAGE ANNUAL EVAPORATIVE LOSS FROM THE OHIO RIVER
BY NAVIGATION POOL

Navigation Pool	Mile Point	Surface Area (ft ²)*	mean annual lake evapor- ation (in)**	water consumed (million ft ³ /yr)	cfs	MGD
Emsworth	0.0 - 6.2	4.8 x 10 ⁷	28.9	115.6	3.7	2.4
Dashields	6.2 - 13.3	5.0 x 10 ⁷	29.2	121.7	3.9	2.5
Montgomery	13.3 - 31.7	1.2 x 10 ⁸	29.5	295.0	9.4	6.1
New Cumberland	31.7 - 54.4	1.5 x 10 ⁸	30.1	376.3	11.9	7.7
Pike Island	54.4 - 84.2	1.9 x 10 ⁸	30.7	486.1	15.4	10.0
Hannibal	84.2 - 126.4	2.3 x 10 ⁸	31.5	603.8	19.1	12.4
Willow Island	126.4 - 161.7	2.4 x 10 ⁸	32.5	650.0	20.6	13.3
Belleville	161.7 - 203.9	2.9 x 10 ⁸	33.6	812.0	25.7	16.7
Racine	203.9 - 237.5	2.1 x 10 ⁸	34.2	598.5	19.0	12.3
Gallipolis	237.5 - 279.2	2.7 x 10 ⁸	34.3	771.8	24.5	15.9
Greenup	279.2 - 341.0	4.6 x 10 ⁸	34.5	1,322.5	41.9	27.2
Meldahl	341.0 - 436.2	8.0 x 10 ⁸	34.4	2,293.3	72.7	47.1
Markland	436.2 - 531.5	9.0 x 10 ⁸	34.3	2,572.5	81.6	52.9
McAlpine	531.5 - 606.8	7.9 x 10 ⁸	34.7	2,284.4	72.4	46.9
Cannelton	606.8 - 720.7	1.1 x 10 ⁹	35.2	3,226.7	102.3	66.3
Newburgh	720.7 - 776.1	7.3 x 10 ⁸	35.4	2,153.5	68.3	44.3
Uniontown	776.1 - 846.0	8.3 x 10 ⁸	35.5	2,455.4	77.9	50.8
Smithland	846.0 - 918.5	1.1 x 10 ⁹	35.9	3,290.8	104.4	67.7
Lock & Dam 52	918.5 - 938.9	3.7 x 10 ⁸	36.2	1,116.2	35.4	22.9
Lock & Dam 53	938.9 - 962.6	4.9 x 10 ⁸	36.2	1,478.2	46.9	30.4
Cairo	962.6 - 981.0	2.7 x 10 ⁸	36.5	821.3	26.0	16.8
Total				27,845.6	883.0	572.6

*Mean Pool Surface Area calculated from US Army Corps of Engineers' navigation maps.

**Source: US Department of Commerce, Environmental Science Services Administrator (1968). Climatic Atlas of the United States. 80 pp.

CRITICAL FLOWS AND DISCHARGE QUANTITIES

<u>Segment</u>	<u>Mile Point</u>	*Critical Flow Cubic Feet per Second	Discharge Load Which Will Raise Stream Concentration by 1 mg/l	
			Pounds per Day	Kilograms per Day
Pittsburgh to Montgomery Dam	0.0 - 32.4	4,800	25,900	11,800
Montgomery to Willow Island	32.4 - 161.8	5,800	31,300	14,200
Willow Isl. to Gallipolis Dam	161.8 - 279.2	6,800	36,700	16,700
Gallipolis to Greenup Dam	279.2 - 341.0	8,500	45,900	20,900
Greenup to Meldahl Dam	341.0 - 436.2	9,800	52,900	24,100
Meldahl to McAlpine Dam	436.2 - 605.8	11,000	59,400	27,000
McAlpine to Uniontown Dam	605.8 - 846.0	13,000	70,200	31,900
Uniontown to Smithland Dam	846.0 - 918.5	18,800	102,000	46,100
Smithland to Cairo Point	918.5 - 981.0	46,300	250,000	114,000

* Minimum 7 consecutive day low flow occurring once in 10 years based on calculations
by the US Corps of Engineers

OHIO RIVER VELOCITY - MILE POINT RELATIONSHIPS

Pool	Mile Points	A	B	Average Velocity (Miles per Hour)	at 10,000 cfs Time of Travel (Hours)	
					Reach	Total
Emsworth	0.0- 6.2	0.486	-.0251	.278	22	22
Dashields	6.2- 13.3	0.828	-.0335	.342	21	43
Montgomery	13.3- 31.7	0.949	-.0242	.276	67	110
New Cumberland	31.7- 54.4	0.739	-.0093	.231	98	208
Pike Island	54.4- 84.2	1.431	-.0144	.231	101	309
Hannibal	84.2-120.4	1.616	-.0113	.297	145	454
Willow Island	126.4-161.7	1.785	-.0093	.304	116	570
Belleville	161.7-203.9	2.702	-.0126	.272	155	725
Racine	203.9-237.5	2.706	-.0105	.205	127	852
Gallipolis	237.5-279.2	3.138	-.0106	.272	153	1005
Greenup	279.2-341.0	2.826	-.0081	.214	289	1294
Meldahl	341.0-436.2	2.850	-.0060	.353	270	1564
Markland	436.2-531.5	1.747	-.0031	.168	567	2131
McAlpine	531.5-605.0	3.301	-.0053	.797	373	2504
Cannelton	605.0-720.7	2.394	-.0032	.186	622	3126
Newburgh	720.7-776.1	3.429	-.0042	.195	284	3410
Uniontown	776.1-846.0	2.741	-.0031	.155	451	3861
Smithland	846.0-918.5	2.532	-.0026	.162	448	4309
L&D 52	918.5-938.9	7.248	-.0075	.193	106	4415
L&D 53	938.9-962.6	5.954	-.0061	.105	226	4641
	962.6-981.0	21.318	-.0215	.289	64	4705

Velocity (in feet per second at 10,000 cfs) = A + (B x mile point)

Coefficients derived from rregression analysis of cross sectional area data.

OHIO RIVER CHANNEL GEOMETRY

River at Normal Pool

<u>Pool</u>	<u>Mile Point</u>	<u>Depth</u> (feet)	<u>Width</u> (feet)	<u>Area</u> (square feet)	<u>Bottom Slope</u> (feet per mile)
Emsworth	0.0- 6.2	21	1456	24,500	0
Dashields	6.2- 13.3	14	1467	19,900	0.7
Montgomery	13.3- 31.7	25	1376	24,700	0.2
New Cumberland	31.7- 54.4	22	1439	29,700	0.2
Pike Island	54.4- 84.2	19	1338	23,200	0.4
Hannibal	84.2-120.4	21	1133	23,400	0.5
Willow Island	126.4-161.7	23	1194	22,400	0.6
Belleville	161.7-203.9	24	1327	25,100	0.5
Racine	203.9-237.5	24	1275	25,700	0.5
Gallipolis	237.5-279.2	26	1154	25,100	0.6
Greenup	279.2-341.0	26	1111	31,800	0.4
Meldahl	341.0-436.2	23	1603	19,300	0.3
Markland	436.2-531.5	31	1594	40,700	0.4
McAlpine	531.5-605.0	25	2040	34,600	0.4
Cannelton	605.0-720.7	32	1674	36,600	0.3
Newburgh	720.7-776.1	28	2477	35,000	0.3
Uniontown	776.1-846.0	28	2401	44,10	0.3
Smithland	846.0-918.5	30	4116	42,000	0.3
L&D 52	918.5-938.9	26	3662	35,300	0.3
L&D 53	938.9-962.6	20	3925	64,900	0.2
Open	962.6-981.0	13	3135	23,600	0.2

Derived from cross sectional area data provided by the U.S. Corps of Engineers.

SECTION II: LAND USE

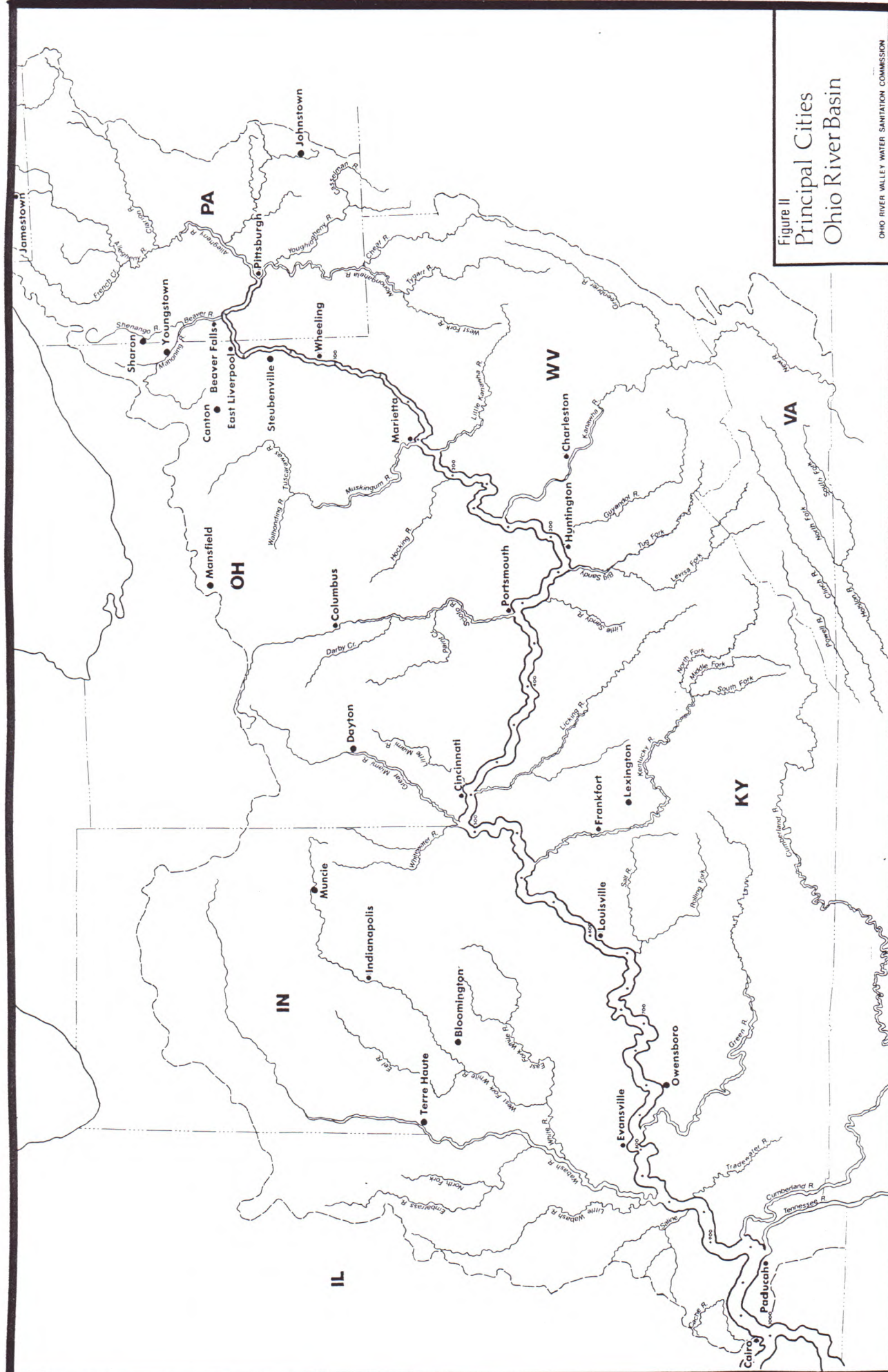
Land use is a significant factor in determining both the runoff characteristics of a drainage basin and the water quality of its streams. In urban areas with considerable paved surfaces and storm drainage systems, runoff is conveyed quickly to streams. Runoff is conveyed more slowly from forested areas. Runoff from cropland may contain nutrients from fertilizers as well as pesticides. Urban runoff can contain numerous constituents such as road salts and heavy metals.

Three summaries of land use are presented on the following pages. The first presents land use in the entire drainage areas, including tributaries, of certain Ohio River locations. The second summary is of land use in major tributary basins. The third summary is of land use in the drainage area of the Ohio River and minor tributaries arranged by segment. The 19 segments are those used by the Commission for analytical purposes.

The remainder of this section presents data on population within the basin. The number of people living in an area will determine the amount of domestic wastewater generated. The data indicate that the population residing in the basin continues to grow, and that most of the growth is occurring in outlying areas. The central cities generally show population declines.

Figure II
Principal Cities
Ohio River Basin

OHIO RIVER VALLEY WATER SANITATION COMMISSION



LAND USE IN DRAINAGE AREAS OF OHIO RIVER LOCATIONS

Location	Mile Point	Drainage Area (Square Miles)	Percent				
			Cropland	Pasture	Forest	Urban	Other
South Heights	15.2	19,500	10.5	7.6	49.7	4.7	27.5
Pike Island	84.2	24,700	14.6	8.7	46.4	6.3	24.0
Willow Island	161.8	27,560	14.7	10.1	47.2	6.1	21.9
Belleville	203.9	39,300	15.7	12.3	45.7	5.7	20.6
Gallipolis	279.2	52,760	14.1	13.0	51.7	5.1	16.1
Huntington	306.9	55,900	13.8	12.8	53.0	5.0	15.4
Greenup	341.0	62,000	13.9	12.5	53.9	4.9	14.8
Markland	531.5	83,170	22.9	13.3	45.9	5.9	12.0
Louisville	600.6	91,170	22.6	14.7	45.2	5.6	11.9
Cannelton	720.7	97,000	22.6	15.5	44.8	5.5	11.6
Evansville	791.5	107,000	23.7	15.6	44.2	5.2	11.3
Smithland	918.5	144,170	28.9	14.3	36.7	5.2	14.9
Joppa	952.3	*162,090	27.8	14.5	38.5	5.0	14.2

* Tennessee River Drainage Area Not Included

Source: Derived from The Ohio Main Stem: Water and Related Land Resources Study Report, Ohio River Basin Commission, January, 1978.

LAND USE IN MAJOR OHIO RIVER TRIBUTARY BASINS

Basin	Area Square Miles	Percent Cropland	Percent Pasture	Percent Forest	Percent Urban	Percent Mine Disturbed
Allegheny	11,700	12.1	3.3	50.2	3.4	2.0
Monongahela	7,400	8.1	14.8	50.7	4.1	3.0
Beaver	3,130	33.6	10.7	30.7	11.9	2.0
Muskingum	8,040	34.0	17.3	34.3	8.6	3.5
Kanawha	12,200	7.6	15.2	71.0	3.1	1.6
Big Sandy	4,280	5.7	5.3	82.5	1.6	3.5
Scioto	6,510	60.0	9.0	21.0	7.0	0.1
Little Miami	1,670	58.0	12.3	13.6	11.3	0.0
Licking	3,670	23.9	33.8	34.7	3.9	0.1
Great Miami	5,400	62.8	10.4	10.5	11.1	0.0
Green	9,230	33.2	17.6	39.5	2.4	1.3
Wabash	33,100	43.3	9.9	15.0	4.8	0.4
Cumberland	17,920	18.9	16.2	52.9	3.9	-

Source: Land Use and Hydrologic Impacts on Water Quality - Ohio River Basin,
Ohio River Valley Water Sanitation Commission, March 6, 1980.

LAND USE BY SEGMENT - OHIO RIVER
AND MINOR TRIBUTARIES

Segment	Percent Cropland	Percent Pasture	Percent Forest	Percent Urban	Percent Other
1	7.0	1.8	18.5	54.6	18.1
2	23.3	18.4	39.4	11.6	7.3
3	26.7	14.3	39.2	13.5	6.3
4	19.7	25.3	43.8	5.9	5.3
5	11.2	18.0	63.7	3.1	4.0
6	9.4	17.2	66.8	3.2	3.4
7	26.6	13.5	52.4	4.7	2.8
8	13.9	12.0	65.6	6.9	1.6
9	11.6	12.5	65.9	4.3	5.7
10	35.1	16.3	43.6	2.7	2.3
11	38.3	9.1	28.3	18.8	5.5
12	17.9	18.9	38.4	21.4	3.4
13	35.8	30.3	24.6	3.4	5.9
14	31.2	23.2	30.4	6.5	8.7
15	26.1	25.6	34.4	5.3	8.6
16	47.3	11.7	28.9	3.7	8.4
17	55.0	10.7	18.7	8.9	6.7
18	43.9	17.6	24.4	3.8	10.3
19	33.1	23.6	27.1	4.6	11.6

Data derived from previous two pages.

LAND AREA AND POPULATION WITHIN THE OHIO RIVER BASIN
ORSANCO COMPACT STATES

<u>State</u>	<u>Area within Ohio River Basin (Square Miles)</u>	<u>Population within Ohio River Basin</u>	
		<u>1970</u>	<u>1980</u>
Illinois	10,745	606,062	634,259
Indiana	29,135	3,597,990	3,830,357
Kentucky	39,375	3,163,493	3,603,516
New York	1,955	158,355	172,303
Ohio	29,570	6,298,122	6,558,723
Pennsylvania	15,620	3,761,083	3,693,843
Virginia	7,175	438,698	531,743
West Virginia	20,610	1,616,986	1,789,585
Total	154,185	19,640,789	20,814,329

Net Change in Population, 1970-1980 - +1,173,540 (+6.0%)

Persons per square mile, 1980 - 135

Land area information taken from Commission sources.
Population information derived from U.S. Census.

POPULATION OF CITIES IN OHIO RIVER BASIN, 1970 AND 1980
CITIES WITH POPULATION OVER 100,000
ORSANCO COMPACT DISTRICT

	City Population		*SMSA Population	
	<u>1970</u>	<u>1980</u>	<u>1970</u>	<u>1980</u>
Cincinnati	454,000	385,000	1,387,000	1,401,000
Columbus	540,000	565,000	1,149,000	1,244,000
Dayton	243,000	203,000	975,000	942,000
Evansville	139,000	130,000	255,000	276,000
Indianapolis	737,000	701,000	1,111,000	1,167,000
Lexington-Fayette	108,000	204,000	267,000	318,000
Louisville	362,000	298,000	907,000	957,000
Pittsburgh	520,000	424,000	2,556,000	2,423,000
Youngstown	141,000	135,000	537,000	531,000
Total	3,244,000	3,045,000	9,144,000	9,259,000
Net Change (percent)		-6.1		+1.3

*SMSA - Standard Metropolitan Statistical Area

Source: Statistical Abstract of the United States, 1984,
U.S. Department of Commerce, Bureau of the Census.

STANDARD METROPOLITAN STATISTICAL AREA POPULATION, 1970 AND 1980

ORSANCO COMPACT DISTRICT

	<u>1970</u>	<u>1980</u>
Anderson, IN	139,000	139,000
Bloomington-Normal, IN	85,000	99,000
Canton, OH	394,000	404,000
Charleston, WV	257,000	270,000
Cincinnati-Hamilton, OH-KY-IN	1,613,000	1,660,000
Columbus, OH	<1,149,000	<1,244,000
Dayton-Springfield, OH	975,000	942,000
Evansville, IN-KY	255,000	276,000
Huntington-Ashland, WV-KY-OH	307,000	336,000
Indianapolis, IN	1,111,000	1,167,000
Johnstown, PA	263,000	265,000
Kokomo, IN	100,000	109,000
LaFayette, IN	109,000	122,000
Lexington-Fayette, KY	267,000	318,000
Louisville, KY-IN	907,000	957,000
Mansfield, OH	130,000	131,000
Muncie, IN	129,000	129,000
Owensboro, KY	79,000	86,000
Parkersburg-Marietta, WV-OH	144,000	158,000
Pittsburgh, PA	2,556,000	2,423,000
Sharon, PA	127,000	128,000
Steubenville-Weirton, OH-WV	166,000	163,000
Terre Haute, IN	138,000	137,000
Wheeling, WV-OH	182,000	186,000
Youngstown-Warren, OH	537,000	531,000
Total	12,119,000	12,380,000
Percent Change, 1970-1980		+2.2
Total Compact District	19,640,789	20,814,329
Percent of Compact District Population Living in SMSA's	61.7	59.5

Source: Statistical Abstract of the United States 1984,
U.S. Department of Commerce, Bureau of the Census

RIVER MILE POINTS OF COUNTY LINES

Pennsylvania

Allegheny	0.0 - 15.4
Beaver	15.4 - 40.2

Ohio

Columbian	40.2 - 49.8
Jefferson	49.8 - 83.8
Belmont	83.8 - 110.9
Monroe	110.9 - 140.5

Washington	140.5 - 196.4
Athens	196.4 - 199.6

Meigs	199.6 - 256.7
-------	---------------

Gallia	256.7 - 291.7
--------	---------------

Lawrence	291.7 - 334.8
----------	---------------

Scioto	334.8 - 374.7
--------	---------------

Adams	374.7 - 405.5
-------	---------------

Brown	405.5 - 429.5
-------	---------------

Clermont	429.5 - 455.2
----------	---------------

Hamilton	455.2 - 490.0
----------	---------------

Indiana

Dearborn	490.0 - 498.8
Ohio	498.8 - 509.9

Switzerland	409.9 - 546.4
-------------	---------------

Jefferson	456.4 - 571.7
-----------	---------------

Clark	571.7 - 606.8
-------	---------------

Floyd	606.8 - 617.0
-------	---------------

Harrison	617.0 - 602.9
----------	---------------

Crawford	662.9 - 681.4
----------	---------------

Perry	681.4 - 731.4
-------	---------------

Spencer	731.4 - 768.8
---------	---------------

Warrick	768.8 - 780.5
---------	---------------

Vanderberg	780.5 - 816.0
------------	---------------

Posey	816.0 - 848.0
-------	---------------

Illinois

Gallatin	848.0 - 867.4
----------	---------------

Hardin	867.4 - 896.7
--------	---------------

Pope	896.7 - 928.3
------	---------------

Massac	928.3 - 956.0
--------	---------------

Pulaski	956.0 - 974.8
---------	---------------

Alexander	974.8 - 981.0
-----------	---------------

West Virginia

40.2 - 65.6

65.6 - 81.5

81.5 - 93.0

93.0 - 121.6

121.6 - 135.5

135.5 - 147.8

147.8 - 164.9

164.9 - 205.7

205.7 - 234.1

234.1 - 287.2

287.2 - 311.9

311.9 - 317.1

Hancock

Brooke

Ohio

Marshall

Wetzel

Tyler

Pleasants

Wood

Jackson

Mason

Cabell

Wayne

Kentucky

317.1 - 324.8

324.8 - 357.5

357.5 - 401.5

401.5 - 421.0

421.0 - 440.3

440.3 - 443.7

443.7 - 470.2

470.2 - 477.5

477.5 - 516.6

516.6 - 535.0

535.0 - 553.3

553.3 - 576.2

576.2 - 592.9

592.9 - 629.9

629.9 - 633.8

633.8 - 689.5

689.5 - 712.4

712.4 - 742.1

742.1 - 771.2

771.2 - 832.0

Boyd

Greenup

Lewis

Mason

Bracken

Pendleton

Campbell

Kenton

Boone

Gallatin

Carroll

Trimble

Oldham

Jefferson

Hardin

Meade

Breckinridge

Hancock

Daviess

*Henderson

*Henderson County, Kentucky also includes land north of the river from mile point 784.6 to mile point 791.4 and from mile point 800.3 to mile point 802.8.

SECTION III: WATER USE

The Ohio River is used for numerous purposes including navigation, water supply, and recreation. Several uses are highly dependent on water quality--public and industrial water supply, fishing, and swimming. Others, such as navigation and industrial use, can affect water quality. The river is also used extensively for the assimilation of treated wastewaters. The degree of treatment affects the ability of the river to assimilate the effluents, which in turn affects its ability to support other uses.

Recreational use takes place all along the river. There are no formal bathing beaches on the river. Water contact recreation on the Ohio consists primarily of water skiing and swimming from boats. In the summary of segments, the number of docks and launch ramps in each segment is presented to provide an indication of the extent of pleasure boating which takes place.

Location of water intakes for municipalities and industries can be more readily identified. The Ohio River serves as a source of drinking water for over three million people. A variety of industries use the river for cooling and process water.

Power generating facilities use large quantities of water for cooling purposes. Older facilities have once-through cooling in which the water used is returned to the river at an elevated temperature. In order to prevent thermal pollution, newer plants have off-stream cooling in which the water is recirculated through cooling towers. While these systems eliminate the thermal pollution potential, they consume more water.

The final list in this section is of river terminals which handle petroleum products and/or hazardous chemicals. These facilities are potential sites for spills to the river during the loading and unloading of cargoes.

Figure III

Municipal Water Intakes and Wastewater Discharges
of Two MGD or Greater

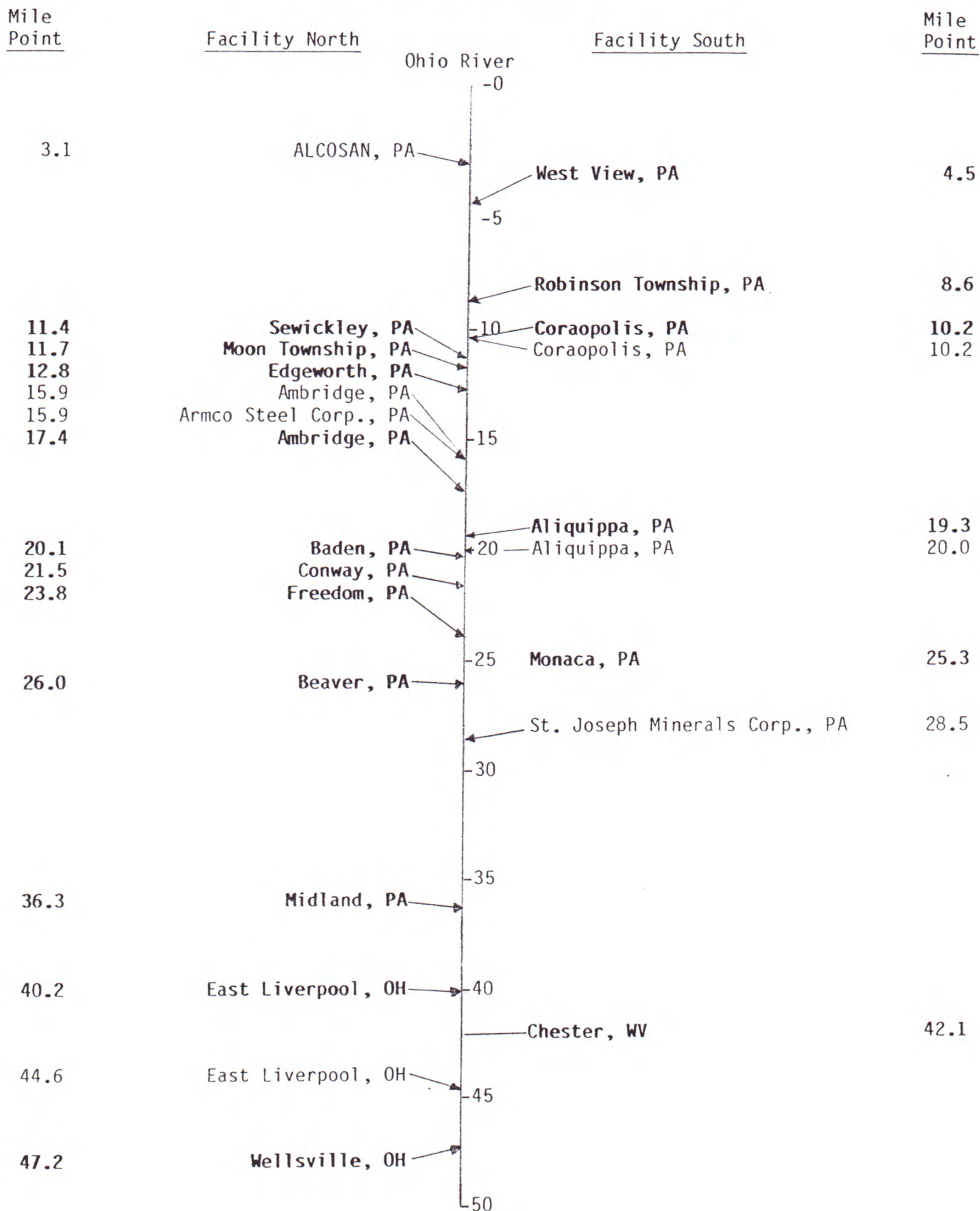


Figure III (Cont.)

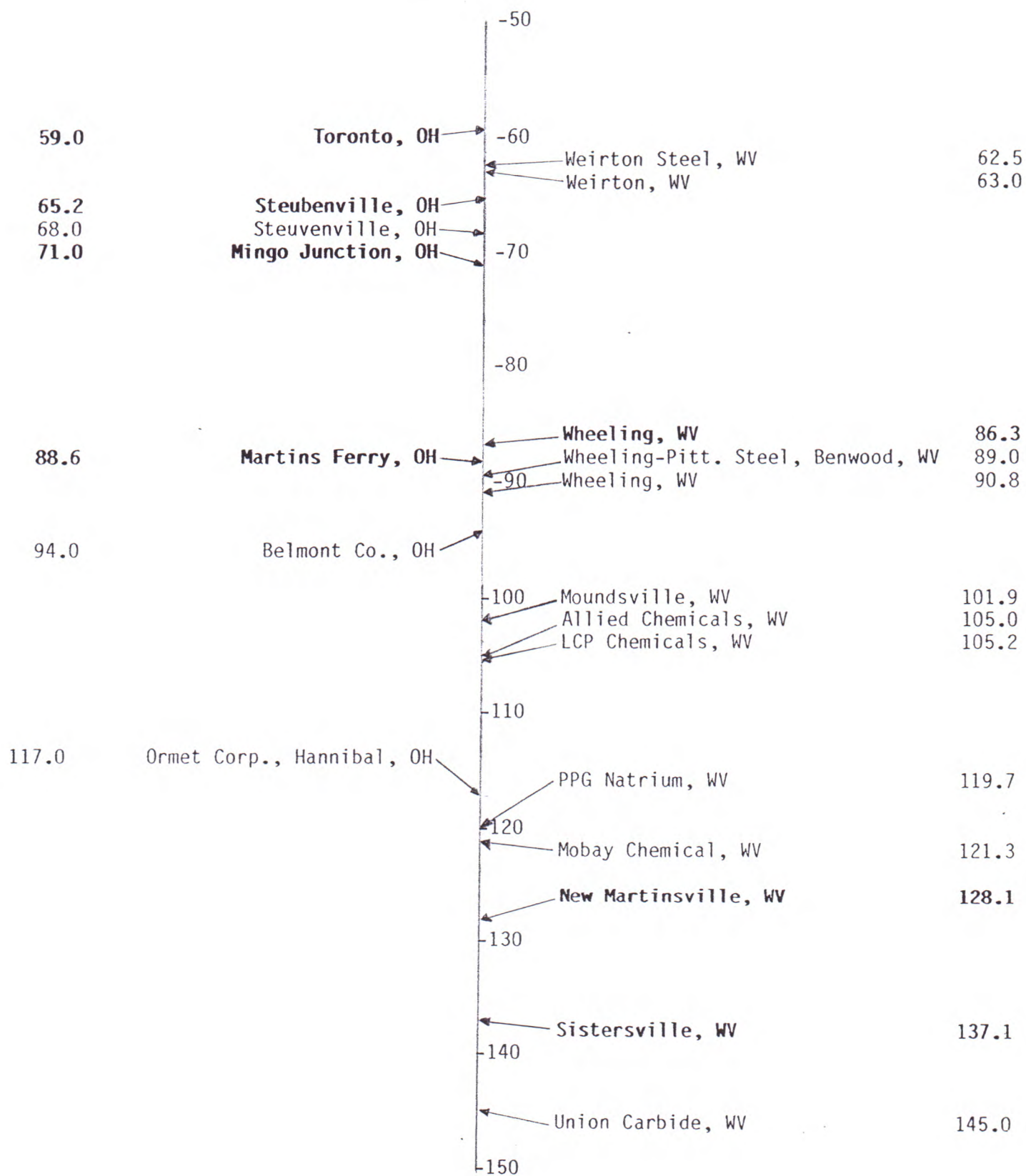


Figure III (Cont.)

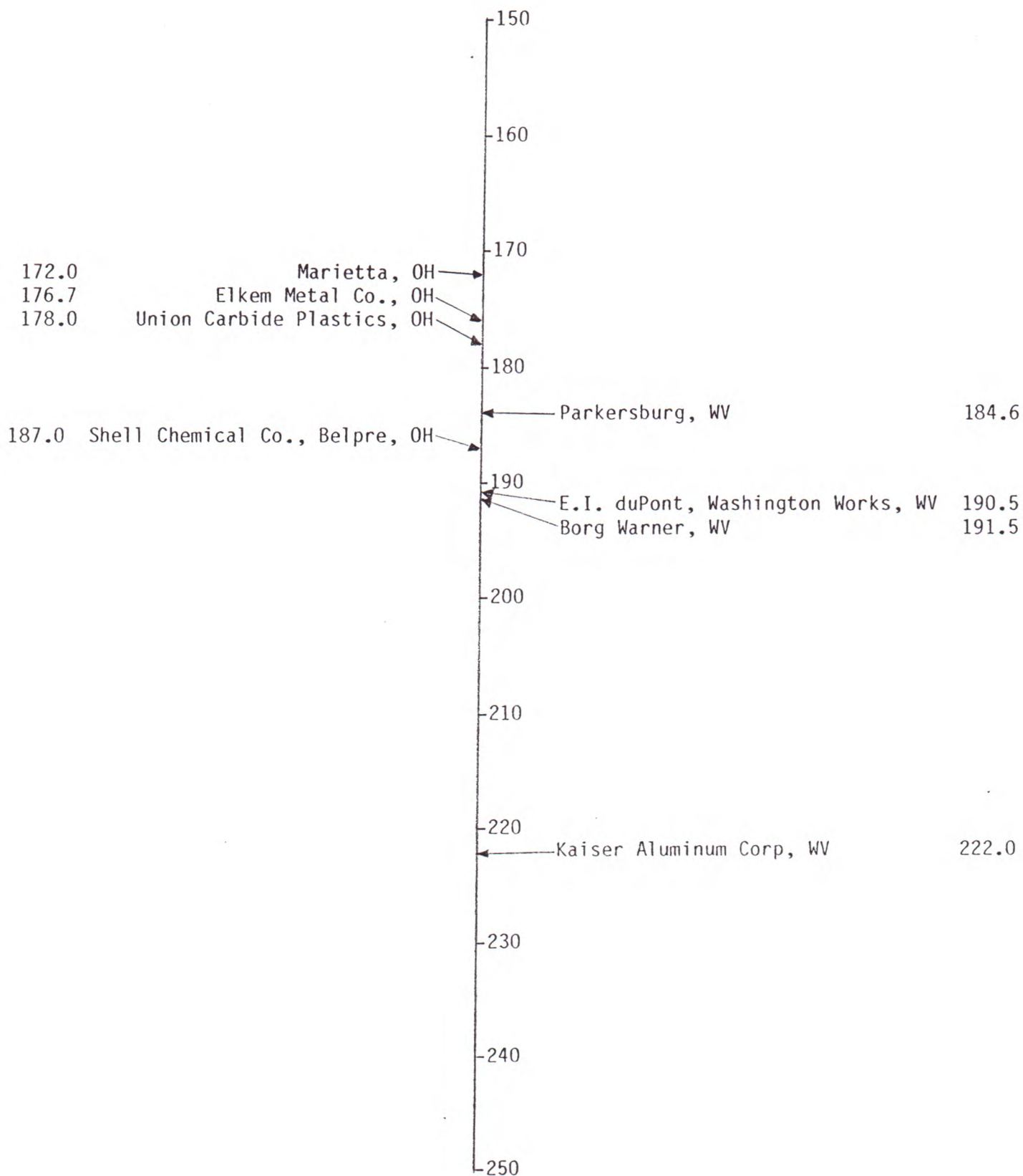


Figure III (Cont.)

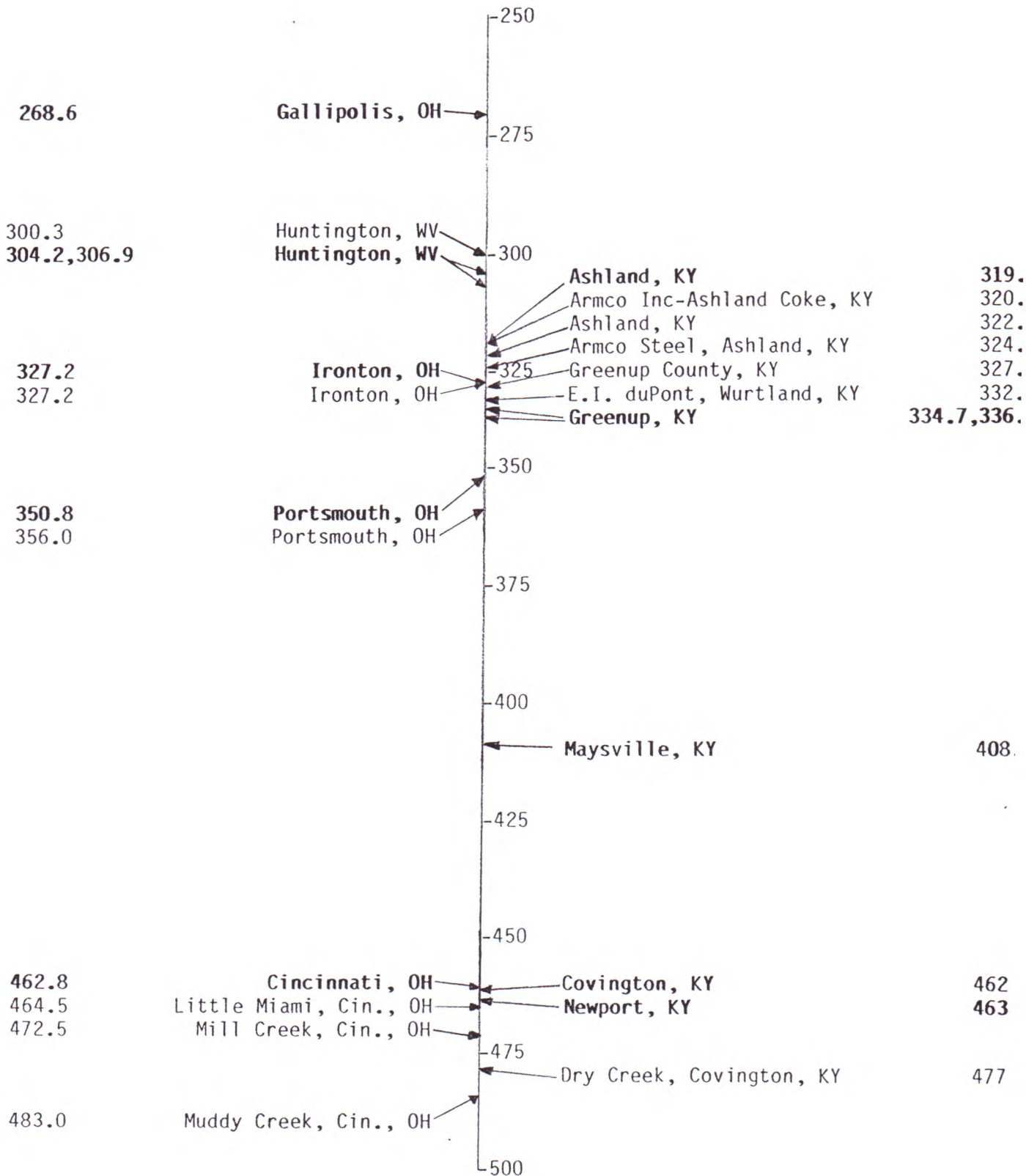


Figure III (Cont.)

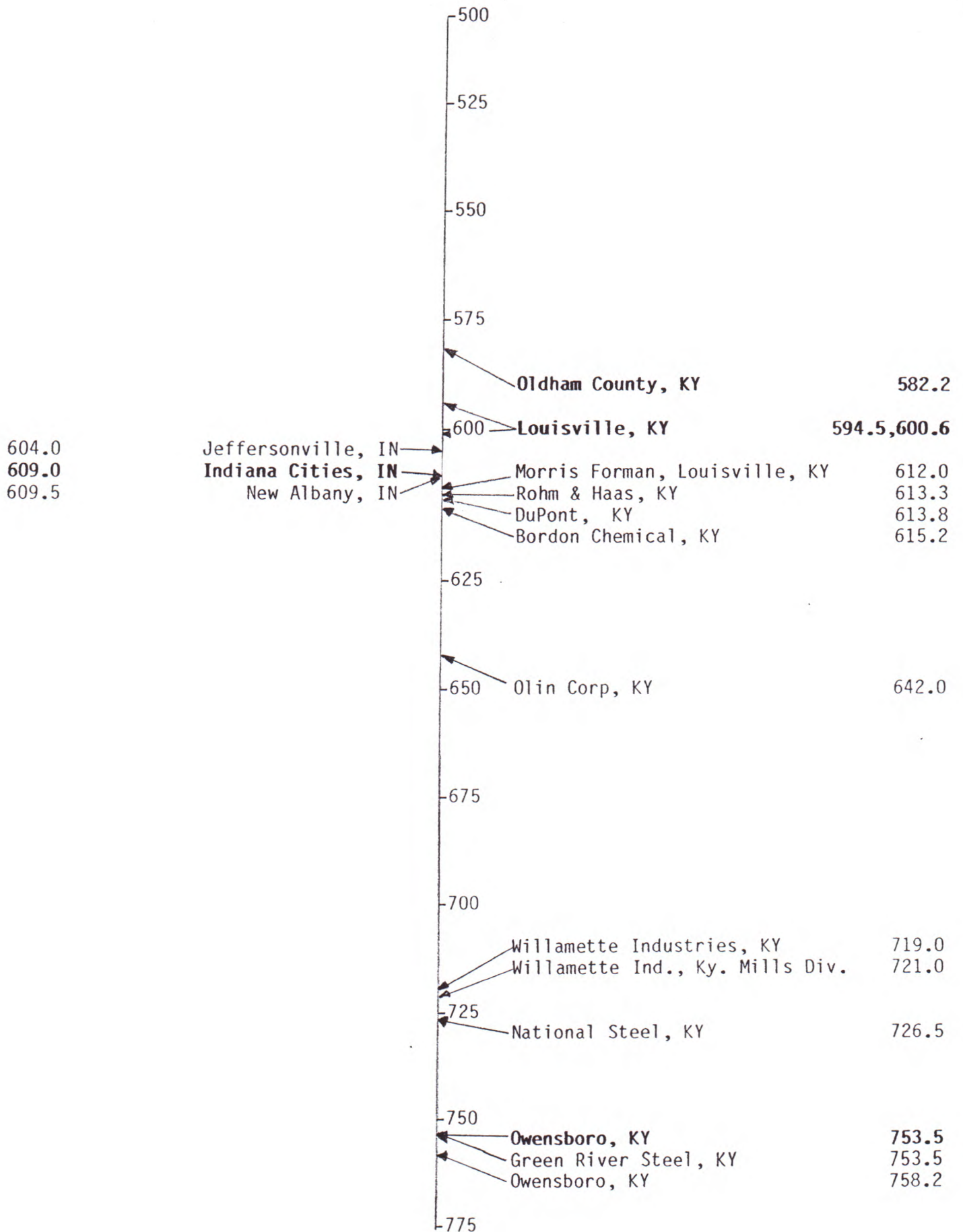
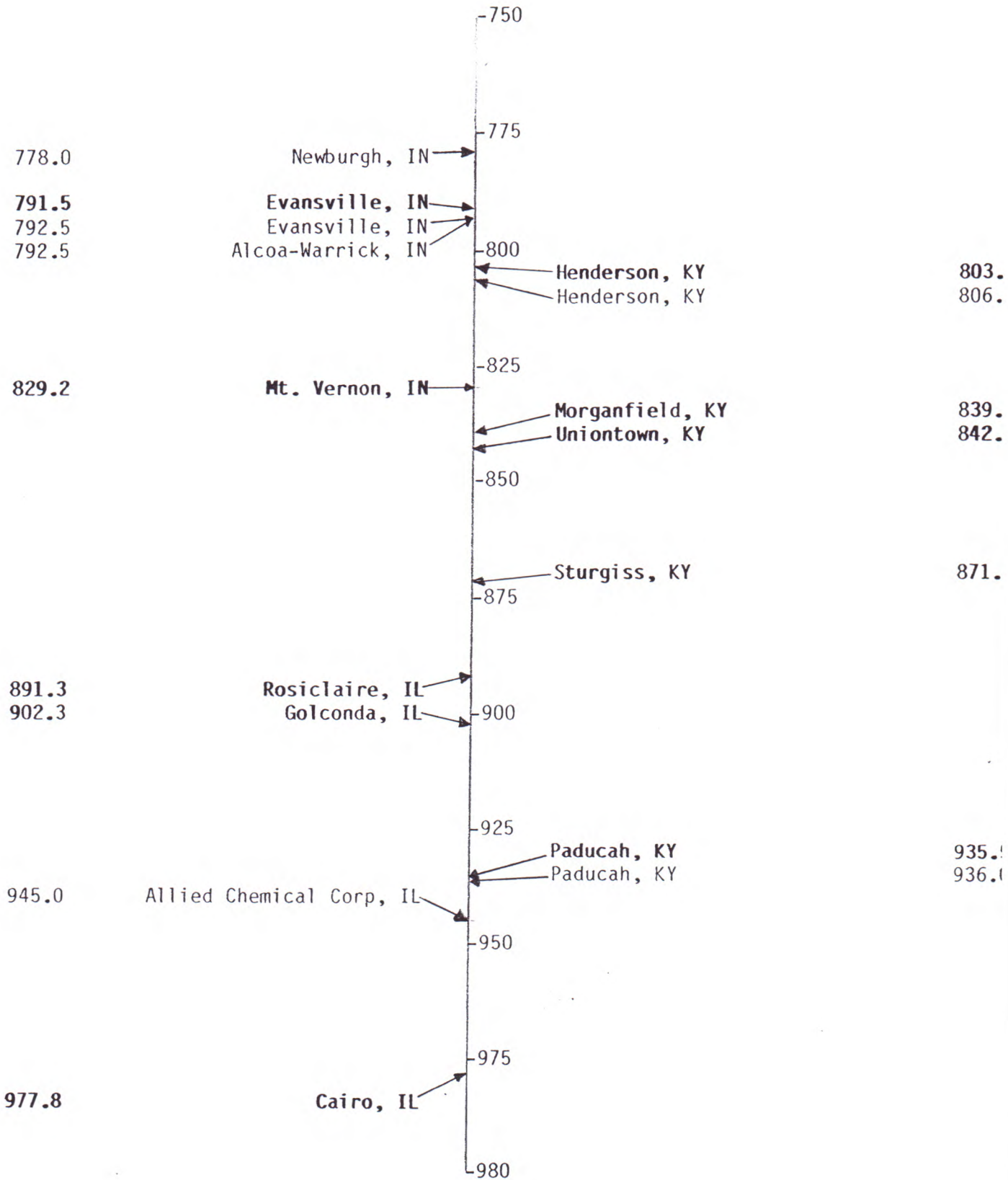


Figure III (Cont.)



SUMMARY OF OHIO RIVER SEGMENTS

Segment Number	Description	Mile Points	States	*Number of Docks & Launch Ramps	Number of Water Supply Intakes	Number of Municipal Discharges	Number of Industrial Discharges	Number of Power Plants
1	Point to Beaver River	0.0-25.4	PA	11	4	11	23	2
2	Beaver R. to PA/OH/WV State Line	25.4-40.0	PA	0	1	4	5	2
3	State Line to Pike Island Dam	40.0-84.2	OH, WV	15	6	15	26	3
4	Pike Island to Hannibal Dam	84.2-126.4	OH, WV	6	4	10	24	4
5	Hannibal to Willow Island Dam	126.4-161.8	OH, WV	11	2	5	5	2
6	Willow Is. to Belleville Dam	161.8-203.9	OH, WV	10	2	6	19	1
7	Belleville to Kanawha River	203.9-265.7	OH, WV	9	0	7	10	5
8	Kanawha R. to Big Sandy River	265.7-317.1	OH, WV	6	3	8	9	0
9	Big Sandy R. to Scioto River	317.1-356.5	OH, KY	9	4	12	27	1
10	Scioto R. to Meldahl Dam	356.5-436.2	OH, KY	14	1	5	5	3
11	Meldahl to Little Miami R.	436.2-464.1	OH, KY	22	3	3	1	1
12	Little Miami R. to Grt. Miami R.	464.1-491.1	OH, KY	36	0	5	9	1
13	Grt. Miami R. to Kentucky R.	491.1-545.8	IN, KY	16	0	3	3	4
14	Kentucky R. to McAlpine Dam	545.8-605.0	IN, KY	36	3	6	7	1
15	McAlpine to Cannelton Dam	605.0-720.7	IN, KY	18	1	7	21	5
16	Cannelton to Newburgh Dam	720.7-776.1	IN, KY	10	1	7	17	4
17	Newburgh to Wabash River	776.1-848.0	IN, KY	10	5	4	11	3
18	Wabash R. to Smithland Dam	848.0-918.5	IL, KY	8	3	3	1	0
19	Smithland to Mississippi R.	918.5-981.0	IL, KY	8	2	6	4	2

* Information from Ohio River and Tributaries Small Boat Harbors, Ramps, Landings, etc.,
U.S. Army Engineer Division, Ohio River 1979-1980

OHIO RIVER MUNICIPAL WATER SUPPLY INTAKES

<u>Mile Point</u>	<u>Intake</u>
4.5	West View
8.6	Robinson Township
10.2	Coraopolis
11.4	Sewickley
11.7	Moon Township
12.8	Edgeworth
17.4	Ambridge
19.3	Aliquippa
20.1	Baden
21.5	Conway
23.8	Freedom
25.3	Monaca
26.0	Beaver
36.3	Midland
40.2	East Liverpool
42.1	Chester
47.2	Wellsville
59.0	Toronto
65.2	Steubenville
71.0	Mingo Junction
86.3	Wheeling
88.6	Martins Ferry
128.1	New Martinsville
137.1	Sistersville
268.6	Gallipolis
304.2, 306.9	Huntington
319.7	Ashland
327.0	Ironton
334.7, 336.2	Greenup
355.5	Portsmouth
408.5	Maysville
462.8	Cincinnati
462.9	Covington
463.5	Newport
587.2	Oldham County
594.5, 600.6	Louisville
609.0	Indiana Cities
753.5	Owensboro
791.5	Evansville
803.2	Henderson
829.2	Mt. Vernon
839.9	Morganfield
842.5	Uniontown
871.5	Sturgis
891.3	Rosiclaire
902.3	Golconda
935.5	Paducah
977.8	Cairo

INDUSTRIAL WATER INTAKES ON THE OHIO RIVER MAIN STEM
Primarily Indicated on Ohio River Charts

	Location	Mile Point
Duquesne Light Company	Pittsburgh, PA	PA 2.1 L*
Duquesne Light Company	Pittsburgh, PA	PA 2.3 L
Lockhart Iron & Steel	McKees Rocks, PA	PA 2.6 L
Pittsburgh & Lake Erie RR Co.	McKees Rocks, PA	PA 2.7 L
Conrail	Bellvue, PA	PA 3.4 R*
Shenango, Inc.	Neville, PA	PA 5.2 L
Vulcan Materials Company	Neville, PA	PA 7.4 L
Witherow Steel Company	Neville, PA	PA 8.2 L
Pittsburgh & Lake Erie RR	Coraopolis, PA	PA 8.3 L
Bethlehem Steel Corporation	Leetsdale, PA	PA 14.3 R
Duquesne Light Company	Wireton, PA	PA 15.1 L
American Bridge Company	Ambridge, PA	PA 15.7 R
American Bridge Company	Ambridge, PA	PA 15.8 R
Jones & Laughlin Steel Corp.	Aliquippa, PA	PA 17.3 L
National Supply Company	Ambridge, PA	PA 17.6 R
Jones & Laughlin Steel Corp.	Aliquippa, PA	PA 18.6 L
A. M. Byers Company	Legionville, PA	PA 18.8 R
Conrail	Conway, PA	PA 21.4 R
Colonial Steel Company	Monaca, PA	PA 23.0 L
St. Joseph Lead Company	Bellowsville, PA	PA 28.4 L
St. Joseph Lead Company	Bellowsville, PA	PA 29.1 L
ARCO Polymers	Kobuta, PA	PA 29.8 L
Pennsylvania Power Company	Shippingport, PA	PA 33.6 L
Duquesne Light Company	Shippingport, PA	PA 34.8 L
Duquesne Light Company	Shippingport, PA	PA 34.9 L
Duquesne Light Company	Shippingport, PA	PA 35.0 L
Crucible Steel Company	Midland, PA	PA 36.0 R
Conrail	Midland, PA	PA 37.4 R
Conrail	Wellsville, OH	OH 48.6
Ohio Edison Company	Stratton, OH	OH 53.8
Crescent Brick Company	New Cumberland, WV	WV 54.6
Ohio Edison Company	Toronto, OH	OH 57.5
Toronto Titanium Metals Co.	Toronto, OH	OH 60.6
Weirton Steel Corporation	Weirton, WV	WV 61.7
Weirton Steel Corporation	Weirton, WV	WV 62.2
Hartje Brothers	Steubenville, OH	OH 67.3
Wheeling Pittsburgh Steel Co.	Steubenville, OH	OH 68.0

* L (left) and R (right) bank facing down river

INDUSTRIAL WATER INTAKES ON THE OHIO RIVER MAIN STEM
Primarily Indicated on Ohio River Charts
(Continued)

	Location	Mile Point
Wheeling Pittsburgh Steel Co.	East Steubenville, WV	WV 68.1
Wheeling Pittsburgh Steel Co.	Steubenville, OH	OH 68.6
Wheeling Pittsburgh Steel Co.	Steubenville, OH	OH 68.7
Wheeling Pittsburgh Steel Co.	East Steubenville, WV	WV 68.8
Koppers Company	Follansbee, WV	WV 69.3
Wheeling Pittsburgh Steel Co.	Mingo Junction, OH	OH 70.8
Conrail	Mingo Junction, OH	OH 70.9
National Steel Corporation	Mingo Junction, OH	OH 71.7
Ohio Power Company	Brilliant, OH	OH 76.2
Ohio Power Company	Brilliant, OH	OH 76.5
Wheeling Pittsburgh Steel Corp.	Beech Bottom, WV	WV 79.2
Ohio Power Company	Beech Bottom, WV	WV 79.8
Wheeling Pittsburgh Steel Corp.	Tiltons ville, OH	OH 83.2
Wheeling Pittsburgh Steel Corp.	Tiltons ville, OH	OH 83.3
Wheeling Pittsburgh Steel Corp.	Tiltons ville, OH	OH 83.4
Warwood Tool Company	Warwood, WV	WV 86.6
Wheeling Pittsburgh Steel Corp.	Martins Ferry, OH	OH 87.7
Baltimore & Ohio Railroad Company	Bridgeport, OH	OH 90.1
Wheeling Pittsburgh Steel Corp.	Benwood, WV	WV 94.6
Baltimore & Ohio Railroad Co.	McMechan, WV	WV 95.6
Ohio Edison Company (Burger Plant)	Shadyside, OH	OH 102.2
North American Coal Company	Shadyside, OH	OH 104.0
Allied Chemical & Dye Corp.	Moundsville, WV	WV 105.9
Kammer Generating Company	Captina, WV	WV 111.1
Ohio Power Company (Mitchell)	Captina, WV	WV 112.4
Consolidation Coal Company	Woodlands, WV	WV 113.1
PPG Industries	Natrium, WV	WV 119.0
PPG Industries	Natrium, WV	WV 119.3
Mobay Chemical Company	Natrium, WV	WV 121.2
Olin Matheson Chemical Corp.	Clarington, OH	OH 123.6
Union Carbide Corporation (Ranney Collector)	Long Reach, WV	WV 144.8
Union Carbide Corporation (Ranney Collector)	Long Reach, WV	WV 145.4
Union Carbide Corporation (Ranney Collector)	Long Reach, WV	WV 145.6
Union Carbide Corporation (Ranney Collector)	Long Reach, WV	WV 145.9
American Cyanamid Corporation (Ranney Collector)	Willow Island, WV	WV 160.1
Monongahela Power Company	Willow Island, WV	WV 160.5

INDUSTRIAL WATER INTAKES ON THE OHIO RIVER MAIN STEM
Primarily Indicated on Ohio River Charts
(Continued)

	Location	Mile Point
American Cyanamid Corporation (Ranney Collector)	Willow Island, WV	WV 161.8
Union Carbide Metals Company	Marietta, OH	OH 176.8
Monongahela Power Company	Parkersburg, WV	WV 183.9
Shell Chemical Company	Marietta, OH	OH 188.6
E.I. duPont deNemours & Company	Parkersburg, WV	WV 190.3
E.I. duPont deNemours & Company (Ranney Collector)	Parkersburg, WV	WV 190.4
E.I. duPont deNemours & Company	Parkersburg, WV	WV 190.8
Appalachian Power Company	Grahams Station, WV	WV 241.6
Ohio Electric Company	Addison, OH	OH 258.3
Ohio Electric Company	Addison, OH	OH 258.4
Ohio Valley Electric Corp.	Addison, OH	OH 260.0
Appalachian Power Company	Applegrove, WV	WV 281.5
Oglebay Norton Company	Ceredo, WV	WV 314.6
Allied Chemical Corporation Nitrogen Division	South Point, OH	OH 318.2
Allied Chemical Corporation Semet Solvay Division	Ashland, KY	KY 320.0
Allied Chemical Corporation Semet Solvay Division	Ashland, KY	KY 320.1
Allied Chemical Corporation Semet Solvay Division	Ashland, KY	KY 320.2
Armco Steel Corporation	Ashland, KY	KY 322.0
Mansbach Metal Company	Ashland, KY	KY 322.1
Armco Steel Corporation	Ashland, KY	KY 323.2
Armco Steel Corporation	Ashland, KY	KY 324.0
Allied Chemical Corporation	Ironton, OH	OH 324.6
Armco Steel Corporation Pump Incline	Ashland, KY	KY 324.7
C & O Railway Company	Russell, KY	KY 327.7
E.I. duPont deNemours & Company	Riverton, KY	KY 333.2
New Boston Coke Corporation	Portsmouth, OH	OH 351.0
New Boston Coke Corporation	Portsmouth, OH	OH 351.1
New Boston Coke Corporation	Portsmouth, OH	OH 351.4
C & O Railway Company	Fullerton, KY	KY 356.0
Dayton Power & Light Company	Monroe, OH	OH 390.0
Dayton Power & Light Company	Aberdeen, OH	OH 404.7
C & O Railway Company	Maysville, KY	KY 409.0
Cincinnati Gas & Electric Beckjord Station	New Richmond, OH	OH 453.0

INDUSTRIAL WATER INTAKES ON THE OHIO RIVER MAIN STEM
Primarily Indicated on Ohio River Charts
(Continued)

	Location	Mile Point
Cincinnati Gas & Electric Company Miami Fort	North Bend, OH	OH 490.3
Indiana & Michigan Electric Company Tanners Creek	Lawrenceburg, IN	IN 494.0
Ghent Power Plant	Ghent, KY	KY 535.3
Indiana & Kentucky Power Corp. Clifty Creek Station	Madison, IN	IN 560.0
Indiana Ordinance	Clark County, IN	IN 589.3
Louisville Gas & Electric Company Waterside Station	Louisville, KY	KY 603.6
Colgate Palmolive Company	Jefferson, IN	IN 603.6
Louisville Gas & Electric Company Canal Station	Louisville, KY	KY 604.9
Public Service of Indiana-Gallagher	New Albany, IN	IN 610.0
National Carbide Corporation	Louisville, KY	KY 612.6
Louisville Gas & Electric Company Paddys Run Station	Louisville, KY	KY 612.9
E.I. duPont deNemours & Company	Louisville, KY	KY 613.5
Publicker Chemical Company (Rohm & Haas)	Louisville, KY	KY 613.5
Louisville Gas & Electric Company Cane Run Station	Louisville, KY	KY 616.6
Indiana Glass Sand Company	Harrison County, IN	IN 620.6
Louisville Gas & Electric Company Mill Creek	Louisville, KY	KY 625.9
Kosmos-Portland Cement Company	Kosmosdale, KY	KY 627.0
Olin Corporation	Brandenburg, KY	KY 643.4
Olin Corporation	Brandenburg, KY	KY 644.0
Kosmos-Portland Cement Company	Brandenburg, KY	KY 654.1
Can-Tex Industries	Cannelton, IN	IN 724.3
Big Rivers RECC, Coleman Station	Hawesville, KY	KY 728.3
Owensboro Municipal Power Company	Owensboro, KY	KY 755.6
Southern Indiana Gas & Electric Co.	Yankeetown, IN	IN 773.0
Alcoa-Warrick Works	Yankeetown, IN	IN 773.6
Southern Indiana Gas & Electric Co.	Evansville, IN	IN 793.7
Henderson Electric Power Company	Henderson, KY	KY 803.6
Agrico Chemical Company	Henderson, KY	KY 806.5
Agrico Chemical Company	Henderson, KY	KY 806.6
Agrico Chemical Company	Henderson, KY	KY 807.2
General Electric	Mt. Vernon, IN	IN 831.2
Aluminum Company of American (inactive)	Rosiclare, IL	IL 892.2
Shawnee Steam Plant (TVA)	Paducah, KY	KY 946.0
Electric Energy Plant	Joppa, IL	IL 952.2

LIST OF POWER GENERATING FACILITIES
OHIO RIVER MAIN STEM
AS OF JUNE, 1984

Mile Point	Operating Company	Station Name	Capacity MW	Fuel	Cooling
2.5	Duquesne Light	Brunet Island	333	Oil	Off stream
15.3	Duquesne Light	F. R. Phillips	325	Coal	Once through
33.7	Pennsylvania Power	Bruce Mansfield	2,360	Coal	Off stream
34.9	Duquesne Light	Beaver Valley	810	Nuclear	Off stream
53.9	Ohio Edison	W.H. Sammis	2,220	Coal	Off stream
57.5	Ohio Edison	Toronto	172	Coal	Once through
76.5	Cardinal Op. Co. (Buckeye)	Cardinal	1,200	Coal	Once through
			630	Coal	Off stream
102.4	Ohio Edison	R.E. Burger	544	Coal	Once through
111.1	Ohio Power	Kammer	675	Coal	Once through
111.5	Ohio Power	Mitchell	1,600	Coal	Off stream
119.5	PPG Industries, Inc.	New Martinsville	124	Coal	Once through
160.0	Monongahela	Pleasants	1,252	Coal	Off stream
160.5	Monongahela	Willow Island	215	Coal	Once through
176.8	Union Carbide	Marietta	200	Coal	Once through
237.5	Ohio Power	Racine	40	Hydro	
241.6	Central Op.Co.(Appalachian)	Phillip Sporn	1,050	Coal	Once through
243.0	Appalachian	Mountaineer	1,300	Coal	Off stream
258.0	Ohio Power	Gen. J.M. Gavin	2,600	Coal	Off stream
260.0	Ohio Valley Elec. Corp.	Kyger Creek	1,068	Coal	Once through
341.0	City of Vanceburg, KY	Greenup	72	Hydro	
390.0	Dayton Power & Light	Killen	660	Coal	Off stream
405.7	Dayton Power & Light	J.M. Stuart	1,830	Coal	Once through
			610	Coal	Off stream
412.5	Eastern Ky. Power Corp., Inc.	H.L. Spurlock	300	Coal	Off stream
453.0	Cincinnati Gas & Elec. Co.	W.C. Beckjord	1,201	Coal	Once through
			245	Gas Turbine	Off stream
490.0	Cincinnati Gas & Elec. Co.	Miami Fort	280	Coal	Once through
			1,048	Coal	Off stream
			207	Gas Turbine	Off stream
495.5	Indiana & Michigan	Tanners Creek	995	Coal	Once through
510.0	Cincinnati Gas & Elec. Co.	East Bend	650	Coal	Off stream
531.5	Public Service of Indiana	Markland	81	Hydro	
536.0	Kentucky Utilities	Ghent	1,533	Coal	Off stream
560.0	Indiana-Kentucky Elec. Corp.	Clifty Creek	1,304	Coal	Once through
606.8	Louisville Gas & Elec. Co.	Ohio Falls	75	Hydro	
610.0	Public Service of Indiana	Gallagher	600	Coal	Once through
613.6	Louisville Gas & Elec. Co.	Paddy's Run	75	Coal	Once through
616.8	Louisville Gas & Elec. Co.	Cane Run	1,003	Coal	Once through
626.0	Louisville Gas & Elec. Co.	Mill Creek	335	Coal	Once through
			1,296	Coal	Off stream
728.4	Big Rivers RECC.	Coleman	460	Coal	Once through
753.5	Owensboro Mun. Utilities	Elmer Smith	416	Coal	Once through
773.0	Southern Indiana Gas & Elec.	F.S. Calley	397	Coal	Once through
773.5	Southern Indiana Gas & Elec.	Warrick	720	Coal	Once through
793.5	Southern Indiana Gas & Elec.	Ohio River	121	Gas & Oil	Once through

LIST OF POWER GENERATING FACILITIES
OHIO RIVER MAIN STEM
AS OF JUNE, 1984
(Continued)

Mile Point	Operating Company	Station Name	Capacity MW	Fuel	Cooling
804.0	Henderson, KY	Henderson	40	Coal	Once through
817.0	Southern Indiana Gas & Elec.	A.B. Brown	255	Coal	Off stream
948.0	Tennessee Valley Authority	Shawnee	1,750	Coal	Once through
952.3	Electric Energy Co.	Joppa	1,086	Coal	Once through

Total generating capacity, facilities operating 6/84	- 38,363 MW
Generating capacity, facilities with once through cooling	- 18,186 MW
Generating capacity, facilities with off stream cooling	- 19,909 MW
Generating capacity, coal fired plants	- 36,379 MW
Generating capacity, oil fired plants	- 454 MW
Generating capacity, hydropower plants	- 268 MW
Generating capacity, gas turbine plants	- 452 MW
Generating capacity, nuclear plants	- 810 MW

Information provided by ORSANCO Power Industry Advisory Committee

MUNICIPAL DISCHARGES TO THE OHIO RIVER
(Secondary Treatment Provided Unless Otherwise Noted)

<u>Mile Point</u>	<u>Discharger</u>	<u>Flow (MGD)</u>
3.1	ALCOSAN (Pittsburgh), PA	200
10.2	Coraopolis, PA	2.25
11.8	Sewickley, PA	1.35
13.9	Leetsdale, PA	.775
15.8	Crescent Heights, PA	.40
15.9	Ambridge, PA	2.6
17.0	Hopewell, PA	.12
20.0	Aliquippa, PA	3.4
20.3	Baden, PA	.50
21.6	Conway, PA	.50
25.0	Rochester, PA	1.4
25.4	Monaca, PA	1.2
26.5	Beaver, PA	.80
28.0	Vanport, PA	1.6
37.3	Midland, PA	1.25
43.3	Chester, WV (primary)	.47
44.6	East Liverpool, OH (primary)	3.5
45.0	Newell, WV	.40
47.6	Wellsville, OH	1.0
55.0	Stratton, OH	.08
56.7	New Cumberland, WV (primary)	.25
59.1	Toronto, OH (primary)	1.0
63.0	Weirton, WV	4.0
68.0	Steubenville, OH	6.0
70.6	Follensbee, WV	0.5
71.0	Mingo Junction, OH (primary)	0.5
74.0	Wellsburg, WV	1.25
74.4	Brilliant, OH (primary)	.25
78.0	Beech Bottom, WV	.08
81.6	Rayland, OH (primary)	.10
83.7	Yorkville (primary)	.40
90.8	Wheeling, WV	15.0
93.0	Benwood, WV	0.2
94.0	Belmont CO., OH (primary)	5.7
96.2	McMechen, WV (primary)	.30
98.0	Shadyside, OH	.60
99.4	Glendale, WV (primary)	.30
101.9	Moundsville, WV (primary)	2.0
109.8	Powhatan, OH (primary)	.22
128.2	New Martinsville, WV	1.40
133.8	Paden City, WV (primary)	.60
137.6	Sistersville, WV (primary)	.50
142.6	Friendly, WV (no treatment)	.30
155.0	St. Mary, WV (primary)	.40
168.0	Newport, OH	.10
172.0	Williamstown, WV (primary)	.80

MUNICIPAL DISCHARGES TO THE OHIO RIVER
(Secondary Treatment Provided Unless Otherwise Noted)
(Continued)

<u>Mile Point</u>	<u>Discharger</u>	<u>Flow (MGD)</u>
172.0	Marietta, OH (primary)	3.4
180.4	Vienna, WV (primary)	1.5
182.0	Belpre, WV	1.5
184.6	Parkersburg, WV	7.5
220.2	Ravenwood, WV	.75
243.0	Syracuse-Racine, OH	.28
245.5	New Haven, WV	.40
250.2	Mason, WV	.20
250.4	Pomeroy, OH	.31
252.1	Middleport, OH (primary)	.53
264.3	Pt. Pleasant, WV (primary)	.78
269.7	Gallipolis, OH	1.8
304.6	Proctorville, OH (no treatment)	.10
308.3	Huntington, WV	17.0
309.2	Chesapeake, OH (primary)	.50
313.1	Union Twp.-Lawrence Co., OH (primary)	.35
314.8	Ceredo, WV (primary)	.16
315.7	Kenova, WV (primary)	.55
317.0	South Point, OH	.62
322.5	Ashland, KY	4.2
327.2	Sanitation District #1, Boyd-Greenup Counties, KY	.75
327.2	Ironton, OH (primary)	2.0
327.8	Greenup County, KY	2.1
327.8	Flatwoods, KY	0.8
328.9	Worthington, KY	0.2
336.4	Greenup, KY	0.3
349.0	Sciotoville, OH	0.6
351.8	New Boston, OH (primary)	1.4
353.8	South Shore, KY	.21
356.0	Portsmouth, OH	4.0
378.4	Vanceburg, KY	.25
400.0	Aberdeen, OH	.10
411.8	Maysville, KY	1.42
417.1	Ripley, OH	.20
427.0	Augusta, KY	.15
449.9	New Richmond, OH	.12
455.1	Clermont Co. - Nine Mile, OH	1.8
464.5	Little Miami (Cincinnati), OH	38.0
472.5	Mill Creek (Cincinnati), OH	120.0
477.4	Dry Creek (Covington), KY	30.0
483.0	Muddy Creek (Cincinnati), OH	15.0
486.0	Indian Lookout (Cincinnati), OH	.50
493.0	South Dearborn (Lawrenceburg), IN	1.39
506.0	Rising Sun, IN	.36
537.0	Vevay, IN	.40
558.5	Madison, IN	.24
559.0	Hanover, IN	.54
589.5	Goshen, IN	.05
597.0	Charlestown, IN	1.4

MUNICIPAL DISCHARGES TO THE OHIO RIVER
(Secondary Treatment Provided Unless Otherwise Noted)
(Continued)

<u>Mile Point</u>	<u>Discharger</u>	<u>Flow (MGD)</u>
602.0	Oak Park Conservancy District, IN	.50
604.0	Jeffersonville, IN	4.0
605.0	Clarksville, IN	1.2
609.5	New Albany, IN	12.5
612.0	Morris Forman, KY	105.0
631.4	West Point, KY	.20
642.3	Doe Valley, KY	.05
645.6	Brandenburg, KY	.20
711.8	Cloverport, KY	.30
724.0	Cannelton, IN (primary)	.30
727.0	Tell City, IN (primary)	1.2
731.0	Troy, IN (primary)	.07
738.0	Lewisport, KY	.25
742.2	Grandview, IN	.12
746.2	Rockport, IN	.50
758.2	Owensboro, KY	12.0
778.0	Newburgh, IN	2.5
792.5	Evansville (two plants), IN	38.6
806.0	Henderson, KY	10.0
829.0	Mount Vernon, IN	1.8
889.0	Elizabethtown, IL	.06
891.5	Rosiclaire, IL (primary)	.15
903.0	Golconda, IL	.38
936.0	Paducah, KY	12.0
937.5	Brookport, IL	.15
944.0	Metropolis, IL (primary)	1.50
950.0	Joppa (primary)	.10
973.9	Mound City, IL	.15
979.0	Cairo, IL (primary)	1.35

Total Flow - Secondary Facilities: 692.8 MGD
 - Primary Facilities: 47.0 MGD
 - No Treatment: .40 MGD

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
2.9E	Pittsburgh Oil Company, Inc. McKees Rock	PA	Oil terminal	-
4.5	U.S. Steel - Homestead	PA	Steel manufacturer	-
5.1	Marquette Cement Company	PA	Cement manufacturer	-
5.3	Calgon Corp. Activated Carbon Div.	PA	NCCW only	.30
6.4E	Exxon, Neville Island	PA	Oil terminal	-
6.5	Mayco Oil & Chemical - Neville Island	PA	Produces inedible lard oil	-
6.6	Neville Chemical Company	PA	Mfg: resins, chlorinated paraffins, organic and inorganic chemicals	.05P
6.7	Dravo Corporation	PA	NCCW only; barge construction and testing	-
6.8	U.S. Steel Chemicals	PA		-
7.0	TAPCO, Inc.	PA	NCCW only	.74
7.7	Vulcan Materials Company	PA	Smelting and refining of non-ferrous metals; mfg. of inorganic tin chemicals	.88
8.0	Shenango, Inc.	PA	Coke plant and blast furnace	-
8.0L	Shenango - Neville Facility	PA	Mfg. ingot molds	.63
8.3	Exxon	PA	Oil terminal	-
10.7E	Boron Oil Company	PA	Oil terminal	-
10.8	Pittsburgh Forgings	PA	Metals fabrication	1.12
10.9	Texaco, Inc.	PA	Oil terminal	-

NCCW = Non Contact Cooling Water

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
15.9	Armco Steel Corporation	PA	Mfg. seamless steel pipe	2.1
16.1	U.S. Steel - Ambridge	PA	Steel fabrication works	-
16.9	H.H. Robertson	PA	Mfg. metal building panels (coating, rolling, welding, galvanizing)	.086
17.0	LTV Steel (formerly Jones & Laughlin)	PA	Steel manufacturer	.018
23.9	Ampco-Pitts Corp., Monaca	PA		.014
24.0	Ashland Oil Company - Valvoline	PA	Oil refinery	-
28.2	Ashland Oil - Vanport	PA	Oil terminal	
28.5	St. Joseph Minerals Corp.	PA	Mfg. zinc metal, zinc oxide, sulfuric acid	11.7
29.7	ARCO polymers - Synclair Koppers	PA		-
35.2	Pennzoil Company	PA	Oil terminal	-
36.3	LTV Steel - Midland (formerly Crucible)	PA	Steel plant	-
40.1	Hall China Company	OH		-
42.2	Taylor, Smith and Taylor Company	WV	Mfg. ceramic dinnerware	.26
42.4	Celotex Corp. - Chester	WV	Mfg. asphalt roofing material	.05
44.9	New Castle Refractories Company	WV		-
45.05	Ohio Brass Company	WV	Mfg. electrical regulators from ceramics	0.61
45.1	Homer Laughlin China Company	WV	Mfg. dinnerware	0.5
45.2	Quaker State Oil Refinery	WV	Oil refinery	0.36P
49.1	Sterling China Company	OH		-
49.3	Ashland Oil	OH	Oil Terminal	0.01

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
59.1	Toronto Paperboard Company	OH	Mfg. paperboard	0.88
60.5	Titanium Metals Corporation	OH		-
62.4	Air Product & Chemicals	WV	0.12	
62.5	Weirton Steel	WV	Steel plant	237.2
64.9	Apex Oil Terminal	WV		0.36
65.8	Signode Corporation - Wierton	WV	Mfg. steel straping	
66.0	Weirton Ice & Coal	WV	Coal preparation plant	
68.6	Wheeling-Pitt Steel - Steubenville	OH	Steel plant	
69.3	Koppers Company - Follansbee	WV	Processing of coke oven tar, production of solvents, tars, organic chemicals	0.42
70.4	Wheeling-Pitts Steel - East Steubenville	WV	Steel plant	-
71.0	Wheeling-Pitt Steel - Steubenville South	OH	Steel plant	-
73.8	S. George Company - Wellsburg	WV	Mfg. standard coarse paper and rope	.16
74.4	Banner Fiberboard Company	WV	NCCW only; mfg. fiberboard	-
74.7	Wheeling-Pitt Steel - Beech Bottom	WV	Steel plant	0.58
80.0	Windsor Power Coal Company	WV	Coal terminal	-
81.0	Ohio Coal & Construction Corp.	OH	Coal preparation and terminal	0.62
81.1	Tri-State Asphalt	OH		-
83.7	Wheeling-Pitt Steel - Yorkville	OH	Steel plant	
86.4	Warwood Tool Company	WV	NCCW only	.38
88.8	Wheeling-Pitt Steel - Martins Ferry	OH	Steel plant	-
89.0	Wheeling-Pitt Steel - Benwood	WV	Steel plant	3.45

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
91.1	Wheeling Stamping Company	WV		-
92.7	R & F Coal - Bellaire	OH	Coal terminal and sanitary discharge	
93.8	Shoemaker Mine Supply	WV	Coal preparation plant	.02
94.6	Phillips Stamping Co.	OH		-
101.4	Triangle PWC, Inc. Glendale	WV	Produces galvanized conduit and strip	0.43
102.0	Standard Oil - Mountaineer Carbon	WV	Domestic sewage treatment plant	.01
102.2	Alexander Mine - Valley Camp Coal Co.	WV		.02
103.0	International Harvester	OH	NCCW only	-
103.5	Columbia Carbon	WV	Domestic sewage treatment plant	.01
105.0	Allied Chemicals	WV	Produces organic chemicals	3.5
105.2	LCP Chemicals	WV	Produces chlorine, caustic soda, chloromethanes	11.6
110.5	Ohio Ferro Alloys Corporation	OH	Domestic STP and gravel cleaning backwash water	.017
110.8	N. American Coal - Powhatan #1	OH	Coal preparation plant	1.0
111.3	Consolidated Coal - McElroy Prep Plant	WV	Coal Preparation plant	-
113.0	U.S. Energy - Liquified Coal	WV	Pilot plant for coal liquefaction	-
115.5	Quarto Mining #4	OH	Coal preparation plant and sanitary STP	-
117.0	Ormet Corporation - Hannibal	OH	Primary smelting and refining of aluminum	4.72
119.7	PPG - Sodium	WV	Mfg. chlorine, ammonia, sodium hydroxide, cyclic intermediates, benzenes	6.0
121.3	Mobay Chemical	WV	Produces isocyanates, polycarbonates, anilin and hydrochloric acid	5.0
124.0	Consolidated Aluminum	OH		-

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
129.5	Baltimore & Ohio Railroad	WV		-
133.3	Corning Glass	WV	Mfg. glazed glass ceramic dinnerware	0.12
145.0	Union Carbide	WV	Mfg. chlorosilanes, silicone oils and rubber, silicone resins, silicone surfactants, and silicone chemicals	10.7
155.0	Quaker State Oil Refining	WV	Oil refinery	0.6
161.0	American Cyanamid company	WV	Mfg. analine, optical brighteners, ultraviolet absorbers, plastic stabilizers, chlorotetracycline, specialty organics, catalysts, inorganic pigments	6.0
164.0	Cabot Corporation - Waverly	WV	Mfg. carbon black; Domestic STP	0.36
172.0	Marietta Ind. Ent. STP	OH	Coal terminal	-
175.0	Byerlyte Company (Koppers), Marietta	OH	Terminal	-
175.1	Gulf Oil Company	OH	Oil terminal	-
176.7	Elkem Metals Company	OH	Mfg. conventional and specialty ferro alloy materials	5.0P
178.0	Union Carbide - Plastics	OH	Mfg. synthetic chemicals, resins and polymers	10.0
179.2	Chevron Asphalt Company	OH	Mfg. asphalt products	.01
180.5	Texaco, Inc.	WV	Oil terminal	-
181.3	Universal Glass Products	WV		-
181.8	John-Manville Fiberglass	WV	Mfg. marble glass and fiberglass	0.42
184.1	Texaco, Inc.	WV	Oil terminal	-
185.1	Pennzoil Company	WV	Oil terminal	-

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
187.0	Shell Chemical Company - Belpre	OH	Mfg. chemical products	47.0
189.7	Ohio Power - Belpre	OH	Coal terminal	.017
190.5	E.I. duPont - Washington Works	WV	Mfg. plastics - nylon, polyvinylbutynal, acrylicresins, plastics compounding, fluoropolymers and polyactals	9.2P
191.0	Burdett Oxygen	WV		-
191.5	Borg Warner	WV	Mfg. synthetics, butadine, acrylonitrile	2.8
192.5	Ohio Sand & Gravel	WV	Sand and gravel washing	-
193.0	American Metal Climax	WV	Mfg. zirconium sponge	0.6
222.0	Kaiser Aluminum Corporation	WV	Primary smelting of aluminums; hot and cold rolling of aluminum sheet and foil	2.27P
231.5	Millwood Housing	WV	Domestic STP	.05
231.6	Tri-State Materials	OH	Sand and gravel washing	1.3
237.3	Racine Locks and Dam	WV	Domestic STP	.01
241.5	Footo Mineral Company	WV		-
242.0	Coal Power, Inc.	OH	Coal Storage & loading	-
252.2	Jay Mar Coal Company	OH	Coal terminal	-
260.0	Pantasote Company	WV	Mfg. polyvinyl chloride products	.22
263.0	Conrich of Ohio Inc. - Addison	OH	Coal crushing	.34
264.1	Conrich of Ohio - Kanawha	OH	Coal terminal	-
270.0	Stauffer Chemical	WV	Mfg. industrial organic chemicals	0.3
273.5	Clipper Mills Docking	OH	Coal loading	-

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
274.0	Mack Energy Company - Terminal	OH	Coal loading	-
281.0	Goodyear Tire & Rubber	WV	Mfg. polyester resins	0.58
292.2	Crown Coal Company	OH	Coal loading	-
303.5	Gulf Oil Company	WV	Oil terminal	-
304.5	Pennzoil Company	WV	Oil terminal	-
315.4	Sun Oil Company - Kenova	WV	Oil terminal	-
316.8	American Commercial Terminals	WV	Coal terminal	-
317.5	Big Sandy Asphalt Company	KY	Distribution of petroleum products	-
318.2	Ashland Oil Company - Marine Repair	KY	Marine repair terminal	-
318.4	South Point Ethanol	OH	Producer of fuel grade ethanol	-
318.5	Ashland Oil - South Point	OH	Store Ammonia, formaldehyde, melamine, urea-formaldehyde concentrate, NCCW	1.2
318.6	Tri-State Terminals	OH	Coal preparation and terminal	.039
319.0	Chevron USA	KY	Oil Terminal	-
320.3	Armco, Inc. - Ashland Coke	KY	Coal production	2.5
321.0	Chesapeake and Oil Railway	KY	Rail yard runoff	-
321.1	Monsbach Metal Company	KY		-
322.0	Armco Steel - Norton Foundry	KY	Foundry	-
323.8	Oliver Elam, Inc.	OH	Coal crushing and loading	0.30
324.0	Rail River Terminal Co.	OH	Coal terminal	-
324.5	Iron City Fuels	OH	Coke plant	-
324.6	Armco Steel - Ashland	KY	Production of carbon steel products	7.3

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
325.0	Allied Chemical	OH	Tar Plant	-
327.2	Dayton Malleable, Inc.	OH	Mfg. malleable and nodular iron	0.85
329.6	McGovney Ready Mix	OH	Mfg. ready mix concrete	.04
331.2	Superior Coal Company	OH	Coal crushing	.01
332.2	E.I. duPont - Wurtland	KY	Mfg. sulfuric acid and microfoam sheeting	5.1
335.5	Bluegrass Mining	KY	Coal preparation plant	-
341.0	Tennessee Gas Pipeline Company	KY	Intermittant discharges from pipeline testing	-
345.0	Bell Docking Co.	OH	Coal terminal	-
347.2	Standard Slag Company	OH	Coal terminal	1.3
349.2	Standard Oil Company	OH	Oil terminal	.44
351.2	New Boston Coke Corporation	OH	Production of alcohol and coke	-
355.6	Dayton Walther Corporation	OH		-
355.8	Norfolk & Western RR	OH		
405.2	Frankfort Materials Co.	KY	Sand and gravel operation	-
407.1	Emerson Electric	KY	Mfg. mechanical power transmission components; NCCW	0.33
408.5	Wald Mfg. Company	KY	Electroplating	-
408.8	Carnation Co.	KY	Mfg. evaporated milk	0.85
412.0	Texaco	KY	Oil terminal	-
441.5	Black River Mining	KY	Lime hydration plant and Domestic STP	-
474.3	Chevron Terminal	KY	Oil terminal	-
474.3	Union Oil	OH	Oil terminal	-

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
474.5	Boron Oil - Bromley	KY	Oil terminal	-
475.8	Valvoline Oil	OH	Oil terminal	.05
476.8	Tresler Comet Oil	OH	Oil terminal	-
480.0	Hilltop Terminal	OH	Mfg. ready mix concrete	0.58
484.0	Monsanto Chemical	OH	Mfg. acrylonitrile - butadiene - styrene, urea formaldehyde, styrene, and phenolic plastic resins	1.0P
487.5	Northern Kentucky Aggregate	KY	Sand and gravel processing	-
489.5	Kaiser Agr. Chemicals	OH	Mfg. liquid nitric acid and nitrogenous fertilizers	.16
540.8	DOW Corning	KY	Mfg. silicones and emulsions	0.30
543.5	Metal & Thermit Corp.	KY	Mfg. various organic, organo - metallic and inorganic chemicals and pesticides	.27P
544.0	Chevron Bulk Plant	KY	Oil terminal	-
554.7	Kawneer Company	KY	Aluminum anodizing	0.05
590.0	The Heil Company	KY	Hydrostatic tank testing	-
602.6	Shell Oil	KY	Oil terminal	-
603.0	Chevron USA	KY	Asphalt terminal	-
603.0	Ashland Petroleum	KY	Asphalt and fuel oil terminal	-
603.3	Jefferson Co. Medical Center	KY	Steam plant discharge	-
604.0	Humana, Inc.	KY	NCCW only	-
605.1	Colgate - Palmolive	IN	Mfg. soap and detergents	0.6P
606.4	George Moser Leather	IN	Leather tanning and finishing	-

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
607.0	Indiana Farm Bureau	IN		-
611.6	Ashland Petroleum	KY	Refinery tank farm; storm runoff only	-
612.5	Texaco	KY	Oil terminal	-
612.5	Chevron USA	KY	Oil terminal	-
613.1	B.F. Goodrich Chemicals	KY	Mfg. synthetic rubber and plastic resins	.73
613.3	Rohm & Haas	KY	Mfg. acrylic polymers, distillation of crude methyl methacrylate	28.8
613.6	American Synthetic Rubber	KY	Mfg. polybutadiene rubber, styrene - butadiene rubber, styrene - butadiene latex	1.4
613.8	DuPont	KY	Mfg. polychloroprene and other chlorinated monomers, chlorofluoromethanes, vinyl fluoride and 1,1-difluoroethane, NCCW only	71.0
614.1	Marathon Oil Company	KY	Coal terminal	-
614.9	Stauffer Chemical Company	KY	Mfg. chlorinated solvents and hydrochloric acid	.55
615.0	Army Reserve Center	KY	Truck washing discharges	-
615.2	Borden Chemical	KY	Mfg. formaldehyde, urea formaldehyde, phenolic resins, adhesives	2.5
615.5	Ready-Mix Concrete	KY	Mfg. ready-mix concrete	-
616.0	Sun Oil Company	KY	Oil terminal	-
620.5	Exxon Corp.	KY	Oil terminal	-
642.0	Olin Corp.	KY	Mfg. glycol ethers, polyalkaline glycols, toluene diamine	3.2P

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
653.0	Martin Marietta	KY	Limestone quarry dewatering	-
712.0	American Olean Tile Co.	KY	Production of quarry tile; Domestic STP	<.01
719.0	Willamette Industries	KY	Mfg. bleached hardwood pulp	5.7
721.0	Willamette Ind. - KY Mills Div.	KY	Mfg. corrugated medium	2.5
726.5	National Steel	KY	Casting of aluminum ingot, rolling of aluminum sheets and painting of steel	6.0
726.4	Howmet Aluminum Corp.	KY	Mfg. cold rolled aluminum reroll, heat treatment of aluminum	-
727.1	Southwire Co.	IN	Extruding of aluminum into electrical conductors	0.01
727.2	National Southwire Aluminum	KY	Primary smelting of aluminum; mfg. carbon electrodes	0.15
746.0	Ind. & Mich. Electric	IN	Construction site runoff	-
750.0	Green Coal Company	KY	Coal preparation plant	-
751.3	WR Grace & Company	KY	Mfg. styrene - butadiene latex, polyvinylidene chloride latex, polyvinylacetate latex, paper, cellulose battery separators, plastic battery separators	1.96
753.0	Texaco, Inc.	KY	Oil terminal	-
753.5	Green River Steel	KY	Mfg. specialty steel blooms and billets	3.83
754.1	Crosby Group	KY	Gold mechanical galvanizing; steel forgings	.06
755.0	South Central Oil	KY	Domestic STP	<.01
755.5	Glenmore Distilleries	KY	Distillery and sanitary discharge	.03
755.5	Chevron USA	KY	Oil terminal	-
757.5	Field Packing Company	KY	Meat processing	0.60

INDUSTRIAL WASTEWATER DISCHARGES TO THE OHIO RIVER

Mile Point	Name	State	Description	Flow MGD
757.7	Julius Wile Distillers	KY	Distillery	-
760.0	Owensboro Riverport Authority	KY	Coal terminal and preparation	-
790.0	Ashland Petroleum	IN	Oil terminal	-
792.5	Alcoa - Warrick	IN	Primary smelting of aluminum and rolling and formation of sheet metal	13.9P
793.8	AMOCO	IN	Oil Terminal	
805.0	Custom Resins Inc.	KY	Mfg. nylon 6 resins	.74
807.3	Agrico Chemical Company	KY	Terminal handling anhydrous ammonia, urea and mixed fertilizers; NCCW and sanitary discharge	<.01P
829.0	General Electric Company	IN	Mfg. plastics	-
829.1	Indiana Farm Bureau Refinery	IN	Gasoline - oil refinery	0.44
829.2	Texaco, Inc.	IN	Oil terminal	-
830.0	Chemetron Corp.	IN	Industrial gasses	-
830.0	Bobcock & Wilcox Company	IN		-
830.0	Sohio Pipeline	IN	Pipeline terminal	-
891.7	Ozark-Mahoning Company	IL	Fluorspar mining	0.94
937.0	Texaco - Paducah	KY	Oil terminal	-
945.0	Allied Chemical Corp.	IL	Mfg. uranium hexafluoride, iodine pentafluoride, sulfur hexafluoride, antimony pentafluoride, fluorine	4.35
946.0	TVA-Atmospheric Fluidized Bed Combustion Pilot Plant	KY	Power generation research project	0.28P
949.5	Missouri Portland Cement	IL	Mfg. portland cement	0.06

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS

OHIO RIVER

Mile Point	Location	Owner	Products Handled
2.9 L*	McKees Rock, PA	Pittsburgh Oil Company	Gasoline
3.1 L	McKees Rock, PA	Gordon Lubricating Company and Cities Service	Oil
5.5 L	Neville Island, PA	U.S. Steel Chemicals Co.	Acid
5.8 L	Neville Island, PA	Gulf Oil Corporation	Gasoline, Kerosene, Fuel Oil, Crude Oil
6.5 L	Neville Island, PA	Exxon Company	Gasoline and Fuel
6.8 L	Neville Island, PA	Neville Chemical Company	Petroleum distillate, Fuel Oil, Solvents, Tar
10.8 L	Coraopolis, PA	Texaco, Inc.	Gasoline, Kerosene, Fuel Oil
10.9 L	Coraopolis, PA	Texaco, Inc.	Gasoline, Kerosene, Fuel Oil
11.2 L	Coraopolis, PA	Buckeye Pipeline Company	Petroleum products
12.1 L	Stoops Ferry, PA	Gordon Lubricating Company	Aviation grade fuel
18.0 L	Aliquippa, PA	LTV Steel	Coal, Acid, Fuel Oil, Corporation Tar, Ammonium sulfate
22.5 R*	Conway, PA	Conrail	Fuel Oil
22.6 L	Colona, PA	North Star	Molasses, Petroleum
24.1 R	Freedom, PA	Ashland Oil & Refining Co.	Gasoline, Fuel, Crude Oil
28.3 R	Vanport, PA	Sun Oil Company	Gasoline
28.5 L	Josephtown, PA	St. Joseph Resources Co.	Acid
28.7 R	Vanport, PA	Ashland Petroleum Co.	Solvent fuel oil, Neutral oils

* L (left) and R (right) bank facing down river.

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
29.9 L	Potter Township, PA	Arco Chemical Company	Benzol, Fuel & Crude oils, Alcohol
33.3 R	Industry, PA	Shell Chemical Corp. and Great Lakes Solvents, Inc.	Liquid industrial chemicals
34.8 R	Midland, PA	Pennzoil Company	Oil, Gasoline
35.1 R	Midland, PA	Mobil Oil Company, Inc.	Gasoline
36.2 R	Midland, PA	LTV Steel Corp.	Coal fluospar, Fuel Oil, Benzol
41.4	East Liverpool, OH	Ohio River Oil Company	Chemical solvents
42.0	Chester, WV	Celotex Corporation	Asphalt, Oil
42.8	East Liverpool, OH	East Liverpool River-Rail Terminal Company	Molasses, Synthetic Rubber
42.8	East Liverpool, OH	Williamson Leasing Company	Oil
46.8	Congo, WV	Quaker State Oil Refining Co.	Liquid
49.1	Wellsville, OH	Ashland Oil & Refining Co.	Petroleum products
62.2	Weirton, WV	Weirton Steel Corp.	Coal, Steel, Fuel Oil, Acid, Scrap
64.6	Steubenville, OH	ARCO	Oil, Gasoline
64.9	Weirton, WV	Apex Oil	Petroleum Products
68.9	Follansbee, WV	Wheeling Pittsburgh Steel Corporation	Coal, Acid, Benzol
69.1	Follansbee, WV	Wheeling Pittsburgh Steel and Allied Oil Company	Fuel Oil
69.3	Follansbee, WV	Koopers Company	Crude tar, Creosote
81.1	Warrenton, OH	Tri-State Asphalt	Misc. Oils, Tar
85.4	Wheeling, WV	Westvaco	Gasoline
85.5	Warwood, Wheeling, WV	Sun Oil Company	Gasoline

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
85.8	Warwood, Wheeling, WV	Tri-State Petroleum	Fuel Oil
88.2	Warwood, Wheeling, WV	Pure Oil Company	Gasoline
105.9	Natrium, WV	Solvay Process Division, Allied Chemical	Industrial chemicals
119.4	Natrium, WV	Chemical Division, PPG Industries	Coal, Chemicals, Benzene
121.0	Proctor, WV	Mobay Chemical Company	Chemicals
121.3	Proctor, WV	Mobay Chemical Company	Chemicals
143.2	Grandview, OH	Tri-State Petroleum	Gasoline
145.3	Long Reach, WV	Union Carbide Corporation	Liquid Fuel
146.0	Bens Run, WV	Bens Run Pipeline Company	Gasoline
147.0	Bens Run, WV	Inorganic Chemicals Division, FMC Corporation	Salt brine
155.2	St. Marys, WV	Quaker State Oil Refining Co.	Gasoline, Oil
159.9	below Newport, WV	Buckeye Pipeline	Crude Oil
160.8	Willow Island, WV	American Cyanamid Company	Chemicals
161.1	Willow Island, WV	American Cyanamid Company	Chemicals
164.0	Waverly, WV	Cabot Corporation	Chemicals
173.1	below Marietta, OH	Mobil Oil Company	Gasoline, Oil
173.8	below Marietta, OH	Ashland Pipeline	Gasoline, Oil
174.7	below Marietta, OH	Ashland Oil, Inc.	Gasoline, Oil
174.8	below Marietta, OH	Ashland Oil, Inc.	Gasoline, Oil, Diesel Fuel
175.0	below Marietta, OH	Asphalt Materials & Construction Company	Asphalt
175.1	below Marietta, OH	Gulf Oil Corporation	Gasoline, Oil
175.6	below Marietta, OH	Standard Oil Company (OH)	Gasoline, Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
179.3	Constitution, OH	Chevron Asphalt Company	Crude Oil, Distillate Oil, Asphalt products
180.8	Vienna, WV	Texaco	Gasoline, Oil
182.0	Belpre, OH	Ashland Chemical	Chemicals
183.4	Parkersburg, WV	Elk Refining Company	Gasoline, Oil
188.6	Belpre, OH	Shell Oil Company	Chemicals
191.3	Washington, WV	Marbon Chemical Division, Borg-Warner Corporation	Chemicals
242.9	Grahams Station, WV	AEP, Mountaineer Plant	Oil
253.1	Middleport, OH	Texaco, Inc.	Gasoline, Oil
258.5	Cheshire, OH	AEP, Gavin Plant	Coal, Oil
260.5	above Pt. Pleasant, WV	Pantasote Company	Chemicals
265.4	Pt. Pleasant, WV	Hartley Marine Corporation	Diesel Fuel
280.7	Apple Grove, WV	Goodyear Tire & Rubber Co.	Chemicals
303.5	above Huntington, WV	Gulf Refining Company	Gasoline, Oil
304.1	Huntington, WV	Huntington Asphalt	Miscellaneous
307.6	Huntington, WV	Exxon	Gasoline, Oil
310.4	Huntington, WV	D-A Lubricant Company	Gasoline, Oil
310.8	Huntington, WV	Pennzoil	Gasoline, Oil
315.9	Kenova, WV	Ashland Oil, Inc.	Crude Oil
316.3	Kenova, WV	Ashland Oil, Inc.	Gasoline, Oil
316.5	Kenova, WV	Ashland Oil, Inc.	Gasoline, Oil
318.5	Catlettsburg, KY	Ashland Oil, Inc.	Crude Oil
319.0	Ashland, KY	Standard Oil Co. (KY)	Gasoline, Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
320.3	Ashland, KY	Semet Solvay Div. ARMC0	Coal tar
324.6	Ironton, OH	Plastics and Coal Chemicals Div., Allied Chemical Corp.	Coal tar
324.9	Ironton, OH	Action Terminal, Inc.	Gasoline, Oil
326.8	Ironton, OH	Rich Oil, Inc.	Petroleum products
327.8	Russell, KY	Chesapeake & Ohio Railway	Diesel Oil
333.2	Hanging Rock, OH	The Dow Chemical Corp.	Chemicals
336.5	Haverhill, OH	U.S.S. Chemicals Company	Chemicals
349.2	Sciotoville, OH	Standard Oil Co. (OH)	Gasoline, Oil
350.8	New Boston, OH	New Boston Coke	Oil
351.5	New Boston, OH	American Buckeye Develepment Corporation	Coal, Tar
351.6	Siloam, KY	Columbia Hydrocarbon Corp.	Gasoline, Butane
352.6	New Boston, OH	Norfolk & Western Railroad	Diesel Oil
389.6	above Manchester, OH	Dayton Light & Power	Coal, Oil
457.0	Campbell Co., KY	Agrico Chemical Company	Fertilizer
465.7	Cincinnati, OH	Queen City Terminal	Fuel Oil, Liquid Fertilizer, Glycol, Methanol
465.8	Cincinnati, OH	Allied Chemical Corporation	Liquid Fertilizer
468.5	Cincinnati, OH	Rookwood Oil Terminals, Inc.	Gasoline, Kerosene, Fuel Oil
474.0	Cincinnati, OH	Union Oil Company	Petroleum products
474.2	Cincinnati, OH	Sohio Petroleum Company	Gasoline, Fuel Oil, Kerosene, Refined products
474.2	Bromley, KY	Standard Oil Co.	Bulk Petroleum

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
474.8	Cincinnati, OH	Cargill, Inc.	Molasses, Calcium Chloride, Caustic Soda
475.5	below Fairview, KY	Chevron Oil Company	Petroleum products
476.2	Cincinnati, OH	Ashland Oil, Inc.	Petroleum products
476.7	Cincinnati, OH	Tresler Oil Company	Petroleum, Petrochemicals, Other chemicals
477.1	Cincinnati, OH	Texaco, Inc.	Petroleum products
478.7	Cincinnati, OH	U.S.A.F. POL Distribution Station	Gasoline, petroleum products
479.0	Cincinnati, OH	Shell Oil Company	Petroleum products, Asphalts, Light oils
479.2	Cincinnati, OH	C.F. Industries (Bulk Service Company)	Phosphate, Fertilizers
479.5	Cincinnati, OH	River Transportation Co.	Salt, Fertilizers, Vegetable Oil, Petroleum Products
484.2	Addyston, OH	Monsanto Chemical Company	Chemicals
486.8	North Bend, OH	Gulf Oil Corp. of PA	Petroleum products
487.9	below North Bend, OH	Koch Asphalt Company	Liquid asphalt
489.3	Miami Fort Stn., OH	Kaiser Agricultural Chemicals	Anhydrous ammonia, Liquid Fertilizer
489.7	Miami Fort Stn., OH	Chevron Asphalt Company	Crude Oil, Distillate Oil, Asphalt products
490.3	Miami Fort Stn., OH	Cincinnati Gas & Electric Company	Coal, Fuel Oil
490.7	Miami Fort Stn., OH	E.I. duPont de Nemours & Co.	Sulfuric Acid
494.0	Lawrenceburg, IN	Indiana & Michigan Electric	Fuel Oil, Coal
541.0	Ghent, KY	Dow Corning Company	Methanol

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
559.0	Madison, IN	Charter Transport	Petroleum products
602.6	Louisville, KY	Shell Oil Company	Gasoline, Oil
602.7	Louisville, KY	American Continental Oil Co.	Petroleum
602.8	Louisville, KY	Chevron Asphalt Company	Asphalt
603.0	Louisville, KY	American Continental Oil Co.	Gasoline, Diesel Fuel
604.0	Jeffersonville, IN	Ashland Oil, Inc.	Gasoline, Kerosene, Diesel Oils
609.4	New Albany, IN	Transit Oil Company	Petroleum products
611.7	Louisville, KY	Louisville Refining Company	Petroleum products
612.0	Louisville, KY	Gulf Oil Corporation	Gasoline, Diesel Oil
612.2	Louisville, KY	Ashland Oil, Inc.	Petroleum products
612.4	Louisville, KY	Standard Oil Company	Petroleum products
612.5	Louisville, KY	National Carbide Company	Waste Carbide
612.6	New Albany, IN	Five M Transportation Co.	Petroleum Products, Diesel
612.7	Louisville, KY	Texaco, Inc.	Gasoline, Middle distillates
613.5	Louisville, KY	American Synthetic Rubber Company	Butadiene
614.0	Louisville, KY	Triangle Refineries, Inc.	Petroleum products
614.8	Louisville, KY	Stauffer Chemical Company	Chlorine
615.2	Louisville, KY	Borden Chemical Division, Borden, Inc.	Methanol
619.9	Louisville, KY	Sunray DX Oil Company	Refined petroleum products
620.5	Louisville, KY	Exxon Company, U.S.A.	Asphalt, Tar, Mineral Spirits, Molasses, Ground Rock

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
627.8	Kosmosdale, KY	B T Energy Company	Petroleum products
643.4	Doe Run, KY	Olin Corporation	Glucol, Butane, Natural Gas
731.4	Troy, IN	Somerset Refining Co., Inc.	Asphalt
753.7	Owensboro, KY	River Terminal Company	Petroleum products
754.4	Owensboro, KY	Ashland Oil, Inc. & Owensboro Ashland Co. (Sohio-Ashland)	Oil (crude)
754.7	Owensboro, KY	Texaco, Inc.	Petroleum products
755.2	Owensboro, KY	Glenmore Distilleries	Grain Alcohol
755.5	Owensboro, KY	Standard Oil Co. (KY)	Petroleum products, Fuel Oil
793.0	Evansville, IN	Mead-Johnson Terminal Corp.	General
793.7	Evansville, IN	Ashland Oil, Inc.	Petroleum products
794.0	Evansville, IN	Shell Oil Company and Gulf Oil Co., U.S.A.	Gasoline, Fuel Oil
794.0	Evansville, IN	Standard Oil Div., Am. Oil Company	Petroleum products
794.5	Evansville, IN	Howell Dock, Inc.	Fuel Oil
801.4	above Henderson, KY	Home Oil Company	Gasoline, Kerosene, Fuel Oil
807.5	Henderson, KY	Gulf Oil Corp., Chemicals Department	Ammonia, Liquid and solid fertilizer
808.4	Henderson, KY	Sunray DX Oil Company	Refined petroleum products
829.7	Mt. Vernon, IN	Indiana Farm Bureau Co-operative Association	Crude Oil, Gasoline
829.8	Mt. Vernon, IN	Texaco, Inc.	Gasoline, Middle Distillates, Fuel Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS
(Continued)

Mile Point	Location	Owner	Products Handled
830.0	Mt. Vernon, IN	Sohio Pipe Line Company	Petroleum products
830.5	Mt. Vernon, IN	Marathon Oil Company	Gasoline, Fuel Oils
831.1	Mt. Vernon, IN	C.F. Industries	Anhydrous ammonia, Nitrogen solutions
932.7	Paducah, KY	Shell Oil	Petroleum
933.2	Paducah, KY	Gulf Oil	Petroleum
933.4	Paducah, KY	Standard Oil	Petroleum
935.4	Paducah, KY	Texaco, Inc.	Petroleum
975.6	Mound City, IL	Martin Oil	Gasoline, Oil, Kerosine

Source: River Terminals - Ohio River and Tributaries, Department of the Army,
Ohio River Division, Corps of Engineers. Revised April, 1984.

COMMUNITIES WITH COMBINED SEWER SYSTEMS

<u>Mile Point</u>	<u>Municipality</u>
0.0	Pittsburgh, PA
4.0	Bellvue, PA
5.0	Avalon, PA
6.5	Emsworth, PA
11.8	Sewickley, PA
13.9	Leetsdale, PA
15.9	Ambridge, PA
20.0	Aliquippa, PA
25.0	Rochester, PA
43.3	Chester, WV
56.7	New Cumberland, WV
59.1	Toronto, OH
63.0	Weirton, WV
68.0	Steubenville, OH
71.0	Mingo Junction, OH
90.8	Wheeling, WV
93.0	Benwood, WV
94.0	Belmont County, OH
96.2	McMechen, WV
250.4	Pomeroy, OH
252.1	Middleport, OH
269.7	Gallipolis, OH
304.6	Proctorville, OH
308.3	Huntington, WV
322.5	Ashland, KY
327.2	Ironton, OH
349.0	Sciotoville, OH
351.8	New Boston, OH
356.0	Portsmouth, OH
411.8	Maysville, KY
470.0	Newport, KY
472.5	Cincinnati, OH
506.0	Rising Sun, IN
545.0	Carrollton, KY
605.0	Louisville, KY
727.0	Tell City, IN
746.2	Rockport, IN
758.2	Owensboro, KY
778.0	Newburgh, IN
792.5	Evansville, IN
806.0	Henderson, KY
829.0	Mt. Vernon, IN
936.0	Paducah, KY

SECTION IV: WATER QUALITY

Water quality of the Ohio River and its tributaries is monitored routinely by the Commission, the states, and the U.S. Geological Survey. Data from all of these efforts are entered into STORET, the data storage and retrieval system of the U.S. Environmental Protection Agency.

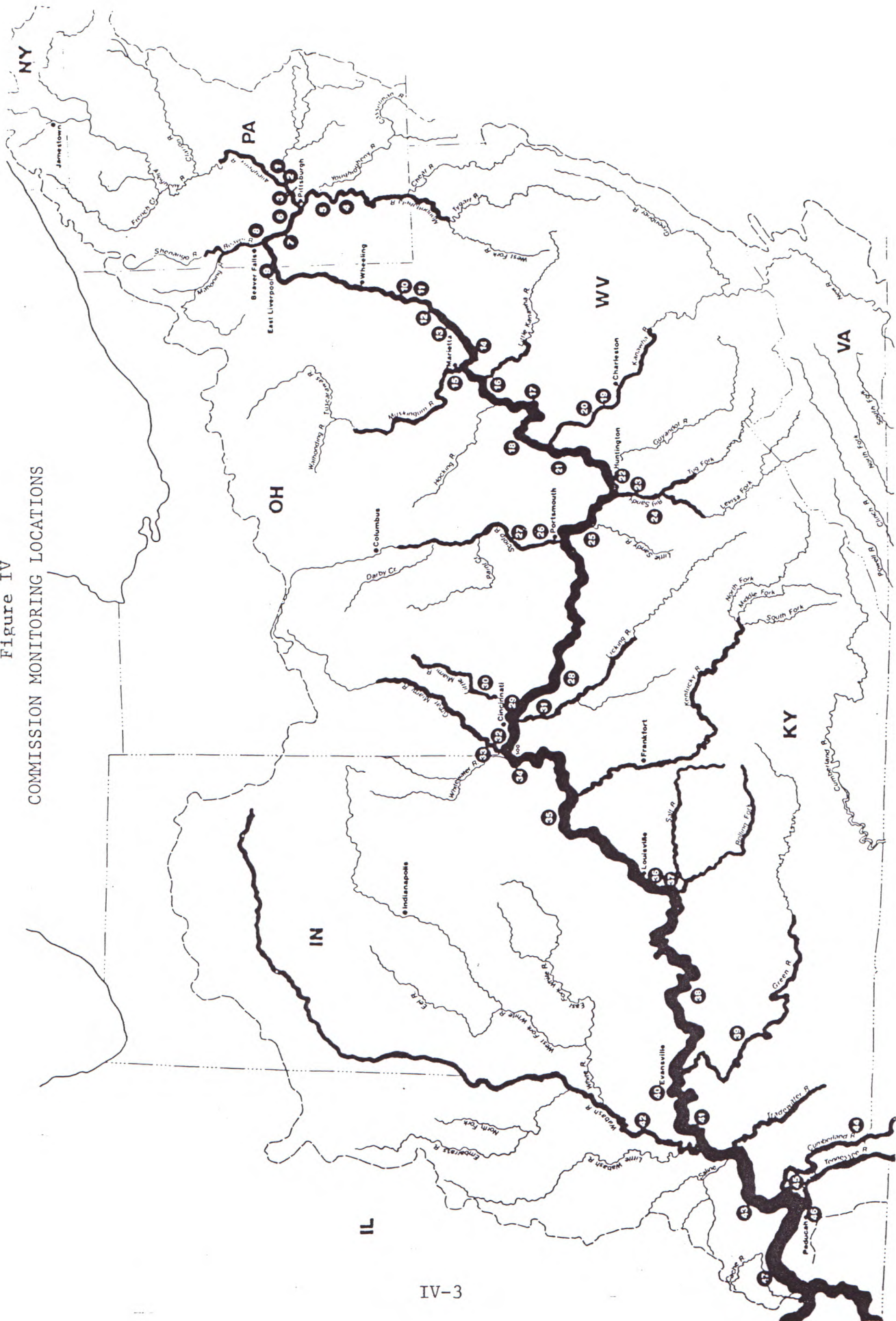
The Commission has the primary responsibility for monitoring the Ohio River main stem. Samples are also collected from major tributaries just above their confluence with the Ohio in order to assess their impacts. Four monitoring systems are maintained by the Commission: Water Users, Electronic, Manual, and Organics Detection System. The Water Users Network, which is the oldest of the systems, consists of data collected by water utilities along the river as part of their operations and sent to the Commission. The network was established in the 1950's, but some utilities have data extending back to the early 1900's. The electronic monitoring system consists of 22 monitors on the Ohio River and major tributaries which provide hourly measurements of temperature, specific conductance, pH, and dissolved oxygen. Data are conveyed to Commission headquarters by telemetry. The manual system involves collection of monthly samples at 38 sites. The samples are analyzed for 33 physical, chemical, and bacteriological parameters. The Organics Detection System consists of 13 water utilities which run daily analyses of river samples by gas chromatograph for 17 purgable halogenated organic compounds.

Each of the states operates a sampling network similar to the Commission's manual sampling program. The states' efforts in the Ohio River Basin are concentrated on the tributaries. The combined results of the state and Commission networks presents a comprehensive picture of Ohio River water quality.

The U.S. Geological Survey operates the National Stream Quality Accounting Network, or NASQAN. This network involves monthly sampling at sites throughout the United States. A total of 25 NASQAN sites are located in the Ohio River Basin.

Historic data for flow, temperature, and specific conductance are presented for electronic monitor locations. The data are for the period of record for each monitor through 1984. Only those monitors which are currently operating and for which eight or more years of data are available are presented. The behavior of these parameters describes seasonal patterns at each monitoring site which are major influences on overall water quality conditions.

Figure IV
COMMISSION MONITORING LOCATIONS



COMMISSION MONITORING LOCATIONS AND STORET STATION CODES

Primary Station Number	Secondary Station Number	Description	Type	Mile Point
AR13.3R	10	Allegheny R. @ Oakmont, PA	E	13.3
AR12.8M	1233	* Allegheny R. @ Oakmont, PA	M	13.3
AR7.40	020DS	Allegheny R. @ Pittsburgh, PA	O	7.4
MR24.5	010DS	Monongahela R. @ Western Pa. Water Co.	O	24.5
MR-4.5R	32	Monongahela R. @ So. Pittsburgh, PA	E	4.5
MR-4.5M	1237	* Monongahela R. @ So. Pittsburgh, PA	M	4.5
MR-4.0	237	Monongahela R. @ So. Pittsburgh, PA	W	4.5
OR976.50	030DS	Ohio R. @ West View, PA	O	4.5
OR9658R	08	Ohio R. @ So. Heights, PA	E	15.2
OR9658M	1201	* Ohio R. @ So. Heights, PA	M	15.2
BR-5.3R	06	Beaver R. @ Beaver Falls, PA	E	5.3
BR-5.3M	1242	Beaver R. @ Beaver Falls, PA	M	5.3
OR9408R	33	Ohio R. @ East Liverpool, OH	E	40.2
OR9408M	1500	* Ohio R. @ East Liverpool, OH	M	40.2
OR9194	403	Ohio R. @ Weirton Steel, WV	W	61.6
OR9157	505	Ohio R. @ Steubenville, OH	W	65.3
OR8968M	1405	* Ohio R. @ Pike Island, WV	M	84.2
OR8945	405	Ohio R. @ Wheeling, WV	W	86.5
OR894.2	040DS	Ohio R. @ Wheeling, WV	O	86.8
OR8786R	34	Ohio R. @ Shadyside, OH	E	102.4
OR8786M	1521	Ohio R. @ Shadyside, OH	M	102.4
OR8516M	1423	* Ohio R. @ Hannibal Lock, WV	M	126.4
OR8192M	1408	* Ohio R. @ Willow Island Dam, WV	M	161.8
MU28.0	532	Muskingum R. @ Beverly, OH	W	28.0
MU-5.8M	1531	Muskingum R. Near Marietta, OH	M	5.8
OR790.7	050DS	Ohio R. @ Parkersburg, WV	O	190.3
OR7771M	1421	* Ohio R. @ Belleville Dam, WV	M	203.9
OR7210R	37	Ohio R. @ Addison, OH	E	260.0
OR7210M	1510	* Ohio R. @ Addison, OH	M	260.0
OR7196	510	Ohio R. @ Addison (Kyger Creek), OH	W	261.4
KR38.3	060DS	Kanawha R. @ St. Albans, WV	O	38.3
KR31.1R	03	Kanawha R. @ Winfield, WV	E	31.1
KR31.1M	1450	Kanawha R. @ Winfield, WV	M	31.1
OR7018R	39	Ohio R. @ Gallipolis Dam, WV	E	279.2
OR7018M	1422	* Ohio R. @ Gallipolis Dam, WV	M	279.2
OR6741R	02	Ohio R. @ Huntington, WV	E	306.9
OR6741M	1412	* Ohio R. @ Huntington, WV	M	306.9
OR674.1	070DS	Ohio R. @ Huntington, WV	O	306.9
OR6740	412	Ohio R. @ Huntington, WV	W	306.9
OR6652M	1523	Ohio R. @ Kenova, WV	M	315.8
SR20.3R	17	Big Sandy R. @ Louisa, KY	E	20.3
SR20.3M	1630	* Big Sandy R. @ Louisa, KY	M	20.3
OR6400M	1621	* Ohio R. @ Greenup Dam, KY	M	341.0
SC15.0M	1538	Scioto R. @ Lucasville, OH	M	15.0
OR630.9	080DS	Ohio R. @ Portsmouth, OH	O	350.1

COMMISSION MONITORING LOCATIONS AND STORET STATION CODES (continued)

Primary Station Number	Secondary Station Number	Description	Type	Mile Point
OR5448M	1511	Ohio R. @ Meldahl Dam, OH	M	436.2
OR5182R	Ø1	Ohio R. @ Cincinnati, OH	E	462.8
OR5182M	15Ø4	Ohio R. @ Cincinnati, OH	M	462.8
OR518.2	Ø90DS	Ohio R. @ Cincinnati, OH	O	462.8
OR5182	5Ø4	Ohio R. @ Cincinnati, OH	W	462.8
LM-7.5M	1571	Little Miami R. @ Cincinnati, OH	M	7.5
LR-4.5R	21	Licking R. @ Kenton County, KY	E	4.5
LR-4.5M	1634	* Licking R. @ Kenton County, KY	M	4.5
OR491ØM	15Ø8	Ohio R. @ North Bend, OH	M	490.0
GM-5.5M	1551	Great Miami R. @ Lost Bridge, OH	M	5.5
OR45ØØM	16ØØ	Ohio R. @ Markland Dam, KY	M	531.5
OR4499R	22	Ohio R. @ Markland Dam, IN	E	531.5
OR38Ø4R	11	Ohio R. @ Louisville, KY	E	600.6
OR38Ø4M	16Ø1	* Ohio R. @ Louisville, KY	M	600.6
OR38Ø.4	1Ø0DS	Ohio R. @ Louisville, KY	O	600.6
OR38Ø4	6Ø1	Ohio R. @ Louisville, KY	W	600.6
OR3551R	35	Ohio R. @ West Point, KY	E	625.9
OR3551M	1622	* Ohio R. @ West Point, KY	M	625.9
OR26Ø3R	41	Ohio R. @ Cannelton Dam, IN	E	720.7
OR26Ø3M	1721	Ohio R. @ Cannelton Dam, IN	M	720.7
GR41.3M	1656	* Green R. @ Seebree, KY	M	41.3
OR1895R	15	Ohio R. @ Evansville, IN	E	791.5
OR1895M	17Ø3	* Ohio R. @ Evansville, IN	M	791.5
OR189.5	110DS	Ohio R. @ Evansville, IN	O	791.5
OR1895	7Ø3	Ohio R. @ Evansville, IN	W	791.5
OR135ØM	1722	Ohio R. @ Uniontown, KY	M	846.0
WA9295R	43	Wabash R. @ New Harmony, IN	E	51.5
WA9295M	1741	Wabash R. @ New Harmony, IN	M	51.5
OR62.5R	48	Ohio R. @ Smithland Dam, IL	E	918.5
OR62.5M	182Ø	Ohio R. @ Smithland Dam, IL	M	918.5
CR3Ø.6M	1645	Cumberland R. near Grand Rivers, KY	M	30.6
TR-6.ØM	165Ø	* Tennessee R. near Paducah, KY	M	6.0
OR28.7R	46	Ohio R. @ Joppa, IL	E	952.3
OR28.7M	1821	* Ohio R. @ Joppa, IL	M	952.3

W - Water Users

E - Electronic

M - Manual

O - Organics Detection System

* - Core Stations designated by states for US EPA's national network

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
---------------	-------------------	-----------------

PENNSYLVANIA Monongahela River Basin

*701 Monongahela River		Rankin Bridge at Braddock
*702 Monongahela River		Bridge between Rts. 88 & 906 at Charleroi
703 Monongahela River		Above Lock & Dam 7, Greensboro
725 Monongahela River		Lock & Dam 8, Point Marion
704 Turtle Creek		Second railroad bridge, Trafford
705 Abers Creek		Rt. 286, Plum Borough
706 Youghiogheny River		Bridge on LR 64326, Sutersville
707 Youghiogheny River		Crawford Ave. bridge, Connellsville
709 Youghiogheny River		Rt. 281 bridge, Confluence
712 Redstone Creek		LR 26026 bridge, Waltersburg
713 South Fork-Ten Mile Creek		Rt. 188 bridge, Jefferson
714 Dunkard Creek		LR 30130 bridge, Bobtown
715 Sewickley Creek		LR 64164 bridge, Hunker
717 Ten Mile Creek		At Millsboro, Bethlehem Township
718 Pigeon Creek		Rt. 854 bridge, Carroll Township
719 Peters Creek		Rt. 51 bridge, Jefferson Borough
721 Jacobs Creek		LR 26131 bridge, Scottdale Borough
723 Big Sandy Creek		Off Rt. 381, Wharton Township
724 Laurel Hill Creek		Rt. 53 bridge, Lower Turkeyfoot Township
710 Casselman River		LR 55029 bridge, Markleton

Allegheny River Basin

801 Allegheny River		Highway bridge at New Kensington
802 Allegheny River		Rt. 422 bridge, Kittaning
803 Allegheny River		Rt. 368 bridge, Parkers Landing
804 Allegheny River		Rt. 322 bridge, Franklin
*805 Allegheny River		Rt. 127 bridge, Harmony Twp.
806 Allegheny River		Rt. 62 bridge, below Warren
807 Allegheny River		Rt. 346 bridge, Eldred
808 Buffalo Creek		LR 03102 bridge, S. Buffalo Twp.
809 Kiskiminetas River		Rt. 56 bridge, Vandergrift
810 Conemaugh River		LR 64269 bridge, Tunnelton
811 Conemaugh River		Rt. 56 bridge, Seward
812 Loyalhanna Creek		LR 64185 bridge, Loyalhanna Township
813 Loyalhanna Creek		At fording point off Rt. 30, Unity Twnshp.
814 Black Lick Creek		Rt. 660 bridge, Burell Twp.
815 Two Lick Creek		Rt. 598 bridge, Center Twp.
816 Little Conemaugh River		Rt. 271 bridge, Johnstown
817 Stony Creek		Rt. 53 bridge, Ferndale
818 Crooked Creek		Rt. 66 bridge, Bethel Twp.
819 Mahoning Creek		Rt. 748 bridge, Redbank Twp.
820 Redbank Creek		T 468 bridge, Porter Twp.
821 Clarion River		Rt. 845 bridge, Piney Twp.
822 Clarion River		Rt. 36 bridge, Farmington Twp.

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
---------------	-------------------	-----------------

Allegheny River Basin (continued)

824 W. Br. Clarion River	LR 24011 bridge, Wilcox	
825 E. Br. Clarion River	LR 24013 bridge, above Glen Hazel	
826 French Creek	LR 60019 bridge, Utica	
827 French Creek	Rt. 700 bridge, Amity Twp.	
829 Tionesta Creek	LR 27001 bridge, Tionesta Twp.	
*830 Tionesta Creek	Rt. 666 bridge, Howe Twp.	
831 Brokenstraw Creek	Rt. 6 bridge, Youngsville	
832 Conewango Creek	LR 61038 bridge, Pine Grove Twp.	
833 Clarion River	Rt. 948 bridge, Ridgeway	
Crooked Creek	at Idaho	
838 Pine Creek	LR 02136 bridge, Bryantt	
839 Deer Creek	Rt. 910 bridge, West Deer Twp.	
841 Cowanshannock Creek	Rt. 612 bridge, Valley Twp.	
843 Clarion River	LR 16109 bridge, Richland Twp.	
844 Elk Creek	Rt. 120 bridge, Ridgeway	
845 French Creek	Rt. 322 bridge, Franklin	
846 French Creek	LR 20027 bridge, Union Twp.	
847 French Creek	Rt. 19 bridge, Woodcock Twp.	
849 Woodcock Creek	LR 20141 bridge, Woodcock Twp.	
851 Muddy Creek	LR 20098 bridge, Steuben Twp.	
852 Oil Creek	Rt. 8 bridge, Oil City	
855 Kinzua Creek	Rt. 219 bridge, Tally Ho	
856 Potato Creek	T 366 bridge, Farmers Valley	
857 Allegheny River	1/2 mile below LR 52062, Eulalia Twp.	
858 Tunungwant Creek	LR 42012 bridge, Foster Twp.	
859 Little Toby Creek	RR bridge above Rt. 949, Portland Mills	

Beaver River Basin

904 Beaver River	Old Rt. 51 bridge, Rochester	
*905 Beaver River	Rt. 588 bridge, Eastvale	
906 Beaver River	Rt. 288 bridge, Wampum	
907 Connoquenessing Creek	LR 04078 bridge, Franklin Township	
909 Shenango River	Rts. 422 & 224 bridge, New Castle	
910 Shenango River	LR 43081 bridge, Sharpsville	
911 Shenango River	Pymatuning Spillway, W. Shenango Twp.	
913 Little Shenango River	LR 43135 bridge, N. of Greenville	
915 Mahoning River	Rt. 224 bridge, Edinburg	
919 Connoquenessing Creek	LR 10015 bridge, Renfrew	
921 Slippery Rock Creek	LR 10048 bridge, Worth Township	
922 Slippery Rock Creek	LR 37083 bridge, above Wurtemberg	
923 N. Fork Little Beaver Creek	LR 37004 bridge, Enon Valley	
926 Slippery Rock Creek	At Boyers, Marion Township	
927 Shenango River	Ohio 54 bridge, Mercer Co., Ohio	

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
<u>Ohio River Basin</u>		
902 Ohio River		Ambridge-Woodlawn Bridge
*901 Ohio River		Rt. 30 bridge, East Liverpool, Ohio
903 Raccoon Creek		LR 04068 bridge, Center Township
914 Chartiers Creek		LR 02037 bridge, Carnegie
916 Chartiers Creek		T 748 bridge, Peters Township
918 Two Mile Run		L Street bridge, Vanport Borough
<u>OHIO</u>		
<u>Beaver River Basin</u>		
Mahoning River	10.8	First Street, Lowellville
Mahoning River	43.8	Leavitt Road, Leavittsburg
<u>Muskingum River Basin</u>		
Muskingum River	107.3	Rt. 83, Coshocton
Licking River	26.8	Stadden bridge, Newark
Mohican River	16.6	Rt. 514, Greer
Nimishillen Creek	8.2	Cheyenne Street, North Industry
Tuscarawas River	21.3	Rt. 83, Newcomerstown
Tuscarawas River	87.4	Warmington Street, Massilon
Walhanding River	14.7	Rt. 36, Nellie
<u>Scioto River Basin</u>		
Scioto River	102.1	Florence Chapen Road, Circleville
Big Darby Creek	13.4	Rt. 316, Darbyville
Mill Creek	16.8	Radner Road, Marysville
Olentangy River	11.5	Interstate 270, Worthington
<u>Little Miami River Basin</u>		
Little Miami River	80.6	Rt. 68, Oldtown
<u>Great Miami River Basin</u>		
Great Miami River	81.2	Monument Ave., Dayton
Mad River	29.6	St. Paris Pike, Eagle City

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
<u>Ohio River Basin</u>		
Hocking River	86.4	Rt. 33, Lancaster
Little Beaver Creek	4.5	Grimms Bridge Road, East Liverpool
Ohio Brush Creek	13.1	Rt. 348, West Union
Raccoon Creek	29.2	Rt. 35, Adamsville

WEST VIRGINIA
Monongahela River Basin

Monongahela River	Rt. 19, Star City
Cheat River	Rt. 26, Albright
Cheat River	Rt. 1, St. George
Tygarts Valley River	Rts. 219, 250, Beverly
West Fork River	Off US 19, Enterprise

Kanawha River Basin

Kanawha River	APCO Power Plant, Winfield
Kanawha River	Rts. 60, 61 bridge, Chelyan
Coal River	Rt. 9 bridge, Tornado
Elk River	Coonskin Park bridge, Charleston
Gauley River	Rt. 39/1 bridge, Beech Glen
New River	C & O RR bridge, Gauley Bridge
Greenbrier River	Rt. 3, Hilldale

Ohio River Basin

Little Kanawha River	Rt. 5, Elizabeth
Guyandotte River	Rt. 26, Huntington

KENTUCKY
Big Sandy River Basin

Tug Fork	35.1	Kermit
Tug Fork	77.7	State Line
Levisa Fork	69.4	Pikeville
Levisa Fork	115.0	Paintsville

Licking River Basin

Licking River	126.9	Shorburne
North Fork Licking River	50.1	Near Lewisburg

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
---------------	-------------------	-----------------

Licking River Basin (continued)

South Fork Licking River	49.1	Cynthiana
--------------------------	------	-----------

Kentucky River Basin

Kentucky River	55.5	Below Frankfort
Kentucky River	69.3	Above Frankfort
Kentucky River	135.3	Camp Nelson
Kentucky River	249.0	Heidelberg
North Fork Kentucky River	304.5	Jackson
Middle Fork Kentucky River	8.3	Tallega
South Fork Kentucky River	11.5	Booneville
Red River	72.7	Hazel Green
Eagle Creek	21.6	Glencoe
South Elkhorn Creek	27.5	Midway

Salt River Basin

Salt River	22.9	Shepherdsville
Pond Creek	15.4	Louisville
Beech Fork	48.1	Maud
Floyds Fork	50.7	Crestwood

Green River Basin

Green River	141.3	Aberdeen
Green River	225.9	Munfordville
Green River	279.7	Greensburg
Nolin River	78.7	White Mills
Bacon Creek	7.2	Priceville
Barren River	37.5	Bowling Green
Mud River	44.5	Eplys
Rough River	57.1	Dundee
Pond River	12.4	85 bridge
Pond River	62.8	Apex

Tradewater River Basin

Tradewater River	72.7	Olney
------------------	------	-------

Cumberland River Basin

Cumberland River	427.0	Bucherville
Cumberland River	562.3	Falls

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
<u>Cumberland River Basin (continued)</u>		
Cumberland River	654.4	Pineville
South Ford Cumberland River	40.3	McGreary County
Rockcastle River	24.4	Billows

INDIANA
Great Miami River Basin

East Fork, Whitewater River	27.0	Abington Pike Road, Abington
West Fork, Whitewater River	24.0	Blue Creek Road, Brookville

Ohio River Basin

Blue River, West Fork	53.0	US Rt. 150, Fredericksburg
-----------------------	------	----------------------------

Wabash River Basin

Wabash River	128.0	US Rt. 50, Vincennes
Wabash River	175.0	I & M Breed Station, Fairbanks
Wabash River	207.0	Ft. Harrison Boat Club, Terre Haute
Wabash River	219.0	Rt. 163 bridge, Clinton
Wabash River	228.0	Rt. 36, Montezuma
Wabash River	245.0	Rt. 234, Cayuga
Wabash River	292.0	Greenville bridge, Lafayette
Wabash River	301.0	US Rt. 26, Lafayette
Wabash River	336.0	CR 675, Georgetown
Wabash River	360.0	US Rt. 31, Peru
Wabash River	390.0	Rt. 105, Andrews
Wabash River	399.0	Huntington Waterworks
Wabash River	409.0	Rt. 3, Markle
Wabash River	452.0	US Rt. 27, Geneva
Patoka River	37.0	Miller Rd. bridge, Oakland City
Patoka River	70.0	County Rd. bridge, Jasper
White River	48.0	Rt. 61, Petersburg
White River	80.0	Rt. 358, Edwardsport
White River	166.0	Rts. 43 & 46, Spencer
White River	185.0	CR 700, Paragon
White River	197.0	IPALCO Station, Centerton
White River	205.0	Henderson Ford bridge, Centerton
White River	249.0	Rt. 100, Nora
White River	280.0	Rt. 13, Perkinsville
White River	295.0	10th St. at Waterworks, Anderson
White River	310.0	County Rd. bridge, Yorktown
White River	319.0	Memorial Drive, Muncie
White River	350.0	US Rt. 24, Winchester

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN
(Continued)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
<u>Wabash River Basin (continued)</u>		
East Fork, White River	1.0	Rt. 57, Petersburg
East Fork, White River	77.0	County Road, Williams
East Fork, White River	94.0	US Rt. 50, Bedford
East Fork, White River	157.0	Waterworks Intake, Seymour
Salt Creek	11.0	Rt. 37, Oolitic
Big Blue River	0.1	US Rt. 31, Edinburg
Big Blue River	61.0	County Road 450S, Spireland
Mill Creek	17.0	US Rt. 231, Devore
Mill Creek	35.0	US Rt. 40, Stilesville
Eagle Creek	1.0	Raymond St., Indianapolis
Eagle Creek	21.0	Rt. 100, Zionsville
Fall Creek	7.0	Keystone Ave., Indianapolis
Indianapolis Waterway Canal	6.6	Confluence with White River, Indianapolis
Sugar Creek	30.0	Rt. 274, above Shades State Park
Wildcat Creek	1.0	Rt. 25, Lafayette
Wildcat Creek	63.0	County Road 300W, Kokomo
Wildcat Creek	69.0	US Rt. 31, Kokomo
Wildcat Creek, South Fork	35.0	Rt. 75, Frankfort
Tippecanoe River	6.0	Rt. 18, Delphi
Eel River	7.0	C.R. 125N, Logansport
Mississinewa River	1.0	Rt. 124, Peru
Mississinewa River	28.0	Isaak Walton Lodge, Jalapa
Mississinewa River	35.0	Highland Ave., Marion
Mississinewa River	100.0	CR 134E, Ridgeville
Salomonie River	0.0	Division Road, Largo
Salomonie River	75.0	Rt. 67, Portland

ILLINOIS
Saline River Basin

Saline River	Peabody Bridge, Gibsonia
North Fork, Saline River	Rt. 45, Eldorado
Middle Ford, Saline River	County Rd., Harrisburg
Bankston Creek	Rt. 34, Harrisburg
South Fork, Saline River	Rt. 45, Carrier Mills
Sugar Creek	County Road, Creal Springs

Ohio River Basin

Lush Creek	County Road, Eddysville
Cache River	County Road, Belknap

UNITED STATES GEOLOGICAL SURVEY (NASQAN)
NATIONAL STREAM QUALITY ACCOUNTING NETWORK STATIONS -
OHIO RIVER AND PRIMARY TRIBUTARIES

<u>Station Number</u>	<u>Location</u>	<u>Mile Point</u>	<u>Period of Record Begun</u>
03049625	Allegheny R. at New Kensington, PA	19.0	1974
03085000	Monongahela R. at Braddock, PA	9.5	1958
03107500	Beaver R. at Beaver Falls, PA	5.5	1975
03112510	Ohio R. at Benwood Near Wheeling, WV	94.3	1978
03150000	Muskingum R. at McConelsville, OH	-	1950
03155000	Little Kanawha R. at Palestine, WV	27.9	1976
03159510	Hocking R. below Athens, OH	-	1966
03201300	Kanawha R. at Winfield Dam at Winfield, WV	31.3	1974
03204000	Guyandotte R. at Branchland, WV	35.3	1975
03215000	Big Sandy R. at Louisa, KY	21.3	1974
03216600	Ohio R. at Greenup Dam, KY	341.5	1974
03234500	Scioto R. at Higby, OH	-	1954
03245500	Little Miami R. at Milford, OH	12.9	1965
03254000	Licking R. at Butler, KY	36.7	1975
03274600	Great Miami R. at New Baltimore, OH	20.5	1966
03277200	Ohio R. at Markland Dam, KY	531.5	1974
03290500	Kentucky R. at Lock 2 at Lockport, KY	31.0	1973
03298500	Salt R. at Shepherdsville, KY	22.9	1979
03303280	Ohio R. at Cannelton Dam, KY	720.8	1975
03321230	Green R. near Beech Grove, KY	49.1	1975
03378500	Wabash R. at New Harmony, IN	51.5	1974
03383000	Tradewater R. at Olney, KY	72.7	1982
03438220	Cumberland R. near Grand Rivers, KY	30.6	1975
03609750	Tennessee R. at Highway 60 near Paducah, KY	5.3	1975
03612500	Ohio R. at Lock & Dam 53 near Grand Chain, IL	962.2	1955

AVERAGE MONTHLY STREAM FLOW - OHIO RIVER ELECTRONIC MONITORS

Station-Mile Point (Date Initiated)	Stream Flow in Thousand Cubic Feet per Second											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
South Heights - 15.2 (3/63)	39.4	50.4	68.1	55.1	39.6	25.5	16.9	14.8	14.1	18.5	28.7	47.4
East Liverpool - 40.2 (12/61) ¹	46.2	53.2	77.2	62.4	43.6	28.3	19.0	16.7	14.9	19.6	31.1	50.5
Shadyside - 102.4 (4/75)	46.8	59.6	76.9	68.6	48.3	33.6	23.3	24.5	21.6	28.8	34.6	55.7
Addison - 260.0 (6/75)	61.3	78.3	112.2	106.3	68.6	47.9	33.4	35.0	25.0	34.5	44.8	80.4
Gallipolis - 279.2 (10/75)	84.1	109.0	152.5	134.3	94.0	69.4	45.8	44.0	31.6	47.3	60.4	104.8
Huntington - 306.9 (9/61)	98.4	118.7	166.8	133.0	95.3	59.0	37.3	33.8	28.4	36.2	59.2	96.7
Cincinnati - 462.8 (9/61)	128.9	151.9	219.0	175.4	124.8	73.3	47.0	41.4	36.1	42.3	69.3	125.8
Markland - 531.5 (5/69) ²	143.0	169.1	211.3	199.1	144.1	94.3	57.4	53.5	47.8	52.8	83.0	158.2
Louisville - 600.6 (3/62)	146.7	170.8	252.3	203.9	144.3	82.6	52.2	44.8	39.9	46.1	75.6	144.6
West Point - 625.9 (4/75)	148.0	166.9	231.3	210.4	154.1	102.4	63.2	60.9	48.0	64.2	85.9	168.7
Cannelton - 720.7 (10/75)	160.0	166.0	248.1	234.7	164.9	109.3	69.3	66.5	51.6	66.0	89.4	177.7
Evansville - 791.5 (10/68)	196.0	221.5	271.2	257.3	194.5	122.4	74.4	64.2	58.0	65.5	103.5	198.8
Joppa - 952.3 (8/75)	357.4	363.1	509.8	488.8	386.6	248.4	168.9	157.9	139.7	146.2	200.7	404.5

¹ Includes data from Stratton (1963-1975)

² Seasonal operation, 1976-1979

MINIMUM MONTHLY AVERAGE STREAM FLOW - OHIO RIVER ELECTRONIC MONITORS

Station-Mile Point (Date Initiated)	Stream Flow in Thousand Cubic Feet per Second (Year)											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
South Heights - 15.2 (3/63)	10.3 (1977)	20.6 (1963)	20.0 (1969)	27.0 (1976)	16.8 (1982)	8.67 (1977)	4.61 (1966)	4.68 (1965)	4.80 (1964)	3.55 (1963)	9.90 (1964)	19.1 (1963)
East Liverpool - 40.2 (12/61)	11.7 (1977)	22.7 (1963)	22.1 (1969)	32.5 (1976)	19.4 (1962)	10.6 (1977)	6.12 (1965)	5.61 (1962)	5.82 (1964)	3.95 (1963)	9.83 (1963)	19.1 (1962)
Shadyside - 102.4 (6/75)	12.1 (1977)	25.5 (1980)	55.4 (1983)	38.1 (1976)	21.0 (1982)	11.9 (1977)	13.2 (1975)	11.2 (1983)	7.85 (1983)	9.47 (1982)	22.0 (1978)	33.1 (1976)
Addison - 260.0 (6/75)	15.5 (1977)	36.9 (1980)	72.6 (1983)	69.9 (1982)	22.1 (1982)	16.2 (1977)	16.3 (1975)	14.1 (1983)	10.1 (1983)	12.0 (1982)	29.6 (1978)	43.6 (1976)
Gallipolis - 279.2 (10/75)	24.2 (1977)	58.4 (1980)	102.1 (1983)	53.3 (1982)	40.4 (1976)	22.9 (1977)	32.2 (1983)	17.3 (1983)	12.6 (1983)	17.2 (1982)	35.2 (1978)	59.5 (1980)
Huntington - 306.9 (9/61)	25.5 (1977)	57.4 (1964)	50.7 (1969)	57.4 (1971)	38.2 (1963)	18.0 (1965)	13.4 (1965)	10.3 (1965)	9.07 (1964)	6.71 (1963)	15.8 (1963)	16.8 (1964)
Cincinnati - 462.8 (9/61)	31.3 (1977)	76.2 (1964)	60.0 (1969)	69.0 (1971)	41.3 (1976)	21.5 (1966)	18.2 (1964)	11.6 (1965)	9.77 (1964)	7.10 (1963)	16.6 (1963)	31.5 (1963)
Markland - 531.5 (5/69)	32.2 (1977)	97.0 (1978)	65.5 (1969)	72.3 (1971)	71.4 (1977)	28.4 (1977)	34.7 (1975)	20.2 (1983)	20.1 (1973)	19.3 (1969)	43.6 (1969)	74.6 (1980)
Louisville - 600.6 (3/62)	66.6 (1976)	86.7 (1964)	63.4 (1969)	70.2 (1971)	53.2 (1962)	22.4 (1966)	19.3 (1964)	12.2 (1965)	10.4 (1964)	7.87 (1963)	17.5 (1963)	32.5 (1963)
West Point - 625.9 (4/75)	37.6 (1977)	97.6 (1980)	126.2 (1983)	98.3 (1976)	45.6 (1976)	30.3 (1977)	32.2 (1975)	20.7 (1983)	16.7 (1983)	24.6 (1982)	53.5 (1980)	77.4 (1980)
Cannelton - 720.7 (10/75)	39.0 (1977)	101.4 (1980)	130.2 (1983)	159.9 (1982)	50.6 (1976)	31.3 (1977)	52.5 (1983)	21.5 (1983)	16.4 (1983)	24.5 (1982)	51.9 (1980)	77.7 (1980)
Evansville - 791.5 (10/68)	42.3 (1981)	110.4 (1977)	79.3 (1969)	89.7 (1971)	52.4 (1976)	39.0 (1977)	35.2 (1968)	24.6 (1983)	20.9 (1968)	23.9 (1968)	42.0 (1971)	80.4 (1969)
Joppa - 952.3 (8/75)	77.2 (1981)	171.6 (1977)	268.9 (1981)	299.2 (1981)	149.2 (1976)	102.3 (1977)	127.3 (1977)	94.4 (1983)	68.1 (1983)	74.0 (1980)	107.8 (1980)	131.3 (1981)

¹ Includes data from Stratton (1963-1975)

² Seasonal operation, 1976-1979

AVERAGE MONTHLY STREAM FLOW
OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Station-Mile Point* (Date Initiated)	Flow in thousand cubic feet per second											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	23.0	26.4	40.9	33.9	23.0	14.6	9.86	7.73	7.71	11.5	18.0	27.3
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	13.0	19.6	24.2	19.8	14.9	9.46	6.82	7.41	4.98	8.90	10.0	19.9
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	4.44	5.35	7.49	5.56	4.14	2.83	2.08	1.85	1.94	1.93	2.98	4.82
Kanawha River at Winfield 265.7, 31.1 (9/61)	23.0	28.3	37.8	26.4	21.2	13.8	9.32	8.05	6.33	10.1	14.3	21.1
Big Sandy River at Louisa 317.1, 20.3 (1/69)	8.78	8.51	9.78	9.16	7.17	3.60	2.03	1.90	1.45	2.09	3.63	5.80
Licking River at Covington 470.2, 4.5 (5/69)	6.49	7.46	7.67	7.42	5.04	2.84	1.95	1.59	2.04	1.52	2.51	6.47
Wabash River at New Harmony 848.0, 51.5 (8/75)	30.2	33.9	64.4	66.4	46.0	30.3	21.1	21.0	13.2	11.6	15.7	37.1

* Mile point of confluence with Ohio; mile point of monitor

MINIMUM MONTHLY AVERAGE FLOW
OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Station-Mile Point* (Date Initiated)	Flow in Thousand Cubic Feet per Second											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	6.65 (1977)	7.67 (1963)	10.0 (1969)	16.6 (1976)	11.0 (1963)	5.46 (1977)	2.17 (1962)	1.88 (1962)	1.82 (1963)	1.29 (1963)	3.69 (1964)	6.92 (1962)
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	3.82 (1977)	8.58 (1978)	12.9 (1976)	10.1 (1976)	3.59 (1982)	3.48 (1977)	2.76 (1975)	3.18 (1976)	1.86 (1983)	3.35 (1983)	7.18 (1978)	11.6 (1980)
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	1.14 (1963)	1.04 (1963)	1.81 (1969)	2.15 (1971)	1.23 (1982)	1.29 (1966)	1.01 (1965)	.93 (1962)	.84 (1962)	.52 (1982)	.86 (1963)	.84 (1962)
Kanawha River at Winfield 265.7, 31.1 (9/61)	4.20 (1966)	16.9 (1978)	17.1 (1966)	10.2 (1963)	7.13 (1964)	3.62 (1964)	2.71 (1964)	2.61 (1965)	2.30 (1963)	2.13 (1963)	2.60 (1965)	2.58 (1965)
Big Sandy River at Louisa 317.1, 20.3 (1/69)	1.26 (1981)	5.12 (1984)	4.06 (1969)	3.87 (1982)	1.32 (1976)	.65 (1970)	.62 (1970)	.64 (1983)	.51 (1969,83)	.42 (1969)	.90 (1969)	1.65 (1980)
Licking River at Covington 470.2, 4.5 (5/69)	.44 (1981)	3.78 (1974)	1.39 (1983)	2.56 (1976)	.58 (1976)	.15 (1977)	.34 (1983)	.08 (1984)	.18 (1983)	.21 (1983)	.43 (1981)	1.37 (1980)
Wabash River at New Harmony 848.0, 51.5 (8/75)	3.23 (1977)	8.13 (1977)	18.6 (1981)	26.1 (1981)	9.73 (1976)	7.11 (1977)	10.6 (1977)	6.90 (1976)	4.38 (1976)	4.17 (1976)	4.58 (1976)	3.82 (1976)

* Mile point of confluence with Ohio; mile point of monitor

AVERAGE MONTHLY TEMPERATURE - OHIO RIVER ELECTRONIC MONITORS

Station-Mile Point (Date Initiated)	Temperature in Degrees Fahrenheit											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
South Heights - 15.2 (3/63)	36.4	37.0	43.4	52.7	63.2	73.2	78.7	78.7	74.1	61.9	49.8	39.9
East Liverpool - 40.2 (12/61)	37.2	37.2	42.9	53.1	63.7	74.2	80.2	79.8	75.3	63.3	51.3	40.4
Shadyside - 102.4 (4/75)	39.4	40.5	45.3	55.0	65.9	74.7	80.5	80.3	75.5	64.8	54.3	44.5
Addison - 260.0 (6/75)	35.5	36.9	43.1	52.9	63.6	73.8	80.0	80.0	75.8	63.6	52.4	41.3
Gallipolis - 279.2 (10/75)	36.3	36.4	44.9	54.7	63.9	73.7	79.4	80.1	76.8	64.3	52.9	42.0
Huntington - 306.9 (9/61)	37.6	38.4	44.8	54.8	64.9	75.1	80.9	80.3	76.3	65.6	53.4	42.5
Cincinnati - 462.8 (9/61)	37.4	37.9	44.3	53.3	63.4	74.0	79.8	80.4	76.5	65.8	53.8	42.6
Markland - 531.5 (5/69)	39.0	39.5	44.8	53.2	64.6	74.3	80.3	81.0	77.4	66.5	55.2	44.3
Louisville - 600.6 (3/62)	38.6	38.9	44.9	54.7	65.0	74.5	80.5	81.0	76.7	66.2	54.4	43.5
West Point - 625.9 (4/75)	38.0	38.5	46.1	54.6	65.5	75.1	82.1	82.3	77.2	66.0	55.1	44.1
Cannelton - 720.7 (10/75)	37.1	38.5	46.0	55.0	65.7	75.8	82.3	82.4	78.0	66.2	55.4	44.3
Evansville - 791.5 (10/68)	38.2	38.9	45.6	54.8	65.5	75.5	81.8	82.3	77.4	66.2	55.1	43.4
Joppa - 952.3 (8/75)	39.6	40.5	46.5	56.4	66.1	77.0	84.1	83.4	77.8	65.3	54.6	43.9

¹ Includes data from Stratton (1963-1975)
² Seasonal operation, 1976-1979

MAXIMUM MONTHLY AVERAGE TEMPERATURE - OHIO RIVER ELECTRONIC MONITORS

Station-Mile Point (Date Initiated)	Temperatures in Degrees Fahrenheit (Year)											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
South Heights - 15.2 (3/63)	41.2 (1974)	40.0 (1974)	47.2 (1976)	59.7 (1968)	69.8 (1975)	76.2 (1969)	82.3 (1966)	82.3 (1968)	79.3 (1966)	69.2 (1969)	57.3 (1964)	43.6 (1982)
East Liverpool - 40.2 (12/61)	43.7 (1974)	42.1 (1974,75)	47.8 (1974)	59.2 (1968)	71.7 (1962)	80.9 (1964)	84.9 (1966)	83.4 (1968)	79.5 (1973)	70.1 (1963)	58.6 (1964)	45.4 (1973)
Shadyside - 102.4 (4/75)	44.1 (1979)	43.5 (1984)	50.2 (1976)	61.1 (1981)	70.4 (1982)	81.2 (1978)	82.9 (1978)	84.8 (1983)	79.7 (1983)	71.6 (1978)	65.5 (1978)	49.3 (1978)
Addison - 260.0 (6/75)	38.9 (1983)	40.0 (1984)	49.2 (1976)	58.3 (1976)	69.1 (1977)	76.7 (1977)	82.8 (1975)	83.6 (1975)	79.5 (1978)	67.9 (1982)	55.9 (1982)	45.0 (1982)
Gallipolis - 279.2 (10/75)	41.2 (1983)	39.5 (1982)	51.6 (1976)	62.5 (1976)	67.8 (1982)	77.7 (1977)	82.9 (1977)	83.3 (1983)	80.8 (1978)	66.9 (1978)	58.3 (1977)	44.9 (1982)
Huntington - 306.9 (9/61)	43.9 (1974)	47.6 (1976)	50.0 (1976)	60.6 (1968)	72.7 (1966)	79.9 (1962)	84.1 (1966)	84.4 (1983)	82.8 (1970)	71.4 (1973)	57.8 (1964)	47.4 (1964)
Cincinnati - 462.8 (9/61)	43.8 (1974)	43.0 (1962)	47.7 (1966)	58.8 (1977)	69.1 (1977)	79.1 (1962)	84.1 (1975)	85.5 (1975)	80.9 (1978)	72.1 (1973)	59.6 (1963)	49.4 (1961)
Markland - 531.5 (5/69)	44.4 (1972)	43.6 (1974)	49.0 (1974)	59.7 (1979)	69.6 (1970)	78.2 (1970)	84.9 (1983)	85.7 (1983)	81.0 (1970)	74.2 (1980)	59.6 (1978)	47.7 (1982)
Louisville - 600.6 (3/62)	43.7 (1974)	44.1 (1974)	52.3 (1976)	61.5 (1967)	72.1 (1962)	79.3 (1962)	82.8 (1969)	83.6 (1983)	80.1 (1970)	71.4 (1963)	60.0 (1963)	48.0 (1971)
West Point - 625.9 (4/75)	42.6 (1983)	42.0 (1976)	50.6 (1976)	59.2 (1976)	70.7 (1977)	78.0 (1977)	84.5 (1983)	85.2 (1983)	81.3 (1978)	70.1 (1982)	58.2 (1978)	48.1 (1982)
Cannelton - 720.7 (10/75)	42.6 (1983)	41.8 (1983)	51.7 (1976)	58.6 (1981)	70.0 (1982)	77.8 (1977)	85.8 (1983)	88.2 (1983)	80.4 (1978)	71.4 (1982)	57.7 (1982)	49.7 (1982)
Evansville - 791.5 (10/68)	44.5 (1974)	45.0 (1974)	51.2 (1976)	60.2 (1981)	70.6 (1970,77)	79.6 (1977)	84.8 (1967)	86.6 (1983)	80.5 (1970)	70.9 (1971)	59.7 (1971)	46.9 (1978)
Joppa - 952.3 (8/75)	41.8 (1983)	44.4 (1976)	52.9 (1976)	61.2 (1976,81)	71.3 (1982)	80.2 (1977)	86.7 (1977)	86.6 (1983)	81.5 (1978)	67.9 (1982)	57.2 (1978)	48.7 (1982)

¹ Includes data from Stratton (1963-1975)

² Seasonal operation, 1976-1979

AVERAGE MONTHLY TEMPERATURE - OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Station-Mile Point* (Date Initiated)	Temperatures in degrees Fahrenheit											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	34.9	35.2	40.4	49.9	61.4	72.4	77.9	77.6	72.5	60.0	47.2	36.7
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	36.6	38.4	45.3	55.0	64.1	74.5	80.9	80.7	75.3	63.2	53.0	42.3
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	37.4	37.8	43.2	53.9	65.7	73.6	79.7	79.6	73.5	62.2	50.1	39.5
Kanawha River at Winfield 265.7, 31.1 (9/61)	39.6	40.2	46.3	56.1	65.8	75.7	81.1	80.8	77.6	66.2	53.6	43.1
Big Sandy River at Louisa 317.1, 20.3 (1/69)	38.8	41.0	47.9	57.6	65.3	75.7	79.7	78.9	72.8	60.9	49.9	42.3
Licking River at Covington 470.2, 4.5 (5/69)	35.7	37.5	46.0	55.8	63.8	72.6	78.2	76.8	71.9	59.7	47.9	40.4
Wabash River at New Harmony 848.0, 51.5 (8/75)	36.5	38.8	47.9	58.1	67.3	77.3	82.8	81.6	74.9	62.4	51.0	41.2

* Mile point of confluence with Ohio; mile point of monitor

MAXIMUM MONTHLY AVERAGE TEMPERATURE
OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Station-Mile Point* (Date Initiated)	Temperature in degrees Fahrenheit (year)											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	37.7 (1974)	37.3 (1975)	44.3 (1973)	55.0 (1968)	66.0 (1965,82)	78.1 (1967)	83.7 (1966)	82.1 (1983)	76.0 (1983)	68.5 (1963)	53.6 (1964)	41.2 (1982)
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	40.0 (1980)	41.9 (1976)	51.9 (1976)	61.2 (1976)	70.9 (1977)	81.1 (1976)	84.6 (1975)	83.6 (1975)	80.3 (1977)	67.5 (1984)	57.1 (1978)	45.4 (1982)
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	41.2 (1967)	41.6 (1973)	53.8 (1973)	60.3 (1968)	75.7 (1965)	81.9 (1966)	87.0 (1966)	83.1 (1968)	79.5 (1970)	66.9 (1963)	57.2 (1982)	41.9 (1982)
Kanawha River at Winfield 265.7, 31.1 (9/61)	46.2 (1965)	48.3 (1965)	55.0 (1966)	62.5 (1963)	75.3 (1964)	84.9 (1964)	87.4 (1964)	86.3 (1966)	83.3 (1962)	74.5 (1961)	60.9 (1965)	51.7 (1965)
Big Sandy River at Louisa 317.1, 20.3 (1/69)	44.5 (1974)	45.8 (1976)	51.5 (1983)	61.1 (1976)	72.0 (1982)	79.4 (1984)	83.8 (1977)	83.4 (1983)	77.2 (1977)	66.8 (1982)	52.8 (1977)	48.2 (1982)
Licking River at Covington 470.2, 4.5 (5/69)	40.5 (1972)	43.1 (1983)	52.2 (1976)	60.4 (1976)	69.4 (1977)	78.5 (1971)	81.5 (1977)	81.3 (1983)	76.0 (1980)	65.3 (1971)	51.2 (1975)	45.6 (1982)
Wabash River at New Harmony 848.0, 51.5 (8/75)	41.1 (1980)	45.1 (1976)	51.6 (1977)	64.2 (1981)	69.7 (1982)	80.7 (1984)	86.3 (1983)	84.7 (1983)	77.8 (1978)	64.9 (1977)	54.2 (1978)	47.6 (1982)

* Mile point of confluence with Ohio; mile point of monitor

AVERAGE MONTHLY SPECIFIC CONDUCTANCE - OHIO RIVER ELECTRONIC MONITORS

Station-Mile Point (Date Initiated)	Specific Conductance in Micromhos per Centimete											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
South Heights - 15.2 (3/63)	273	291	267	260	287	337	406	446	425	413	334	254
East Liverpool - 40.2 (12/61) ¹	296	303	272	267	299	357	433	465	448	440	365	274
Shadyside - 102.4 (4/75)	321	346	289	287	329	341	400	415	408	410	351	286
Addison - 260.0 (6/75)	328	392	314	307	354	371	420	434	461	468	418	323
Gallipolis - 279.2 (10/75)	310	344	261	270	305	341	384	383	410	403	361	293
Huntington - 306.9 (9/61)	291	287	280	281	319	380	442	444	507	490	445	296
Cincinnati - 462.8 (9/61)	287	289	282	283	320	360	412	434	457	486	437	320
Markland - 531.5 (5/69) ²	310	308	312	304	316	346	387	403	416	440	419	336
Louisville - 600.6 (3/62)	297	298	283	286	312	346	391	422	429	455	450	357
West Point - 625.9 (4/75)	326	334	303	306	300	354	392	404	414	414	418	334
Cannelton - 720.7 (10/75)	339	336	307	317	353	360	394	407	395	408	419	339
Evansville - 791.5 (10/68)	315	328	310	315	334	351	386	371	404	430	442	355
Joppa - 952.3 (8/75)	349	351	325	324	348	372	430	331	330	355	389	362

¹ Includes data from Stratton (1963-1975)

² Seasonal operation, 1976-1979

AVERAGE MONTHLY SPECIFIC CONDUCTANCE
OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Station-Mile Point* (Date Initiated)	Specific Conductance in Micromhos per Centimeter											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	242	214	189	184	213	251	309	320	340	330	272	203
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	315	337	279	270	325	399	445	426	427	420	364	270
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	401	403	347	357	396	459	458	475	486	488	452	389
Kanawha River at Winfield 265.7, 31.1 (9/61)	199	183	157	178	209	266	313	308	363	297	253	220
Big Sandy River at Louisa 317.1, 20.3 (1/69)	270	256	262	336	314	434	426	439	483	459	383	323
Licking River at Covington 470.2, 4.5 (5/69)	275	262	276	269	260	266	261	266	258	265	287	275
Wabash River at New Harmony 848.0, 51.5 (8/75)	533	517	455	467	482	518	480	477	515	590	570	521

* Mile point of confluence with Ohio; mile point of monitor

A P P E N D I C E S

APPENDIX A

CONVERSION FACTORS FOR WATER QUALITY ANALYSIS

FLOW

1 Million Gallons per Day (MGD)	= 1.545 cfs	= 694.4 GPM	= 43.8 LPS
1 Cubic Foot per Second (cfs)	= .646 MGD	= 448.6 GPM	= 28.3 LPS
1 Gallon per Minute (GPM)	= .00144 MGD	= .000093 cfs	= .063 LPS
1 Liter per Second (LPS)	= .023 MGD	= .036 cfs	= 15.9 GPM

VELOCITY

1 Foot per Second (fps)	= .682 MPH	= .303 mps	= 1.09 KPH
1 Mile per Hour (MPH)	= 1.47 fps	= .444 mps	= 1.61 KPH
1 Meter per Second (mps)	= 3.3 fps	= 2.25 MPH	= 3.6 MPH
1 Kilometer per Hour (KPH)	= .92 fps	= .62 MPH	= .28 mps

MASS DISCHARGE

Discharge in Pounds per day	= Flow (MGD) x Concentration (mg/l) x 8.33
	= Flow (cfs) x Concentration (mg/l) x 5.39
	= Flow (GPM) x Concentration (mg/l) x .012
	= Flow (LPS) x Concentration (mg/l) x .192

Discharge in Kilograms per day	= Flow (MGD) x Concentration (mg/l) x 3.78
	= Flow (cfs) x Concentration (mg/l) x 2.44
	= Flow (GPM) x Concentration (mg/l) x .0054
	= Flow (LPS) x Concentration (mg/l) x .0864

1 pound per day = .454 kilograms per day

1 kilogram per day = 2.2 pounds per day

Calculation of stream concentration resulting from a spill or shock load

$$\text{Load (L) in pounds: } \text{Concentration (C)} = \frac{L \times T}{5.39 Q}$$

Q = Stream flow in cfs

$$\text{L in kilograms: } C = \frac{L \times T}{2.44 Q}$$

T = Duration of spill or shock load expressed as fraction of a day

t = duration of spill

$$\text{If t is expressed in days, } T = \frac{1}{t}$$

$$\text{If t is expressed in hours, } T = \frac{24}{t}$$

$$\text{If t is expressed in minutes, } T = \frac{1440}{t}$$

$$\text{If t is expressed in seconds, } T = \frac{86,400}{t}$$

OHIO RIVER VALLEY WATER SANITATION COMMISSION

POLLUTION CONTROL STANDARDS

(September 13, 1984 Revision)

NOTICE OF REQUIREMENTS

**ESTABLISHED BY POLLUTION CONTROL STANDARDS
FOR DISCHARGES TO THE OHIO RIVER**

September 13, 1984 Revision

You are hereby notified that, having considered all the evidence presented at public hearings, the Ohio River Valley Water Sanitation Commission, at its regularly held meeting on September 13, 1984, acting in accordance with and pursuant to the authority contained in Article VI of the Ohio River Valley Water Sanitation Compact, adopted and promulgated, subject to revision as changing conditions require, Pollution Control Standards (September 13, 1984 Revision) for the modification or treatment of all sewage from municipalities or other political subdivisions, public or private institutions, corporations, or watercraft, and for the modification or treatment of all industrial wastes discharged or permitted to flow into the Ohio River from the point of confluence of the Allegheny and Monongahela Rivers at Pittsburgh, Pennsylvania, designated as Ohio River mile point 0.0, to Cairo Point, Illinois, located at the confluence of the Ohio and Mississippi Rivers, and being 981.0 miles downstream from Pittsburgh, Pennsylvania.

Under terms and provisions of the Ohio River Valley Water Sanitation Compact all sewage from municipalities or other political subdivisions, public or private institutions, corporations or watercraft and all industrial wastes discharged or permitted to flow into the Ohio River will be required to be modified or treated to the extent specified in the standards established as above set forth.

The Commission at its September 13, 1984 meeting also rescinded both Pollution Control Standard No. 1-70 and Pollution Control Standard No. 2-70, which were established by Commission action November 13, 1970, including all definitions and application procedures appended to or incorporated therein, together with such other treatment standards and regulatory actions as have been heretofore adopted.

Leo Weaver
Executive Director and Chief Engineer

TABLE OF CONTENTS

I.	Preamble	1
II.	Definitions	1
III.	Designated Uses	4
IV.	Stream Criteria	4
V.	Standards of Treatment	
	A. General	7
	B. Sewage	8
	C. Industrial Wastes, Toxic Wastes and Other Wastes	9
	D. Residues from Potable Water Treatment Plants	10
VI.	Mixing Zone Designation	10
VII.	Additional Treatment	11
VIII.	Limitation	11
IX.	Variance	11
X.	Analytical Methods	12
XI.	Severability Clause	12

The Ohio River Valley Water Sanitation Commission

An interstate Commission created by compact among: Illinois • Indiana • Kentucky • New York •

Ohio • Pennsylvania • Virginia • West Virginia •

Headquarters: 414 Walnut Street, Cincinnati, Ohio 45202

I.

PREAMBLE^a

Pollution control standards implement many decisions affecting water quality of the Ohio River and the uses made thereof. The Ohio River Valley Water Sanitation Compact provides the basis for assuring multipurpose uses of the Ohio River, and authorizes the Commission to promulgate standards of treatment for sewage or industrial wastes. It also states that: "The guiding principle of this Compact shall be that pollution by sewage or industrial wastes originating within a signatory state shall not injuriously affect the various uses of the interstate waters as hereinbefore defined."

The purpose of these regulations, therefore, is to recognize those uses to be protected in the Ohio River, establish stream criteria to assure that the uses will be achieved, and set Standards of Treatment needed to attain the established stream criteria and parameter levels. These regulations also implement the formal decisions of the Commission as they are concerned with pollution control activities, the granting of variances upon justification and recognize that individual states may adopt more stringent regulations.

Article IX of the Compact grants the Commission certain enforcement powers. These regulations must be implemented in the issuance of any permit to a discharger to the mainstem of the Ohio River (unless the state or the Federal government has a more stringent regulation).

II.

DEFINITIONS

- A. "*Cooling Water*" means non-contact cooling water used as a heat transfer medium for once-through cooling or cooling tower blowdown to which no Industrial Wastes, Toxic Wastes, Residues from Potable Water Treatment Plants, untreated Sewage, or Other Wastes, exclusive of approved anti-fouling agents (e.g., chlorine) are added prior to discharge.
- *B. "*Compact*," as used in these regulations, means the Ohio River Valley Water Sanitation Compact and is an agreement entered into by and between the states of Indiana, West Virginia, Ohio, New York, Illinois,

^a Specific Standards of Treatment are established in these regulations and must be incorporated into discharge permits upon issuance or reissuance when they are more stringent than:

1. applicable US EPA technology-based effluent guidelines required under Section 301 of the Federal Clean Water Act, or
2. any state treatment requirements, effluent standards, or water quality based effluent limitations.

In the absence of promulgated Federal effluent guidelines pursuant to Section 301 of the Clean Water Act, the Compact signatory states have the responsibility to establish effluent limitations to be included in any discharge permit, consistent with the standards contained herein using Best Professional Judgment on a case by case basis.

Kentucky, Pennsylvania, and Virginia, which pledges each to the other of the signatory states faithful cooperation in the control of future pollution and abatement of existing pollution from the waters in the Ohio River basin. This compact created the Ohio River Valley Water Sanitation Commission (ORSANCO).

- *C. “*Industrial Wastes*” means any liquid, gaseous, solid materials or waste substances or combination thereof other than Cooling Water as herein defined, resulting from any process or operation including storage and transportation, manufacturing, commercial, agricultural, and government operations.
- D. “*Mixing Zone*” means that portion of the water body receiving a discharge where effluent and receiving waters are not totally mixed and uniform with the result that the zone is not representative of the receiving waters and may not meet all ambient water quality standards or other requirements of any signatory state applicable to the particular receiving waters.
- E. “*Net Discharge*” is determined by excluding the amount of pollutant in an influent when determining the quality of an effluent if both the intake and discharge are from and to the same body of water.
- F. “*96 hour LC₅₀*” as used in these standards means the concentration that kills 50 percent of the test organisms within 96 hours. The test organisms shall be Representative Important Species indigenous to the Ohio River.
- G. “*Non-Cumulative Substances*” means compounds which have a biological half-life of less than four days. All other compounds are cumulative substances.
- *H. The “*Ohio River,*” as used in these regulations, extends from the point of confluence of the Allegheny and Monongahela Rivers at Pittsburgh, Pennsylvania, designated as Ohio River mile-point 0.0 to Cairo Point, Illinois, located at the confluence of the Ohio and Mississippi Rivers and being 981.0 miles downstream from Pittsburgh.
- *I. “*Ohio River Valley Water Sanitation Commission*” (Commission) means a body corporate created by authority of the Compact and is the operating agency established to implement the Compact. It consists of three (3) representatives of each signatory state and three (3) representatives of the Federal government.

*Terms contained in the Ohio River Valley Water Sanitation Compact

- J. *"Other Wastes"* means any waste other than Sewage, Cooling Water, Residues from Potable Water Treatment Plants, Industrial Wastes or Toxic Wastes, which if discharged to the Ohio River could cause or contribute to any violations of these regulations, or of any water quality standards of any signatory state or which may be deleterious to the designated uses of those waters.
- K. *"Primary Contact Recreation"* means recreational activities where the human body may come in direct contact with water to the point of complete body submergence and where ingestion of the water is probable.
- L. *"Representative Important Species"* means those species of aquatic life whose protection and propagation will assure the sustained presence of a balanced indigenous community. Such species are representative in the sense that maintenance of suitable water quality conditions will assure the overall protection and sustained propagation of the balanced indigenous community.
- M. *"Residues from Potable Water Treatment Plants"* means those wastes emanating from processes used in water purification. Such processes may include sedimentation, chemical coagulation, filtration, iron and manganese removal, softening and disinfection.
- *N. *"Sewage"* means water-carried human or animal wastes from such sources as residences; industrial, commercial or governmental establishments; public or private institutions; or other places. The admixture of Sewage with Industrial Wastes, Toxic Wastes or Other Wastes, in amounts detrimental to the quality of the combined effluent shall also be regarded as Sewage.
- *O. *"Standards of Treatment"* means the degree of processing of wastes necessary to meet the specific discharge limitations provided by these regulations but does not prescribe the methodology.
- *P. *"Substantially Complete Removal"* means removal to the lowest practicable level attainable with current technology.
- Q. *"Toxic Wastes"* means wastes containing substances or combinations of substances which might reasonably be expected to cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformations in fish, other aquatic life, wildlife, livestock, or humans.

*Terms contained in the Ohio River Valley Water Sanitation Compact

III.

DESIGNATED USES

The Ohio River, as hereinbefore defined, has been designated by the Compact for safe and satisfactory use as public and industrial water supplies after reasonable treatment, suitable for recreational usage, capable of maintaining fish and other aquatic life and adaptable to such other uses as may be legitimate.

IV.

STREAM CRITERIA

- A. The stream criteria which these regulations are intended to achieve in the receiving waters outside the Mixing Zone are as follows:
1. Freedom from anything that will settle to form putrescent or otherwise objectionable sludge deposits which interfere with designated water uses;
 2. Freedom from floating debris, scum, oil (in whatever state, i.e., free, emulsified, dispersed and dissolved), and other floating material in amount sufficient to be unsightly or deleterious;
 3. Freedom from materials producing color or odors in such a degree as to create unaesthetic conditions or a nuisance;
 4. Freedom from substances in concentrations which are toxic or harmful to humans, animals, or fish and other aquatic life; which would in any manner adversely affect the flavor, color, odor, or edibility of fish and other aquatic life, wildlife or livestock; or which are otherwise detrimental to the designated uses specified in Section III.
- B. These criteria relate to the conditions of waters as affected by the direct and indirect discharges of Sewage, Industrial Wastes, Toxic Wastes, Other Wastes, Cooling Water or Residues from Potable Water Treatment Plants. They also include consideration of permanent alterations of the water body such as channeling, diversions, or impoundment. The natural waters of the Ohio River may have characteristics which do not meet the stream criteria and parameter levels set forth below.
- C. To assure that the foregoing criteria will be attained, the following parameter levels shall be met outside the Mixing Zone:
1. DISSOLVED OXYGEN: Concentrations shall average at least 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time provided that a minimum of 5.0 mg/l at any time is maintained during the April 15-June 15 spawning season.

2. TEMPERATURE: Allowable stream temperatures are:

<u>MONTH/DATE</u>	<u>PERIOD</u> <u>AVERAGE (°F)</u>	<u>INSTANTANEOUS</u> <u>MAXIMUM (°F)</u>
January 1-31	45	50
February 1-29	45	50
March 1-15	51	56
March 16-31	54	59
April 1-15	58	64
April 16-30	64	69
May 1-15	68	73
May 16-31	75	80
June 1-15	80	85
June 16-30	83	87
July 1-31	84	89
August 1-31	84	89
September 1-15	84	87
September 16-30	82	86
October 1-15	77	82
October 16-31	72	77
November 1-30	67	72
December 1-31	52	57

3. pH: No value below 6.0 nor above 9.0.

4. TOXIC SUBSTANCES:

- a. Non-Cumulative Substances — not to exceed one-tenth (0.1) of the 96 hour LC₅₀ of Representative Important Species indigenous to the Ohio River.
- b. Cumulative Substances — not to exceed one one-hundredth (0.01) of the 96 hour LC₅₀ of Representative Important Species indigenous to the Ohio River.
- c. Other limiting concentrations may be used when justified on the basis of available evidence and approved by the appropriate regulatory agency or agencies.

5. BACTERIA

Maximum allowable level of fecal coliform for Primary Contact Recreation — Content (either MPN or MF count) shall not exceed 200/100 ml as a monthly geometric mean based on not less than five samples per month; nor exceed 400/100 ml in more than ten percent of all samples taken during the month; these limits are applicable to waters designated for recreational use during the recreation season (May through October).

Maximum allowable level of fecal coliform for other uses — Fecal coliform content (either MPN or MF count) shall not exceed 2,000/100 ml as a monthly geometric mean based on not less than five samples per month.

6. **DISSOLVED SOLIDS:** Not to exceed 500 mg/l as a monthly average value, nor exceed 750 mg/l at any time. (Equivalent 25 deg. C specific conductance values are 800 and 1,200 micromhos/cm.)
7. **AMMONIA:** The concentration of un-ionized ammonia (as NH_3) shall not exceed 0.05 mg/l; un-ionized ammonia shall be determined from values shown in Appendix B for total ammonia-N, pH and temperature and the following equation:

$$Y = \frac{1.2 (\text{Total ammonia-N})}{[1 + 10 (\text{pK}_a - \text{pH})]}$$

$$\text{pK}_a = 0.0902 + \frac{2730}{(273.2 + T)}$$

$$T = \text{Temperature degree C.}$$

$$Y = \text{Un-ionized ammonia}$$

8. **CHEMICAL CONSTITUENTS:** Not to exceed the concentrations in the following table at any time (dissolved limits, where applicable, are identified):

CONSTITUENTS	CONCENTRATION (mg/l)
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chloride	250
Chromium (hexavalent)	0.05
Cyanide	0.025
Fluoride	1.0
Lead (dissolved)	0.05
Mercury	0.0002
Nitrite-N + Nitrate-N	10
Nitrite-N	1.0
Phenol (phenolic materials)	0.01
Selenium	0.01
Silver	0.05
Sulfate	250

Copper:

TOTAL HARDNESS AS CALCIUM CARBONATE (mg/l)	CONCENTRATION (mg/l)
50	0.012
80	0.018
100	0.022
160	0.034
200	0.043

Zinc:

TOTAL HARDNESS AS CALCIUM CARBONATE (mg/l)	CONCENTRATION (mg/l)
0-80	0.040
81-120	0.055
121-160	0.070
161-180	0.095
181-200	0.115

9. RADIONUCLIDES: Gross total alpha activity (including radium-226 but excluding radon and uranium) shall not exceed 15 picocurie per liter (pCi/l) and combined radium-226 and radium-228 shall not exceed 5 pCi/l; provided that specific determinations of radium-226 and radium-228 are not required if gross particle activity does not exceed 5 pCi/l. Concentration of total gross beta particle activity shall not exceed 50 pCi/l; the concentration of tritium shall not exceed 20,000 pCi/l; the concentration of total strontium-90 shall not exceed 8 pCi/l.

V. STANDARDS OF TREATMENT

A. General

1. No discharge of any Sewage, Industrial Wastes, Toxic Wastes, Other Wastes, Cooling Water or Residues from Potable Water Treatment Plants shall cause or contribute to a violation of these regulations, shall preclude the attainment of any designated use of the mainstem waters of the Ohio River or shall interfere with the attainment of the stream criteria and parameter levels set forth in Section IV.
2. All discharge of Sewage, Industrial Wastes, Toxic Wastes, Other Wastes, Cooling Water or Residues from Potable Water Treatment Plants shall be treated or otherwise modified so as to provide:
 - a. Substantially Complete Removal of settleable solids, which may form sludge deposits;
 - b. Substantially Complete Removal of oil (in whatever state, including free, emulsified, dispersed and dissolved), debris, scum, and other floating material;
 - c. Reduction of total suspended solids and other materials to such a degree that the discharge will not produce a substantial negative visible contrast to natural conditions in turbidity, color or odor of the river, or impart taste to the potable water supplies or cause tainting of fish flesh;

- d. Reduction of all substances in amounts which, when concentrated or combined in the receiving stream, would result in conditions toxic or harmful to humans, animals, or fish and other aquatic life; which would in any manner adversely affect the flavor, color, odor, or edibility of fish and other aquatic life, wildlife or livestock; or which are otherwise detrimental to the designated water uses specified in Section III.

B. Sewage

1. MINIMUM LEVEL OF TREATMENT

The minimum level of treatment required for sewage prior to discharge shall meet the following standards in addition to those contained in Section V.A.

a. Biochemical Oxygen Demand (five day)

- i. The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.
- ii. The arithmetic mean of the values for effluent samples collected in a period of 7 consecutive days shall not exceed 45 milligrams per liter.

b. Suspended Solids

- i. The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 30 milligrams per liter.
- ii. The arithmetic mean of the values for effluent samples collected in a period of 7 consecutive days shall not exceed 45 milligrams per liter.

c. pH

The effluent values for pH shall be maintained within the limits of 6.0 to 9.0.

d. Bacteria

Reduction of fecal coliform bacteria to such degree that (1) during the months of May through October fecal coliform density in the discharge does not exceed 200/100 ml as a monthly geometric mean (based on not less than ten samples per month), nor exceed 400/100 ml in more than ten percent of the samples examined during a month, and (2) during the months of November through April the den-

sity does not exceed 1,000/100 ml as a monthly geometric mean (based on not less than ten samples per month), nor exceed 2,000/100 ml in more than ten percent of the samples examined during a month.

2. ALTERNATIVE TREATMENT

Notwithstanding the requirements of Section V.B.1(a), (b), and (c), such facilities as oxidation ponds, lagoons and ditches, and trickling filters shall be deemed to provide effective treatment provided that the effluent does not cause a violation of the states' applicable water quality standards, or these regulations.

C. Industrial Wastes, Toxic Wastes and Other Wastes

1. The treatment of Industrial Wastes, Toxic Wastes, and Other Wastes prior to discharge shall be in accordance with Section V.A.
2. In addition, a Net Discharge of the following toxic pollutants is hereby prohibited:
 - a. Aldrin (1, 2, 3, 4, 10, 10-hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-1, 4-endo-5, 8-exo-dimethanonaphthalene)
 - b. Dieldrin (1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-exo-dimethanonaphthalene)
 - c. DDT, including DDD and DDE
 1. DDT means 1, 1, 1-trichloro-2, 2-bis (p-chlorophenyl) ethane and some o, p'-isomers
 2. DDD (TDE) means 1, 1-dichloro-2, 2-bis (p-chlorophenyl) ethane and some o, p'-isomers
 3. DDE means 1, 1-dichloro-2, 2-bis (p-chlorophenyl) ethylene
 - d. Endrin (1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-endo-dimethanonaphthalene)
 - e. Toxaphene - a material consisting of technical grade chlorinated camphene having the approximate formula of $C_{10}H_{10}Cl_8$ and normally containing 67-69 percent chlorine by weight

- f. Benzidine - the compound benzidine and its salts as identified by the chemical name 4, 4-diaminobiphenyl
- g. Polychlorinated Biphenyls (PCB) - a mixture of compounds composed of the biphenyl molecule which has been chlorinated to varying degrees

D. Residues from Potable Water Treatment Plants

The use of controlled discharge for Residues from Potable Water Treatment Plant processes of sedimentation, coagulation and filtration may be authorized provided that as a minimum the discharge meets all the requirements of Section IV. A. and V.A.

VI. MIXING ZONE DESIGNATION

- A. A Mixing Zone shall be deemed to exist for each discharge. When required, the specific numerical limits for any Mixing Zone shall be determined on a case by case basis, and shall include considerations for existing uses, linear distance (i.e., length and width) from the point of discharge, surface area involved, and volume of receiving water within the defined zone.
- B. Conditions within the Mixing Zone shall not be injurious to human health, in the event of a temporary exposure.
- C. Conditions within the Mixing Zone shall not be lethal to aquatic life or wildlife that may enter the zone.
- D. The Mixing Zone shall be free from substances attributable to Sewage, Industrial Wastes, Toxic Wastes, Other Wastes, Cooling Water, or Residues from Potable Water Treatment Plants in quantities which:
 - 1. Settle to form sludge deposits;
 - 2. Float as debris, scum, or oil;
 - 3. Contaminate natural sediments so as to cause or contribute to a violation of:
 - a. appropriate stream criteria and parameter levels outside the Mixing Zone, or
 - b. any condition of the designated uses of the water;
 - 4. Impart a disagreeable flavor or odor to flesh of fish or other aquatic life, wildlife or livestock which are consumed by man and which ac-

quire such a flavor because of passage through or ingestion of the waters from the Mixing Zone.

- E. The Mixing Zone shall be located so as not to interfere significantly with migratory movements and passage of fish, other aquatic life and wildlife. No waste discharge related to the Mixing Zone shall, outside the limits of the Mixing Zone, interfere with potable water supply intakes, bathing areas, reproduction of fish, other aquatic life and wildlife; or adversely affect fish or aquatic life normally inhabiting waters prior to addition of waste discharged; or result in any other violations of appropriate stream criteria and parameter levels relating to the designated use at or above critical river flow as shown in Appendix A.

VII. ADDITIONAL TREATMENT

In order to protect the public health or the uses specified in Section III, such higher degrees of treatment or reduction in waste loads may be determined to be necessary by the Commission after investigation, due notice and hearing.

VIII. LIMITATION

Nothing contained in these regulations shall be construed to limit the powers of any state signatory to the Compact to promulgate more stringent criteria, conditions and restrictions to further lessen or prevent the pollution of waters within its jurisdiction.

IX. VARIANCE

- A. The Commission may grant a variance from the provisions in Section V of these regulations, in accordance with the following procedures, provided that the uses set forth in Section III are maintained:
1. The burden of proof is upon the applicant to assure that the uses set forth in Section III are maintained;
 2. Prior concurrence of the state where the applicant's discharge is located and those state(s) which may be affected must be obtained;
 3. The specific reasons for the variance shall be clearly stated in writing;
 4. Such additional information shall be provided to the Commission as it may request.
- B. A variance may be granted for a period not to exceed the life of the applicable discharge permit; the applicant may apply for a variance renewal prior to the expiration of the permit.

Tests or analytical determinations to determine compliance or non-compliance with the Standards of Treatment, stream criteria and parameter levels established hereby shall be made in accordance with accepted procedures such as those contained in the most recent edition of (a) *Standard Methods for the Examination of Water and Wastewater* prepared and published jointly by the American Public Health Association (APHA), American Water Works Association (AWWA), and Water Pollution Control Federation; (b) *Annual Book of ASTM Standards Part 31 — Water* published by the American Society for Testing and Materials; (c) 40 CFR 136 — *Guidelines Establishing Test Procedures for the Analysis of Pollutants* by the U.S. Environmental Protection Agency; or (d) by such other methods as are approved by the Commission equal to or superior to or not available within methods in documents listed above, provided such other test methods are available to the public.

XI.

SEVERABILITY CLAUSE

Should any one or more of the Pollution Control Standards hereby established or should any one or more provision of the regulations herein contained be held or determined to be invalid, illegal or unenforceable, for any reason whatsoever, all other Standards and other provisions shall remain effective and shall be construed, applied and enforced as if the invalid, illegal or unenforceable language had not been included.



APPENDIX A

CRITICAL FLOW VALUES

River Reach		
From	To	Critical Flow in cfs*
Pittsburgh	Montgomery Dam (MP 32.4)	4,800
Montgomery	Willow Island Dam (MP 161.8)	5,800
Willow Island	Gallipolis Dam (MP 279.2)	6,800
Gallipolis	Greenup Dam (MP 341.0)	8,500
Greenup	Meldahl Dam (MP 436.2)	9,800
Meldahl	McAlpine Dam (MP 605.8)	11,000
McAlpine	Uniontown Dam (MP 846.0)	13,000
Uniontown	Smithland Dam (MP 918.5)	18,800
Smithland	Cairo Point (MP 981.0)	46,300

* Minimum 7 day, 10 year low flow based on calculations by the U.S. Corps of Engineers

APPENDIX B

Concentrations of total Ammonia-N which contain an un-ionized ammonia concentration of 0.05 mg/l NH₃

	pH	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9.0	9.1	9.2	9.3
Temp.	5																											
(°C)	6							13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0
	7							12.3	9.8	7.8	6.2	4.9	3.9	3.1	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0
	8							11.2	8.9	7.1	5.7	4.5	3.6	2.9	2.3	1.8	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0
	9						13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0
	10						12.0	9.6	7.6	6.1	4.8	3.8	3.1	2.4	1.9	1.6	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	11						11.2	8.9	7.1	5.7	4.5	3.6	2.9	2.3	1.8	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	12					13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	13					12.1	9.6	7.6	6.1	4.8	3.8	3.1	2.4	1.9	1.6	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	14					11.2	8.9	7.1	5.7	4.5	3.6	2.9	2.3	1.8	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	15					13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	16					12.1	9.6	7.6	6.1	4.8	3.8	3.1	2.4	1.9	1.6	1.2	1.0	0.8	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	17					11.2	8.9	7.1	5.7	4.5	3.6	2.9	2.3	1.8	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	18					13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	19					12.3	9.8	7.8	6.2	4.9	3.9	3.1	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	20					11.2	8.9	7.1	5.7	4.5	3.6	2.9	2.3	1.8	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	21					13.2	10.5	8.4	6.6	5.3	4.2	3.4	2.7	2.1	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	22					12.3	9.8	7.8	6.2	4.9	3.9	3.1	2.5	2.0	1.6	1.3	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	23					11.5	9.2	7.3	5.8	4.6	3.7	2.9	2.3	1.9	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	24					13.5	10.8	8.5	6.8	5.4	4.3	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	25					12.6	10.0	8.0	6.3	5.1	4.0	3.2	2.6	2.0	1.6	1.3	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	26					11.8	9.4	7.5	5.9	4.7	3.8	3.0	2.4	1.9	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	27					13.5	10.8	8.5	6.8	5.4	4.3	3.4	2.7	2.2	1.7	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
	28					12.6	10.0	8.0	6.3	5.1	4.0	3.2	2.6	2.0	1.6	1.3	1.0	0.8	0.7	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	29					11.8	9.4	7.5	5.9	4.7	3.8	3.0	2.4	1.9	1.5	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
	30					11.0	8.7	7.0	5.5	4.4	3.5	2.8	2.2	1.8	1.4	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0
						10.2	8.2	6.5	5.2	4.1	3.3	2.6	2.1	1.7	1.3	1.1	0.9	0.7	0.6	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0

APPENDIX C

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706
(217) 782-1654

Champaign Office
2125 South First Street
Champaign, Illinois 61820
217-333-8361

Marion Office
2209 West Main Street
Marion, Illinois 62959
618-997-4371

<u>County</u>	<u>River Basin</u>
Champaign	Wabash
Clark	Wabash
Coles	Wabash
Crawford	Wabash
Cumberland	Wabash
Douglas	Wabash
Edgar	Wabash
Effingham	Wabash
Ford	Wabash
Jasper	Wabash
Shelby	Wabash
Vermillion	Wabash

<u>County</u>	<u>River Basin</u>
Alexander	Ohio
Clay	Wabash
Edwards	Wabash
Gallatin	Ohio
Hamilton	Wabash
Hardin	Ohio
Jefferson	Wabash
Johnson	Ohio
Lawrence	Wabash
Marion	Wabash
Massac	Ohio
Pope	Ohio
Pulaski	Ohio
Richland	Wabash
Saline	Ohio
Union	Ohio
Wabash	Wabash
Wayne	Wabash
White	Wabash
Williamson	Ohio

STATE OF INDIANA
STREAM POLLUTION CONTROL BOARD
State Board of Health
1330 West Michigan Street
Indianapolis, Indiana 46206
317-633-0795

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
Division of Water Quality
18 Reilly Road
Fort Boone Plaza
Frankfort, Kentucky 40601
(502) 564-3410

Bowling Green District Office
210 East 10th Street
Bowling Green, Kentucky 42101
502-842-8131

<u>County</u>	<u>River Basin</u>
Allen	Green
Barren	Green
Butler	Green
Edmonson	Green
Hart	Green
Logan	Green
Metcalf	Green
Monroe	Green
Simpson	Green
Warren	Green

Columbia District Office
P.O. Box 353
Columbia, Kentucky 42728
502-384-4734

<u>County</u>	<u>River Basin</u>
Adair	Green
Casey	Green
Clinton	Cumberland
Cumberland	Cumberland
Green	Green
Hardin	Green
LaRue	Green
Marion	Ohio
McCreary	Cumberland
Nelson	Ohio
Pulaski	Cumberland
Russell	Cumberland
Taylor	Green
Washington	Ohio
Wayne	Cumberland

Florence District Office
7964 Kentucky Drive, Suite 8
Florence, Kentucky 41042
606-371-0598

<u>County</u>	<u>River Basin</u>
Boone	Ohio
Campbell	Licking
Carroll	Kentucky
Gallatin	Ohio
Grant	Licking
Kenton	Licking
Owen	Kentucky
Pendleton	Licking

Frankfort District Office
18 Reilly Road, Ft. Boone Plaza
Frankfort, Kentucky 40601
502-564-3410

<u>County</u>	<u>River Basin</u>
Anderson	Ohio
Bourbon	Licking
Boyle	Ohio
Bullitt	Ohio
Clark	Licking
Fayette	Kentucky
Franklin	Kentucky
Garrard	Kentucky
Harrison	Licking
Henry	Kentucky
Jefferson	Ohio
Jessamine	Kentucky
Lincoln	Kentucky
Madison	Kentucky
Mercer	Ohio
Nicholas	Licking
Oldham	Ohio
Scott	Kentucky
Shelby	Ohio
Spencer	Ohio
Trimble	Ohio
Woodford	Kentucky

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
Division of Water Quality
(continued)

Hazard District Office
213 Lovern Street
Hazard, Kentucky 41701
606-439-2391

<u>County</u>	<u>River Basin</u>
Breathitt	Kentucky
Estill	Kentucky
Floyd	Big Sandy
Johnson	Big Sandy
Knott	Kentucky
Lee	Kentucky
Letcher	Kentucky
Margoffin	Licking
Martin	Big Sandy
Perry	Kentucky
Pike	Big Sandy
Powell	Kentucky
Wolf	Kentucky

London District Office
Regional State Office Bldg. Rm. 343
London, Kentucky 40741
606-878-0610

<u>County</u>	<u>River Basin</u>
Bell	Cumberland
Clay	Kentucky
Harlan	Cumberland
Jackson	Kentucky
Knox	Cumberland
Laurel	Cumberland
Leslie	Kentucky
Owlsley	Kentucky
Rockcastle	Cumberland
Whitley	Cumberland

Madisonville District Office
Old TB Hospital, N. Laffoon Street
Madisonville, Kentucky 42421
502-821-4213

<u>County</u>	<u>River Basin</u>
Breckinridge	Ohio
Caldwell	Ohio

Madisonville District Office (cont.)

<u>County</u>	<u>River Basin</u>
Christian	Cumberland
Crittenden	Ohio
Daviess	Green
Grayson	Green
Hancock	Ohio
Henderson	Ohio
Hopkins	Ohio
Livingston	Ohio
Lyon	Cumberland
McLean	Green
Meade	Ohio
Muhlenburg	Green
Ohio	Green
Todd	Cumberland
Union	Ohio
Webster	Ohio

Morehead District Office
Mabry Bldg., Ky. 32 South
Morehead, Kentucky 40531
606-784-6635

<u>County</u>	<u>River Basin</u>
Bath	Licking
Bracken	Ohio
Carter	Ohio
Elliott	Ohio
Fleming	Licking
Greenup	Ohio
Lawrence	Big Sandy
Lewis	Ohio
Mason	Ohio
Menifee	Licking
Montgomery	Licking
Morgan	Licking
Robertson	Licking
Rowan	Licking

Paducah District Office
1390 Irvin Cobb Drive
Paducah, Kentucky 42001
502-444-8298

<u>County</u>	<u>River Basin</u>
Ballard	Ohio
McCracken	Ohio

**STATE OF OHIO
ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Water Pollution Control
P.O. Box 1049
Columbus, Ohio 43216
(614) 466-7427**

Central District
369 East Broad Street
Columbus, Ohio 43215
614-466-43215

<u>County</u>	<u>River Basin</u>
Delaware	Scioto
Fairfield	Ohio
Fayette	Scioto
Franklin	Scioto
Knox	Muskingum
Licking	Muskingum
Madison	Scioto
Pickaway	Scioto
Union	Scioto

Northeast District
2110 East Aurora Road
Twinsburg, Ohio 44807
216-425-9171

<u>County</u>	<u>River Basin</u>
Carroll	Muskingum
Columbiana	Ohio
Holmes	Muskingum
Mahoning	Ohio
Medina	Muskingum
Portage	Ohio
Stark	Muskingum
Trumbull	Ohio
Wayne	Muskingum

Northwest District
1035 Devlac Grove Drive
Bowling Green, Ohio 43402
419-352-8461

<u>County</u>	<u>River Basin</u>
Ashland	Muskingum
Auglaize	Great Miami
Crawford	Scioto
Hardin	Scioto
Marion	Scioto
Mercer	Wabash
Richland	Muskingum

Southeast District
2195 Front Street
Logan, Ohio 43138
614-385-8501

<u>County</u>	<u>River Basin</u>
Adams	Ohio
Athens	Ohio
Belmont	Ohio
Coshocton	Muskingum
Gallia	Ohio
Guernsey	Muskingum
Harrison	Muskingum
Hocking	Ohio
Jackson	Ohio
Jefferson	Ohio
Lawrence	Ohio
Meigs	Ohio
Monroe	Ohio
Morgan	Muskingum
Muskingum	Muskingum
Noble	Ohio
Perry	Muskingum
Pike	Scioto
Ross	Scioto
Scioto	Scioto
Tuscarawas	Muskingum
Vinton	Ohio
Washington	Ohio

Southwest District
7 East Fourth Street
Dayton, Ohio 45402
513-449-6357

<u>County</u>	<u>River Basin</u>
Brown	Ohio
Butler	Great Miami
Champaign	Great Miami
Clark	Great Miami
Clermont	Little Miami
Clinton	Little Miami
Darke	Great Miami
Greene	Little Miami
Hamilton	Ohio
Highland	Little Miami
Logan	Great Miami

STATE OF OHIO
ENVIRONMENTAL PROTECTION AGENCY
(Continued)

Southwest District (cont.)

<u>County</u>	<u>River Basin</u>
Montgomery	Great Miami
Miami	Great Miami
Preble	Great Miami
Shelby	Great Miami
Warren	Great Miami

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water
50 Wolf Road
Albany, New York 12233
(513) 457-6674

Buffalo Regional Office
600 Delaware Avenue
Buffalo, New York 14202
716-847-4600

<u>County</u>	<u>River Basin</u>
Chautauqua	Allegheny
Cattaraugus	Allegheny
Allegheny	Allegheny

STATE OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Bureau of Water Quality Management
P.O. Box 2063
Harrisburg, Pennsylvania 17120
(717) 787-2666

Pittsburgh District
600 Highland Building
Pittsburgh, Pennsylvania 15206-3988
412-655-2900

Meadville District
1012 Water Street
Meadville, Pennsylvania 16335
814-724-8557

<u>County</u>	<u>River Basin</u>
Allegheny	Ohio
Armstrong	Allegheny
Beaver	Ohio
Cambria	Allegheny
Fayette	Monongahela
Greene	Monongahela
Indiana	Allegheny
Somerset	Monongahela
Washington	Ohio
West Moreland	Monongahela

<u>County</u>	<u>River Basin</u>
Butler	Ohio
Clarion	Allegheny
Crawford	Allegheny
Elk	Allegheny
Erie	Allegheny
Forest	Allegheny
Jefferson	Allegheny
Lawrence	Ohio
McKean	Allegheny
Mercer	Ohio
Venango	Allegheny
Warren	Allegheny

COMMONWEALTH OF VIRGINIA
STATE WATER CONTROL BOARD
P.O. Box 11143
Richmond, Virginia 63230
(804) 257-6383

Abingdon Office
P.O. Box 976
Abingdon, Virginia 24210
703-628-5183

Roanoke Office
5312 Peters Creek Road
Roanoke, Virginia 24019
703-982-7432

<u>County</u>	<u>River Basin</u>
Bland	Kanawha
Buchanan	Big Sandy
Carroll	Kanawha
Dickenson	Big Sandy
Grayson	Kanawha
Lee	Big Sandy
Russell	Big Sandy
Scott	Big Sandy
Smyth	Kanawha
Tazewell	Kanawha
Washington	Big Sandy
Wise	Big Sandy
Wythe	Kanawha

<u>County</u>	<u>River Basin</u>
Craig	Kanawha
Floyd	Kanawha
Giles	Kanawha
Montgomery	Kanawha
Pulaski	Kanawha

STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RESOURCES
1201 Greenbrier Street
Charleston, West Virginia 25311
(304) 348-2107

District 1
1304 Goose Run Road
Fairmont, West Virginia 26554
304-366-5880

<u>County</u>	<u>River Basin</u>
Barbour	Monongahela
Brooke	Ohio
Hancock	Ohio
Harrison	Monongahela
Marion	Monongahela
Marshall	Ohio
Monongahela	Monongahela
Ohio	Ohio
Preston	Monongahela
Taylor	Monongahela
Tucker	Monongahela
Wetzel	Ohio

District 3
Post Office Box 38
French Creek, West Virginia 26218
304-924-6211

<u>County</u>	<u>River Basin</u>
Braxton	Ohio
Clay	Kanawha
Lewis	Monongahela
Nicholas	Kanawha
Pocahontas	Kanawha
Randolph	Monongahela
Upshur	Monongahela
Webster	Kanawha

District 4
General Delivery
McArthur, West Virginia 25873
304-255-5133

<u>County</u>	<u>River Basin</u>
Fayette	Kanawha
Greenbrier	Kanawha
McDowell	Guyandotte
Mercer	Kanawha
Monroe	Kanawha
Raleigh	Kanawha
Summers	Kanawha
Wyoming	Guyandotte

District 5
694 Winfield Road
St. Albans, West Virginia 25177
304-755-9141

<u>County</u>	<u>River Basin</u>
Boone	Kanawha
Cabell	Ohio
Kanawha	Kanawha
Lincoln	Guyandotte
Logan	Guyandotte
Mason	Ohio
Mingo	Guyandotte
Putnam	Kanawha
Wayne	Ohio

District 6
6321 Emerson Avenue
Parkersburg, West Virginia 26101
304-485-5521

<u>County</u>	<u>River Basin</u>
Calhoun	Ohio
Doddridge	Ohio
Gilmer	Ohio
Jackson	Ohio
Pleasants	Ohio
Ritchie	Ohio
Roane	Ohio
Tyler	Ohio
Wirt	Ohio
Wood	Ohio

**REGULATORY AGENCIES OF THE
SIGNATORY STATES**

ILLINOIS

Division of Water Pollution Control
Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

INDIANA

Indiana Department of Environmental
Management
311 W. Washington Street, Room 319
Indianapolis, Indiana 46204

KENTUCKY

Division of Water Quality
Natural Resources and
Environmental Protection Cabinet
18 Reilly Road
Fort Boone Plaza
Frankfort, Kentucky 40601

NEW YORK

Division of Water
Department of Environmental
Conservation
50 Wolf Road
Albany, New York 12233

OHIO

Office of Wastewater Pollution Control
Environmental Protection Agency
Post Office Box 1049
Columbus, Ohio 43266-0149

PENNSYLVANIA

Bureau of Water Quality Management
Department of Environmental Resources
Post Office Box 2063
Harrisburg, Pennsylvania 17120

VIRGINIA

State Water Control Board
Post Office Box 11143
Richmond, Virginia 23230

WEST VIRGINIA

Department of Water Resources
Department of Natural Resources
1201 Greenbrier Street
Charleston, West Virginia 25311