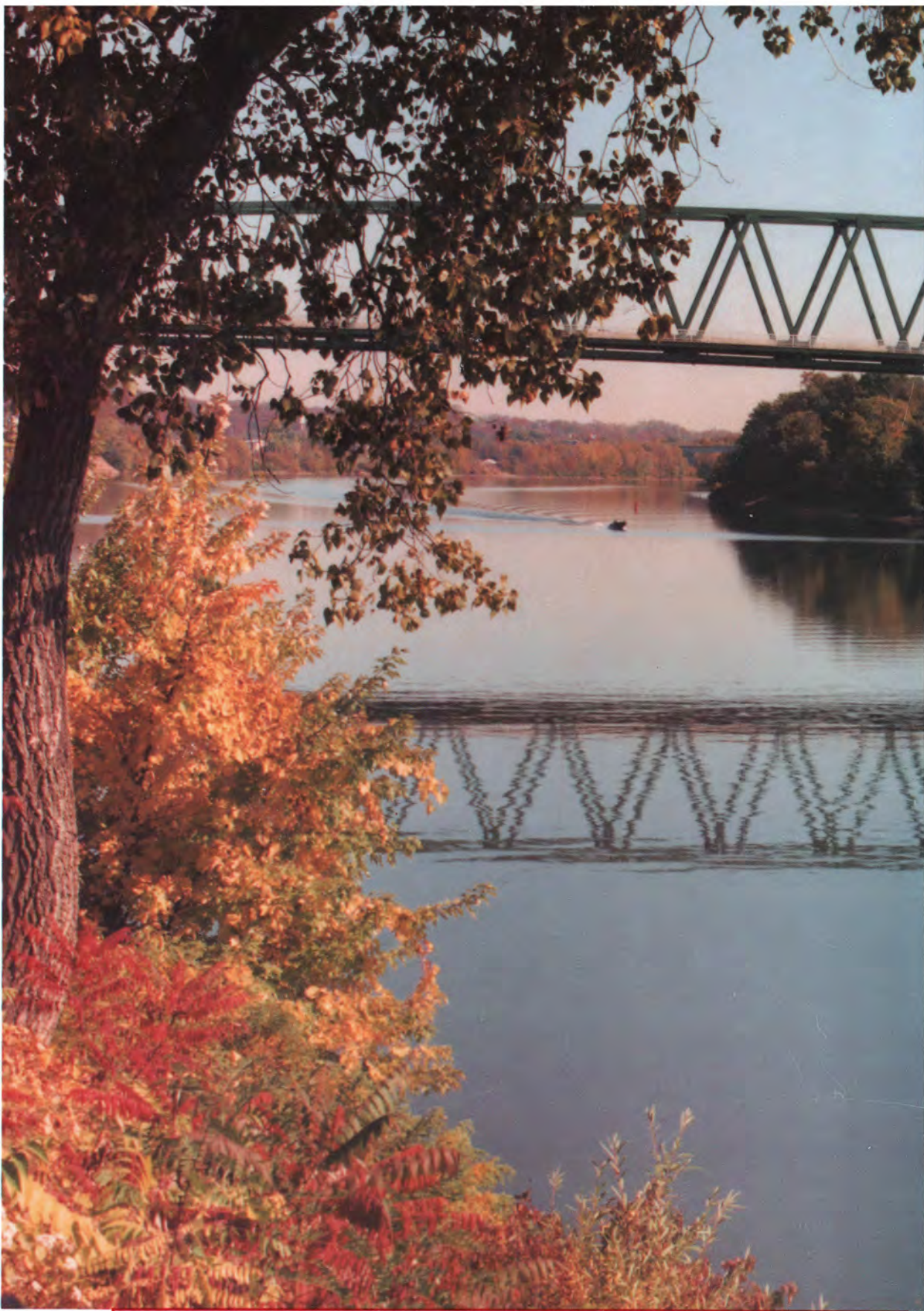


Ohio River Fact Book



Ohio River Valley Water Sanitation Commission

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**As of December 31, 1994*

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

**5735 Kellogg Avenue
Cincinnati, Ohio 45228-1112
(513) 231-7719**

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FOREWORD

This is the third edition of the Ohio River Fact Book, first published in 1986. With the publication of this third edition, corrections and additions have been incorporated as suggested by its users, and information has been updated where appropriate. This is intended to be a dynamic document with periodic updating and supplementation as new information becomes available. Users of this document are encouraged to suggest other information for inclusion in subsequent editions.

Many factors, both natural and manmade, affect the water quality of the Ohio River. In order to properly interpret the results of water quality studies, it is necessary to have some understanding of these factors. The information in this book is divided into five sections: Hydrology, Land Use, Water Use, Water Quality, and Directories and Publications. Each section begins with a brief discussion of potential water quality relationships and information included in that section.

Ohio River mile points are included in many of the tables in this text, beginning at Pittsburgh, Mile Point 0, and ending where the Ohio River enters the Mississippi River at Mile Point 981. Tributary mile points are expressed as zero (0) where they enter the Ohio River.

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

SECTION I: HYDROLOGY

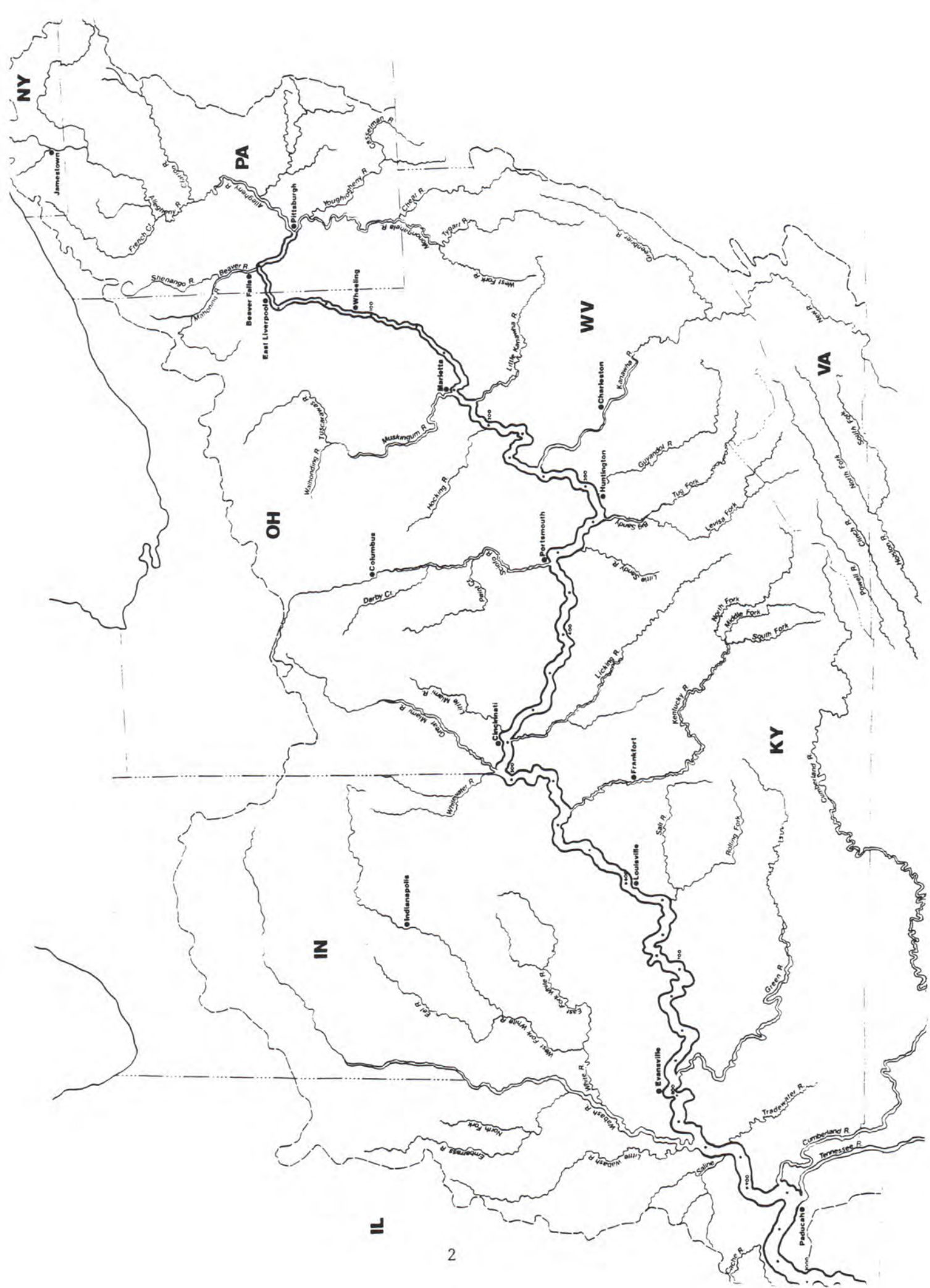
Hydrology is the branch of science dealing with the distribution of surface and ground water, and with the cycle involving precipitation, evaporation and flow. For purposes of water quality analysis of rivers, the most important hydrologic factor is stream flow in terms of quantity and velocity. The 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 influenced by operations of the Corps of Engineers for the purpose of maintaining 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 suggests certain influences on water quality: settling of some 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 that could otherwise 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. Inspection of the data shows that precipitation is lowest in February. Due to the effects of evaporation, however, stream flow is lowest in September. Air temperature, besides determining the form of precipitation, is also a 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.

The lowest flow to be expected for seven consecutive days in a ten-year period has been established as the basis for the Commission's water quality standards and associated treatment requirements for waste water discharges. Flow on the Ohio River is determined to a large degree by the dam operations of the Corps of Engineers which are designed to maintain a minimum depth of nine feet for navigation purposes. The average and minimum monthly flows at selected stations are provided. Daily flow data is posted on ORSANCO's electronic bulletin board. This electronic bulletin board can be accessed by anyone with a computer and modem. The telephone number and information on use can be obtained from the Commission office.



**UNITED STATES GEOLOGICAL SURVEY
STREAM FLOW GAGES**

OHIO RIVER MAIN STEM

Number	Location	Ohio River Mile Point	Drainage Area Square Miles	Year Initiated	Comments
03086000	at Sewickley, PA	13.3	19,500	1933	COE*
03111534	at Martins Ferry, OH	87.3	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 Cannelton Dam, KY	720.8	97,000	1975	
03322000	at Evansville, IN	792.3	107,000	1936	Low flows recorded
03611500	at Metropolis, IL	944.1	203,000	1928	

*COE - Part of the U.S. Army Corps of Engineers Telemetry Network

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

**UNITED STATES GEOLOGICAL SURVEY
STREAM FLOW GAGES**

MAJOR OHIO RIVER TRIBUTARIES

Number	River	Location	Ohio River Mile Point	Drainage	Year Initiated	Comments
				Area Sq. Mi.		
03049500	Allegheny	at Natrona, PA	24.3	11,410	1938	COE*
03085000	Monongahela	at Braddock, PA	11.2	7,337	1938	
03107500	Beaver	at Beaver Falls, PA	5.5	3,106	1935	COE
03150000	Muskingum	at McConnelsville, OH		7,422	1921	
03198000	Kanawha	at Charleston, WV	54.3	10,419	1939	COE
03155000	Little Kanawha	at Palestine, WV	27.9	1,515	1915	COE
03234500	Scioto	at Higby, OH		5,131	1930	
03245500	Little Miami	at Milford, OH	12.9	1,203	1915	COE
03253500	Licking	at Catawba, KY	48.0	3,300	1914	
03274000	Great Miami	at Hamilton, OH	34.8	3,630	1907	
03290500	Kentucky	at Lockport, KY	31.0	6,180	1925	
03320000	Green	at Calhoun, KY	63.3	7,566	1930	
03377500	Wabash	at Mt. Carmel, IL	94.4	28,635	1908	Pre-1900 data available
03438220	Cumberland	at Grand Rivers, KY	30.6	17,598	1939	
03609500	Tennessee	at Paducah, KY	21.6	40,200	1936	Pre-1900 data available

*COE - Part of the U.S. Army Corps of Engineers Telemetry Network

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

OHIO RIVER NAVIGATION DAMS

Mile Point	Name	Normal Pool Elevation (ft)*	Year Placed In Operation**
6.2	Emsworth	710.0	1921
13.2	Dashields	692.0	1929
31.7	Montgomery	682.0	1936
54.4	New Cumberland	664.5	1959
84.2	Pike Island	644.0	1963
126.4	Hannibal (h)	623.0	1972
161.7	Willow Island	602.0	1972
203.9	Belleville	582.0	1965
237.5	Racine (h)	560.0	1967
279.2	Robert C. Byrd	538.0	1937
341.0	Greenup (h)	515.0	1962
436.2	Meldahl	485.0	1964
531.5	Markland (h)	455.0	1963
606.8	McAlpine (h)	420.0	1961
720.7	Cannelton	383.0	1972
776.1	Newburgh	358.0	1975
846.0	Uniontown	342.0	1975
918.5	Smithland	324.0	1980
938.9	Lock and Dam 52	302.0	1928
962.6	Lock and Dam 53	290.0	1929

* Height of water surface above mean sea level (National Geodetic Vertical Data)

** Year placed in operation defined as when the pool was raised.

(h) Have hydropower facilities

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

ALLEGHENY RIVER NAVIGATION DAMS

Mile Point from Ohio R.	Name	Normal Pool Elevation (ft)*
6.7	L&D #2	721.0
14.5	L&D #3	734.5
24.2	L&D #4	745.0
30.0	L&D #5	756.8
36.3	L&D #6	669.0
45.7	L&D #7	782.1
52.6	L&D #8	800.0
62.2	L&D #9	822.0

MONONGAHELA RIVER NAVIGATION DAMS

Mile Point from Ohio R.	Name	Normal Pool Elevation (ft)*
11.2	L&D #2	718.7
23.8	L&D #3	726.9
41.5	L&D #4	743.5
61.2	Maxwell	763.0
85	L&D #7	778.0
90.8	Point Marion	797.0
102.0	Morgantown	814.0
108.0	Hildebrand	835.0
115.4	Opekiska	857.0

KANAWHA RIVER NAVIGATION DAMS

Mile Point from Ohio R.	Name	Normal Pool Elevation (ft)*
31.1	Winfield	566.0
67.7	Marmet	590.0
82.8	London	614.0

NORMAL POOL, FLOOD STAGE, AND ELEVATION FOR SELECTED OHIO RIVER LOCATIONS

Mile Point	Location	Stage (ft.)*		Elevation**
		Normal Pool	Flood Stage	Normal Pool
<u>Allegheny</u>				
6.7	Lock & Dam #2	10	22	721
14.5	Lock & Dam #3	10	20	734.5
<u>Monongahela</u>				
11.2	Lock & Dam #2	10	21	718.7
23.8	Lock & Dam #3	10	17	726.9
<u>Ohio</u>				
0	Pittsburgh, PA	16	25	710
6.2	Emsworth L&D	16	21	710
13.2	Dashields L&D	12	25	692
31.7	Montgomery L&D	12	33	682
54.4	New Cumberland L&D	12	36	664.5
84.2	Pike Island L&D	12	37	644
126.4	Hannibal L&D	12	35	623
161.7	Willow Island L&D	12	37	602
167.5	Marietta, OH	14.9	35	582
179.9	Parkersburg, WV	20	36	582
203.9	Belleville L&D	12	45	582
237.5	Racine L&D	12	38	560
260.7	Point Pleasant, WV	23.9	40	538
279.2	Robert C. Byrd L&D	12	50	538
312	Huntington, WV	24.7	50	515
319.9	Ashland, KY	33.7	52	515
341.0	Greenup L&D	12	54	515
359.3	Portsmouth, OH	14.2	50	485
405.1	Maysville, KY	33.5	50	485
436.2	Meldahl L&D	12	51	485
483.2	Cincinnati, OH	25.4	52	455
531.5	Markland L&D	12	51	455

*Stage: arbitrary measurement based on reading of local gauge

**Elevation: height of the water surface above mean sea level

NORMAL POOL, FLOOD STAGE, AND ELEVATION FOR SELECTED OHIO RIVER LOCATIONS

Mile Point	Location	Stage (ft.)*		Elevation**
		Normal Pool	Flood Stage	Normal Pool
606.8	McAlpine L&D	12	55	420
720.7	Cannelton L&D	9	42	383
776.1	Newburgh L&D	10	38	358
809.6	Evansville, IN	12.8	42	342
846.0	Uniontown L&D	12	37	342
876.8	Shawneetown, IL	14.9	33	324
903	Golconda, IL	29.4	40	324
918.5	Smithland L&D	12	40	324
935	Paducah, KY	15.7	39	302
979	Cairo, IL	--	40	--

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

CRITICAL FLOWS AND DISCHARGE QUANTITIES

Segment	Mile Point	*Q 7-10 (cfs)	Discharge Load that will Raise Stream Concentration by 1 mg/L Lb/Day	Kg/day	**Harmonic Mean Flow (cfs)	Discharge Load that will Raise Stream Concentration by 1 mg/L Lb/Day	Kg/day
Pittsburgh to Montgomery Dam	0.0 - 32.4	4,800	25,900	11,800	20,600	111,000	50,300
Montgomery Dam to Willow Island Dam	32.4 - 161.8	5,800	31,300	14,200	24,900	134,200	60,800
Willow Island Dam to Gallipolis Dam	161.8 - 279.2	6,800	36,700	16,600	29,200	157,400	71,200
Gallipolis Dam to Greenup Dam	279.2 - 341.0	8,500	45,800	20,700	36,500	196,700	89,100
Greenup Dam to Meldahl Dam	341.0 - 436.2	9,800	52,800	23,900	42,100	226,900	102,700
Meldahl Dam to McAlpine Dam	436.2 - 605.8	11,000	59,300	26,800	47,300	254,900	115,400
McAlpine Dam to Uniontown Dam	605.8 - 846.0	13,000	70,100	31,700	55,900	310,300	136,400
Uniontown Dam to Smithland Dam	846.0 - 918.5	18,800	101,300	45,900	90,800	489,400	221,600
Smithland Dam to Cairo Point	918.5 - 981.0	46,300	249,600	113,000	199,000	1,072,600	485,600

* Minimum 7 consecutive day, 10 -year low flow (in cubic feet per second) based on calculations by the U.S. Corps of Engineers

** Harmonic mean flow (in cubic feet per second) based on analysis of stream flow data from the U.S. Geological Survey

SELECTED TRIBUTARIES TO THE OHIO RIVER

Tributary Name	Enters Ohio River at Mile Point	Stream Length (Miles)	Drainage Area (Square Miles)
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 River (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
Grave 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		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
Guyandotte River (WV)	305.2	66	1,670
Symmes Creek (OH)	308.7	70	356
Twelvepole Creek (WV)	313.2		440
Big Sandy River (WV-KY)	317.1	27	4,280
Little Sandy River (KY)	336.4		724
Pine Creek (OH)	346.9	48	185
Little Scioto River (OH)	349.0	41	233

SELECTED TRIBUTARIES TO THE OHIO RIVER

Tributary Name	Enters Ohio River at Mile Point	Stream Length (Miles)	Drainage Area (Square Miles)
Tygarts Creek (KY)	353.3		336
Scioto River (OH)	356.5	237	6,510
Kinniconnic 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 River (OH)	464.1	90	1,670
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
Laughery Creek (IN)	498.7	39	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		253
Blue River (IN)	663.0		435
Sinking Creek (KY)	700.9		154
Anderson Creek (IN)	731.5		234
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	474	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 the Ohio River 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)

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

Tributary Basin	Project	Year Completed	Drainage Area (square miles)	Storage Capacity (1000 acre feet)
Allegheny	Kinzua Dam	1967	2,180.0	1,180.0
	East Branch, Clarion R.	1952	72.4	84.3
	Woodcock Creek	1974	45.7	20.0
Monongahela	Youghiogheny	1948	434.0	254.0
	Stonewall Jackson	1988	102.0	74.6
Beaver	Berlin	1943	209.0	91.2
	Mosquito Creek	1944	97.4	104.1
	Shenango	1967	589.0	192.4
	M.J. Kirwan	1967	80.5	78.7
Little Kanawha	Burnsville	1978	165.0	65.9
Kanawha	Summersville	1964	803.0	413.4
	Sutton	1960	537.0	265.3
Guyandotte	R.D. Bailey	1980	540.0	203.7
Big Sandy	Fishtrap	1969	395.0	164.4
	J.W. Flannagan	1963	221.0	145.7
	Paintsville	1983	92.5	73.5
	Yatesville	1991	208.0	83.3
Little Sandy	Grayson	1969	196.0	119.0
Scioto	Paint Creek	1974	573.0	145.0
Little Miami	Caesar Creek	1978	237.0	242.2
	East Fork	1978	342.0	294.8
Licking	Cave Run	1974	826.0	614.1
Great Miami	C.J. Brown	1974	82.0	63.7
Kentucky	Buckhorn	1961	408.0	167.4
	Carr Fork	1976	58.2	47.4
Salt	Taylorsville	1983	353.0	291.7

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

Tributary Basin	Project	Year Completed	Drainage Area (Square Miles)	Storage Capacity (1000 acre feet)
Green	Barren River	1964	940.0	815.2
	Nolin	1963	703.0	609.4
	Rough River	1960	454.0	334.4
	Green River	1969	682.0	723.2
Wabash	Huntington	1969	707.0	153.1
	Cecil M. Hardin	1960	216.0	132.8
	Mississinewa	1968	809.0	368.4
	Monroe	1966	441.0	441.0
	Patoka	1978	186.0	301.6
	Salamonie	1967	553.0	263.6
Cumberland	Martins Fork	1978	55.7	21.1

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

**ANNUAL CLIMATIC DATA FOR SELECTED CITIES
OHIO RIVER BASIN**

	Average Temperature (oF)	Average Wind Speed (MPH)	Average Percent Sunshine	Average No. Days with Precipitation	Annual Precipitation (Inches)	Annual Snow & Ice (Inches)
Charleston, WV	55.0	6.3	40	151	42.53	32.2
Cincinnati, OH	53.2	9.1	52	129	41.33	23.5
Columbus, OH	51.4	8.5	49	137	38.09	28.0
Indianapolis, IN	52.3	9.6	55	125	39.94	22.9
Louisville, KY	56.1	8.4	58	124	44.39	16.5
Pittsburgh, PA	50.3	9.1	46	154	36.85	42.8

*Source: Statistical Abstract of the United States 1992
112th edition, U.S. Department of Commerce, Bureau of the Census*

MONTHLY AIR TEMPERATURES AT SELECTED CITIES - OHIO RIVER BASIN

TEMPERATURE IN DEGREES FAHRENHEIT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Charleston WV	Record Max.	79	78	89	94	93	98	104	101	102	92	85	80
	Normal Daily Max.	41.2	45.3	56.7	66.8	75.5	83.1	85.7	84.4	78.8	68.2	57.3	46.0
	Normal Daily Mean	32.1	35.5	45.9	54.8	63.5	71.4	75.1	73.9	67.7	56.2	46.8	37.0
	Normal Daily Min.	23.0	25.7	35.0	42.8	51.5	59.8	64.4	63.4	56.5	44.2	36.3	28.0
	Record Min.	-15	-6	0	19	26	33	46	41	34	17	6	-12
Cincinnati OH	Record Max.	69	73	84	89	93	102	103	102	98	88	81	75
	Normal Daily Max.	36.6	40.8	53.0	64.2	74.0	82.0	85.5	84.1	77.9	66.0	53.3	41.5
	Normal Daily Mean	32.8	31.8	43.0	53.2	62.9	71.0	75.1	73.5	67.3	55.1	44.3	33.5
	Normal Daily Min.	19.5	22.7	33.1	42.2	51.8	60.0	64.8	62.9	56.6	44.2	35.3	25.3
	Record Min.	-25	-11	-11	17	27	39	47	43	31	16	1	-20
Columbus OH	Record Max.	74	73	85	89	94	102	100	101	100	90	80	76
	Normal Daily Max.	34.1	38.0	50.5	62.0	72.3	80.4	83.7	82.1	76.2	64.5	51.4	39.2
	Normal Daily Mean	26.4	29.6	40.9	51.0	61.2	69.2	73.2	71.5	65.5	53.7	42.9	31.9
	Normal Daily Min.	18.5	21.2	31.2	40.0	50.1	58.0	62.7	60.8	54.8	42.9	34.3	24.6
	Record Min.	-19	-13	-6	14	25	35	43	39	31	20	5	-17
Indianapolis IN	Record Max.	71	74	85	89	93	102	104	102	100	90	81	74
	Normal Daily Max.	33.7	38.3	50.9	63.3	73.8	82.7	85.5	83.6	77.6	65.8	51.9	38.5
	Normal Daily Mean	25.5	29.6	41.4	52.4	62.8	71.9	75.4	73.2	66.6	54.7	43.0	30.9
	Normal Daily Min.	17.2	20.9	31.9	41.5	51.7	61.0	65.2	62.8	55.6	43.5	34.1	23.2
	Record Min.	-22	-21	-7	16	28	39	44	41	28	17	-2	-23
Louisville KY	Record Max.	77	77	86	91	95	102	105	101	104	92	84	76
	Normal Daily Max.	40.3	44.8	56.3	67.3	76.0	83.5	87.0	85.7	80.3	69.2	56.8	45.1
	Normal Daily Mean	31.7	35.7	46.3	56.3	65.3	73.2	77.2	75.8	69.5	57.6	47.1	36.9
	Normal Daily Min.	23.2	26.5	36.2	45.4	54.7	62.9	67.3	65.8	58.7	45.8	37.3	28.6
	Record Min.	-20	-19	-1	22	31	42	50	46	33	23	-1	-15
Pittsburgh PA	Record Max.	69	69	82	89	91	98	103	100	97	87	82	74
	Normal Daily Max.	33.7	36.9	49.0	60.3	70.6	78.9	82.6	80.8	74.3	62.5	50.4	38.6
	Normal Daily Mean	26.1	28.7	39.4	58.6	59.5	67.9	72.1	70.5	63.9	52.4	42.3	31.5
	Normal Daily Min.	18.5	20.3	29.8	38.8	48.4	56.9	61.6	60.2	53.5	42.3	34.1	24.4
	Record Min.	-18	-12	-1	14	26	34	42	39	31	16	-1	-12

AVERAGE PRECIPITATION IN SELECTED CITIES - OHIO RIVER BASIN

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Charleston, WV	15	14	15	14	13	11	13	11	9	10	12	14
Precipitation	2.91	3.04	3.63	3.31	3.94	3.59	4.99	4.01	3.24	2.89	3.59	3.39
Snow & Ice	10.6	8.8	4.6	0.9	--	--	T	T	T	0.1	2.2	5.0
Cincinnati, OH	12	11	13	12	11	11	10	9	8	8	11	12
Precipitation	2.59	2.69	4.24	3.75	4.28	3.84	4.24	3.35	2.88	2.86	3.46	3.15
Snow & Ice	7.0	5.4	4.3	0.5	--	--	--	--	--	0.2	2.1	4.0
Columbus, OH	13	12	14	13	13	11	11	9	8	9	11	13
Precipitation	2.18	2.24	3.27	3.21	3.93	4.04	4.31	3.72	2.96	2.15	3.22	2.86
Snow & Ice	8.3	6.2	4.5	1.0	--	T	--	--	T	--	2.3	5.7
Indianapolis, IN	12	10	13	12	12	10	9	9	8	8	10	12
Precipitation	2.32	2.46	3.79	3.7	4.00	3.49	4.47	3.64	2.87	2.63	3.23	3.34
Snow & Ice	6.1	5.8	3.5	.0	--	--	--	T	--	0.2	1.8	5.0
Louisville, KY	11	11	13	12	12	10	11	8	8	8	10	11
Precipitation	2.86	3.3	4.66	4.23	4.62	3.46	4.51	3.54	3.16	2.71	3.7	3.64
Snow & Ice	5.4	4.4	3.3	0.1	T	--	--	--	--	--	1.1	2.2
Pittsburgh, PA	16	14	16	14	13	12	11	10	9	11	13	16
Precipitation	2.54	2.39	3.41	3.15	3.59	3.71	3.75	3.21	2.97	2.36	2.85	2.92
Snow & Ice	11.6	9.4	8.1	1.8	0.1	T	--	--	T	0.2	3.4	8.2

Days:
Precipitation:
Snow & Ice:
T:

Average number of days with .01 inch or more precipitation
Average monthly precipitation in inches
Average total snow and ice pellets in inches
Trace

Source: *Statistical Abstract of the United States 1992*
112th edition, U.S. Department of Commerce, Bureau of the Census

AVERAGE MONTHLY PRECIPITATION FOR SELECTED CITIES **OHIO RIVER MAIN STEM***

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Pittsburgh PA	Average number of precipitation days/month**	14.6	13.2	14.6	13.2	14.2	11.2	12.0	8.0	11.6	9.2	12.4	16.6
	Average precipitation/month (inches)	.08	.09	.11	.09	.11	.15	.15	.09	.11	.07	.09	.13
Wheeling WV	Average number of precipitation days/month	14.6	12.4	15.2	14.8	13.4	9.6	13.6	8.2	11.6	9.8	12.2	12.2
	Average precipitation/month (inches)	.09	.09	.12	.10	.11	.12	.18	.10	.14	.07	.09	.10
Parkersburg WV	Average number of precipitation days/month	14.0	12.4	15.0	12.8	13.2	10.6	12.2	9.4	10.8	9.6	11.6	14.2
	Average precipitation/month (inches)	.09	.11	.16	.11	.14	.13	.15	.19	.13	.10	.10	.13
Huntington WV	Average number of precipitation days/month	13.0	13.4	14.6	14.6	13.4	11.6	11.8	8.8	9.8	9.8	10.4	14.2
	Average precipitation/month (inches)	.08	.15	.16	.11	.14	.13	.16	.13	.13	.09	.10	.14
Portsmouth OH	Average number of precipitation days/month	12.0	11.8	14.2	16.4	15.2	11.4	12.6	10.8	10.2	9.8	11.4	11.0
	Average precipitation/month (inches)	.09	.13	.15	.12	.12	.10	.15	.10	.12	.09	.10	.11
Cincinnati OH	Average number of precipitation days/month	9.8	10.4	12.2	12.8	14.0	9.0	11.2	10.8	8.2	8.4	11.4	11.4
	Average precipitation/month (inches)	.09	.12	.14	.12	.16	.12	.14	.15	.10	.08	.10	.11
Louisville KY	Average number of precipitation days/month	11.0	11.2	13.8	12.0	13.2	10.2	10.6	8.4	9.8	8.0	10.6	13.2
	Average precipitation/month (inches)	.11	.18	.16	.11	.17	.13	.15	.12	.10	.09	.10	.13
Evansville IN	Average number of precipitation days/month	10.0	8.6	12.0	12.0	13.0	9.0	8.4	6.8	8.6	9.0	9.4	11.2
	Average precipitation/month (inches)	.10	.14	.13	.11	.17	.10	.14	.10	.11	.10	.13	.11
Paducah KY	Average number of precipitation days/month	9.4	9.0	11.4	12.0	11.4	9.6	8.0	7.4	8.2	7.8	9.6	10.4
	Average precipitation/month (inches)	.13	.23	.12	.12	.12	.15	.14	.08	.13	.12	.11	.13

* Based on 1989-93 data from the National Weather Service precipitation gauge nearest each city.

**Precipitation greater than .01

AVERAGE MONTHLY STREAM FLOW - OHIO RIVER*

STREAM FLOW IN THOUSAND CUBIC FEET PER SECOND

Station - Mile Point (Date Initiated)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
South Heights - 15.2 (3/63)	39.1	52.0	68.2	54.1	37.9	25.6	17.8	14.5	13.8	18.1	30.0	47.8
East Liverpool - 40.2 (12/61)**	45.7	54.8	76.9	61.3	41.8	28.7	19.8	16.3	14.6	19.1	32.4	50.8
Shadyside - 102.4 (4/75)	46.1	62.8	70.5	65.6	44.0	32.8	24.8	22.3	20.4	27.2	41.9	57.0
Addison - 260.0 (6/75)	59.9	85.2	111.9	99.0	65.2	46.9	34.1	29.9	21.3	31.5	56.9	83.8
Gallipolis - 279.2 (10/75)	82.9	118.7	149.2	123.8	86.0	65.8	46.2	39.7	27.1	44.5	74.6	101.9
Huntington - 306.9 (9/61)	96.8	122.4	164.8	129.1	91.8	58.4	38.6	32.9	27.9	35.6	65.0	95.9
Cincinnati - 462.8 (9/61)	126.4	155.5	215.8	169.2	120.2	72.1	48.1	40.2	34.8	41.7	75.1	128.5
Markland - 531.5 (5/69)***	139.5	171.6	209.9	189.1	136.4	91.1	58.5	50.7	45.3	51.6	91.6	162.1
Louisville - 600.6 (3/62)	145.1	176.7	249.6	197.4	139.4	81.8	53.7	43.8	38.9	45.6	79.2	148.6
West Point - 625.9 (4/75)	143.7	181.0	229.9	199.6	142.2	96.6	64.6	56.2	42.9	61.2	101.5	175.9
Cannelton - 720.7 (10/75)	153.9	182.7	242.4	214.3	150.4	103.2	69.2	60.3	45.8	62.8	103.6	184.9
Evansville - 791.5 (10/68)	191.3	227.4	269.7	244.8	180.4	118.8	74.4	61.0	54.1	64.0	111.9	202.9
Joppa - 952.3 (8/75)	345.8	383.3	497.0	438.7	346.6	235.2	159.3	140.6	124.0	141.6	219.6	411.8

*From date initiated through 1986

**Includes data from Stratton (1963-1975)

***Seasonal operation, 1976-1979

AVERAGE MONTHLY STREAM FLOW - OHIO RIVER TRIBUTARIES*

STREAM FLOW IN THOUSAND CUBIC FEET PER SECOND

Station Mile Point** (Date Initiated)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Allegheny R. at Oakmont 0.0, 13.3 (4/62)	23.0	27.6	40.8	33.3	21.8	14.9	10.2	7.6	7.45	11.1	19.0	27.6
Monongahela R. at S. Pittsburgh 0.0, 4.5 (6/75)	12.5	23.0	24.4	20.5	13.7	9.0	7.65	5.39	4.72	8.5	12.3	19.1
Beaver R. at Beaver Falls 25.3, 5.3 (12/61)	4.37	5.82	7.35	5.32	3.95	2.88	2.15	1.78	1.85	1.87	3.27	4.98
Kanawha R. at Winfield 265.7, 31.1 (9/61)	22.4	29.8	36.9	25.1	20.8	13.3	9.24	7.88	6.22	10.0	15.3	21.2
Big Sandy R. at Louisa 317.1, 20.3 (1/69)	9.47	8.89	9.39	8.4	6.73	3.43	1.93	1.84	1.35	2.03	3.79	5.78
Licking R. at Covington 470.2, 4.5 (5/69)	6.21	7.5	7.46	6.77	4.6	2.72	1.73	1.47	1.87	1.55	2.66	6.44
Wabash R. at New Harmony 848.0, 51.5 (8/75)	36.9	36.9	68.5	64.2	44.3	30.6	21.2	19.5	11.9	11.6	21.2	43.7

*From date initiated through 1986

**Mile point of confluence with Ohio River, mile point of tributary monitor

MINIMUM MONTHLY AVERAGE STREAM FLOW - OHIO RIVER*

STREAM FLOW IN THOUSAND CUBIC FEET PER SECOND

Station - Mile Point Date Initiated	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	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)	19.3 (1986)	10.6 (1977)	6.12 (1965)	5.61 (1962)	5.82 (1964)	3.95 (1963)	9.83 (1963)	19.1 (1976)
Shadyside - 102.4 4/75	12.1 (1977)	25.5 (1980)	55.4 (1983)	38.1 (1976)	20.7 (1986)	11.9 (1977)	13.2 (1975)	10.5 (1985)	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)	49.2 (1986)	22.1 (1982)	16.2 (1977)	16.3 (1975)	14.1 (1983)	10.0 (1986)	12.0 (1982)	29.6 (1978)	43.6 (1976)
Gallipolis - 279.2 10/75	24.4 (1977)	58.4 (1980)	90.6 (1982)	53.3 (1982)	40.4 (1977)	22.9 (1976)	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)	66.0 (1986)	41.3 (1986)	21.5 (1966)	18.2 (1964)	11.6 (1963)	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)	72.0 (1986)	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)	77.7 (1986)	45.6 (1976)	30.3 (1977)	32.2 (1975)	20.7 (1983)	16.7 (1983)	24.6 (1982)	53.3 (1980)	77.4 (1980)
Cannelton - 720.7 10/75	39.0 (1977)	101.4 (1980)	13.2 (1983)	86.0 (1986)	50.6 (1976)	31.1 (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)	83.4 (1986)	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)	126.6 (1986)	123.4 (1986)	102.3 (1977)	110.9 (1985)	66.8 (1986)	46.9 (1985)	74.0 (1980)	107.8 (1980)	131.3 (1981)

(Year of minimum monthly average occurrence)

*From date initiated through 1986
**Includes data from Stratton (1963-1975)
***Seasonal operation, 1976-1979

MINIMUM MONTHLY AVERAGE STREAM FLOW - OHIO RIVER TRIBUTARIES*

STREAM FLOW IN THOUSAND CUBIC FEET PER SECOND

Station		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Mile Point** (Date Initiated)													
Allegheny River at Oakmont													
0.0, 13.3 (4/62)		6.65 (1977)	7.67 (1963)	10.0 (1969)	16.6 (1976)	7.9 (1985)	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)	2.01 (1986)	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)		4.2 (1966)	16.9 (1978)	17.1 (1966)	8.2 (1986)	7.13 (1964)	3.62 (1964)	2.17 (1964)	2.61 (1965)	2.3 (1963)	2.13 (1963)	2.6 (1965)	2.58 (1965)
Big Sandy River at Louisa													
317.1, 20.3 (1/69)		1.26 (1981)	5.12 (1984)	4.06 (1969)	1.62 (1986)	1.32 (1976)	.65 (1970)	.62 (1970)	.64 (1983)	.51 (1969,83)	.42 (1969)	.9 (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)	6.9 (1976)	4.38 (1976)	4.17 (1976)	4.58 (1976)	3.82 (1976)

(Year of minimum monthly average occurrence)

*From date initiated through 1986

**Mile point of confluence with Ohio River, mile point of tributary monitor

OHIO RIVER CHANNEL GEOMETRY

River at Normal Pool

Pool	Mile Point	Average Depth (feet)	Average Width (feet)	Length (miles)	Bottom Slope (feet per mile)
Emsworth	0.0 - 6.2	21	1456	6.2	0
Dashields	6.2 - 13.3	14	1467	7.1	0.7
Montgomery	13.3 - 31.2	25	1376	18.4	0.2
New Cumberland	31.7 - 54.4	22	1439	22.7	0.2
Pike Island	54.4 - 84.2	19	1338	29.8	0.4
Hannibal	84.2 - 120.4	21	1133	36.2	0.5
Willow Island	120.4 - 161.7	23	1194	35.3	0.6
Belleville	161.7 - 203.9	24	1327	42.2	0.5
Racine	203.9 - 237.5	24	1275	33.6	0.5
Gallipolis	237.5 - 279.2	26	1154	41.7	0.6
Greenup	279.2 - 341.0	26	1111	61.8	0.4
Meldahl	341.0 - 436.2	23	1603	95.2	0.3
Markland	436.2 - 531.5	31	1594	95.3	0.4
McAlpine	531.5 - 605.0	25	2040	73.5	0.3
Cannelton	605.0 - 720.7	32	1674	115.7	0.3
Newburgh	720.7 - 776.1	28	2477	55.4	0.3
Uniontown	776.1 - 846.0	28	2401	69.9	0.3
Smithland	846.0 - 918.5	30	4116	72.5	0.3
L&D 52	918.5 - 938.9	26	3662	20.4	0.3
L&D 53	938.9 - 962.6	20	3925	23.7	0.2
Open	962.6 - 981.0	13	3135	18.4	0.2

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

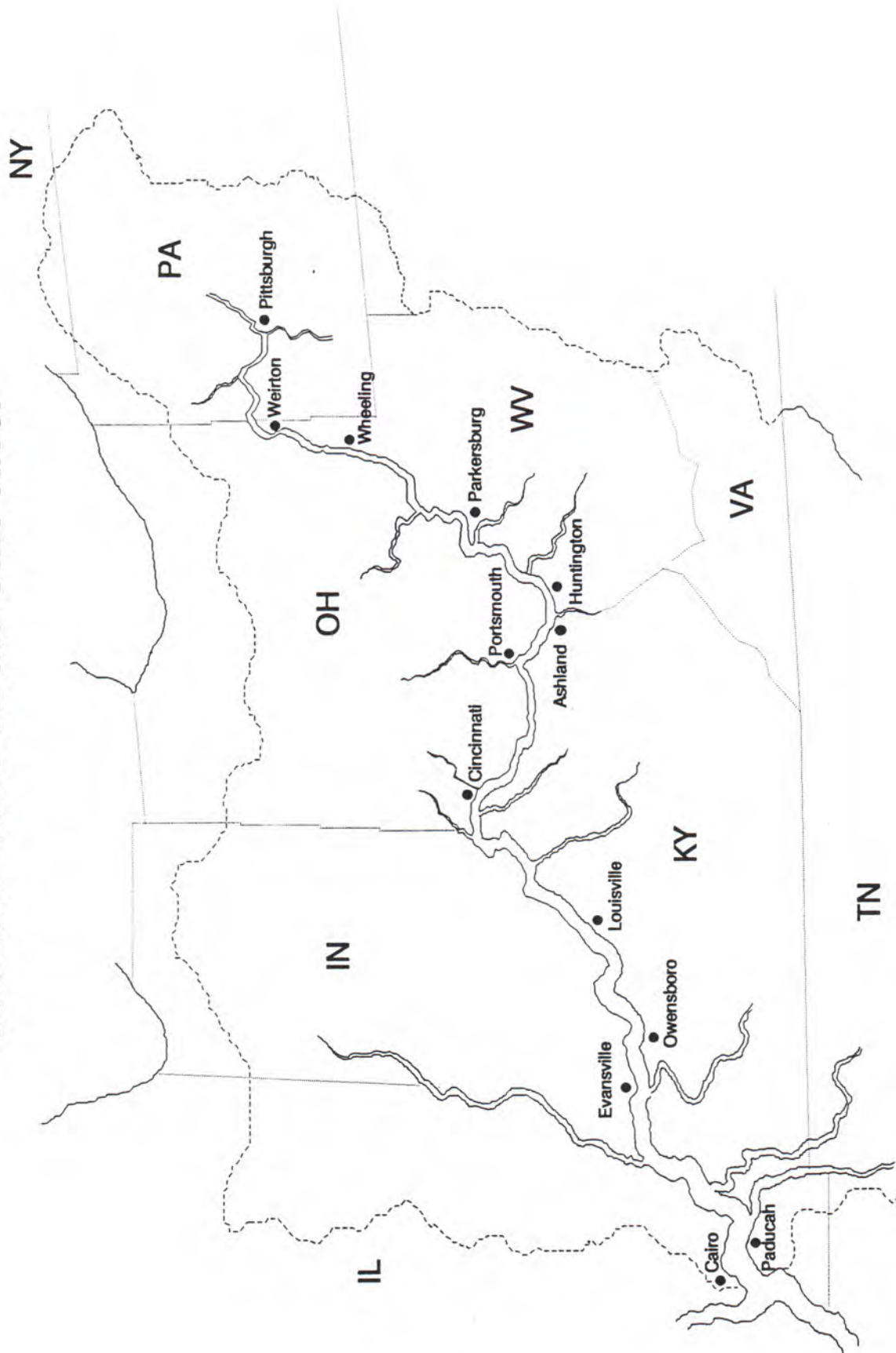
SECTION II: LAND USE

Land use is a significant factor in determining both the runoff characteristics of a drainage basin and the water quality of its streams. Nonpoint sources of pollution, particularly from agriculture, mining, and urban runoff, are the greatest factor in continued water quality impairment of the Ohio River. 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 and animal waste. Acid mine drainage from abandoned coal mines can render streams biologically dead. Urban runoff can contain numerous constituents such as road salts and heavy metals as well as untreated sewage in communities with combined sewer systems.

Summaries of land use are presented for entire drainage areas, including tributaries, of certain Ohio River locations and major tributary basins.

The remainder of this section presents data on population within the basin. The number of people living in an area will aid in determining the amount of domestic wastewater generated. The data indicate that while the population residing in major cities within the basin continues to grow, population as a whole decreased from 1980 to 1990.

Selected Cities on the Ohio River



LAND USE OF THE MAJOR SUB-BASINS OF THE OHIO RIVER

Basin Description	Cropland	Pasture	Forest	Barren	Urban	Mine Disturbed	Total Area (Sq. Mi.)
Allegheny	14.6%	10.0%	58.2%	1.4%	3.4%	2.0%	11,700
Monongahela	12.0%	17.2%	52.9%	1.8%	4.1%	3.0%	7,400
Beaver	33.6%	10.7%	30.7%	0.0%	11.9%	2.0%	3,130
Muskingum	33.5%	17.7%	32.3%	1.2%	8.6%	3.5%	8,040
Kanawha	6.2%	13.8%	63.7%	0.3%	3.1%	1.6%	12,200
Guyandotte/Big Sandy	2.5%	4.2%	83.6%	3.0%	1.2%	2.5%	4,280
Scioto	55.9%	7.6%	19.8%	0.2%	7.0%	0.0%	6,510
Little Miami	58.0%	12.3%	13.6%	0.0%	11.3%	0.0%	1,670
Licking/Kentucky	15.2%	29.9%	43.2%	1.1%	1.3%	0.0%	10,640
Great Miami/Whitewater	60.2%	10.9%	10.4%	0.3%	11.1%	0.0%	5,400
Green	30.7%	25.7%	31.8%	1.8%	2.4%	1.3%	9,230
Wabash	65.2%	8.2%	13.5%	0.5%	4.8%	0.4%	33,100
Cumberland	16.5%	20.3%	44.4%	1.1%	0.0%	0.0%	17,920
Percentage of Total Area	33.6%	14.7%	36.3%	0.9%	4.1%	1.0%	131,220

*Ref. U.S.D.A. "Basic Statistics, 1982 National Resources Inventory".
Soil Conservation Service, U.S.D.A., Statistical Bulletin No. 756, Sept., 1987*

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

State	Area Within Ohio River Basin (Square Miles)	Population		
		1970	1980	1990
Illinois	10,745	606,062	634,259	623,454
Indiana	29,135	3,597,990	3,830,357	3,882,781
Kentucky	39,375	3,163,493	3,603,516	3,269,605
New York	1,955	158,355	172,303	163,747
Ohio	29,570	6,298,122	6,558,723	6,692,023
Pennsylvania	15,620	3,761,083	3,693,843	3,451,633
Virginia	7,175	438,698	531,743	515,052
West Virginia	20,610	1,616,986	1,789,585	1,601,541
Total	154,185	19,640,789	20,814,329	20,199,836

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

Net Change in Population, 1980 - 1990: -614,493 (-3.0%)

Persons per square mile, 1990: 131

Land area data taken from Commission sources.

*Population data derived from Statistical Abstract of the United States 1992, 112th Edition
U.S. Department of Commerce, Bureau of the Census*

Population of Cities in Ohio River Basin, 1970, 1980 and 1990
Cities with Population Over 100,000
ORSANCO Compact District

	City Population			*PMSA Population		
	<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>1970</u>	<u>1980</u>	<u>1990</u>
Charleston, WV	--	--	--	257,000	270,000	250,000
Cincinnati, OH	454,000	385,000	364,000	1,387,000	1,401,000	1,453,000
Columbus, OH	540,000	565,000	633,000	1,149,000	1,244,000	1,377,000
Dayton, OH	243,000	194,000	182,000	975,000	942,000	951,000
Evansville, IN	139,000	130,000	126,000	255,000	276,000	279,000
Huntington, WV-Ashland, KY	--	--	--	307,000	336,000	313,000
Indianapolis, IN	737,000	701,000	731,000	1,111,000	1,167,000	1,250,000
Lexington, KY	108,000	204,000	225,000	267,000	318,000	348,000
Louisville, KY	362,000	299,000	269,000	907,000	956,000	953,000
Pittsburgh, PA	520,000	424,000	370,000	2,556,000	2,423,000	2,243,000
Total	3,103,000	2,902,000	2,900,000	8,914,000	9,063,000	9,167,000

*PMSA - Primary Metropolitan Statistical Area (includes surrounding greater metropolitan area)

Source: *Statistical Abstract of the United States 1992, 112th Edition*

U.S. Department of Commerce, Bureau of the Census

RIVER MILE POINTS OF COUNTIES BORDERING THE OHIO RIVER

PENNSYLVANIA

Allegheny	0.0	-	15.4
Beaver	15.4	-	40.2

OHIO

Columbiana	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	291.9	-	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	509.9	-	546.4
Jefferson	546.4	-	571.7
Clark	571.7	-	606.8
Floyd	606.8	-	617.0
Harrison	617.0	-	662.9
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

Hancock	40.2	-	65.6
Brooke	65.6	-	81.5
Ohio	81.5	-	93.0
Marshall	93.0	-	121.6
Wetzel	121.6	-	135.5
Tyler	135.5	-	147.8
Pleasants	147.8	-	164.9
Wood	164.9	-	205.7
Jackson	205.7	-	234.1
Mason	234.1	-	287.2
Cabell	287.2	-	311.9
Wayne	311.9	-	317.1

KENTUCKY

Boyd	317.1	-	324.8
Greenup	324.8	-	357.5
Lewis	357.5	-	401.5
Mason	401.5	-	421.0
Bracken	421.0	-	440.3
Pendleton	440.3	-	443.7
Campbell	443.7	-	470.2
Kenton	470.2	-	477.5
Boone	477.5	-	516.6
Gallatin	516.6	-	535.0
Carroll	535.0	-	553.3
Trimble	553.3	-	576.2
Oldham	576.2	-	592.9
Jefferson	592.9	-	629.9
Hardin	629.9	-	633.8
Meade	633.8	-	689.5
Breckinridge	689.5	-	712.4
Hancock	712.4	-	742.1
Daviess	742.1	-	771.2
Henderson*	771.2	-	832.0
Union	832.0	-	873.5
Crittenden	873.5	-	893.0
Livingston	893.0	-	934.6
McCracken	934.6	-	956.0
Ballard	956.0	-	981.0

* 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. Several uses which are highly dependent on water quality are public and industrial water supply, aquatic habitat and contact recreation. Other uses such as navigation and industrial use can affect water quality. The river is also used for assimilation of treated wastewaters. The degree of treatment provided affects the ability of the river to assimilate an effluent, 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. Health departments in a number of communities along the river have issued advisories against contact with the river because of elevated bacteria levels. In the summary of waterbodies, the number of docks and launch ramps in each waterbody is presented to provide an indication of the extent of pleasure boating which takes place.

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. This section includes lists of municipal and industrial intakes and discharges. In order to further quantify municipal discharges, a list of those facilities served by combined sewers and pretreatment programs is included.

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. A list of power facilities on the main stem is included.

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

SUMMARY OF OHIO RIVER WATERBODY SEGMENTS

Mile Point		Waterbody Name	State	Boat Landings*	Municipal Intakes	Power Plants	Dischargers	
From	To						WWTP**	Industrial/Other
0.0	6.2	Point - Emsworth	PA	6	1	1	1	4
6.2	13.3	Emsworth - Dashields	PA	5	1	0	3	11
13.3	25.4	Dashields - Beaver	PA	3	0	1	6	8
25.4	31.7	Beaver - Montgomery	PA	0	0	0	3	7
31.7	40.2	Montgomery - PA State Line	PA	0	1	2	2	6
40.2	54.4	PA State Line - New Cumberland	OH-WV	9	1	1	4	13
54.4	84.2	New Cumberland - Pike Island	OH-WV	7	3	4	12	39
84.2	126.4	Pike Island - Hannibal	OH-WV	18	1	5	14	35
126.4	161.7	Hannibal - Willow Island	OH-WV	10	1	2	8	6
161.7	172.2	Willow Island - Muskingum	OH-WV	4	0	0	3	2
172.2	203.9	Muskingum - Belleville	OH-WV	12	0	1	6	23
203.9	237.5	Belleville - Racine	OH-WV	3	0	1	2	6
237.5	265.7	Racine - Kanawha	OH-WV	9	0	4	10	9
265.7	279.2	Kanawha - Gallipolis	OH-WV	1	0	0	2	5
279.2	317.1	Gallipolis - Big Sandy	OH-WV	5	2	0	14	12
317.1	341.0	Big Sandy - Greenup	OH-KY	5	3	1	9	33
341.0	356.5	Greenup - Scioto	OH-KY	6	1	0	6	6
356.5	436.2	Scioto - Meldahl	OH-KY	19	1	3	7	8
436.2	464.1	Meldahl - Little Miami	OH-KY	24	3	2	7	10
464.1	470.2	Little Miami - Licking	OH-KY	16	0	0	1	0
470.2	491.1	Licking - Great Miami	OH-KY	22	0	1	6	11
491.1	531.5	Great Miami - Markland	IN-KY	10	0	3	8	4
531.5	545.8	Markland - Kentucky	IN-KY	9	0	1	3	6
545.8	606.8	Kentucky - McAlpine	IN-KY	38	2	3	9	22

SUMMARY OF OHIO RIVER WATERBODY SEGMENTS

(Continued)

Mile Point		Waterbody Name	State	Boat Landings*	Municipal Intakes	Power Plants	Dischargers	
From	To						WWTP**	Industrial/Other
606.8	629.9	McAlpine - Salt	IN-KY	5	1	3	7	22
629.9	720.7	Salt - Cannelton	IN-KY	15	0	0	7	8
720.7	776.1	Cannelton - Newburgh	IN-KY	12	0	5	17	41
776.1	784.2	Newburgh - Green	IN-KY	2	0	0	1	0
784.2	846.0	Green - Uniontown	IN-KY	15	5	3	4	15
846.0	848.0	Uniontown - Wabash	IN-KY	0	0	0	0	0
848.0	918.5	Wabash - Smithland	IL-KY	19	3	0	4	6
918.5	920.4	Smithland - Cumberland	IL-KY	1	0	0	0	0
920.4	934.5	Cumberland - Tennessee	IL-KY	1	0	0	1	1
934.5	981.0	Tennessee - Cairo	IL-KY	10	3	2	7	7
Totals				321	33	49	194	386

* Includes harbors, ramps, landings and marinas.

Information from "Ohio River and Tributaries Small Boat Harbors, Ramps, Landings, Etc." Revised 1993, U.S. Army Corps of Engineers, Ohio River Division

** Includes municipal waste water treatment plants and private package treatment plants

OHIO RIVER PUBLIC DRINKING WATER INTAKES

Mile Point	State	Intake	Pumping Rate (MGD)	Intake Depth (Feet*)	Population Served
4.5	PA	West View	20.0	15	200,000
8.6	PA	Robinson Township	2.3	15	10,800
36.0	PA	Midland	3.5	15	1,200
40.2	OH	East Liverpool	3.2	10	13,500
59.1	OH	Toronto	0.3	19	6,000
65.1	WV	Wierton	3.2	24	22,000
65.2	OH	Steubenville	6.5	18	40,000
86.8	WV	Wheeling	8.0	7	60,000
137.1	WV	Sistersville	0.2	8	2,000
304.2	WV	Huntington	13.0	17-21	90,000
306.9	WV	Huntington		17.5	
319.7	KY	Ashland	8.5	23	35,900
327.0	OH	Ironton	2.0	18	12,700
327.5	KY	Russell	2.0	15	14,500
350.0	OH	Portsmouth	7.0	18	50,000
408.5	KY	Maysville	1.3	12	13,000
462.8	OH	Cincinnati	124.0	27	800,000
462.9	KY	Kenton County (Ft. Thomas)	24.0	30	180,000
463.2	KY	Newport	12.0	22	18,000
594.2	KY	Louisville	115.0	20	720,000
600.6	KY	Louisville		10-30	
609.0	IN	Indiana Cities (New Albany)	5.0	15	35,000
791.5	IN	Evansville	30.0	8-9	150,000
803.6	KY	Henderson	6.6	30	42,000
829.3	IN	Mt. Vernon	2.0	35	8,300
840.0	KY	Morganfield	2.2	28.3	10,000
842.5	KY	Uniontown	0.1	5	1,000
871.0	KY	Sturgis	0.35	18	4,200
891.3	IL	Rosiclare	0.15	7	2,500
902.5	IL	Golconda	0.1	31	1,000
935.8	KY	Paducah	6.6	15	47,000
977.0	IL	Cairo	1.2	8	5,800
978.0	IL	Cairo		26	

*Below normal pool stage

**Organics Detection System location

INDUSTRIAL WATER INTAKES ALONG THE OHIO RIVER
Indicated on U.S. Army Corps of Engineers Ohio River Navigation Charts

INTAKE	CITY	STATE	M.P.	RIVER BANK*
Duquesne Light Co.	Pittsburgh	PA	2.3	Rt. Brun
Lockhart Iron & Steel Co.	McKees Rocks	PA	2.6	Left
Pittsburgh & Erie Railroad Co.	Pittsburgh	PA	2.8	Left
Conrail	Bellevue	PA	3.4	Right
McKees Rocks Industrial Enterprise	McKees Rocks	PA	3.8	Left
Shenango Inc.	Neville	PA	5.3	Rt. Nev. Is.
Tapco Inc.	Neville	PA	7.4	Right
Vulcan Materials Co.	Neville	PA	7.6	Left
Witherow Steel Co. (Formerly)	Neville	PA	8.2	Left
Burrell Construction & Supply Co.	New Kensington	PA	11.3	--
Bethlehem Steel Corp (Leetsdale Plant)	Leetsdale	PA	14.2	--
Duquesne Light Co.	Wireton	PA	15.2	Left
USX Corp. Realty	Ambridge	PA	15.9	--
LTV Steel Co.	Aliquippa	PA	17.3	Left
LTV Steel Co.	Aliquippa	PA	18.6	Left
A. M. Byers (Formerly)	Ambridge	PA	18.8	Right
LTV Steel Co.	Aliquippa	PA	19.2	--
Conrail	Conway	PA	21.5	Right
Colonial Steel Co.	Monaca	PA	23.0	Left
Consolidated Aluminum Inc.	Hannibal	OH	23.6	--
Ashland Petroleum Inc.	Freedom	PA	23.9	--
St. Joe Resources Co.	Monaca	PA	28.5	Left
St. Joe Resources Co.	Monaca	PA	29.1	Left
St. Joe Resources Co.	Monaca	PA	29.2	--
ARCO Chemical Co.	Monaca	PA	29.5	Left
PA Power Co. (Mansfield)	Shippingport	PA	33.9	Left
Duquesne Light Co.	Shippingport	PA	34.5	Left
Duquesne Light Co.	Shippingport	PA	34.8	Left
Duquesne Light Co.	Shippingport	PA	35.0	Left
J&L Specialty Products Co.	Midland	PA	36.2	Right

*Left or right bank facing downstream

Data received from U.S. Army Corps of Engineers Water
Resources Support Center, Navigation Data Center

INDUSTRIAL WATER INTAKES ALONG THE OHIO RIVER
Indicated on U.S. Army Corps of Engineers Ohio River Navigation Charts
(continued)

INTAKE	CITY	STATE	M.P.	RIVER BANK*
Conrail	Midland	PA	37.4	Right
Dravo Natural Resources	Georgetown	PA	38.3	--
Standard Slag Co. (Georgetown)	Georgetown	OH	39.4	--
Conrail			48.5	--
Standard Slag Co. (Iron City)	Iron City		50.5	--
Ohio Edison Co. (Sammis)			53.8	--
Ohio Edison Co. (Toronto)	Toronto	OH	57.5	--
Toronto Titanium Metals Corp.	Toronto	OH	60.5	--
Weirton Steel Corp.	Weirton	OH	61.7	--
Federal Paper Co. (Formerly)			67.3	--
Wheeling Pittsburgh Steel Corp.	East Steubenville	WV	68.4	--
Wheeling Pittsburgh Steel Corp.	Steubenville	OH	68.6	--
Wheeling Pittsburgh Steel Corp.	East Steubenville	WV	69.2	--
Koppers Company Inc.	Follansbee	WV	69.2	--
Wheeling Pittsburgh Steel Corp.	Mingo Junction	OH	70.8	--
Norfolk & Western Railway			71.7	--
Ohio Power Company (Tidd)	Brilliant	OH	76.5	--
Ohio Power Company (Cardinal)	Brilliant	OH	77.4	--
Conrail			79.0	--
Wheeling Pittsburgh Steel Corp.	Beech Bottom	WV	79.2	--
Wheeling Pittsburgh Steel Corp.	Tiltonsville	OH	83.2	--
Wheeling Pittsburgh Steel Corp.	Tiltonsville	OH	83.3	--
Wheeling Pittsburgh Steel Corp.	Tiltonsville	OH	83.6	--
Warwood Tool Co.	Warwood	WV	86.7	--
Wheeling Pittsburgh Steel Corp.	Martins Ferry	OH	87.9	--
CSX Railroad Co.	Bridgeport	OH	90.2	--
Ohio Valley Transit Authority	Wheeling	WV	92.5	--
Wheeling Electric Co.	Wheeling	WV	92.5	--
Wheeling Pittsburgh Steel Corp.	Wheeling	WV	94.3	--
Wheeling Pittsburgh Steel Corp.	Wheeling	WV	94.4	--

INDUSTRIAL WATER INTAKES ALONG THE OHIO RIVER
Indicated on U.S. Army Corps of Engineers Ohio River Navigation Charts
(continued)

INTAKE	CITY	STATE	M.P.	RIVER BANK*
Ohio Edison Co. (Burger)	Shadyside	WV	102.4	--
LCP Chemicals-WV Inc.	Moundsville	WV	105.6	--
Ohio Power Co. (Kammer)	Moundsville	WV	111.0	--
Ohio Power Co. (Mitchell)	Moundsville	WV	112.4	--
North American Coal Corp.	Clarington	OH	115.5	--
PPG Industries Inc. (Natrium)	Natrium	WV	119.0	--
PPG Industries Inc.	Natrium	WV	119.3	--
Quarto Mining Co.	Clarington	OH	120.2	--
Miles, Inc.	New Martinsville	WV	121.3	--
Miles, Inc.	New Martinsville	WV	121.3	--
Union Carbide Corp.	Sistersville	WV	144.7	--
Union Carbide Corp.	Sistersville	WV	145.3	--
Union Carbide Corp.	Sistersville	WV	145.6	--
Union Carbide Corp.	Sistersville	WV	145.9	--
American Cyanamid Corp.	Willow Island	WV	160.3	--
Monongahela Power Co.	Willow Island	WV	160.5	--
American Cyanamid Corp.	Willow Island	WV	161.4	--
Elkem Metals Co. (Power Dept.)	Marietta	OH	176.7	--
Monongahela Power Co.	Parkersburg	WV	183.9	--
Shell Chemical Co.	Marietta	OH	188.6	--
E.I. DuPont Denemours & Co.	Parkersburg	WV	190.2	--
E.I. DuPont Denemours & Co.	Parkersburg	WV	190.6	--
E.I. DuPont Denemours & Co.	Parkersburg	WV	190.7	--
Appalachian Power Co. (Mountaineer)	Grahams Station	WV	241.6	--
Appalachian Power Co.	Grahams Station	WV	242.7	--
Ohio Power Co. (Gen. J.M. Gavin)	Addison	OH	258.3	--
Ohio Valley Electric Corp. (Kyger Creek)	Addison	OH	260.0	--
Appalachian Power Co.	Bluefield	OH	281.4	--
Oglebay-Norton Co.	Ceredo	WV	314.5	--
Ashland Oil, Inc.	South Point	OH	318.2	--

INDUSTRIAL WATER INTAKES ALONG THE OHIO RIVER
Indicated on U.S. Army Corps of Engineers Ohio River Navigation Charts
(continued)

INTAKE	CITY	STATE	M.P.	RIVER BANK*
ARMCO Steel Corp.	Ashland	KY	320.1	--
ARMCO Steel Corp.	Ashland	KY	320.2	--
ARMCO Steel Corp.	Ashland	KY	320.3	--
ARMCO Steel Corp.	Ashland	KY	322.0	--
Mansbach Metal Co.	Ashland	KY	322.1	--
ARMCO Steel Corp.	Ashland	KY	323.2	--
ARMCO Steel Corp.	Ashland	KY	324.0	--
Allied Chemical Co.	Ironton	OH	324.5	--
ARMCO Steel Corp.	Ashland	KY	324.7	--
Chesapeake & Ohio Railway Co.	Russell	KY	327.7	--
E.I. DuPont Denemours & Co.	Wurtland	KY	333.2	--
King River Ltd. Inc.	Portsmouth	OH	351.0	--
King River Ltd. Inc.	Portsmouth	OH	351.1	--
King River Ltd. Inc.	Portsmouth	OH	351.5	--
Chesapeake & Ohio Railway Co.	Huntington	WV	356.1	--
Chesapeake & Ohio Railway Co.	Huntington	WV	409.0	--
Eastern KY Power Coop. (H.L. Spurlock)	Winchester	KY	413.8	--
Cincinnati Gas & Electric Co. (Zimmer)	New Richmond	OH	443.3	--
Cincinnati Gas & Electric Co. (Beckjord)	New Richmond	OH	453.0	--
Cincinnati Gas & Electric Co.	Cincinnati	OH	471.3	--
Kaiser Agricultural	North Bend	OH	489.3	--
Cincinnati Gas & Electric Co. (Miami Fort)	Cincinnati	OH	490.3	--
Indiana & Michigan Electric Co. (Tanners Creek)	Lawrenceburg	IN	494.0	--
Kentucky Utilities Co. (Ghent)	Ghent	KY	535.9	--
Indiana-Kentucky Electric Co. (Clifty Creek)	Madison	IN	559.9	--
Public Service of Indiana (Marble Hill)	Jefferson Co.	IN	570.2	--
Louisville Gas & Electric Co. (Trimble Co.)	Louisville	KY	571.3	--
Colgate Palmolive Co.	Jeffersonville	IN	603.6	--
Public Service of Indiana (Gallagher)	New Albany	IN	610.0	--
Airco Carbide	Louisville	KY	612.7	--

INDUSTRIAL WATER INTAKES ALONG THE OHIO RIVER
Indicated on U.S. Army Corps of Engineers Ohio River Navigation Charts
(continued)

INTAKE	CITY	STATE	M.P.	<u>RIVER BANK*</u>
Louisville Gas & Electric Co. (Paddys Run)	Louisville	KY	613.0	--
E.I. DuPont Denemours & Co.	Louisville	KY	613.6	--
Louisville Gas & Electric Co. (Cane Run)	Louisville	KY	616.0	--
Louisville Gas & Electric Co.	Louisville	KY	616.6	--
Louisville Gas & Electric Co. (Mill Creek)	Louisville	KY	626.4	--
Kosmos Cement Co.	Kosmosdale	KY	627.0	--
Olin Corp.	Brandenburg	KY	644.0	--
Kosmos Cement Co.	Brandenburg	KY	654.1	--
Can-Tex Industries	Cannelton	IN	724.5	--
Big Rivers Electric Corp. (Coleman)	Henderson	KY	728.5	--
Indiana-Michigan Electric Co. (Rockport)	Rockport	IN	744.7	--
Owensboro Municipal Utilities (Elmer Smith)	Owensboro	KY	753.5	--
Owensboro Municipal Utilities (Elmer Smith)	Owensboro	KY	755.5	--
Southern Indiana Gas & Electric Co. (F.B. Culley)	Yankeetown	IN	773.0	--
Southern Indiana Gas & Electric Co. (Warrick)	Yankeetown	IN	773.5	--
ALCOA-Warrick Works	Yankeetown	IN	773.5	--
Southern Indiana Gas & Electric Co. (Ohio River)	Evansville	IN	793.8	--
Henderson Electric Power Co.	Henderson	KY	803.6	--
Agrico Chemical Co.	Henderson	KY	806.6	--
General Electric Co.	Mt. Vernon	IN	831.2	--
Island Creek Coal	Madisonville	KY	851.7	--
ALCOA	Rosiclare	IL	892.2	--
Tennessee Valley Authority (Shawnee)	Paducah	KY	946.0	--
Electric Energy, Inc. (Joppa)	Joppa	IL	952.1	--

POWER GENERATING FACILITIES ON THE OHIO RIVER

Mile Point	Operating Company	Station Name	Capacity (MW)	Fuel	Cooling	Average Withdrawal (MGD)
2.5	Duquesne Light	Brunet Island	204	Gas & Oil	NA	NA
15.3	Duquesne Light	F.R. Phillips	365	Coal	Once Through	234
34.0	Pennsylvania Power	Bruce Mansfield	2,505	Coal	Off Steam	45
34.9	Duquesne Light	Beaver Valley	1,646	Nuclear	Off Steam	58
53.0	Ohio Edison	W.H. Sammis	2,303	Coal	Once Through	1,094
57.5	Ohio Edison	Toronto	176	Coal	Once Through	111
76.5	Ohio Power (AEP)	Tidd	70	Coal	Once Through	131
76.5	Ohio Power/Buckeye Power (AEP)	Cardinal (1&2)	1,200	Coal	Once Through	1,165*
77.3	Buckeye Power (AEP)	Cardinal (Unit 3)	630	Coal	Off Steam	
102.0	Ohio Edison	R.E. Burger	544	Coal	Once Through	651
111.0	Ohio Power (AEP)	Kammer	713	Coal	Once Through	655
112.5	Ohio Power (AEP)	Mitchell	1,632	Coal	Off Steam	35
119.5	PPG Industries, Inc.	New Martinsville	124	Coal	Once Through	
126.4	City of New Martinsville, WV	Hannibal	34	Hydro	NA	NA
160.0	Monongahela	Pleasants	1,252	Coal	Off Steam	43
160.5	Monongahela	Willow Island	243	Coal	Once Through	198
176.8	Union Carbide	Marietta	200	Coal	Once Through	
237.5	Ohio Power (AEP)	Racine	48	Hydro	NA	NA
241.6	Central Op. Co. (AEP)	Phillip Sporn	1,050	Coal	Once Through	1,058
242.5	Appalachian Power (AEP)	Mountaineer	1,300	Coal	Off Steam	22
258.0	Ohio Power (AEP)	Gen. J.M. Gavin	2,600	Coal	Off Steam	173
260.0	Ohio Valley Electric Corp.	Kyger Creek	1,086	Coal	Once Through	1,109
341.0	City of Hamilton, OH	Greenup	72	Hydro	NA	NA
390.0	Dayton Power & Light	Killen	666	Coal	Off Steam	8
405.7	Dayton Power & Light	J.M. Stuart (1,2,&3), Unit 4	1,830	Coal	Once Through	839*
414.0	East Kentucky Power Cooperative	H.L. Spurlock	800	Coal	Off Steam	4
443.5	Cincinnati Gas & Electric	Zimmer	1,408	Coal	Off Steam	59
453.0	Cincinnati Gas & Electric	W.C. Beckjord	1,201	Coal	Once Through	758

POWER GENERATING FACILITIES ON THE OHIO RIVER

Mile Point	Operating Company	Station Name	Capacity (MW)	Fuel	Cooling	Average Withdrawal (MGD)
490.0	Cincinnati Gas & Electric	Miami Fort	260	Coal	Once Through	308*
495.5	Indiana & Michigan Power (AEP)	Tanners Creek	1,056	Coal	Off Steam	
510.0	Cincinnati Gas & Electric	East Bend	995	Coal	Once Through	1,093
531.5	PSI Energy	Markland	650	Coal	Off Steam	15
536.0	Kentucky Utilities	Ghent	55	Hydro	NA	NA
560.0	Indiana-Kentucky Electric Corp.	Clifty Creek	2,200	Coal	Off Steam	69
571.8	Louisville Gas & Electric	Trimble County	1,304	Coal	Once Through	1,267
606.8	Louisville Gas & Electric	Ohio Falls (McAlpine)	500	Coal	Off Steam	6
610.0	PSI Energy	Gallagher	80	Hydro	NA	NA
616.8	Louisville Gas & Electric	Cane Run	600	Coal	Once Through	244
			608	Coal	Once-Through	498
			140	Gas	Once-Through	108
625.9	Louisville Gas & Electric	Mill Creek	321	Coal	Once Through	242
			1,241	Coal	Off Steam	20
728.4	Big Rivers Electric Corp.	Coleman	485	Coal	Once Through	258
745.0	Indiana & Michigan Power (AEP)	Rockport	2,600	Coal	Off Steam	43
753.5	Owensboro Municipal Utilities	Elmer Smith	416	Coal	Once-Through	204
773.0	Southern Indiana Gas & Electric	F.B. Culley	397	Coal	Once-Through	284
773.5	Southern Indiana Gas & Electric	Warrick	720	Coal	Once Through	409
794.0	Southern Indiana Gas & Electric	Ohio River	135	Gas & Oil	NA	NA
803.6	City of Henderson, KY	Henderson**	38	Coal	Once Through	15
817.0	Southern Indiana Gas & Electric	A.B. Brown	500	Coal	Off Steam	4
946.0	Tennessee Valley Authority	Shawnee	1,750	Coal	Once-Through	1,066
952.3	Electric Energy, Inc.	Joppa	1,086	Coal	Once-Through	467

Total generating capacity, facilities operating 1/93: 44,649

* Combined flow for all units

** Plant discharge is source of supply for municipal water system

Information provided by ORSANCO Power Industry Advisory Committee

COMBINED SEWER OVERFLOWS ALONG THE OHIO RIVER

River Mile	Municipality	State	NPDES Expiration	Permitted CSOs	Lat/Long	CSO Plan	Comments
3.1	ALCOSAN	PA	9/30/98	3	For 194	None	No. of CSOs as high as 400
10.2	Coraopolis	PA	12/29/94	6	Yes	Required	Draft permit issued
12.3	Sewickley	PA	5/16/99	4	Yes	Due 9/16/96	One unpermitted CSO
14.2	Leetsdale	PA	6/03/96	6	Yes	None	
25.0	Rochester	PA	10/06/94	3	Yes	Required	Draft permit issued
25.6	Monaca	PA	12/29/94	6	No	None	
37.3	Midland	PA	2/05/95	1	No	None	
60.1	Toronto	OH	11/03/94	8	Yes	None	
68.0	Steubenville	OH	10/01/97	17	No	Due 3/1/94	
70.5	Follansbee	WV	8/23/95	4	No	Submitted	One unpermitted CSO
71.1	Mingo Junction	OH	10/31/94	6	No	None	Draft permit issued
74.7	Wellsburg	WV	5/13/95	9	No	Submitted	One unpermitted CSO
90.8	Wheeling	WV	9/09/95	216	Yes	Submitted	Three unpermitted CSOs
93.2	Benwood	WV	3/01/95	9	Yes	Due 11/15/93	
94.0	Belmont Co. SA#1	OH	2/25/98	47	No	Submitted	
96.5	McMechen	WV	4/18/95	3 (0)	Yes	Due 5/1/95	
99.5	Glen Dale	WV	10/23/95	1	Yes	Reviewed	
102.4	Moundsville	WV	11/18/95	5	Yes	Reviewed	
128.7	New Martinsville	WV	9/09/95	4	Yes	Reviewed	Revisions on plan required
133.2	Paden City	WV	10/10/99	1	Yes	Due 11/15/93	
138.2	Sistersville	WV	9/28/94	4	No	Reviewed	Draft permit issued
155.1	St. Mary's	WV	7/10/96	1	No	Required	Modification made to permit
181.4	Vienna	WV	7/06/94	1	No	None required	100% Sanitary with I/T?
183.3	Parkersburg	WV	9/26/94	0 (16)	Yes	None	SSOs, elimination by 2009
250.4	Pomeroy	OH	5/28/98	13	No	Due 6/2/94	
251.2	Middleport	OH	10/94	13	No	None	Draft permit issued
260.0	Point Pleasant	WV	6/09/94	2	1 of 2	Submitted	
313.2	Huntington	WV	9/26/94	23	Yes	Reviewed	
313.2	Kenova	WV	6/9/96	2	Yes	Reviewed	Waste pumped to Huntington
322.5	Ashland	KY	12/31/99	9	Yes	Due 3/1/96	Draft permit issued
327.4	Ironton	OH	4/01/97	9	Yes	Submitted	One unpermitted CSO
328.9	Worthington	KY	7/31/97	3	Yes	Due 11/1/93	
351.8	New Boston	OH	4/01/97	2	Yes	Reviewed	Revised plan submitted
356.0	Portsmouth	OH	7/31/99	9	Yes	Reviewed	Revised plan due 2/1/96
378.4	Vanceburg	KY	9/30/98	5	Yes	Due 1/1/95	
411.8	Maysville	KY	9/30/99	14	Yes	Due 1/1/96	
464.5	Hamilton Co.	OH	7/28/97	240	Yes	Due 8/1/94	
477.4	Bellevue	KY	6/30/99	15	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Bromley	KY	6/30/99	4	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Covington	KY	6/30/99	86	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Dayton	KY	6/30/99	9	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Ft. Wright	KY	6/30/99	4	Yes	Due 10/1/95	Will join Sanitation District 7/1/95

COMBINED SEWER OVERFLOWS ALONG THE OHIO RIVER

River Mile	Municipality	State	NPDES Expiration	Permitted CSOs	Lat/Long	CSO Plan	Comments
477.4	Ludlow	KY	6/30/99	8	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Newport	KY	6/30/99	20	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Park Hills	KY	6/30/99	10	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
477.4	Taylor Mill	KY	6/30/99	1	Yes	Due 10/1/95	Will join Sanitation District 7/1/95
493.0	Aurora	IN	<i>9/30/84</i>	6	No	None	Waste to South Dearborn
545.0	Carrollton	KY	5/31/96	0	No	None	Three unpermitted CSOs Separation by 1994
558.8	Madison	IN	11/30/95	5	No	Approved	Three unpermitted
604.1	Jeffersonville	IN	<i>9/30/92</i>	16	Yes	Submitted	Four of 16 CSOs are emergency
612.0	Louisville	KY	3/31/97	120	Yes	Approved	
726.6	Tell City	IN	<i>5/13/92</i>	7	No	Reviewed	
746.2	Rockport	IN	2/28/98	2	No	<i>Due 2/3/94</i>	
754.6	Owensboro	KY	7/31/96	4	Yes	None	
792.5	Evansville East	IN	<i>10/31/94</i>	7	Yes	Submitted	CSO Plan for Evansville East
794.0	Evansville West	IN	<i>10/31/94</i>	15	Yes	Submitted	and West submitted as one
806.0	Henderson	KY	10/31/99	16	Yes	Due 2/1/96	
829.0	Mt. Vernon	IN	6/30/96	4	No	Reviewed	
891.5	Rosiclare	IL	6/30/98	1	No	<i>Due 4/15/94</i>	
936.0	Paducah	KY	7/31/96	12	Yes	Approved	
944.0	Metropolis	IL	9/30/96	1	Yes	Submitted	CSO Plan not approved yet
979.0	Cairo	IL	1/31/95	3	No	Submitted	CSO Plan not approved yet

As of 12/05/94

SUMMARY

Shaded areas indicate changes made from the September 1994 Status Report CSO listing. Previous CSO numbers are shown in parentheses, with the current CSO numbers to the left.

There are 59 municipalities with a total of 1085 permitted CSOs. In addition, there are 8 municipalities with 17 unpermitted CSOs, excluding the ALCOSAN service area. If the estimates for the Pittsburgh area are accurate, the total number of unpermitted CSOs would increase to 415. There are an estimated total of 1500 CSOs from 60 municipalities along the Ohio River.

There are 14 facilities with expired NPDES Permits, shown above in italics and bold print. Two additional permits will expire by the end of 1994. Of these, draft permits have been issued to five facilities.

ORSANCO has retrieved latitude/longitude information for 42 municipalities and 1082 CSOs.

CSO minimization plans have been completed and submitted to their respective states by 23 municipalities. Only 3 have been approved by the appropriate state agency. ORSANCO has received each of these plans. In addition, the submittal dates for eight facilities have passed, and their plans are now overdue.

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
2.5	PA0031933	Duquesne Light Co	Brunot Island Power Station	Pittsburgh	PA
3.1	PA0025984	Allegheny County Sanitary Auth	ALCOSAN WWTP*	Pittsburgh	PA
4.0	PA0094528	United States Steel Corp	Wheel and Axle Plant	McKees Rocks	PA
4.5	PA0004481	Park Corp	Homestead Works	Homestead	PA
5.1	PA0091774	Marquette Co	Marquette Cement Plant	Neville Township	PA
5.3	PA0091227	Calgon Carbon Corp	Neville Island Plant	Neville Township	PA
6.4	PA0041602	Exxon Co, USA	Neville Island Terminal	Pittsburgh	PA
6.6	PA0004979	Neville Chemical Co		Neville Township	PA
6.7	PA0001538	Dravo Corp	Engineering Works Division	Neville Township	PA
6.8	PA0003832	Aristech Chemical Corp	Neville Island Plant	Neville Island	PA
7.0	PA0094722	Tapco Inc.	Tapco Processing Plant	Neville Township	PA
7.7	PA0002861	AMG Resources Corp	Neville Island	Neville Township	PA
8.0	PA0002437	Shenango, Inc.	Shenango Coke and Iron Divisio	Neville Township	PA
8.1	PA0002445	Shenango, Inc.	Neville Island Foundry Division	Neville Township	PA
9.5	PA0028801	Moon Township Mun Auth	Montour Run WWTP	Moon Township	PA
10.2	PA0026352	Coraopolis Mun San Auth	Coraopolis WWTP	Coraopolis	PA
10.7	PA0003816	Boron Oil Co	Coraopolis Terminal	Coraopolis Borough	PA
10.8	PA0000779	Pittsburgh Forgings Co	Metals Fabrication Plant	Coraopolis Borough	PA
10.9	PA0002984	Star Enterprise	Pittsburgh Sales Terminal	Coraopolis Borough	PA
12.3	PA0020681	Borough of Sewickley	Sewickley WWTP	Sewickley Borough	PA
15.2	PA0001619	Duquesne Light Co	F.R. Philips Power Station	Crescent Township	PA
15.5	PA0000566	Hussey Copper Ltd.		Leetsdale	PA
15.8	PA0023159	Crescent-South Heights Mun Auth	Crescent-South Heights WWTP	South Heights Borough	PA
16.0	PA0006335	Babcock & Wilcox	Ambridge Plant	Ambridge Borough	PA
17.0	PA0006114	LTV Steel Company, Inc.	Aliquippa Works	Aliquippa	PA
17.5	PA0027146	Borough of Ambridge Mun Auth	Ambridge Borough WWTP	Ambridge Borough	PA
17.5	PA0003000	H.H. Robertson Co	Ambridge Division Plant	Ambridge Borough	PA
18.9	PA0204315	J & L Structural, Inc.	14" Products Mill	Aliquippa	PA
20.3	PA0028410	Mun Auth of the Borough of Bade	Baden WWTP	Baden Borough	PA
20.6	PA0025968	Mun Water Auth of Aliquippa	Aliquippa WWTP	Aliquippa Borough	PA
21.6	PA0036609	Conway Borough Mun Auth	Conway Borough WWTP	Conway	PA

* WWTP - Waste Water Treatment Plant

** WTP - Water Treatment Plant

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
23.1	PA0002585	Teledyne Vasco Colonial Plant		Monaca	PA
23.9	PA0005819	Ampco Pittsburgh Corp	Colona Division Plant	Monaca Borough	PA
24.0	PA0001295	Ashland Petroleum Co	Freedom Refinery	Freedom Borough	PA
24.2	PA0034665	Superior Drawn Steel Co	Monaca Plant	Monaca	PA
25.3	PA0026140	Rochester Area Joint Sewer Auth	Rochester Area WWTP	Rochester Borough	PA
25.6	PA0002046	Teledyne Pittsburgh Tool Steel		Monaca	PA
25.6	PA0020125	Monaca Borough Mun Auth	Monaca WWTP	Monaca Borough	PA
26.2	PA0024694	Beaver Borough Mun Auth	Beaver Borough WWTP	Beaver Borough	PA
28.1	PA0023698	Vanport Township Mun Auth	Vanport WWTP	Vanport	PA
28.2	PA0000523	Ashland Petroleum Co	Vanport Terminal	Vanport	PA
28.5	PA0002208	Zinc Corp of America	Monaca Smelting Div	Potter Township	PA
29.4	PA0001236	Westinghouse Electric Corp		Vanport Township	PA
29.6	PA0092223	Polysar Latex	Monaca Plant	Potter Township	PA
29.7	PA0006254	ARCO Chemical Co	Beaver Valley Plant	Potter Township	PA
29.7	PA0204579	ARCO Chemical Co	Groundwater Remediation at Beaver Valley Plant	Potter Township	PA
32.9	PA0204676	Borough of Industry	Industry WWTP	Industry	PA
33.7	PA0027481	Pennsylvania Power Co	Bruce Mansfield Plant	Shippingport Borough	PA
33.8	PA0002488	The Standard Aggregates Co		Georgetown	PA
34.5	PA0001589	Department of Energy	Shippingport Atomic Power Sta	Shippingport Borough	PA
34.9	PA0025615	Duquesne Light Co	Beaver Valley Power Sta	Shippingport Borough	PA
35.0	PA0027707	Duquesne Light Co	Beaver Valley Unit No.2	Shippingport Borough	PA
35.2	PA0204013	Ashland Petroleum Co	Midland Terminal	Industry Borough	PA
36.3	PA0005754	J&L Specialty Products Corp	Midland Works	Midland	PA
36.4	PA0097870	LTV Steel Co	Midland Works	Midland Borough	PA
37.3	PA0023701	Midland Borough Mun Auth	Midland WWTP	Midland	PA
40.1	OH0011410	The Hall China Co		East Liverpool	OH
41.7	OH0107298	Waste Technologies Industries		East Liverpool	OH
42.2	WV0004685	Taylor, Smith & Taylor Co		Chester	WV
42.4	WV0005223	The Celotex Corp		Chester	WV
43.3	WV0021768	City of Chester	Chester WWTP	Chester	WV
44.6	OH0024970	City of East Liverpool	East Liverpool WWTP	East Liverpool	OH
45.1	WV0041653	Shippingport Sand & Gravel Co	Iron City Plant	Newell	WV
45.3	WV0004561	Newell Porcelain Co		Newell	WV

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
45.5	WV0004570	The Homer Laughlin China Co		Newell	WV
45.5	WV0004774	Glove Refractories, Inc		Newell	WV
45.7	WV0027502	The Newell Co		Newell	WV
46.2	OH0030341	City of East Liverpool	East Liverpool WTP** (Water Plant Discharge)	East Liverpool	OH
47.4	WV0004626	Quaker State Oil Refining Corp	Congo Plant	Newell	WV
47.6	OH0028045	City of Wellsville	Wellsville WWTP	Wellsville	OH
48.6	OH0029068	Ashland Petroleum Co	Wellsville Terminal	Wellsville	OH
49.2	OH0012327	Sterling China Co	WWTP	Wellsville	OH
49.6	OH0064157	Wellsville Storage & Transp Term		Wellsville	OH
50.5	OH0094170	McCourt Mining Co		Saline Township	OH
53.9	OH0011525	Ohio Edison Co	W.H. Sammis Plant	Stratton	OH
54.9	OH0022225	Village of Stratton	Stratton WWTP No.1	Empire	OH
55.0	OH0099350	B. and S. Resources Inc		Knox Township	OH
55.0	OH0059374	Village of Stratton	Stratton WWTP No.2	Stratton Heights	OH
55.6	OH0050539	Village of Empire	Empire WWTP	Empire	OH
57.4	WV0079103	CM Tech, Inc		New Cumberland	WV
57.5	OH0011568	Ohio Edison Co	Toronto Plant	Toronto	OH
57.6	WV0025119	City of New Cumberland	New Cumberland WWTP	New Cumberland	WV
59.1	OH0059234	City of Toronto	Toronto WTP	Toronto	OH
59.2	OH0011738	Valley Converting Co, Inc		Toronto	OH
60.1	OH0020214	City of Toronto	Toronto WWTP	Toronto	OH
60.5	OH0010910	Titanium Metals Corp, Timet Div	Toronto Plant	Toronto	OH
61.5	WV0070084	International Mill Services, Inc		Weirton	WV
62.4	WV0004391	Air Products & Chemicals Inc		Weirton	WV
62.5	WV0003336	Weirton Steel Corp		Weirton	WV
64.1	OH0011886	Barium & Chemicals Inc		Island Creek Township	OH
64.9	WV0071129	Petroleum Fuel & Terminal Co		Weirton	WV
65.2	WV0070971	City of Weirton	Weirton WTP	Weirton	WV
65.8	WV0003425	Sidnode Consumable Prod Operation		Weirton	WV
66.0	WV0091367	Weirton Ice & Coal Supply Co		Weirton	WV
66.2	WV0023108	City of Weirton	Weirton WWTP	Weirton	WV
68.0	OH0027511	City of Steubenville	Steubenville WWTP	Steubenville	OH
68.6	OH0010774	Weirton Steel Corp	Steubenville Plant	Steubenville	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
68.7	OH0011347	Wheeling Pittsburgh Steel Corp	Steubenville North Plant	Steubenville	OH
68.8	WV0004499	Wheeling Pittsburgh Steel Corp	Steubenville East Coke Plant	Follansbee	WV
69.3	WV0004588	Koppers Co, Inc	Follansbee Plant	Follansbee	WV
69.7	WV0023281	Wheeling Pittsburgh Steel Corp	Steubenville East Sinter Plant	Follansbee	WV
70.0	WV1007238	West Virginia Energy, Inc	Loading Dock	Fairmont	WV
70.3	WV0004502	Wheeling-Nisshin, Inc		Follansbee	WV
70.6	WV0020273	City of Follansbee	Follansbee WWTP	Follansbee	WV
70.7	WV0075060	Hooverson Heights PDS	Hooverson Heights WTP	Follansbee	WV
70.7	OH0011355	Wheeling-Pittsburgh Steel Corp	Steubenville South Plant	Mingo Junction	OH
71.1	OH0029904	Village of Mingo Junction	Mingo Junction WTP	Mingo Junction	OH
72.5	WV1002554	Starvaggi Industries, Inc.	Wellsburg Dock & Stockpile Fac	Wellsburg	WV
73.0	WV0071196	Eagle Manufacturing Co.		Wellsburg	WV
73.6	WV0070289	Genpak Corp.		Wellsburg	WV
73.8	WV0005118	S. George Co.		Wellsburg	WV
74.4	WV0004430	Banner Fiberboard Co.		Wellsburg	WV
74.5	OH0099333	Village of Brilliant	Brilliant WTP	Brilliant	OH
74.7	WV0026832	City of Wellsburg Water & Sewer	Wellsburg WWTP	Wellsburg	WV
76.0	OH0021270	Village of Brilliant	Brilliant WWTP	Brilliant	OH
76.0	OH0099236	American Elec Pwr-Ohio Power C	Tidd Pressurized Fluidized Bed Combustion Demonstration Plant	Wells Township	OH
76.3	OH0012602	Ohio Power Co.	Tidd Plant	Brilliant	OH
76.5	OH0012581	Cardinal Operating Co.	Cardinal Plant	Wells Township	OH
77.7	OH0096164	W.B. Coal Co.		Tiltonsville	OH
78.5	WV0084182	Brooke County PSD	Beech Bottom WWTP	Beech Bottom	WV
79.4	WV0004511	Wheeling-Pittsburgh Steel Corp.	Beech Bottom Plant	Beech Bottom	WV
80.0	WV0065790	Windsor Power House Coal Co.		Windsor Heights	WV
80.7	OH0090891	Village of Tiltonsville	Tiltonsville WWTP	Tiltonsville	OH
80.9	OH0089028	Ohio Coal & Construction Co.		Warren Township	OH
81.0	OH0098973	Ohio Coal & Construction Co.		Wintersville	OH
81.0	OH0076597	Ohio Coal & Construction Co.	Warrenton Prep. & Loading Faci	Warrenton	OH
81.8	OH0012343	Tri-State Asphalt Corp.	Warrenton Terminal	Warren Township	OH
83.0	OH0041611	Village of Tiltonsville	Tiltonsville WTP	Tiltonsville	OH
83.6	OH0030767	Yorkville Waterworks	Yorkville WTP	Yorkville	OH
83.7	OH0011371	Wheeling-Pittsburgh Steel Corp.	Yorkville Plant	Yorkville	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
84.3	OH0087009	Ohio Coal & Construction Co.		Pease Township	OH
85.0	OH0088587	Marietta Coal Co.		Pease Township	OH
86.4	OH0097578	Marietta Coal Co.		Pease Township	OH
86.4	WV0039764	Warwood Tool Co.		Wheeling	WV
86.6	OH0097918	Ohio Coal & Construction Corp.		Pease Township	OH
86.6	OH0100609	R & F Coal Co.	Bellaire Dock WWTP		OH
86.8	WV0071366	City of Wheeling	Wheeling WTP	Wheeling	WV
87.1	WV0005002	Wheeling Stamping Co.		Wheeling	WV
87.2	OH0093777	Ohio Coal & Construction Corp.	WWTP	Pease Township	OH
87.8	OH0011339	Wheeling-Pittsburgh Steel Corp.	Martins Ferry Plant	Martins Ferry	OH
88.3	WV0026387	Uno - Ven Co.		Wheeling	WV
89.0	WV0004529	Wheeling-Pittsburgh Steel Corp.	Benwood Plant	Benwood	WV
90.2	OH0032433	City of Bridgeport	Bridgeport WTP	Bridgeport	OH
90.6	WV0005282	L. Niebergall Ice & Freezer Storage		Wheeling	WV
90.8	WV0023230	City of Wheeling	Wheeling WWTP	Wheeling	WV
92.6	OH0097586	Marietta Coal Co.		Bellaire	OH
92.7	OH0059889	R & F Coal Co.	Bellaire Terminal	Bellaire	OH
93.2	WV0020648	City of Benwood	Benwood WWTP	Benwood	WV
93.8	WV0020770	Consolidation Coal Co.	Ohio Valley Div-Shoemaker Min	Benwood	WV
94.0	OH0049999	Belmont Co. Sewer Authority	Belmont County WWTP	Bellaire	OH
94.3	WV0020796	Consolidation Coal Co.	Ohio Valley Div-Shoemaker Min	Benwood	WV
95.0	WV0004863	The Baltimore & Ohio Railroad	Benwood Yard	Benwood	WV
96.5	WV0020141	City of McMechen	McMechen WWTP	McMechen	WV
97.0	OH0041947	Village of Shadyside	Shadyside WTP	Shadyside	OH
97.6	OH0027383	Village of Shaydside	Shadyside WWTP	Shadyside	OH
100.5	WV0004693	Triangle PWC, Inc.	Glen Dale Facility	Glendale	WV
102.4	WV0020036	City of Glen Dale	Glen Dale WWTP	Glendale	WV
102.4	WV0023264	City of Moundsville	Moundsville WWTP	Moundsville	WV
102.5	OH0011592	Ohio Edison Co.	R.E. Burger Plant	Shadyside	OH
103.0	OH0010839	Shadyside Stamping Corp.		Mead Township	OH
104.9	WV0004413	Olin Corp.	Olin Chemicals	Moundsville	WV
106.1	WV0004405	LCP Chemicals of WV, Inc.		Moundsville	WV
106.5	OH0076040	James Tonkovich, Inc.		Dilles Bottom	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
107.6	WV0081612	Marshall County Sewer District	Marshall County WWTP	Glendale	WV
109.5	OH0027219	Village of Powhatan Point	Powhatan Point WWTP	Powhatan Point	OH
110.5	OH0012122	Ohio Ferro-Alloys Corp.	Powhatan Point Plant	Powhatan Point	OH
111.1	WV0005291	Ohio Power Co.	Kammer Plant	Moundsville	WV
111.2	OH0001681	North American Coal Corp.	Powhatan No. 1 Mine	York Township	OH
111.3	WV0020834	Consolidation Coal Co.	Moundsville Operation	Cresap	WV
112.1	WV0004642	Conoco, Inc.		Moundsville	WV
112.3	WV0020818	Consolidation Coal Co.	McElroy Mine	Cresap	WV
112.6	WV0005304	Ohio Power Co.	Mitchell Plant	Moundsville	WV
112.8	WV0071897	Reed Minerals	Reed Mineral Division	Captina	WV
114.7	WV0020010	Columbian Chemicals Co.		Franklin	WV
115.5	OH0012211	Quarto Mining Co.	Mine No. 4	Switzerland Township	OH
116.5	OH0021636	The Village of Clarington	Village of Clarington WWTP	Clarington	OH
119.7	WV0004359	PPG Industries, Inc.	Natrium Plant	Natrium	WV
121.0	WV0004383	Air Products and Chemicals Inc.		Proctor	WV
121.3	WV0005169	Miles Inc.		New Martinsville	WV
123.5	OH0011550	Ormet Corp.	Hannibal Plant WWTP	Hannibal	OH
123.7	OH0010855	Consolidated Aluminum Corp.		Ohio Township	OH
126.0	OH0048704	Ohio & Lee Twp Water & Sewer	Lee Township WWTP	Lee Township	OH
127.8	OH0091103	Ohio Dept. of Transportation	Duffey Outpost Bldg.	Duffey	OH
128.4	WV0000337	Baltimore & Ohio Railroad	Brooklyn Jct.	New Martinsville	WV
128.7	WV0027472	City of New Martinsville	New Martinsville WWTP	New Martinsville	WV
133.2	WV0020613	City of Paden City	Paden City WWTP	Paden City	WV
138.2	WV0021814	City of Sistersville	Sistersville WWTP	Sistersville	WV
142.6	WV0048861	Friendly Public Service Dist.	Friendly WWTP	Friendly	WV
142.8	OH0059323	Frontier Board of Education	Frontier High School WWTP	Grandview Township	OH
145.0	WV0000094	Union Carbide Chemicals & Plasti	Sistersville Facility	Sistersville	WV
150.9	WV0051268	WV Dept. of Health	Colin Anderson Center	St. Marys	WV
155.1	WV0020168	City of St. Marys	St. Marys WWTP	St. Marys	WV
155.4	WV0001805	Phoenix Refining Co.	St Marys Plant	St. Marys	WV
157.7	WV0024490	City of Belmont	Belmont WWTP	Belmont	WV
159.5	OH0099449	Ohio Oil Gathering Corp.	Bells Run Terminal WWT Work	Newport Township	OH
160.5	WV0000761	Allegheny Power Service Corp.	Willow Island Power Sta.	Willow Island	WV

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
160.6	WV0023248	Monongahela Power Co.	Pleasants Power Station	Willow Island	WV
161.0	WV0000787	American Cyanamid Co.	Willow Island Facility	Willow Island	WV
163.0	OH0041173	Newport Water & Sewer Assoc.	Newport Water & Sewer WWTP	Newport Township	OH
163.7	WV0001210	Cabot Corp.	Ohio River Valley Plant	Waverly	WV
171.0	OH0026344	City of Marietta	Marietta WWTP	Marietta	OH
172.2	OH0104035	Super America, Inc.	Station No. 5237	Marietta	OH
172.2	WV0022071	Williamstown, City of	Williamstown WWTP	Williamstown	WV
172.7	WV0054259	Fenton Art Glass Co.		Williamstown	WV
173.5	OH0059919	Marietta Industrial Enterprises Inc.	Dockside Inc. Division	Marietta	OH
174.9	OH0048747	Ashland Petroleum Co.	Marietta Terminal No. 1	Marietta	OH
175.0	OH0005070	Koch Materials Co.		Marietta	OH
175.1	OH0008974	Ashland Oil Co.	Marietta Terminal	Marietta	OH
175.3	OH0076830	Par Mar Oil Co., Inc.		Marietta	OH
175.8	WV0084221	Central Boaz Public Service Dist.	Central Boaz WWTP	Parkersburg	WV
175.9	OH0003905	Amoco Performance Products Inc.		Marietta	OH
176.9	OH0099252	Praxair, Inc.	Linde Division	Warren Township	OH
176.9	OH0004006	Elkem Metal Co.	Marietta Plant	Marietta	OH
179.2	OH0006751	Chevron Asphalt Co.	Marietta Terminal	Constitution	OH
180.3	WV0001422	Manville Building Materials Corp.		Vienna	WV
180.5	WV0002691	Texaco, Inc.		Vienna	WV
181.4	WV0023221	City of Vienna	Vienna WWTP	Vienna	WV
181.5	WV0003158	Diamond Glass Co.		Vienna	WV
183.2	WV0025011	City of Parkersburg	Parkersburg WTP	Parkersburg	WV
183.3	WV0023213	City of Parkersburg Sanitary Board	Parkersburg WWTP	Parkersburg	WV
183.5	WV0045250	Pennzoil Co.		Parkersburg	WV
184.9	WV0035394	WV Dept. of Highways	WWTP	Marrton	WV
185.7	OH0020621	City of Belpre	Belpre WWTP	Belpre	OH
187.0	OH0007030	Shell Chemical Co.	Belpre Plant	Belpre	OH
189.7	OH0041335	Ohio Power Co.	Belpre Coal Terminal	Belpre	OH
190.5	WV0001279	El duPont de Nemours & Co.	Washington Works	Parkersburg	WV
191.4	WV0100200	Distribution Centers of Parkersburg	WWTP	Washington	WV
191.5	WV0000841	GE Chemicals, Inc.		Washington	WV
192.5	WV0001392	Ohio River Sand & Gravel		Parkersburg	WV

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
192.9	WV0073202	EI duPont deNemours & Co.	Warehouse Facility	Parkersburg	WV
193.0	WV0001775	AGA Gas Inc.		Washington	WV
193.0	WV0000671	American Metal Climax, Inc.	Amax Specialty Metals Corp.	Parkersburg	WV
210.8	OH0030643	Tuppers Plains	Chester Water Plant	Long Bottom	OH
220.2	WV0021989	City of Ravenswood	Ravenswood WWTP	Ravenswood	WV
222.0	WV0000779	Ravenswood Aluminum Corp.	Ravenswood Works	Ravenswood	WV
229.0	WV0110175	Plasma Processing Corp.		Ravenswood	WV
231.5	WV0046434	McCoy Development Corp.	Millwood Subdivision WWTP	Millwood	WV
231.6	OH0000000	Tri-State Materials Corp.	Apple Grove Plant	Apple Grove	OH
234.2	OH0004413	The Shelly Co.	Richards & Son, Inc.	Letart Falls	OH
235.7	WV0092100	Jesco Corp.	Sand and Gravel Mining	Letart	WV
237.5	OH0059561	Ohio Power Co.	Racine Hydroelectric Plant	Racine	OH
241.6	WV0000426	Foote Mineral Co.		New Haven	WV
241.7	WV0001058	Central Operating Co.	Phillip Sporn Plant	New Haven	WV
242.0	OH0085014	Coal Power, Inc.		Sutton Township	OH
242.1	WV0048500	Appalachain Power Co.	Mountaineer Plant	New Haven	WV
243.0	OH0050661	Syracuse-Racine Reg. Sewer Dist.	Syracuse-Racine WWTP	Sutton Township	OH
245.6	WV0032531	Town of New Haven	New Haven WWTP	New Haven	WV
250.4	OH0021725	Village of Pomeroy	Pomeroy WWTP	Pomeroy	OH
250.7	WV0021849	Town of Mason	Mason WWTP	Mason	WV
252.1	OH0026514	Village of Middleport	Middleport WWTP	Salisbury Township	OH
256.3	OH0060020	Jay Mar Coal Co.		Cheshire	OH
256.3	WV0081353	WV Dept. of Health	Lakin State Hospital WWTP	Lakin	WV
257.6	OH0041149	Village of Cheshire	Cheshire WWTP (Proposed)	Cheshire	OH
258.1	OH0023762	Ohio Power Co.	James Gavin Plant	Cheshire	OH
260.0	OH0005282	Ohio Valley Elec. Corp.	Kyger Creek Station	Cheshire	OH
260.0	WV0000370	Pantasote Co.	Pt. Pleasant		WV
260.0	WV0075736	Pt. Pleasant Water Works	Pt. Pleasant WTP	Pt. Pleasant	WV
260.2	WV0086886	Camp Conley Public Service	Camp Conley WWTP	"near" Pt. Pleasant	WV
262.0	OH0051063	Gallipolis Hospitality, Inc.	Holiday Inn-Gallipolis WWTP	Gallipolis	OH
263.0	OH0059692	Conrich of Ohio		Addison	OH
264.1	OH0060003	Lamay Industries		Addison	OH
264.5	OH0099716	Middleport Terminal, Inc.		Kanauga	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
265.0	OH0060151	Zinn Coal Company, Inc.		Gallipolis Township	OH
265.4	WV0112046	Hartley Marine Corp.	Hartley Marine WWTP	Pt. Pleasant	WV
266.0	OH0030091	Save More Service Station	Save More Service Station	Kanauga	OH
268.5	OH0006416	Gallia Co. Rural Water Assoc.	Gallia County WTP	Addison Township	OH
269.7	OH0020478	City of Gallipolis	Gallipolis WWTP	Gallipolis	OH
273.0	WV0002496	AKZO Chemicals Inc.		Gallipolis Ferry	WV
273.5	OH0060186	Clipper Mills Docking Co.		Clipper Mills	OH
274.5	WV0074799	Mason County Public Service Dist.	Mason County WTP	Gallipolis Ferry	WV
279.0	WV0101761	U.S. Army Corps of Engineers	Gallipolis Ferry WWTP	Gallipolis Ferry	WV
281.0	WV0000132	Shell Chemical Co.	Pt. Pleasant Polyester Plant	Apple Grove	WV
292.2	OH0075850	Crown Coal Co.		Crown City	OH
293.8	WVG550248	Green Acres Regional Center Inc.	Green Acres Region Center WW	Lesage	WV
296.7	WV0088846	W.Scott Bias/Riverside MHP	WW Mobile Home Park WWTP	Lesage	WV
299.2	WV0033120	Cabell County Board of Education	Cox's Landing JHS WWTP	Lesage	WV
299.3	WVG550004	Cabell County Board of Education	Cox's Landing Elem. School W	Lesage	WV
301.0	WV0104647	YMCA Glenbrier		Huntington	WV
301.0	WV0034860	Glenbrier Limited Partnership c/o First American Management	WWTP	Huntington	WV
301.3	WV0089524	Ohio R. Sewer Proj. Homeowners	WWTP	Huntington	WV
302.5	OH0059951	Montrose Commercial Developme	WWTP	Proctorville	OH
303.5	WV0032484	Chevron Huntington Light Oil	Huntington Terminal	Huntington	WV
304.0	WVG550014	Cabell County Board of Education	Cabell County School Warehous	Fuyandotte	WV
306.5	WV0034886	Kyle Industrial Park Users Inc.		Lesage	WV
306.9	WV0000159	WV-American Water Co.	Huntington WTP	Huntington	WV
309.2	OH0024376	Village of Chesapeake	Chesapeake WWTP (proposed)	Chesapeake	OH
311.0	WV0045241	Penzoil Storage Facility		Huntington	WV
313.1	OH0094684	Lawrence Co. Bd of Commissioner	Eastern Lawrence Co. SD WWT	Chesapeake	OH
313.2	WV0021873	Town of Ceredo	Ceredo WWTP	Ceredo	WV
313.2	WV0023159	City of Huntington Sanitary Board	Huntington WWTP	Huntington	WV
314.7	WV0064238	Oglebay Norton Co.		Ceredo	WV
315.4	WV0027090	Sun Oil Co.		Kenova	WV
315.7	WV0035912	City of Kenova	Kenova WWTP	Kenova	WV
316.8	WV0064360	American Commercial Terminals		Kenova	WV
317.0	OH0021814	Village of South Point	South Point WWTP	South Point	OH

River Mile	Permit Number	Facility Description	Plant Name	City	State
317.1	KY0000388	Ashland Oil, Inc.	Catlettsburg Refinery	Catlettsburg	KY
317.1	KY0035467	City of Catlettsburg	Catlettsburg WWTP	Catlettsburg	KY
318.2	KY0000370	Ashland Oil Co.	Marine Repair Terminal	Catlettsburg	KY
318.3	OH0007714	Ashland Oil Co.	South Point Plant	South Point	OH
318.4	OH0076392	South Point Ethanol		South Point	OH
318.5	KY0041602	Leon Coal Co.		Ashland	KY
318.6	OH0076082	Tri-State Terminals, Inc.	South Point Ethanol WWTP	South Point	OH
319.0	KY0058122	Chevron USA, Inc.	Ashland Terminal	Ashland	KY
319.9	OH0076856	Lowman Dock, Inc.	Barge Loading Terminal	South Point	OH
320.3	KY0000558	Armco Inc.	Ashland Coke Plant	Ashland	KY
321.0	KY0026930	Chesapeake & Ohio Railroad	Ashland Yard	Ashland	KY
321.1	KY0000931	Mansbach Metal Co.		Ashland	KY
322.0	KY0060399	Armco Steel Co.	Norton Foundry	Ashland	KY
322.5	KY0022373	City of Ashland	Ashland WWTP	Ashland	KY
323.8	OH0060097	Oliver Elam Jr., Inc.		Coal Grove	OH
324.0	OH0029432	Village of Coal Grove	Coal Grove WWTP	Coal Grove	OH
324.4	OH0076619	Ironton Coal Co., Addington Inc.	Ironton Coal Loading Facility	Ironton	OH
324.5	OH0007579	Iron City Fuels, Inc.	Ironton Coke Plant	Ironton	OH
324.9	OH0059897	Rail River Terminal		Ironton	OH
325.0	OH0007544	Allied Signal Inc.	Ironton Tar Processing Plant	Ironton	OH
325.1	OH0006017	Ironton Iron Inc.		Ironton	OH
325.1	OH0099422	Amcast Industrial Corp. Peerless Div.		Ironton	OH
326.0	KY0000485	ARMCO Steel Co., L.P.	Ashland Works	Ashland	KY
326.4	KY0000124	CSX Transportation	Russell Yard	Russell	KY
326.8	OH0107638	Rich Oil, Inc.		Ironton	OH
327.1	OH0008516	City of Ironton	Ironton WTP	Ironton	OH
327.2	OH0025852	City of Ironton	Ironton WWTP	Ironton	OH
327.3	KY0041190	Boyd and Greenup Counties	Sanitation Dist. No. 1 WWTP	Russell	KY
327.5	OH0076821	Penn Properties Inc.	Barge Loading Terminal	Ironton	OH
327.8	KY0022918	City of Flatwoods	Flatwoods WWTP	Russell	KY
327.9	KY0048348	Greenup Co. Environmental Com	Greenup County WWTP	Russell	KY
328.9	KY0022926	City of Worthington	Worthington WWTP	Worthington	KY
329.6	OH0076252	McGovern Ready Mix, Inc.	Hanging Rock Plant	Hanging Rock	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
330.0	OH0094358	Collins Mining Co.		Ironton	OH
331.2	OH0060119	Superior River Coal Co.			OH
332.0	OH0094927	Bel Docking II		Glendale	OH
332.0	OH0007391	Aristech Chemical Corp.	Haverhill Plant	Haverhill	OH
332.5	KY0092975	City of Wurtland	Wurtland WTP	Wurtland	KY
332.6	KY0094790	PCI, Inc.		Wurtland	KY
333.2	KY0000493	EI duPont deNemours & Co.	Wurtland Plant	Wurtland	KY
333.5	OH0099309	Dow Chemical Co., USA	Hanging Rock Plant	Ironton	OH
335.5	KY0048437	Bluegrass Mining	Greenup Dock	Greenup	KY
336.4	KY0026450	City of Greenup	Greenup WWTP	Greenup	KY
341.0	KY0069256	Tennessee Gas Pipeline			KY
342.8	OH0059447	Scioto Co. Bd of Commissioners	Portsmouth Industrial Park WW	Franklin Furnace	OH
345.0	OH0060011	Bel Docking Corp.		Wheelersburg	OH
347.2	OH0060089	Standard LaFarge Co.	Wheelersburg Dock	Wheelersburg	OH
349.0	OH0027201	City of Portsmouth	Sciotoville WWTP	Portsmouth	OH
349.2	OH0050962	British Petroleum Oil Co.	Sciotoville Terminal WWTP	Sciotoville	OH
350.8	OH0008621	Village of Portsmouth	Portsmouth WTP	New Boston	OH
351.2	OH0006068	New Boston Coke Corp.		New Boston	OH
351.8	OH0020613	Village of New Boston	New Boston WWTP	New Boston	OH
353.8	KY0026131	City of South Shore	South Shore WWTP	South Shore	KY
355.5	OH0006238	Dayton-Walther Corp.	Portsmouth Div.	Portsmouth	OH
355.8	OH0005266	Norfolk Southern Corp.	Norfolk & Western Railway Co.	Portsmouth	OH
356.0	OH0027197	City of Portsmouth	Lawson Run WWTP	Portsmouth	OH
363.2	OH0048305	Ohio Dept. of Natural Resources	Shawnee State Park Marina WW	Niles Township	OH
378.4	KY0021512	Vanceburg Utilities System	Vanceburg WWTP	Vanceburg	KY
397.0	OH0031810	Adams County Water Co.	Adams County WTP	Manchester	OH
397.8	OH0020842	Village of Manchester	Manchester WWTP	Manchester	OH
400.0	OH0023825	Village of Aberdeen	Aberdeen WWTP	Aberdeen	OH
403.8	KY0084298	Wald Manufacturing Co., Inc.	Disposal Facility	Maysville	KY
405.2	KY0004391	Frankfort Materials Co.		Maysville	KY
405.7	OH0004316	Dayton Power & Light Co.	J.M. Stuart Station	Aberdeen	OH
407.1	KY0000353	Emerson Electric Company		Maysville	KY
408.4	KY0000639	Maysville Utility Commission	Maysville WTP	Maysville	KY

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
408.5	KY0000477	Wald Manufacturing Co., Inc.		Maysville	KY
408.8	KY0000531	Carnation Co.		Maysville	KY
411.8	KY0020257	Maysville Utility Commission	Maysville WWTP	Maysville	KY
413.7	KY0094463	Inland Container Corp.		Maysville	KY
413.8	KY0022250	East Kentucky Power Cooperative	Hugh L. Spurlock Power Station	Maysville	KY
417.1	OH0020966	Village of Ripley	Ripley WWTP	Union Township	OH
427.7	KY0021261	City of Augusta	Augusta WWTP	Augusta	KY
441.5	KY0045284	Dravo Lime Co.	Black River Division	Carntown	KY
441.6	KY0052515	Black River Mining Co.		Carntown	KY
443.2	OH0048836	Cincinnati Gas & Electric Co.	William H Zimmer Power Station	Mowcow	OH
445.9	KY0091545	Pachanga's Marina		California	KY
447.5	KY0027707	Campbell Co. Bd of Education	AJ Jolly Elem School WWTP	California	KY
448.4	KY0095648	California Shores		California	KY
449.8	OH0010731	Village of New Richmond	New Richmond WTP	New Richmond	OH
449.9	OH0021156	Village of New Richmond	New Richmond WWTP	New Richmond	OH
453.0	OH0009865	Cincinnati Gas & Electric Co.	W.C. Beckjord Station	New Richmond	OH
456.3	KY0027715	Campbell Co. Bd. of Education	Alexandria Elem. School WWTP	Alexandria	KY
456.5	KY0027723	Campbell Co. Bd. of Education	Campbell Co. High School WW	Alexandria	KY
457.7	KY0075779	U.S. Post Office		Melbourne	KY
457.7	KY0075701	Melbourne Mobile Home	WWTP	Melbourne	KY
458.4	KY0075761	St. Anne Convent	St. Anne Convent WWTP	Melbourne	KY
461.0	OH0047511	River Downs Investment Co.	River Downs Race Track	Cincinnati	OH
461.5	OH0010014	Coney Island Inc.	Coney Island Rec Center	Cincinnati	OH
462.8	OH0009083	Cincinnati Waterworks	California WTP	Cincinnati	OH
462.9	KY0002828	Newport Water Filtration Plant	Newport WTP	Fort Thomas	KY
464.5	OH0025453	Hamilton County Commissioners	Little Miami WWTP	Cincinnati	OH
472.5	OH0025461	Hamilton County Commissioners	Mill Creek WWTP	Cincinnati	OH
473.0	KY0093009	HVC/M.J. Daly Co.		Ludlow	KY
473.0	KY0097985	McGinnis Inc.		Ludlow	KY
474.3	OH0010120	Unocal Corp.	Cincinnati Terminal	Cincinnati	OH
474.5	KY0001406	Boron Oil Co.	Bromley Terminal	Ludlow	KY
475.4	KY0063274	Chevron U.S.A., Inc.	Covington Terminal	Ludlow	KY
475.8	OH0047457	Ashland Oil Co.	Valvoline Oil Co. Div.	Cincinnati	OH

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
476.8	OH0009598	Tresler Oil Co.		Cincinnati	OH
477.4	KY0021466	Sanitation Dist No.1 of Kenton and Campbell Counties	Dry Creek WWTP	Erlanger	KY
480.0	OH0010031	Hilltop Basic Resources	River Terminal Plant	Cincinnati	OH
480.4	KY0089061	Taylor'sport Sand Co., Inc.		Taylor'sport	KY
482.0	OH0025470	Hamilton Co. Commissioners	Muddy Creek WWTP	Cincinnati	OH
482.8	KY0092924	Boone Co. Water & Sewer	Parlor Grove Estates Subdiv. W	Hebron	KY
484.0	OH0009946	Monsanto Chemical Co.		Addyston	OH
484.1	KY0094072	Boone Co. Water & Sewer	Rivershore Farms Subdiv. WWT	Francisville	KY
486.0	OH0024678	Hamilton Co. Commissioners	Indian Creek WWTP	North Bend	OH
489.5	OH0009571	Kaiser Alum. & Chem. Co.	Kaiser Agricultural Chemical Di	North Bend	OH
490.0	OH0009873	Cincinnati Gas & Elec. Co.	Miami Fort Station	North Bend	OH
493.0	IN0024538	South Dearborn Regional SD	South Dearborn Regional WWT	Lawrenceburg	IN
495.0	IN0001694	Schenley Distillers, Inc.		Lawrenceburg	IN
495.0	IN0003131	Joseph E. Seagram & Sons, Inc.		Lawrenceburg	IN
495.5	IN0002160	Indiana & Michigan Electric Co.	Tanners Creek Generating Sta.	Lawrenceburg	IN
502.5	KY0080691	Boone Co. Bd. of Education	Charles H. Kelly Elem. School	Bellevue	KY
502.9	KY0077917	Tom Arlinghaus	Arlinghaus Properties WWTP	Bellevue	KY
503.9	KY0075639	River Ridge Inc.	River Ridge Park WWTP	Burlington	KY
506.0	IN0024431	Town of Rising Sun	Rising Sun WWTP	Rising Sun	IN
511.0	KY0040444	Cincinnati Gas & Electric Co.	East Bend Station	Rabbit Hash	KY
516.5	KY0027642	U.S. Army Corps of Engineers	Big Bone Creek Ramp WTP		KY
516.6	KY0004243	KY Dept. of Parks	Big Bone Lick State Park WTP	Union	KY
519.5	IN0056391	Patriot, Town of	Patriot WWTP	Patriot	IN
529.9	KY0075825	Craig's Creek Campground	Craig's Cr. Campground WWTP	Warsaw	KY
530.0	KY0028118	Warsaw, City of	Warsaw WWTP	Warsaw	KY
534.1	KY0098221	Gallatin Steel Co.	Gallatin Co. Steel Plant	Warsaw	KY
535.0	KY0082686	Cleancoal Terminal Co.		Ghent	KY
535.3	KY0002038	Kentucky Utilities Co.	Ghent Generating Station	Ghent	KY
535.5	KY0096890	Ghent, City of	Ghent WWTP	Ghent	KY
536.0	KY0090603	Spangler Apartments	WWTP	Mentor	KY
537.5	IN0020231	Vevay, Town of	Vevay WWTP	Vevay	IN
539.6	KY0095877	North American Stainless		Carrollton	KY
540.8	KY0001279	Dow Corning Corp.		Carrollton	KY

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
543.6	KY0001431	Atochem North America, Inc.		Carrollton	KY
543.7	KY0071757	Bobby L. Harper Dist. Co. Inc.		Carrollton	KY
552.9	KY0001732	Kawneer Co., Inc.		Carrollton	KY
553.5	KY0079014	Milton Sand & Gravel Co., Inc.		Milton	KY
556.6	KY0088625	Milton, City of	Milton WWTP	Milton	KY
558.6	IN0025666	Madison, City of	Madison WWTP	Madison	IN
560.0	IN0001759	Indiana-Kentucky Elec. Corp.	Clifty Creek Station	Madison	IN
562.5	IN0020702	Hanover, Town of	Hanover WWTP	Hanover	IN
571.1	KY0091359	Bobby L. Harper Dist. Co., Inc.	Bulk Petroleum Terminal	Maysville	KY
572.0	KY0041971	Louisville Gas & Electric Co.	Trimble Co. Generating Station		KY
586.0	IN0053571	Martin Marietta Basic Products	Lane Quarry	Charlestown	IN
589.5	KY0038580	Goshen Utilities, Inc.	Goshen WWTP	Goshen	KY
590.0	KY0072389	Heil Co.		Goshen	KY
592.0	IN0020508	Charlestown, City of	Charlestown WWTP	Charlestown	IN
593.5	IN0001163	Indiana Army Ammunition Plant		Charlestown	IN
597.0	KY0044261	Louisville & Jefferson Co. MSD	Glenview Bluff Subdiv. WWTP	Louisville	KY
600.5	KY0097241	River Road Terminal, Inc.	Marine Cargo Handling Facility	Louisville	KY
600.7	KY0003123	Louisville Water Co.	B.E. Payne WTP	Louisville	KY
600.8	KY0001830	Louisville Water Co.	Zorn Avenue WTP	Louisville	KY
601.0	KY0031801	Louisville & Jefferson Co. MSD	New Market Subdivision WWTP	Louisville	KY
601.5	KY0072745	Convenient Energy Inc.		Louisville	KY
601.6	KY0095702	Madison Chemical Co., Inc.	Louisiana Dock Co.	Louisville	KY
602.0	IN0023965	Oak Park Conservancy Dist.	Oak Park Cons. Dist. WWTP	Jeffersonville	IN
602.6	KY0054771	Ashland Petroleum Co.	Louisville Plant	Louisville	KY
603.0	KY0061395	Chevron U.S.A., Inc.	Louisville Asphalt Plant	Louisville	KY
603.0	KY0046027	Missouri Portland Cement Co.	Louisville Plant	Louisville	KY
603.0	IN0048801	Martin Marietta Aggregates	Utica Sand & Gravel	Jeffersonville	IN
603.3	KY0053783	Jefferson Co. Medical Center	Steam & Chilled Water Plant	Louisville	KY
603.5	KY0080675	Galt House East		Louisville	KY
603.8	KY0002101	Louisville Gas & Electric Co.	Waterside Station	Louisville	KY
604.0	KY0069809	Humana, Inc.		Louisville	KY
604.1	IN0023302	Jeffersonville, City of	Jeffersonville WWTP	Jeffersonville	IN
604.5	IN0025313	Ashland Petroleum Co.		Clarksville	IN

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
605.0	IN0003638	Colgate-Palmolive Co.		Clarksville	IN
605.9	KY0002089	Louisville Gas & Electric Co.	Ohio Falls Station	Louisville	KY
606.4	IN0002666	Caldwell-Moser Leather Co., Inc.		New Albany	IN
609.5	IN0023884	New Albany, City of	New Albany WWTP	New Albany	IN
610.0	IN0002798	PSI Energy	Gallagher Generating Station	New Albany	IN
610.5	KY0070301	Heyburn Partnership		Louisville	KY
611.6	KY0002291	Ashland Petroleum Co.		Louisville	KY
612.0	KY0022411	Louisville & Jefferson Co. MSD	Morris Forman WWTP	Louisville	KY
612.1	KY0089711	BP Oil Co.	Louisville Terminal	Louisville	KY
612.3	KY0097179	Carbide/Graphite Group, Inc.	Louisville Plant	Louisville	KY
612.4	KY0063002	Chevron U.S.A. Inc.	Louisville Terminal	Louisville	KY
612.6	KY0021717	Texaco, Inc.	Terminals & Bulk Storage	Louisville	KY
613.0	KY0021610	Ashland Chemical, Inc.		Louisville	KY
613.0	KY0002071	Louisville Gas & Electric Co.	Paddy's Run Station	Louisville	KY
613.1	KY0001457	B.F. Goodrich Chemical Co.		Louisville	KY
613.1	KY0001007	Reynolds Metals Co.	Louisville Plant No. 3	Louisville	KY
613.2	KY0001350	El duPont deNemours & Co. Inc.		Louisville	KY
613.3	KY0002305	Rohm & Haas Kentucky, Inc.		Louisville	KY
613.5	KY0001589	American Synthetic Rubber Corp.		Louisville	KY
614.0	KY0027839	Ashland Service Station	No.14-0 WWTP	Louisville	KY
614.1	KY0064629	Marathon Oil Co.		Louisville	KY
614.9	KY0002780	Stauffer Chemical Co.		Louisville	KY
615.2	KY0001112	Borden Chemical A&C	Louisville Site	Louisville	KY
615.7	KY0027103	Wellington Elementary School	Wellington Elem. School WWTP	Louisville	KY
616.2	KY0002062	Louisville Gas & Electric Co.	Cane Run Station	Louisville	KY
616.3	IN0004731	Edwardsville Water Corp.	Edwardsville WTP	New Albany	IN
618.8	KY0086665	Interpolymer Corp.		Louisville	KY
619.1	KY0096504	D.J. Inc.		Louisville	KY
619.2	KY0090875	Lsvl & Jefferson Co Riverport Auth		Greenwood	KY
620.0	KY0027014	Shacklette Elem School	Shacklette Elem School WWTP	Louisville	KY
620.5	KY0021881	Marathon Petroleum Co.	Bulk Asphalt Terminal	Louisville	KY
621.0	KY0026310	Johnston Road Elem. School	WWTP	Louisville	KY
621.5	IN0054852	US Silica Co.		Elizabeth	IN

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
623.3	KY0078956	Louisville & Jefferson Co. MSD	West County WWTP	Louisville	KY
626.0	KY0003221	Louisville Gas & Electric Co.	Mill Creek Station	Louisville	KY
627.8	KY0087386	B-T Energy Corp.	West Point Facility	Louisville	KY
630.0	KY0087319	West Point, City of	West Point WTP	West Point	KY
631.4	KY0022152	West Point, City of	West Point WWTP	West Point	KY
637.4	KY0074268	Louisville, City of	Otter Creek Park WWTP		KY
642.0	KY0002119	Olin Corp.	Doe Run, Kentucky Plant	Brandenburg	KY
642.3	KY0043478	Doe Valley Utilities, Inc.	Doe Valley WWTP	Brandenburg	KY
645.8	KY0021474	Brandenburg, City of	Brandenburg WWTP	Brandenburg	KY
653.0	KY0064611	Martin Marietta Aggregates	Big Bend Quarry	Battletown	KY
653.9	KY0090565	Russell, City of	Russell WTP	Russell	KY
655.3	KY0093793	New River Lime, Inc.		Mint Springs	KY
664.0	IN0021121	Leavenworth, Town of	Leavenworth WWTP	Leavenworth	IN
674.0	IN0001139	Mulzer Crushed Stone, Inc.	Cape Sandy Quarry	Cape Sandy	IN
686.7	KY0086371	Carney Residence	Carney Residence WWTP	Concordia	KY
710.4	KY0023272	American Olean Tile Co.	Cloverport Plant	Cloverport	KY
711.8	KY0026701	Cloverport, City of	Cloverport WWTP	Cloverport	KY
719.0	KY0001716	Williamette Industries, Inc.	Bleached Pulp Mill	Hawesville	KY
721.0	KY0001708	Williamette Industries, Inc.	Corrugated Medium Mill	Hawesville	KY
721.7	KY0083917	Riverview Restaurant	Riverview Restaurant WWTP	Hawesville	KY
723.5	KY0003239	Hawesville, City of	Hawesville WTP	Hawesville	KY
726.1	KY0092118	World Source Coal Coating Inc.		Hawesville	KY
726.2	IN0001406	Maxon Marine, Inc.		Tell City	IN
726.4	KY0065838	Alumax Mill Products, Inc.	Alumax Mill Products, Inc.	Hawesville	KY
726.5	KY0002461	National Aluminum Corp (Nat. Ste	Hawesville Plant	Hawesville	KY
726.5	IN0043460	Tell City Water Dept.	Tell City WTP	Tell City	IN
726.6	IN0021016	Tell City, City of	Tell City WWTP	Tell City	IN
727.1	KY0002747	Southwire Co.	Kentucky Division	Hawesville	KY
727.2	KY0001821	National Southwire Aluminum Co.		Hawesville	KY
728.4	KY0001937	Big River Electric Corp.	Coleman Station	Hawesville	KY
737.7	KY0052744	Lewisport, City of	Lewisport WTP	Lewisport	KY
738.0	KY0025241	Lewisport, City of	Lewisport WWTP	Lewisport	KY
738.1	KY0023281	American Olean Tile Co.		Lewisport	KY

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
742.2	IN0038300	Grandview, Town of	Grandview WWTP	Grandview	IN
744.7	IN0051845	Indiana Michigan Power Co.	Rockport Generating Facility	Rockport	IN
746.2	IN0021067	Rockport, City of	Rockport WWTP	Rockport	IN
749.2	IN0055620	P-V Mining Co.	Rockport River Terminal	Rockport	IN
750.0	KY0049018	Green Coal Co.		Owensboro	KY
750.7	KY0023302	Lamp Lite Estates	Lamp Lite Estates WWTP	Owensboro	KY
751.3	KY0001953	W.R. Grace and Co.		Owensboro	KY
752.8	KY0001295	Owensboro Municipal Utilities	Elmer Smith Elec. Gen. Sta.	Owensboro	KY
753.0	KY0083771	Kentucky Fried Chicken	Kentucky Fried Chicken WWTP	Owensboro	KY
753.5	KY0001571	Green River Steel Corp.		Owensboro	KY
753.8	KY0095711	Southern States River Terminal Co.		Owensboro	KY
753.9	KY0076147	Long John Silvers Anchors Inc.	Long John Silvers Seafood Restaurant No. 3 WWTP	Owensboro	KY
754.0	KY0033421	East 60 Apartments	East 60 Apartments WWTP	Owensboro	KY
754.1	KY0024937	Titan Contracting & Leasing Co. I	WWTP	Owensboro	KY
754.5	KY0071684	Kroger Co.	Kroger WWTP	Owensboro	KY
754.5	KY0023817	Wyndall's Center	Wyndall's Center WWTP	Owensboro	KY
754.6	KY0073377	Owensboro WWTP	East WWTP	Owensboro	KY
754.6	KY0056103	Oscar Hornsby Inc.	Super Test Food Mart #2	Owensboro	KY
754.9	KY0069752	McDonald's Restaurant	McDonald's WWTP	Owensboro	KY
755.4	KY0063100	Chevron U.S.A., Inc.	Owensboro Terminal	Owensboro	KY
755.5	KY0001031	Glenmore Distilleries Co.		Owensboro	KY
755.6	KY0046019	Missouri Portland Cement Co.	Owensboro Plant	Owensboro	KY
755.6	KY0003140	Owensboro, City of	Owensboro WTP	Owensboro	KY
756.0	KY0095729	Owensboro Grain Co.-Groundwater Remediation		Owensboro	KY
757.0	KY0024627	Daviess Co. Detention Center	WWTP	Owensboro	KY
757.5	KY0001520	Field Packing Co.		Owensboro	KY
757.6	KY0001082	Medley Distilling Co.		Owensboro	KY
757.7	KY0002518	Owensboro Distilling Co.		Owensboro	KY
758.1	KY0095265	Pinkerton Tobacco Co.		Owensboro	KY
758.2	KY0020095	Owensboro WWTP	Owensboro WWTP West		KY
759.2	KY0062731	Owensboro Riverport Authority	Owensboro Coal Dock Inc.	Owensboro	KY
760.0	KY0054755	Owensboro Riverport Authority		Owensboro	KY
765.0	KY0090280	Owensboro Grain Co.		Owensboro	KY

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
768.3	KY0095192	Scott Paper Co.		Newman	KY
770.0	IN0055212	Warrick Minerals Inc.		Hatfield	IN
772.5	IN0048429	Yankeetown Dock Corp.		Newburgh	IN
773.0	IN0002259	Southern Indiana Gas & Elec. Co.	F.B. Culley Station	Newburgh	IN
773.5	IN0001155	Aluminum Co. of America-ALCO	Warrick Works	Newburgh	IN
778.0	IN0023892	Newburgh, Town of	Newburgh WWTP	Newburgh	IN
790.0	IN0025348	Ashland Petroleum Co.		Evansville	IN
791.5	IN0043117	Evansville, City of	Evansville WTP	Evansville	IN
792.5	IN0033073	Evansville Water & Sewer Utility	Evansville East WWTP	Evansville	IN
793.5	IN0002241	Southern Indiana Gas & Elec. Co.	Ohio River Generating Sta.	Evansville	IN
793.6	IN0047091	Evansville Terminal Corp.		Evansville	IN
794.0	IN0032956	Evansville Water & Sewer Utility	Evansville West WWTP	Evansville	IN
801.3	KY0095435	Home Oil Terminal Co., Inc.		Henderson	KY
804.0	KY0002178	Henderson Municipal Power & Light		Henderson	KY
805.0	KY0024643	Bemis Co., Inc.	Custom Resins Div.	Henderson	KY
806.0	KY0020711	Henderson Water & Sewer Dept.	Henderson WWTP	Henderson	KY
807.0	KY0042412	Kentucky National Guard		Henderson	KY
807.3	KY0002534	Agrico Chemical Co.	Henderson Terminal	Henderson	KY
807.5	KY0092126	Henderson County Riverport Auth.		Henderson	KY
812.0	KY0090077	Uniontown	Uniontown WTP	Uniontown	KY
817.0	IN0052191	Southern Indiana Gas & Elec. Co.	A.B. Brown Generating Sta.	West Franklin	IN
829.0	IN0035696	Mt. Vernon, City of	Mt. Vernon WWTP	Mt. Vernon	IN
829.7	IN0002470	Countryside Co-op Inc.	Indiana Farm Bureau Refinery	Mt. Vernon	IN
830.0	IN0002895	Babcock & Wilcox Co.		Mt. Vernon	IN
830.1	IN0001970	MG Industries		Mt. Vernon	IN
830.4	IN0049948	Marathon Petroleum Co.		Mt. Vernon	IN
830.9	IN0002101	General Electric Co.		Mt. Vernon	IN
833.0	KY0094587	Kit Development Corp.	Zimmerman-Kuester Lease	Slim Island	KY
851.9	KY0001996	Island Creek Coal	Hamilton #1	Morganfield	KY
859.5	IL0021776	Shawneetown, City of	Shawneetown South WWTP	Shawneetown	IL
871.0	KY0057967	Pryo Mining Co.	Loading Dock, Ohio River	Sturgis	KY
878.5	IL0065871	Dravo Basic Materials Co. Inc.	Cave-in-Rock	Cave-in-Rock	IL
889.0	IL0028690	Elizabethtown, Village of	Elizabethtown WWTP	Elizabethtown	IL

PERMITTED DISCHARGERS TO THE OHIO RIVER

River Mile	Permit Number	Facility Description	Plant Name	City	State
891.4	IL0004553	Rosiclare, City of	Rosiclare WTP	Rosiclare	IL
891.5	IL0034207	Rosiclare, City of	Rosiclare WWTP	Rosiclare	IL
891.7	IL0004251	Ozark-Mahoning Co.	Johnson Works	Rosiclare	IL
903.0	IL0028991	Golconda, City of	Golconda WWTP	Golconda	IL
915.0	KY0096776	Kentucky Marine Corp.		Ledbetter	KY
920.6	KY0075836	Smithland, City of	Smithland WWTP	Smithland	KY
934.3	KY0073113	Paducah Waterworks	Paducah WTP	Paducah	KY
935.0	KY0021695	Midwest Terminal Inc.		Paducah	KY
936.0	KY0022799	Paducah, City of	Paducah WWTP	Paducah	KY
936.5	KY0042838	Essex Group	Power Conductor Division	Paducah	KY
937.5	IL0027782	Brookport, City of	Brookport WWTP	Brookport	IL
944.0	IL0029874	Metropolis, City of	Metropolis WWTP	Metropolis	IL
945.0	IL0004421	Allied-Signal	Metropolis Works	Metropolis	IL
946.0	KY0053678	Tennessee Valley Authority	20-MW Atmosphere Fluidized	Paducah	KY
946.0	KY0004049	U.S. Atomic Energy Commission	Oak Ridge Operations	Paducah	KY
946.0	KY0004219	Tennessee Valley Authority	Shawnee Fossil Plant	West Paducah	KY
949.5	IL0004081	Missouri Portland Cement Co.		Joppa	IL
951.2	IL0004171	Electric Energy Inc.	Joppa Generating Station	Joppa	IL
952.0	IL0029327	Joppa Sanitary District	Joppa WWTP	Joppa	IL
952.5	IL0042773	Ohio Power Co.	Cook Coal Terminal	Joppa	IL
973.9	IL0041891	Mound City, City of	Mound City WTP	Mound City	IL
978.0	IL0046698	Garden Inn Motel & Trailer Court	Garden Inn WWTP	Cairo	IL
979.0	IL0023825	Cairo, City of	Cairo WWTP	Cairo	IL

Information from Permit Compliance System (PCS) data base.

**MUNICIPAL WASTE WATER TREATMENT PLANT
DISCHARGES TO THE OHIO RIVER**

River Mile	Permit Number	Municipal Waste Water Treatment Facility	State	Flow (MGD)	Pretreatment Program
3.1	PA0025984	Alcosan WWTP	PA	200.0	Required
9.5	PA0028801	Montour Run WWTP-Moon Twp.	PA	6.2	Required*
10.2	PA0026352	Coraopolis WWTP	PA	3.0	
12.3	PA0020681	Sewickley WWTP	PA	0.9	
14.2	PA0024589	Leetsdale WWTP	PA	0.8	
15.8	PA0023159	Crescent-South Heights WWTP	PA	1.0	
17.5	PA0027146	Ambridge Borough WWTP	PA	2.6	
20.3	PA0028410	Baden WWTP	PA	<0.1	
20.6	PA0025968	Aliwuippa WWTP	PA	3.4	
21.6	PA0036609	Conway Borough WWTP	PA	0.5	
25.3	PA0026140	Rochester Area WWTP	PA	1.4	
25.6	PA0020125	Monaca WWTP	PA	1.2	Required
26.2	PA0024694	Beaver Borough WWTP	PA	1.0	
28.1	PA0023698	Vanport WWTP	PA	1.6	
32.9	PA0204676	Industry WWTP	PA	0.3	
37.3	PA0023701	Midland WWTP	PA	1.3	
43.3	WV0021768	Chester WWTP	WV	0.5	
44.6	OH0024970	East Liverpool WWTP	OH	2.7	
47.6	OH0028045	Wellsville WWTP	OH	1.0	
54.9	OH0022225	Stratton WWTP No. 1	OH	<0.1	
55.0	OH0059374	Stratton WWTP No. 2	OH	<0.1	
55.6	OH0050539	Empire WWTP	OH	<0.1	
57.6	WV0025119	New Cumberland WWTP	WV	0.3	
60.1	OH0020214	Toronto WWTP	OH	1.0	
66.2	WV0023108	Weirton WWTP	WV	4.0	
68.0	OH0027511	Steubenville WWTP	OH	6.0	
70.6	WV0020273	Follansbee WWTP	WV	0.5	
74.7	WV0026832	Wellsburg WWTP	WV	1.3	
76.0	OH0021270	Brilliant WWTP	OH	0.2	
78.5	WV0084182	Beech Bottom WWTP	WV	<0.1	

*Pretreatment program required but not approved as of 5/94.

MUNICIPAL WASTE WATER TREATMENT PLANT DISCHARGES TO THE OHIO RIVER

River Mile	Permit Number	Municipal Waste Water Treatment Facility	State	Flow (MGD)	Pretreatment Program
80.7	OH0090891	Tiltonsville WWTP	OH	0.4	Required
90.8	WV0023230	Wheeling WWTP	WV	15.0	
93.2	WV0020648	Benwood WWTP	WV	0.1	
94.0	OH0049999	Belmont County WWTP	OH	6.1	Required
96.5	WV0020141	McMechen WWTP	WV	0.3	
97.6	OH0027383	Shadyside WWTP	OH	0.6	
102.4	WV0020036	Glen Dale WWTP (collection system only)	WV		Required
102.4	WV0023264	Moundsville WWTP	WV	2.3	
107.6	WV0081612	Marshall County WWTP	WV	<0.1	
109.5	OH0027219	Powhatan Point WWTP	OH	0.3	Required
116.5	OH0021636	Village of Clarington WWTP	OH	<0.1	
126.0	OH0048704	Lee Township WWTP	OH		
128.7	WV0027472	New Martinsville WWTP	WV	0.8	Required
133.2	WV0020613	Paden City WWTP	WV	0.6	
138.2	WV0021814	Sistersville WWTP	WV	0.3	
142.6	WV0048861	Friendly WWTP	WV	0.1	Required
155.1	WV0020168	St. Marys WWTP	WV	0.3	
157.7	WV0024490	Belmont WWTP	WV	0.1	
163.0	OH0041173	Newport Water & Sewer WWTP	OH	<0.1	Required
171.0	OH0026344	Marietta WWTP	OH	3.8	
172.2	WV0022071	Williamstown WWTP	WV	0.4	
175.8	WV0084221	Central Boaz WWTP	WV	<0.1	Required
181.4	WV0023221	Vienna WWTP (collection system only)	WV		
183.3	WV0023213	Parkersburg WWTP	WV	9.7	
185.7	OH0020621	Belpre WWTP	OH	1.5	Required
220.2	WV0021989	Ravenswood WWTP	WV	0.8	
243.0	OH0050661	Syracuse-Racine WWTP	OH	0.3	
245.6	WV0032531	New Haven WWTP	WV	0.4	Required
250.4	OH0021725	Pomeroy WWTP	OH	0.3	
250.7	WV0021849	Mason WWTP	WV	0.3	
252.1	OH0026514	Middleport WWTP	OH	0.3	Required
257.6	OH0041149	Cheshire WWTP	OH		
269.7	OH0020478	Gallipolis WWTP	OH	1.3	

MUNICIPAL WASTE WATER TREATMENT PLANT DISCHARGES TO THE OHIO RIVER

River Mile	Permit Number	Municipal Waste Water Treatment Facility	State	Flow (MGD)	Pretreatment Program
309.2	OH0024376	Village of Chesapeake WWTP	OH		
313.1	OH0094684	Eastern Lawrence Reg. Sewer Dist. WWTP	OH	1.1	
313.2	WV0021873	Ceredo WWTP (collection system only)	WV		
313.2	WV0023159	Huntington WWTP	WV	17.0	Required
315.7	WV0035912	Kenova WWTP (collection system only)	OH		
317.0	OH0021814	South Point WWTP	OH	1.2	
322.5	KY0022373	Ashland WWTP	KY	11.0	Required
324.0	OH0029432	Coal Grove WWTP	OH	0.3	
327.2	OH0025852	Ironton WWTP	OH	1.7	
327.3	KY0041190	Sanitation Dist. No. 1 WWTP-Boyd/Greenup Counties	KY	0.8	
327.8	KY0022918	Flatwoods WWTP	KY	0.8	
327.9	KY0048348	Greenup County WWTP	KY	2.1	
328.9	KY0022926	Worthington WWTP	KY	0.2	
336.4	KY0026450	Greenup WWTP	KY	0.2	
349.0	OH0027201	Sciotoville WWTP-City of Portsmouth	OH	0.6	
351.8	OH0020613	New Boston WWTP	OH	0.5	
353.8	KY0026131	South Shore WWTP	KY	0.4	
356.0	OH0027197	Portsmouth WWTP	OH	4.0	
378.4	KY0021512	Vanceburg WWTP	KY	0.4	
397.8	OH0020842	Manchester WWTP	OH	0.3	
400.0	OH0023825	Aberdeen WWTP	OH	0.3	
411.8	KY0020257	Maysville WWTP	KY	1.4	Required
417.1	OH0020966	Ripley WWTP	OH	0.4	
427.7	KY0021261	Augusta WWTP	KY	0.3	
449.9	OH0021156	New Richmond WWTP	OH	0.3	
464.5	OH0025453	Little Miami WWTP-Hamilton County	OH	55.0	Required
472.5	OH0025461	Mill Creek WWTP-Hamilton County	OH	170.0	Required
477.4	KY0021466	Dry Creek WWTP-Campbell/Kenton Counties	KY	46.5	Required
482.0	OH0025470	Muddy Creek WWTP-Hamilton County	OH	15.0	Required
486.0	OH0024678	Indian Creek WWTP-Hamilton County	OH	0.5	
493.0	IN0024538	South Dearborn Regional WWTP	IN	3.5	
506.0	IN0024431	Rising Sun WWTP	IN	0.4	
519.5	IN0056391	Patriot WWTP	IN	<0.1	

**MUNICIPAL WASTE WATER TREATMENT PLANT
DISCHARGES TO THE OHIO RIVER**

River Mile	Permit Number	Facility Description		City	State
530.0	KY0028118	Warsaw WWTP	KY	0.1	
535.5	KY0096890	Ghent WWTP (3 outfalls to Ohio River)	KY	18.7	
				9.0	
				26.2	
537.5	IN0020231	Vevay WWTP	IN	0.2	
556.6	KY0088625	Milton WWTP	KY	0.2	
558.6	IN0025666	Madison WWTP	IN	3.6	
562.5	IN0020702	Hanover WWTP	IN	0.5	
592.0	IN0020508	Charlestown WWTP	IN	0.7	
602.0	IN0023965	Oak Park Conservancy District WWTP	IN	0.8	
604.1	IN0023302	Jeffersonville WWTP	IN	5.2	Required
605.2	IN0020621	Clarksville WWTP - North	IN	0.9	
606.0	IN0047058	Clarksville WWTP	IN	3.0	
609.5	IN0023884	New Albany WWTP	IN	12.5	Required
612.0	KY0022411	Morris Forman WWTP-Louisville/Jefferson County	KY	105.0	Required
623.3	KY0078956	West County WWTP-Louisville/Jefferson County	KY	15.0	Required
631.4	KY0022152	West Point WWTP	KY	0.2	
645.8	KY0021474	Brandenburg WWTP	KY	0.3	
664.0	IN0021121	Leavenworth WWTP	IN	<0.1	
711.8	KY0026701	Cloverport WWTP	KY	0.2	
726.6	IN0021016	Tell City WWTP	IN	2.1	
731.0	IN0022047	Troy WWTP	IN	<0.1	
738.0	KY0025241	Lewisport WWTP	KY	0.3	
742.2	IN0038300	Grandview WWTP	IN	0.1	
746.2	IN0021067	Rockport WWTP	IN	0.5	
754.6	KY0073377	Owensboro WWTP-East	KY	6.8	Required
758.2	KY0020095	Owensboro WWTP-West	KY	12.0	Required
778.0	IN0023892	Newburgh WWTP	IN	2.0	
792.5	IN0033073	Evansville East WWTP	IN	18.0	Required
794.0	IN0032956	Evansville West WWTP	IN	11.5	Required
806.0	KY0020711	Henderson WWTP	KY	7.5	Required
829.0	IN0035696	Mt. Vernon WWTP	IN	1.8	

**MUNICIPAL WASTE WATER TREATMENT PLANT
DISCHARGES TO THE OHIO RIVER**

River Mile	Permit Number	Facility Description		City	State
859.5	IL0021776	Shawneetown South WWTP	IL	0.5	
889.0	IL0028690	Elizabethtown WWTP	IL	0.1	
891.5	IL0034207	Rosiclare WWTP	IL	0.2	
903.0	IL0028991	Golconda WWTP	IL	0.2	
920.6	KY0075836	Smithland WWTP	KY	<0.1	
936.0	KY0022799	Paducah WWTP	KY	9.0	Required
937.5	IL0027782	Brookport WWTP	IL	0.2	
944.0	IL0029874	Metropolis WWTP	IL	2.1	
952.0	IL0029327	Joppa WWTP	IL	0.1	
973.9	IL0041891	Mound City WWTP	IL	0.2	
979.0	IL0023825	Cairo WWTP	IL	1.5	

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Mile Point	Location	Owner	Products Handled
2.0 R*	Pittsburgh, PA	Duquesne Light	Oil
2.9 L*	McKees Rock, PA	Mobil Oil Co.	Gasoline
3.1 L	McKees Rock, PA	Gordon Lubricating Co. & Cities Service	Oil
5.0 L	Neville Island, PA	Shenango, Inc.	Pig iron, Sulphur, and Fluorspar
5.5 L	Neville Island, PA	Aristech Chemical Corp.	Acid
5.8 L	Neville Island, PA	Gulf Oil Co.	Gasoline, Kerosene Fuel Oil, Crude Oil
6.5 L	Neville Island, PA	Exxon Co.	Gasoline and Fuel
6.8 L	Neville Island, PA	Neville Chemical Co.	Petroleum Distillate, Fuel Oil, Solvents, Tar
10.8 L	Coraopolis, PA	Star Enterprises	Gasoline, Kerosene, Fuel Oil
10.9 L	Coraopolis, PA	Star Enterprises	Gasoline, Kerosene, Fuel Oil
11.2 L	Coraopolis, PA	Buckeye Pipeline Co.	Petroleum Products
12.1 L	Stoops Ferry, PA	Gordon Lubricating Co.	Aviation Grade Fuel
18.0 L	Aliquippa, PA	LTV Steel Corp.	Coal, Acid, Fuel Oil, Tar, Ammonium Sulfate
20.7 R	Baden, PA	General Materials Corp.	Sulphur, Sluorspar
22.5 R	Conway, PA	Conrail	Fuel Oil
22.6 L	Colona, PA	North Star Coal Co.	Molasses, Petroleum
24.1 R	Freedom, PA	Ashland Oil & Refining Co.	Gasoline, Fuel, Crude Oil
28.3 R	Vanport, PA	Sunmark Industries	Gasoline
28.5 L	Josephtown, PA	Zinc Corp. of America	Acid
28.7 R	Vanport, PA	Ashland Petroleum Co.	Solvent, Fuel Oil, Neutral Oils
29.9 L	Potter Township, PA	ARCO Chemical Co.	Benzol, Fuel & Crude Oils, Alcohol
33.3 R	Industry, PA	Shell Chemical Corp.	Liquid Industrial Chemicals
34.8 R	Midland, PA	Ashland Oil Co.	Oil, Gasoline
35.1 R	Midland, PA	Mobil Oil Co., Inc.	Gasoline
40.0	East Liverpool, OH	S. H. Bell Co.	Ores (chrome, manganese, etc.)
42.0	Chester, WV	Wind-Cheester Roofing Products Inc.	Asphalt
42.9	East Liverpool, OH	ITAPCO Ohio Terminal Inc.	Petroleum Products, Liquid Fertilizer
43.2	East Liverpool, OH	D.W. Dickey Sons, Inc.	Fertilizer
46.8	Congo, WV	Quaker State Oil Refining	Liquid
49.1	Wellsville, OH	Ashland Oil & Refining Co.	Petroleum Products
62.2	Weirton, WV	National Steel Corp.-Weirton Steel Div.	Coal, Steel, Fuel Oil, Acid, Scrap
64.6	Steubenville, OH	ARCO	Oil, Gasoline
64.9	Weirton, WV	Petroleum Fuel & Terminal Co.	Petroleum Products

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Continued

Mile Point	Location	Owner	Products Handled
68.9	Follansbee, WV	Wheeling Pittsburgh Steel Corp.	Coal, Acid, Benzol
69.1	Follansbee, WV	Wheeling Pittsburgh Steel Corp. & Allied Oil	Fuel Oil
69.3	Follansbee, WV	Koppers Industries, Inc.	Crude Tar, Creosote
81.1	Warrenton, OH	Burrell Industries, Inc.	Miscellaneous Oils, Tar
85.4	Wheeling, WV	Westvaco	Gasoline
85.5	Warwood, Wheeling, W	Sun Oil Co.	Gasoline
85.8	Warwood, Wheeling, W	Tri-State Petroleum	Fuel Oil
88.2	Warwood, Wheeling, W	Uno-Ven Co.	Gasoline
105.9	Natrium, WV	LPC Chemicals	Industrial Chemicals
119.4	Natrium, WV	Chemical Div., PPG Industries	Coal, Chemicals, Benzene
121.0	Proctor, WV	Mobay Chemical Co.	Chemicals
121.3	Proctor, WV	Mobay Chemical Co.	Chemicals
143.2	Grandview, OH	Tri-State Petroleum	Gasoline
145.3	Long Reach, WV	Union Carbide Corp.	Liquid Fuel
146.0	Bens Run, WV	Bens Run Pipeline Co.	Gasoline
146.3	Bens Run, WV	CNG Energy Co.	Natural Gasoline
147.0	Bens Run, WV	Inorganic Chemicals Div., FMC Corp.	Salt Brine
155.2	St. Marys, WV	Phoenix Refining Co.	Gasoline, Oil
159.8	Bells Run, OH	Buckeye Pipeline	Crude Oil
161.1	Willow Island, WV	American Cyanamid Co.	Chemicals
164.0	Waverly, WV	Cabot Corp.	Chemicals
173.1	Marietta, OH	Mobil Oil Co.	Gasoline, Oil
173.8	Marietta, OH	Ashland Pipeline	Gasoline, Oil
174.7	Marietta, OH	Ashland Oil, Inc.	Gasoline, Oil
174.8	Marietta, OH	Ashland Oil, Inc.	Gasoline, Oil, Diesel Fuel
175.0	Marietta, OH	Asphalt Materials & Construction Co.	Asphalt
175.1	Marietta, OH	Gulf Oil Corp.	Gasoline, Oil
175.5	Marietta, OH	Standard Oil Co. (OH)	Gasoline, Oil
175.6	Marietta, OH	Par-Mar Oil Co.	Gasoline, Oil
179.3	Constitution, OH	Chevron Asphalt Co.	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 Co.	Gasoline, Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Continued

Mile Point	Location	Owner	Products Handled
188.6	Belpre, OH	Shell Oil Co.	Chemicals
191.3	Washington, WV	Marbon Chemical Div., Borg-Warner Corp.	Chemicals
242.9	Grahams Station, WV	American Electric Power	Oil
253.1	Middleport, OH	Texaco, Inc.	Gasoline, Oil
258.5	Cheshire, OH	American Electric Power Service Inc.	Coal, Oil
260.2	Pt. Pleasant, WV	Pantosote Co.	Chemicals
265.4	Pt. Pleasant, WV	Hartley Marine Corp.	Diesel Fuel
280.7	Apple Grove, WV	Goodyear Tire & Rubber Co.	Chemicals
303.5	Huntington, WV	Chevron, USA	Gasoline, Oil
304.1	Huntington, WV	Huntington Asphalt	Miscellaneous
307.6	Huntington, WV	Exxon Co.	Gasoline, Oil
310.4	Huntington, WV	Century Oils	Oils
310.8	Huntington, WV	Pennzoil	Gasoline, Oil
315.9	Kenova, WV	Ashland Oil	Crude Oil
316.3	Kenova, WV	Ashland Oil	Gasoline, Oil
316.5	Kenova, WV	Ashland Oil	Gasoline, Oil
318.5	Catlettsburg, KY	Ashland Oil	Petroleum Products
319.0	Ashland, KY	Chevron, USA	Gasoline, Oil
320.2	Ashland, KY	Semet Solvay Div., Armco	Coal Tar
324.6	Ironton, OH	Allied Signal, Inc.	Coal Tar
324.9	Ironton, OH	Action Terminal, Inc.	Gasoline, Oil
326.8	Ironton, OH	Rich Oil, Inc.	Petroleum Products
327.7	Russell, KY	Chesapeake & Ohio Railway	Diesel Oil
333.2	Hanging Rock, OH	Dow Chemical Co.	Chemicals
336.4	Haverhill, OH	Aristech Chemicals	Chemicals
347.2	Wheelersburg, OH	Standard Slag Co.	Miscellaneous
349.2	Sciotoville, OH	Standard Oil Co. (OH)	Gasoline, Oil
350.8	New Boston, OH	New Boston Coke	Oil
351.5	New Boston, OH	King River Limited, Inc.	Tar
351.6	Siloam, KY	Mark West Hydrocarbon Corp.	Gasoline, Oil
352.6	New Boston, OH	Norfolk & Western Railroad	Diesel Oil
389.6	Manchester, OH	Dayton Light & Power	Coal, Oil
443.2	Moscow, OH	Zimmer Power Plant (CG&E)	Coal, Lime, Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Continued

Mile Point	Location	Owner	Products Handled
452.9	Blairville, OH	Cincinnati Gas & Electric	Coal, Fuel Oil
457.0	Milburn, KY	Agrico Chemical Co.	Fertilizer
465.7	Cincinnati, OH	Queen City Terminal	Fuel Oil, Liquid Fertilizer, Petro-Chemical
465.8	Cincinnati, OH	Arcadian Chemical Corp.	Liquid Fertilizer
474.0	Cincinnati, OH	Union Oil Co.	Petroleum Products
474.2	Bromley, KY	Boron Oil Co.	Bulk Petroleum
475.1	Cincinnati, OH	Southside River Rail	Liquid Fertilizer, Caustic Soda
475.5	Ludlow, KY	Chevron USA, Inc.	Petroleum Products
476.2	Cincinnati, OH	Ashland Petroleum Co.	Petroleum Products
476.7	Cincinnati, OH	Ashland Petroleum Co.	Petroleum, Petro-Chemicals, Other Chemicals
477.1	Cincinnati, OH	Ashland Petroleum Co.	Petroleum, Other Chemicals
478.7	Cincinnati, OH	U.S. Defense Logistic Agency	Gasoline, Petroleum Products
479.0	Cincinnati, OH	Shell Asphalt Co.	Petroleum Products, Asphalts, Light Oils
479.2	Cincinnati, OH	C.F. Industries	Fertilizers and Phosphate
479.5	Cincinnati, OH	River Transportation Co.	Salt, Fertilizers, Petroleum Products, Dry Bulk
480.9	Stringtown, KY	Ashland Oil, Inc.	Crude Oil
484.2	Addyston, OH	Monsanto Chemical Co.	Chemicals and Plastics
486.8	North Bend, OH	Chevron USA, Inc.	Petroleum Products
487.9	North Bend, OH	Koch Asphalt Co.	Liquid Asphalt, Flux Oil
489.3	North Bend, OH	Kaiser Agricultural	Anhydrous Ammonia, Liquid Fertilizer
489.7	North Bend, OH	Chevron USA, Inc.	Distillate Oil, Asphaltic Products
490.3	North Bend, OH	Cincinnati Gas & Electric Co. (Miami Fort)	Coal, Fuel Oil
490.7	Miami Fort Station, OH	E.I. DuPont DeNemours & Co.	Sulfuric Acid
494.0	Lawrenceburg, IN	Indiana & Michigan Electric Co.	Fuel Oil, Coal
541.5	Carrollton, KY	Dow Corning Co.	Methanol
601.0	Louisville, KY	River Road Terminal	Coal, Salt, Fertilizer
601.3	Louisville, KY	Louisiana Dock Co.	Follansbee
602.6	Louisville, KY	Shell Oil Co.	Gasoline, Oil
603.0	Louisville, KY	Ashland Asphalt Plant	Asphalt
604.0	Jeffersonville, IN	Ashland Oil, Inc.	Gasoline, Kerosene, Diesel Fuels
609.4	New Albany, IN	ITAPCO	Petroleum Products
611.7	Louisville, KY	Louisville Refining Terminal	Petroleum Products
612.0	Louisville, KY	BP Oil Co.	Gasoline, Diesel Oil

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Continued

Mile Point	Location	Owner	Products Handled
612.2	Louisville, KY	Ashland Oil, Inc.	Petroleum Products
612.4	Louisville, KY	Chevron USA, Inc.	Petroleum Products
612.5	Louisville, KY	AIRCO Carbide Co.	Waste Carbide
612.7	Louisville, KY	ITAPCO	Petroleum Products
613.5	Louisville, KY	American Synthetic Rubber	Butadiene, Styrene
614.0	Louisville, KY	Triangle Refineries, Inc.	Petroleum Products
615.2	Louisville, KY	Bordon Chemical Div.	Methanol
616.8	Louisville, KY	Louisville Gas & Electric	Fuel Oil
619.9	Louisville, KY	Sun Refining & Marketing	Refined Petroleum Products
620.5	Louisville, KY	Marathon Asphalt Terminal	Asphalt, Tar, Mineral Spirits, Molasses, Grou
626.4	Kosmosdale, KY	Louisville Gas & Electric	Coal, Fuel Oil
627.8	Kosmosdale, KY	BT Energy Co.	Petroleum Products
643.4	Brandenberg, KY	Olin Corp.	Butane, Natural Gas
744.7	Rockport, IN	Indiana-Michigan Electric	Coal, Fuel Oil
753.7	Owensboro, KY	River Terminal Co.	Petroleum Products
754.4	Owensboro, KY	The Texas Company	Petroleum Products
755.3	Owensboro, KY	Chevron USA, Inc.	Petroleum Products, Fuel Oil
793.0	Evansville, IN	Valley Terminal Evansville	General
793.8	Evansville, IN	Ashland Oil, Inc.	Petroleum Products
794.0	Evansville, IN	ITAPCO and AMOCO	Gasoline, Fuel Oil, Petroleum Products
794.5	Evansville, IN	Southern IN Dock	Fuel Oil, Coal Grain
801.4	Henderson, KY	Home Oil Co.	Gasoline, Kerosene, Fuel Oils
807.5	Henderson, KY	Agrico Chemical Co.	Ammonia, Liquid & Solid Fertilizer
808.4	Henderson, KY	Sun Refining & Marketing Co.	Refined Petroleum Products
828.2	Mt. Vernon, IN	Cargill, Inc.	Fertilizers
828.6	Mt. Vernon, IN	Hutson Co., Inc.	Fertilizer
829.7	Mt. Vernon, IN	Indiana Farm Bureau Cooperative Assoc.	Petroleum Products
829.7	Mt. Vernon, IN	County Mark, Inc.	Crude Oil, Gasoline
830.5	Mt. Vernon, IN	Marathon Oil Co.	Gasoline, Fuel Oils
831.2	Mt. Vernon, IN	C.F. Industries	Anhydrous Ammonia, Nitrogen Solutions
831.4	Mt. Vernon, IN	General Electric Co.	Petroleum
858.4	Shawneetown, IL	Delta Materials Co., Inc.	Dry Fertilizer
881.0	Cave-In-Rock, IL	Crystal Produce, Inc.	Fluorspar, Zinc

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS -- OHIO RIVER

Continued

Mile Point	Location	Owner	Products Handled
891.7	Rosiclare, IL	Rosiclare Lead & Fluorspar Mining Co.	Fluorspar
935.2	Paducah, KY	Midwest Terminal	Petroleum Products
975.8	Cairo, IL	J.D. Street Oil Co., Inc.	Gasoline, Kerosene, Diesel & Fuel Oils

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS OHIO RIVER TRIBUTARIES

Mile Point	Location	Owner	Products Handler
<u>ALLEGHENY RIVER</u> <u>(ENTERS OHIO AT MILE POINT 0.0)</u>			
2.7 L	Pittsburgh, PA	Exxon	Gasoline, Oil
4.4 L	Pittsburgh, PA	The Pennzoil Co.	Petroleum Products
5.0 L	Pittsburgh, PA	ARCO	Petroleum Products
16.4 R	Springdale, PA	Chevron Oil Co.	Asphalt Products
17.7 L	New Kensington, PA	Penn Glen Oil Co.	Petroleum Products
19.7 R	Tarentum, PA	Pittsburgh Penn Oil Co.	Petroleum Products
29.6 R	Freeport, PA	Freeport Terminals	Petroleum Products
47.7 R	Kittanning, PA	Agway	Fertilizer
<u>MONONGAHELA RIVER (to mile point 50.9)</u> <u>(ENTERS OHIO AT MILE POINT 0.0)</u>			
4.0 L	Pittsburgh, PA	LTV Steel Corp.	Fuel Oil
4.0 R	Pittsburgh, PA	LTV Steel Corp.	Tar
4.2 R	Pittsburgh, PA	LTV Steel Corp.	Acid, Light Oil
5.7 L	Hays, Pittsburgh, PA	Amoco Oil Co.	Petroleum Products
9.4 R	Rankin, PA	Park Corp.	Fuel Oil
11.7 L	Duquesne, PA	Union Railroad Co.	Fuel Oil
12.7 L	Duquesne, PA	Regional Industrial Development, Inc.	Fuel Oil
16.1 L	Dravosburg, PA	Boswell Oil Co.	Asphalt
19.3 L	Clairton, PA	Aristech Chemical Corp.	Benzol
20.8 R	Glassport, PA	Ashland Oil Co.	Fuel Oil
23.8 L	West Elizabeth, PA	Hercules Picco	Chemicals
24.7 L	Floeffe, PA	Ashland Oil & Refining Co.	Petroleum Products
27.8 R	Bunda, PA	Chemply Corp.	Chemicals
29.0 L	Courtney, PA	West Penn Power Co.	Oil
35.9 L	Donora, PA	Ireco, Inc.	Acid
39.7 L	Monessen, PA	Monessen, Inc.	Fuel Oil
40.9 L	North Charleroi, PA	Coastal Oil of NY, Inc.	Asphalt
43.6 L	Speers, PA	Guttman Oil Co.	Petroleum Products
44.3 L	Dunlevy, PA	Haney Barge Line, Inc.	Coal, Sand, Gravel, Fuel Oil
47.0 L	Allenport, PA	Wheeling-Pittsburgh Steel	Scrap, Fuel Oil, Finished Products
50.1 R	Newell, PA	Welland Chemical Corp.	Sulfur, Acid
<u>LITTLE KANAWHA RIVER</u> <u>(ENTERS OHIO AT MILE POINT 184.6)</u>			
1.6 R	Parkersburg, WV	B.T. Energy	Gasoline
3.6 L	Parkersburg, WV	American Viscose Div., FMC Corp.	Sulfuric Acid

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS OHIO RIVER TRIBUTARIES

Continued

Mile Point	Location	Owner	Products Handled
<u>KANAWHA RIVER</u> <u>(ENTERS OHIO AT MILE POINT 265.0)</u>			
39.1 L	Scary, WV	American Electric Power Service Inc.	Fuel Oil
42.4 R	Nitro, WV	Monsanto Chemical Co.	Chemicals
42.7 R	Nitro, WV	Par Industrial Corp. Div., FMC Corp.	Coal, Acid
43.2 R	Nitro, WV	PB&S Chemical Co., Inc.	Coal, Acid, Liquid Sulfur
45.2 L	St. Albans, WV	Go Mart, Inc.	Petroleum Products
47.8 R	Institute, WV	Union Carbide Corp. (Kanawha Valley Fleet)	Chemicals
48.9 R	Institute, WV	Union Carbide Chemicals Co.	Chemicals
49.1 R	Institute, WV	Union Carbide Chemicals Co.	Chemicals
49.3 R	Institute, WV	Union Carbide Chemicals Co.	Chemicals
49.4 R	Institute, WV	Union Carbide Chemicals Co.	Chemicals
54.5 L	South Charleston, WV	Inorganic Chemicals Div., FMC Corp.	Salt Brine
54.7 L	South Charleston, WV	Inorganic Chemicals Div., FMC Corp.	Salt Brine, Chemicals
55.0 R	North Charleston, WV	Union Carbide Chemicals Co.	Chemicals
55.0 L	Blaine Island, WV	Union Carbide Chemicals Co.	Chemicals
55.0 L	Blaine Island, WV	Union Carbide Chemicals Co.	Acetylene Sludge (Back Channel)
55.1 R	North Charleston, WV	Union Carbide Chemicals Co.	Chemicals
55.3 R	North Charleston, WV	Union Carbide Chemicals Co.	Gasoline, Chemicals
55.5 L	Blaine Island, WV	Union Carbide Chemicals Co.	Chemicals
55.6 R	North Charleston, WV	Chevron, USA	Gasoline
57.9 L	Charleston, WV	Exxon Co., USA	Gasoline
68.4 R	Belle, WV	E.I. duPont deNemours & Co.	Chemicals
69.1 R	Belle, WV	E.I. duPont deNemours & Co.	Chemicals
69.3 R	Belle, WV	Occidental Chemical Co.	Chemicals
74.7 L	Cabin Creek, WV	Union Oil of California	Gasoline, Oil
81.6 R	Hugheston, WV	Baker Oil Co.	Gasoline
88.9 R	Boomer, WV	Exxon Co., USA	Gasoline
<u>BIG SANDY RIVER</u> <u>(ENTERS OHIO AT MILE POINT 317.0)</u>			
3.2 L	Leach, KY	Ashland Oil & Refining Co.	Petroleum Products
3.7 L	Leach, KY	Ashland Oil & Refining Co.	Petroleum Products
4.0 L	Leach, KY	Ashland Oil & Refining Co.	Fuel Oil
<u>LICKING RIVER</u> <u>(ENTERS OHIO AT MILE POINT 470.2)</u>			
2.8 L	Covington, KY	Ashland Oil, Inc.	Oil Products
3.0 R	Wilder, KY	Agrico	Liquid Fertilizer

RIVER TERMINALS HANDLING PETROLEUM PRODUCTS AND HAZARDOUS CHEMICALS OHIO RIVER TRIBUTARIES

Continued

Mile Point	Location	Owner	Products Handled
<u>CUMBERLAND RIVER (to mile point 50)</u> <u>(ENTERS OHIO AT MILE POINT 922.5)</u>			
38.3	Kuttawa, KY	Southern States Asphalt Co.	Asphalt
<u>TENNESSEE RIVER (to mile point 50)</u> <u>(ENTERS OHIO AT MILE POINT 934.4)</u>			
0.5 L	Paducah, KY	James Marine Midstream Service	Fuel
0.8 L	Paducah, KY	Paducah River Service	Fuel
1.0 L	Paducah, KY	Chevron, USA	Petroleum Products
	Paducah, KY	Gulf Oil Co.	Petroleum Products
1.5 L	Paducah, KY	Shell Oil Co., Inc.	Petroleum Products
6.0 L	Paducah, KY	Ashland Oil & Refining Co.	Petroleum Products
14.0 L	Paducah, KY	E.M. Bailey Dist. Co.	Petroleum Products
14.0 L	Paducah, KY	Bailey Fuel Terminal	Petroleum Products
16.3 L	Calvert City, KY	Penn Walt Mfg. Co.	Chemicals
17.5 L	Calvert City, KY	Carbon Graphite	Chemicals, Coke
17.6 L	Calvert City, KY	Air Products & Chemicals Inc.	Vinyl Acetate
17.9 L	Calvert City, KY	B.F. Goodrich Chemical Co.	Chemicals
18.0 L	Calvert City, KY	B.F. Goodrich Chemical Co.	Petroleum
18.2 L	Calvert City, KY	B.F. Goodrich Chemical Co.	Chemicals
18.3 L	Calvert City, KY	B.F. Goodrich Chemical Co.	Chemicals
45.0 L	Murray, KY	Hutson Chemical Co.	Grain Fertilizer

Located L (Left) and R (Right) bank facing downriver.

Based on information collected from U.S. Corps of Engineers
Ohio River and Tributaries River Terminals

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. Samples are also collected from major tributaries just above their confluence with the Ohio to assess their impacts. Three monitoring systems are maintained by the Commission: manual sampling, bacteria, and the Organics Detection System.

The manual sampling system, initiated in 1975 and continuing today, involves collection of bi-monthly samples at 30 sites, 17 on the Ohio River and 13 its tributaries. The samples are analyzed for certain physical and chemical parameters.

Bacteria samples are collected during the contact recreation season (May through October). The seven monitoring stations are all located downstream of major urban areas on the Ohio River. Water supply utilities in five of those cities provide ORSANCO with results of fecal coliform analysis at their water intakes, which are upstream of urban areas.

The Organics Detection System (ODS), established in 1978, consists of 14 sampling stations operated by public and private water supplies and two industries. Three of these stations are located on tributaries, with the rest on the Ohio River main stem. Water samples are analyzed daily by gas chromatograph for 21 selected organic compounds. Data from the ODS sites are used primarily for spill detection purposes.

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 present 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.

In the fall of 1986, the Commission revised its electronic monitoring system. This system, established in the 1960's, provided hourly measurements of temperature, specific conductance, pH, and dissolved oxygen, at 22 stations along the Ohio River and its tributaries. At locations where electronic monitors operated, historical data for temperature and specific conductance are presented. (Flow data is presented in Section I.) The data (eight or more years) are for the period of record for each monitor through the fall of 1986. The behavior of these parameters describes seasonal patterns at each monitoring site which are major influences on overall water quality conditions.

Spill Information

ORSANCO's Electronic Bulletin Board can be accessed with a computer and modem and not only lists the reported spills, but also lists flow information for selected stations along the Ohio River. Bulletin Board telephone number and information on its use can be obtained from the Commission office, (513) 231-7719.

ORSANCO SAMPLING LOCATIONS

Station	Mile Point	Type(s)	Station	Mile Point	Type(s)
1. Pittsburgh (Allegheny)	7.4 *	M, O	24. Lucasville (Scioto)	15.0 *	M
2. South Pittsburgh - Hays Mine (Monongahela)	4.5 *	M, O	25. Meldahl	436.2	M
3. Neville Island - West View	4.5	O, B	26. Cincinnati	462.8	O
4. Beaver Falls (Beaver)	5.3 *	M	27. Newtown (Little Miami)	7.5 *	M
5. Beaver Valley	34.9	O	28. Covington (Licking)	4.7 *	M
6. New Cumberland	54.4	M	29. Anderson Ferry	477.5	M, B
7. Weirton	65.1	O	30. Cleves (Great Miami)	8.0 *	M
8. Pike Island	84.2	M	31. Markland	531.5	M
9. Wheeling	86.8	O	32. Louisville	600.6	O
10. Wheeling	92.8	B	33. McAlpine	606.	M
11. Hannibal	126.4	M	34. Louisville	619	B
12. Willow Island	161.8	M	35. West Point	625.9	M
13. Marietta (Muskingum)	0.8 *	M	36. Cannelton	720.7	M
14. Parkersburg	190.3	O	37. Sebree (Green)	41.3 *	M
15. Belleville	203.9	M	38. Newburgh	776.1	M
16. St. Albans (Kanawha)	38.3 *	O	39. Evansville	791.5	O
17. Winfield (Kanawha)	31.1 *	M	40. Evansville	797.3	B
18. Gallipolis	279.2	M	41. Uniontown	846.0	M
19. Huntington	304.4	O	42. New Harmony (Wabash)	51.5 *	M
20. Huntington	314.8	B	43. Smithland	918.5	M
21. Louisa (Big Sandy)	20.3 *	M	44. Pinkneyville (Cumberland)	16.0 *	M
22. Greenup	341.0	M	45. Paducah (Tennessee)	6.0 *	M
23. Portsmouth	350.7	O	46. Paducah	935.5	O
			47. Paducah	937.9	B

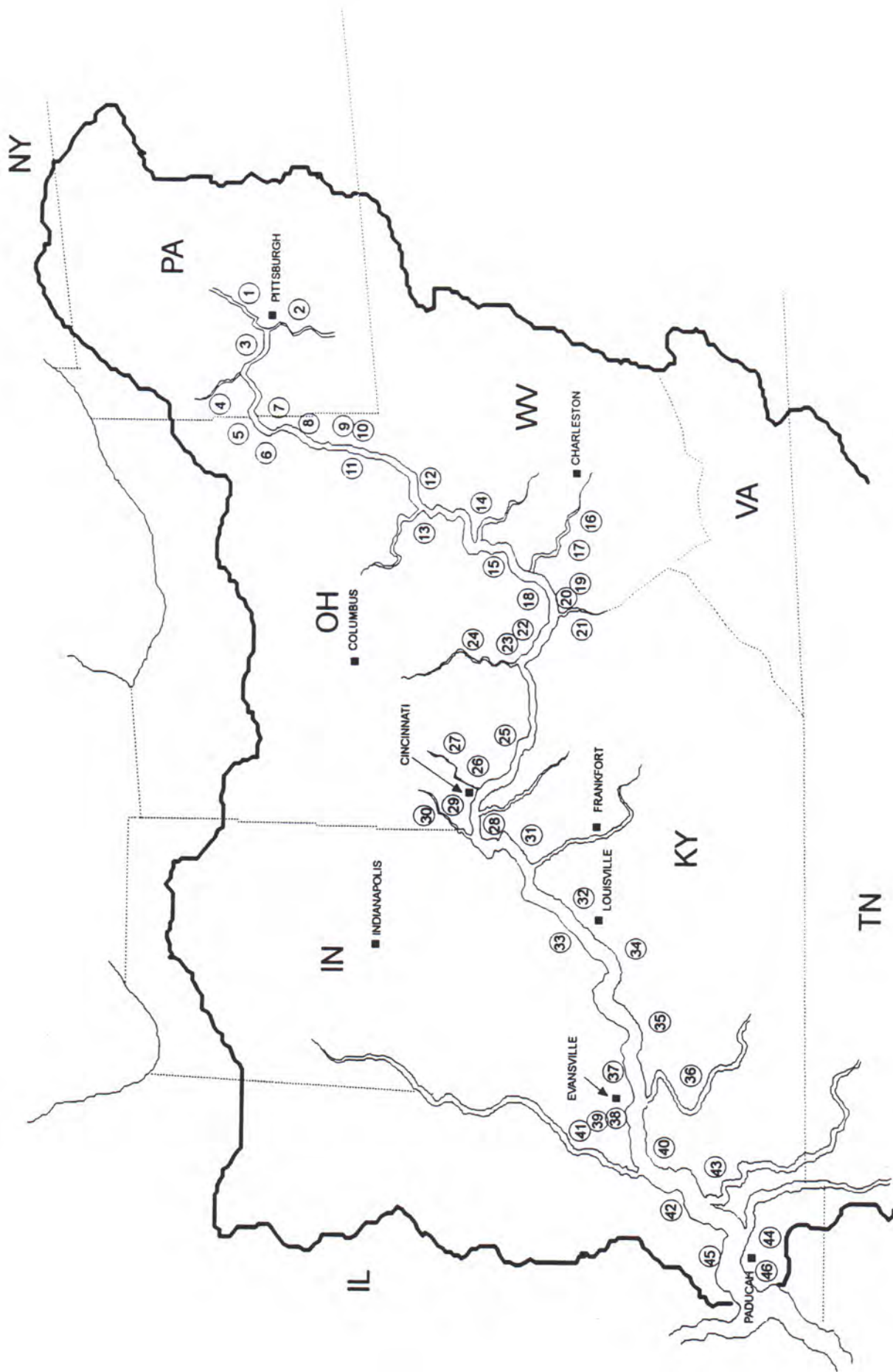
* From confluence with the Ohio River

TYPE:

M - Manual Sampling

O - Organics Detection System

B - Bacteria Sampling (May - October recreation season)



ORSANCO MONITORING STATIONS AND STORET CODES

Storet Number	STATION NAME	River Mile	Service Date	
			Beginning	End
<u>Manual Monitoring Stations (Main Stem)</u>				
OR9658M	South Heights	15.2	11/03/75	06/09/92
OR9408M	East Liverpool	40.2	11/12/75	06/09/92
OR926.6M	New Cumberland Lock and Dam	54.2	07/09/92	Present
OR896.8M	Pike Island Lock and Dam	84.2	09/05/92	Present
OR894.2M	Wheeling, WV	86.8	10/14/86	06/14/92
OR8546M	Hannibal Lock and Dam	126.4	09/26/77	Present
OR8192M	Willow Island Lock and Dam	161.8	11/19/75	Present
OR7771M	Belleville Lock and Dam	203.9	11/11/75	Present
OR7210M	Addison	260.0	11/11/75	06/09/92
OR7018M	Gallipolis	279.2	11/11/75	Present
OR6741M	Huntington	304.4	11/11/75	06/09/92
OR661.3M	Ashland	319.7	10/23/86	06/10/92
OR640M	Greenup Lock and Dam	341.0	07/07/92	Present
OR630.3M	Portsmouth	350.7	10/23/86	06/10/92
OR572.5M	Maysville	408.5	11/03/86	06/23/92
OR544.8M	Meldahl Lock and Dam	436.2	07/20/92	Present
OR5182M	Cincinnati	462.8	11/07/75	06/23/92
OR502.2M	Anderson Ferry	477.5	07/20/92	Present
OR4910M	North Bend	490.0	11/17/75	06/23/92
OR4495M	Markland Lock and Dam	531.5	11/17/75	Present
OR3804M	Louisville	600.6	11/10/75	06/11/92
OR374.2M	McAlpine Lock and Dam	606.8	07/13/92	Present
OR3551M	West Point	625.9	11/10/75	Present
OR2603M	Cannelton Lock and Dam	720.7	11/13/75	Present
OR204.9M	Newburgh Lock and Dam	776.1	07/07/92	Present
OR1895M	Evansville	791.5	11/03/75	06/14/92
OR1350M	Uniontown Lock and Dam	846.0	11/11/75	Present
OR62.5M	Smithland Lock and Dam	918.5	01/19/82	Present
OR42.1M	Lock and Dam #52	938.9	07/13/93	Present
OR28.7M	Joppa	952.3	11/17/75	02/11/92
<u>Manual Monitoring Stations (Tributaries)</u>				
AR7.4M	Pittsburgh (Allegheny River)	7.4	10/15/86	Present
MR-4.5M	South Pittsburgh (Monongahela River)	4.5	11/03/75	Present
BR-5.3M	Beaver Falls (Beaver River)	5.3	11/12/75	Present
MU-5.8M	Marietta (Muskingum River)	0.8 & 5.8	11/19/75	Present
KR31.1M	Winfield (Kanawha River)	31.1	11/11/75	Present
SR20.3M	Louisa (Big Sandy River)	20.3	11/10/75	Present
SC15.0M	Lucasville (Scioto River)	15.0	11/12/75	Present
LM-7.5M	Newtown (Little Miami River)	7.5	07/06/76	Present
LR-4.5M	Covington (Licking River)	4.5 & 4.7	11/18/75	Present
GM-5.5M	Cleves (Great Miami)	8.0	4/30/91	Present

ORSANCO MONITORING STATIONS AND STORET CODES

Storet Number	STATION NAME	River Mile	Service Date	
			Beginning	End
<u>Manual Monitoring Stations (Tributaries)</u>				
(continued)				
GM-5.5M	Elizabethtown (Great Miami)	5.5	11/10/75	3/28/91
GR41.3M	Sebree (Green River)	41.3	11/11/75	Present
WA9295M	New Harmony (Wabash River)	51.5	11/11/75	Present
TR-5.0M	Paducah (Tennessee River)	5.0	07/13/94	Present
CR16.0M	Pinkneyville (Cumberland River)	16.0	04/18/89	Present
TR-5.0M	Paducah (Tennessee River)	5.0	7/11/94	Present
TR-6.0M	Paducah (Tennessee River)	6.0	11/17/75	4/13/92
CR30.6M	Barkley Dam (Cumberland River)	30.6	11/17/75	03/29/89
<u>Organics Detection System (Main Stem)</u>				
OR976.5	West View Water Authority	4.5	07/15/81	Present
OR946.1	Beaver Valley Nuclear Power Plant	34.9	03/01/90	Present
OR9408	East Liverpool OH Water Treatment Plant	40.2	12/15/82	12/31/92
OR9159	Weirton WV Water Treatment Plant	62.5	06/01/90	Present
OR894.2	Wheeling WV Water Treatment Plant	86.8	01/02/79	Present
OR790.7	E.I. DuPont DeNemours & Co.,Parkersburg W	190.3	05/27/80	Present
OR674.1	Huntington Water Corporation	306.9	10/01/79	Present
OR630.9	Portsmouth OH Water Treatment Plant	350.7	01/04/79	Present
OR518.2	Cincinnati OH Water Works	462.8	01/02/79	Present
OR380.4	Louisville KY Water Company	600.6	01/04/79	Present
OR189.5	Evansville IN Water Works	791.5	09/04/79	Present
OR45.5	Paducah Water Works	935.5	06/06/85	Present
<u>Organics Detection System (Tributaries)</u>				
AR7.40	Pittsburgh Water (Allegheny)	7.4	02/12/79	Present
MR-4.5	South Pittsburgh (Monongahela)	4.5	07/08/86	Present
MR24.5	Elrama (Monongahela)	24.5	02/26/80	06/15/86
KR38.3	St. Albans (Kanawha)	38.3	01/09/79	Present

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

PENNSYLVANIA

Monongahela River Basin

<u>Stream</u>	<u>Location</u>
701 Monongahela River	Rankin Bridge at Braddock
702 Monongahela River	Bridge between Rts. 88 & 906 at Charleroi
704 Turtle Creek	Second railroad bridge, Trafford
706 Youghiogheny River	Bridge on LR 64326, Sutersville
709 Youghiogheny River	Rt. 281 bridge, Addison Township
714 Dunkard Creek	LR 30130 bridge, Bobtown
715 Sewickley Creek	LR 64164 bridge, Hunker
717 Ten Mile Creek	SR. 88 at Millsboro, E. Bethlehem Township
725 Monongahela River	Lock & Dam 8, Point Marion
726 Casselman River	SR. 2009 bridge, Elk Lick Township
727 Cheat River	SR. 119 bridge, Springhill Township
728 Whiteley Creek	SR. bridge, Kirby
729 Indian Creek	SR. 381 bridge, Jones Mill

Allegheny River Basin

<u>Stream</u>	<u>Location</u>
802 Allegheny River	Rt. 422 bridge, Kittanning
805 Allegheny River	Rt. 127 bridge, West Hickory
807 Allegheny River	Rt. 346 bridge, Eldred
810 Conemaugh River	LR 64269 bridge, Tunnelton
812 Loyalhanna Creek	LR 64185 bridge, Loyalhanna Township
814 Blacklick Creek	Rt. 660 bridge, Burrell Township
818 Crooked Creek	Rt. 66 bridge, Bethel Township
819 Mahoning Creek	Rt. 748 bridge, Redbank Township
820 Redbank Creek	T. 468 bridge, Porter Township
822 Clarion River	Rt. 36 bridge, Cooksburg
830 Tionesta Creek	LR 27015 bridge, Lynch
831 Brokenstraw Creek	Rt. 6 bridge, Youngsville
832 Conewango Creek	LR 61038 bridge, Russell
843 Clarion River	PA Rt. 58, Callensburg
845 French Creek	Rt. 322 bridge, Franklin
846 French Creek	LR 20027 bridge, Wilson Chutes
858 Tunungwant Creek	LR 42012 bridge, Bradford
862 Blue Eye Run	PA Rt. 27 bridge, Garland
863 Cathers Run	T634 bridge, Millcreek Township
864 S. Br. Two Lick Creek	SR. 1014 bridge, Wandin

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

PENNSYLVANIA

Beaver River Basin

<u>Stream</u>	<u>Location</u>
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 Dam Spillway, W. Shenango Twp.
913 Little Shenango River	Williamson Road bridge, N of Greenville
915 Mahoning River	Rt. 224 bridge, Edinburg
917 Connoquenessing Creek	LR 10015 bridge, Renfrew
922 Slippery Rock Creek	LR 37083 bridge, Camp Allegheny
928 Traverse Creek	
929 Thorn Creek	T556 bridge, Saxonburg

Ohio River Basin

<u>Stream</u>	<u>Location</u>
901 Ohio River	Rt. 30 bridge, East Liverpool, Ohio
902 Ohio River	Ambridge-Woodlawn bridge, Sewickley
903 Raccoon Creek	LR 04068 bridge, Raccoon Township
914 Chartiers Creek	LR 02037 bridge, Carnegie

OHIO

Beaver River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Mahoning River	10.8	First Street, Lowellville
Mahoning River	43.8	Leavitt Road, Leavittsburg

Muskingum River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Muskingum River	107.3	Rt. 83, Coshocton
Licking River	26.8	Staddena bridge, Newark
Mohican River	16.6	Rt. 514, Greer

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

OHIO

Muskingum River Basin (cont.)

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

Scioto River Basin

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

Little Miami River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Little Miami River	80.6	Rt. 68, Oldtown

Great Miami River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Great Miami River	81.2	Monument Ave., Dayton
Mad River	29.6	St. Paris Pike, Eagle City

Ohio River Basin

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

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

WEST VIRGINIA

Monongahela River Basin

<u>Stream</u>	<u>Location</u>
Monongahela River	Rt. 19, Star City
Cheat River	Rt. 26, Albright
Cheat River	Rt. 1, St. George
Tygart Valley River	Rts. 219 & 250, Beverly
Tygart Valley River	Rt. 62, Colfax
West Fork River	Off US 19, Enterprise

Kanawha River Basin

<u>Stream</u>	<u>Location</u>
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, Hilddale

Ohio River Basin

<u>Stream</u>	<u>Location</u>
Little Kanawha River	Rt. 5, Elizabeth
Guyandotte River	Rt. 26, Huntington

KENTUCKY

Big Sandy River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Tug Fork	35.1	Kermit, KY40
Levisa Fork	29.6	Paintsville (Louisa), KY644
Levisa Fork	114.6	Pikeville, KY 1426
Little Sandy River	13.2	Argillite, KY 1
Tygart's Creek	28.1	Load, KY 7
Kinniconick Creek	10.4	Tannery, KY 1149

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

KENTUCKY

Licking River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Licking River	78.2	Claysville, US62
North Fork Licking River	6.9	Lewisburg (Milford), KY19
South Fork Licking River	11.7	Cynthiana (Morgan), KY1054
Licking River	226.4	West Liberty, US460

Kentucky River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Kentucky River	66.4	Above Frankfort, St. Clair Street Bridge
Kentucky River	135.1	Camp Nelson, Old US27
North Fork Kentucky River	304.5	Jackson, Old KY30
North Fork Kentucky River	8.3	Tallega, KY708
South Fork Kentucky River	12.1	Booneville, KY28
Eagle Creek	21.5	Glencoe, US127
South Elkhorn Creek	25.3	Midway, Moores Mill Road Bridge
Dix River	34.6	Danville, KY52
Red River	21.6	Clay City, KY11/15
Kentucky R. at confluence with Red	191.2	-----

Salt River Basin

Salt River	22.9	Shepherdsville, KY61
Salt River	82.5	Glensboro, KY53
Rolling Fork	12.3	Lebanon Junction, KY434
Beech Fork	48.1	Maud, KY55
Pond Creek	15.5	Louisville, Manslick Road Bridge

Green River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Green River	74.4	Gromwell Island, KY85
Pond Creek	12.4	Sacramento, KY85
Rough River	62.5	Dundee, Barrets Ford Bridge
Mud River	17.4	Gus, KY949
Barren River	37.5	Bowling Green, College Street Bridge
Green River	225.9	Munfordville, US31W
Nolin River	80.9	White Mills, White Mills Bridge
Bacon Creek	7.2	Priceville, C. Avery Road Bridge

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

KENTUCKY

Tradewater River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Tradewater River	15.1	Sullivan, US60/641

Tygart Creek Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Tygart Creek	28.1	Load

Cumberland River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Little River	24.4	Cadiz, KY272
Cumberland River	393.7	Turkey Neck Bend, KY214 Ferry Crossing
South Fork Cumberland River	44.7	Blue Heron, Old Rail Bridge
Rockcastle River	24.4	Billows, Old KY80
Horse Lick Creek	7.5	Lamero, Daugherty Road Ford
Cumberland River	562.3	Cumberland Falls, KY90
Cumberland River	654.4	Pineville, Pine Street Bridge
Clarks River	53.5	Almo, Almo-Shiloh Road Bridge

INDIANA

Great Miami River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
East Fork, Whitewater River	27.0	Abington Pike Road, Abington
West Fork, Whitewater River	22.0	SR. 1 bridge, Cedar Grove

Ohio River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Blue River, West Fork	57.0	US Rt. 150, Fredericksburg

Wabash River Basin

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Wabash River	52.0	US Rt. 460, New Harmony
Wabash River	130.0	US Rt. 50, Vincennes
Wabash River	183.0	I&M Breed Station, Fairbanks

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

INDIANA

Wabash River Basin (cont.)

<u>Stream</u>	<u>Mile Point</u>	<u>Location</u>
Wabash River	218.0	Ft. Harrison Boat Club, Terre Haute
Wabash River	230.0	Rt. 163 bridge, Clinton
Wabash River	240.0	Rt. 36, Montezuma
Wabash River	256.0	Rt. 234, Cayuga
Wabash River	303.0	Granville bridge, Lafayette
Wabash River	316.0	SR. 225, Battleground
Wabash River	347.0	CR 675, Georgetown
Mississinewa River	1.0	Prt. 124, Peru
Mississinewa River	28.0	Isaak Walton Lodge, Jalapa
Mississinewa River	36.0	Highland Avenue, Marion
Mississinewa River	99.0	CR134E, Ridgeville
Salomonie River	0.0	Division Road, Largo
Salomonie River	25.0	CR 300W, Lancaster
Salomonie River	71.0	106 South Road, Portland
Muscatatuck River	20.0	Rt. 39 bridge, Austin
Big Pin Creek	21.0	Rt. 55, Pine Village
Vermillion River	0.8	St. Hwy. 63, Cayuga

ILLINOIS

Wabash River Basin

<u>Stream</u>	<u>Location</u>
Wabash River	IN Rt. 154, Hudsonville
Wabash River	Rt. 460, New Harmony, IN
Bonpas Creek	Rt. 15, Browns, IL
Embarras River	County Road, Billet
Embarras River	County Road, St. Marie
Embarras River	Ryan Bridge, County Road, Charleston
Embarras River	County Road, Camargo
North Fork, Embarras River	County Road, Oblong
Sugar Creek	Township Road, Palestine
Sugar Creek	County Road, IN State Line
Brouillets Creek	IN. Rt. 71, Blanford
Little Vermillion River	County Road, Georgetown
Vermillion River	Grape Creek Road, Danville
Middle Fork, Vermillion River	Kickapoo State Park

STATE SAMPLING LOCATIONS IN THE OHIO RIVER BASIN

ILLINOIS

Wabash River Basin (Continued)

<u>Stream</u>	<u>Location</u>
North Fork, Vermillion River	County Road, Bismark
Salt Fork, Vermillion River	County Road, Oakwood
Salt Fork, Vermillion River	County Road, St. Joseph
Saline Branch	County Road, Mayview
Little Wabash River	W. Salem-Mt. Erie Road, Mt. Erie
Little Wabash River	County Road, Louisville
Little Wabash River	US Rt. 40, Effingham
Little Wabash River	County Road, Clay City
Little Wabash River	Main Street bridge, Carmi
Skillet Fork	Winters Bridge County Road, Carmi
Skillet Fork	Rt. 15, Wayne City
Skillet Fork	County Road, Iuka
Elm Creek	Price Bridge, Fairfield

Saline River Basin

<u>Stream</u>	<u>Location</u>
Saline River	Peabody Bridge, Gibsonia
North Fork, Saline River	Rt. 45, Eldorado
Middle Fork, Saline River	County Road, Harrisburg
South Fork, Saline River	County Road, Crab Orchard
Bankston Creek	Rt. 34, Harrisburg
South Fork, Saline River	Rt. 45, Carrier Mills
Sugar Creek	County Road, Creal Springs

Ohio River Basin

<u>Stream</u>	<u>Location</u>
Lusk Creek	County Road, Eddysville
Cache River	County Road, Belknap
Ohio River	Dam 53, Olmsted

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

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

AVERAGE MONTHLY WATER TEMPERATURE - OHIO RIVER ELECTRONIC MONITORS THROUGH SEPTEMBER 1986

Temperature in degrees Fahrenheit

Station-Mile Point (Date Initiated)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
South Heights (3/63)	15.2	36.3	37.0	43.3	52.8	63.3	73.1	78.4	78.6	74.0	61.9	49.9	39.9
East Liverpool (12/61)*	40.2	37.2	37.1	42.9	53.5	63.9	73.9	79.9	79.7	75.3	63.3	51.3	40.3
Shadyside (4/75)	102.4	39.6	40.3	45.7	55.7	66.0	74.6	80.5	80.6	75.7	65.0	54.2	44.2
Addison (6/75)	260.0	35.7	37.0	43.2	53.7	64.6	74.0	80.1	80.1	76.0	63.8	52.6	41.4
Gallipolis (10/75)	279.2	36.8	36.9	44.9	55.3	65.0	74.2	79.6	80.5	77.0	64.3	53.6	42.4
Huntington (9/61)	306.9	37.6	38.5	44.9	55.5	65.1	75.2	80.8	80.4	76.4	65.7	53.5	42.6
Cincinnati (9/61)	462.8	37.3	37.9	44.4	53.6	63.8	74.1	79.8	80.4	76.5	65.8	53.9	42.6
Markland (5/69)**	531.5	39.1	39.3	44.7	53.7	64.9	74.3	80.2	80.9	77.3	66.6	55.4	44.3
Louisville (3/62)	600.6	38.6	38.9	44.9	54.8	65.1	74.6	80.5	81.1	76.7	66.3	54.5	43.4
West Point (4/75)	625.9	38.1	38.6	46.1	55.2	66.2	75.4	82.0	82.4	77.2	66.2	55.3	44.0
Cannelton (10/75)	720.7	37.5	38.9	45.9	55.6	66.7	76.1	82.3	82.7	78.2	66.5	55.7	44.3
Evansville (10/68)	791.5	38.3	38.8	45.6	55.1	65.8	75.5	81.8	82.3	77.4	66.3	54.9	43.3
Joppa (8/75)	952.3	40.0	40.6	46.7	57.0	66.8	77.0	83.8	83.1	77.7	65.4	54.8	43.8

* Includes data from Stratton (1963-1975)

**Seasonal operation, 1976-1979

**MAXIMUM MONTHLY AVERAGE TEMPERATURE
OHIO RIVER TRIBUTARY ELECTRONIC MONITORS
THROUGH SEPTEMBER 1986**

Temperature in degrees Fahrenheit (year)

Station-Mile Point* (Date Initiated)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	37.7 (1974)	38.4 (1986)	44.3 (1973)	55.0 (1968)	68.1 (1985)	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)	42.9 (1985)	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)	45.9 (1984)
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	41.2 (1967)	41.6 (1973)	53.8 (1973)	64.9 (1986)	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)	545.8 (1976)	51.5 (1983)	62.6 (1986)	72.0 (1982)	79.4 (1984)	83.8 (1977)	83.4 (1983)	77.2 (1977)	66.8 (1982)	56.9 (1985)	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)	54.0 (1985)	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)	71.5 (1986)	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 River; mile point of monitor

AVERAGE MONTHLY SPECIFIC CONDUCTANCE - OHIO RIVER ELECTRONIC MONITORS **Through September 1986**

Specific Conductance in Micromhos per Centimeter

Station-Mile Point* (Date Initiated)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
South Heights 15.2 (3/63)	272	292	266	260	288	337	403	445	425	413	330	254
East Liverpool 40.2 (12/61)*	295	305	268	260	303	355	427	462	447	440	365	274
Shadyside 102.4 (4/75)	318	350	284	288	336	341	394	414	411	413	351	286
Addison 260.0 (6/75)	326	392	308	308	358	372	418	430	466	473	418	323
Gallipolis 279.2 (10/75)	298	337	261	272	305	341	381	379	423	403	361	293
Huntington 282.9 (9/61)	289	286	279	282	319	379	437	437	501	487	445	296
Cincinnati 462.8 (961)	286	289	280	283	320	360	412	431	453	486	437	320
Markland 531.5 (5/69)	309	309	308	306	321	348	389	404	415	443	419	336
Louisville 600.6 (3/62)	297	299	286	284	316	347	392	423	428	455	450	357
West Point 625.9 (4/75)	324	333	301	306	309	355	396	409	414	414	418	334

AVERAGE MONTHLY SPECIFIC CONDUCTANCE - OHIO RIVER ELECTRONIC MONITORS **Through September 1986**

Specific Conductance in Micromhos per Centimeter

Station-Mile Point* (Date Initiated)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Cannelton 720.7 (10/75)	337	336	307	317	356	361	380	411	398	410	419	339
Evansville 791.5 (10/68)	315	329	310	316	338	352	388	376	406	430	442	355
Joppa 952.3 (8/75)	349	352	326	325	353	372	427	334	329	355	389	362

* Includes data from Stratton (1963-1975)

** Seasonal operation, 1976-1979

AVERAGE MONTHLY SPECIFIC CONDUCTANCE - OHIO RIVER TRIBUTARY ELECTRONIC MONITORS

Through September 1986

Specific Conductance in Micromhos per Centimeter

Station-Mile Point* (Date Initiated)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Allegheny River at Oakmont 0.0, 13.3 (4/62)	241	216	189	187	213	255	308	319	340	327	272	203
Monongahela River at S. Pittsburgh 0.0, 4.5 (6/75)	313	335	275	272	326	381	407	422	430	426	364	270
Beaver River at Beaver Falls 25.3, 5.3 (12/61)	400	404	347	357	400	455	455	474	482	488	452	389
Kanawha River at Winfield 265.7, 31.1 (9/61)	198	182	156	178	207	263	310	305	359	296	253	220
Big Sandy River at Louisa 317.1, 20.3 (1/69)	270	254	266	338	319	434	431	439	490	467	383	323
Licking River at Covington 470.2, 4.5 (5/69)	278	265	287	276	269	271	264	269	261	268	287	275
Wabash River at New Harmony 848.0, 51.5 (8/75)	528	515	449	467	485	525	489	477	514	586	570	521

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

HARDNESS (mg/L)

**LONG TERM AVERAGES (WITH STANDARD DEVIATION) OVER PERIOD OF RECORD FOR EACH
MONITORING STATION BY MONTH**

1980-1992

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SOUTH HEIGHTS	110	113	96	93	124	107	119	124	132	140	102	86
M.P. 15.2	(22)	(16)	(11)	(38)	(49)	(17)	(35)	(40)	(26)	(33)	(20)	(15)
EAST LIVERPOOL	124	102	100	102	116	111	123	130	145	143	113	102
M.P. 40.2	(21)	(43)	(23)	(18)	(30)	(17)	(33)	(51)	(27)	(23)	(24)	(11)
HANNIBAL	126	120	103	96	136	127	134	145	150	161	134	117
M.P. 126.4	(23)	(14)	(24)	(25)	(18)	(17)	(25)	(28)	(25)	(34)	(41)	(33)
WILLOW ISLAND	119	130	104	102	117	122	126	146	152	153	137	116
M.P. 161.8	(14)	(9)	(21)	(23)	(20)	(10)	(25)	(35)	(27)	(44)	(32)	(22)
BELLEVILLE	139	140	116	124	137	137	146	148	163	166	156	131
M.P. 203.9	(19)	(24)	(25)	(19)	(22)	(22)	(29)	(29)	(35)	(42)	(22)	(29)
ADDISON	130	130	121	118	134	134	143	143	184	170	143	126
M.P. 260.0	(26)	(29)	(15)	(11)	(17)	(19)	(32)	(20)	(50)	(42)	(42)	(14)
GALLIPOLIS	110	103	96	102	104	111	127	134	138	148	115	99
M.P. 279.2	(26)	(25)	(14)	(24)	(27)	(22)	(21)	(43)	(39)	(31)	(43)	(19)
HUNTINGTON	131	101	106	114	111	127	135	124	142	150	136	108
M.P. 306.9	(42)	(22)	(12)	(19)	(24)	(22)	(24)	(23)	(37)	(26)	(39)	(13)
CINCINNATI	130	116	112	117	117	123	142	136	147	147	142	126
M.P. 462.8	(34)	(12)	(16)	(18)	(20)	(23)	(26)	(23)	(30)	(29)	(31)	(17)
NORTH BEND	140	128	117	123	133	124	143	142	145	167	156	126
M.P. 490.0	(47)	(14)	(11)	(18)	(12)	(12)	(21)	(24)	(17)	(43)	(31)	(16)
MARKLAND	140	150	137	132	140	138	162	158	150	160	166	137
M.P. 531.5	(19)	(56)	(37)	(28)	(20)	(15)	(35)	(29)	(16)	(24)	(29)	(10)

HARDNESS (mg/L)

(Continued)

LONG TERM AVERAGES (WITH STANDARD DEVIATION) OVER PERIOD OF RECORD FOR EACH MONITORING STATION BY MONTH

1980-1992

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LOUISVILLE M.P. 600.6	128 (41)	137 (20)	140 (36)	130 (16)	140 (32)	134 (17)	139 (20)	143 (11)	143 (18)	161 (26)	161 (33)	131 (16)
WEST POINT M.P. 625.9	136 (37)	135 (16)	129 (10)	128 (16)	137 (21)	144 (31)	146 (21)	145 (22)	147 (15)	168 (30)	166 (33)	135 (13)
CANNELTON M.P. 720.7	140 (12)	135 (12)	132 (29)	123 (12)	134 (19)	134 (14)	135 (33)	129 (50)	151 (24)	144 (21)	135 (41)	125 (16)
EVANSVILLE M.P. 791.5	138 (41)	143 (22)	125 (19)	132 (14)	142 (26)	144 (22)	148 (14)	160 (26)	161 (52)	155 (25)	138 (49)	142 (26)
UNIONTOWN M.P. 846.0	142 (17)	128 (31)	145 (43)	128 (14)	138 (24)	144 (26)	139 (19)	147 (13)	149 (24)	160 (25)	167 (50)	142 (21)
JOPPA M.P. 952.3	177 (29)	151 (13)	149 (21)	144 (15)	162 (37)	180 (29)	154 (20)	140 (28)	118 (30)	133 (21)	156 (28)	169 (31)

SECTION V:

ADDITIONAL INFORMATION SOURCES

There are many state and federal agencies involved in the regulation and preservation of the Ohio River. While this book is meant to be a summary of available information, additional information may be required in some situations. The following summary of state and federal agencies should aid the reader in obtaining the necessary information.

The directory of state water pollution control agencies includes the local office address with a list of counties served by each office. The list of U.S. EPA regional offices includes their address list of states in each region. These water pollution control agencies are responsible for pollution monitoring, permitting and emergency response in a spill event for the Ohio River basin.

Additional names and addresses of other federal agencies include U.S. Fish and Wildlife, U.S. Army Corps of Engineers, U.S. Geological Survey, and U.S. Coast Guard.

Daily flow data and water quality data can be accessed electronically through ORSANCO's bulletin board. This board, originally designed for use during spill events, is maintained by the Commission on a daily basis. The telephone number and information on bulletin board use can be obtained from the Commission office (513/231-7719).

The Commission has numerous other publications available through the Commission office. A list of these publications is included in this section.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
2200 Churchill Road
Springfield, IL 62794
(217) 782-1654

Champaign Office
2125 South First Street
Champaign, IL 61820
(217) 333-8361

Marion Office
2309 West Main Street
Marion, IL 62969
(618) 997-4371

County River Basin

Champaign	Wabash
Clark	Wabash
Coles	Wabash
Crawford	Wabash
Cumberland	Wabash
Douglas	Wabash
Edgar	Wabash
Effingham	Wabash
Ford	Wabash
Iroquois	Wabash
Jasper	Wabash
Livingston	Wabash
Moultrie	Wabash
Shelby	Wabash
Vermillion	Wabash

Collinsville Office
2009 Mall Road
Collinsville, IL 62234
(618) 346-5120

County River Basin

Marion	Wabash
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County River Basin

Alexander	Ohio
Clay	Wabash
Edwards	Wabash
Fayette	Wabash
Gallatin	Ohio
Hamilton	Wabash
Hardin	Ohio
Jefferson	Wabash
Johnson	Ohio
Lawrence	Wabash
Massac	Ohio
Pope	Ohio
Pulaski	Ohio
Richland	Wabash
Saline	Ohio
Union	Ohio
Wabash	Wabash
Wayne	Wabash
White	Wabash
Williamson	Ohio

STATE OF INDIANA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
Indiana Water Pollution Control Board
P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 232-8476

<u>County</u>	<u>County</u>	<u>County</u>
P Adams	Henry	Randolph
P Allen	Howard	P Ripley
Bartholomew	Huntington	Rush
P Benton	Jackson	Scott
Blackford	P Jasper	Shelby
Boone	P Jay	Spencer
Brown	Jefferson	Starke
Carroll	Jennings	Sullivan
Cass	Johnson	Switzerland
Clark	Knox	Tippecanoe
Clay	Kosciusko	Tipton
Clinton	Lawrence	Union
Crawford	Madison	Vanderburgh
Daviess	Marion	Vermillion
Dearborn	Marshall	Virgo
Decatur	Martin	Wabash
Delaware	Miami	Warren
Dubois	Monroe	Warrick
Fayette	Montgomery	Washington
Floyd	Morgan	Wayne
Fountain	Noble	P Wells
Franklin	Ohio	P White
Fulton	Orange	Whitley
Gibson	P Owen	
Grant	Parke	
Greene	Perry	
Hamilton	Pike	
Hancock	Posey	
Harrison	Pulaski	
Hendricks	Putnam	

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
Division of Water Quality
14 Reilly Road
Frankfort, KY 40601
(502) 564-3410

Bowling Green District Office
1508 Westen Avenue
Bowling Green, KY 42104
(502) 843-5475

Florence District Office
7964 Kentucky Dr., Suite 8
Florence, KY 41042
(502) 292-6411

<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

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

Columbia District Office
P.O. Box 335
Columbia, KY 42728
(502) 384-4734

Frankfort District Office
14 Reilly Road
Frankfort, KY 40601
(502) 564-3410

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

<u>County</u>	<u>River Basin</u>
Anderson	Ohio
Bourbon	Licking
Bulitt	Ohio
Clark	Licking
Fayette	Kentucky
Franklin	Kentucky
Harrison	Licking
Henry	Kentucky
Jefferson	Ohio
Jessamine	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
Division of Water Quality
14 Reilly Road
Frankfort, KY 40601
(502) 564-3410

(Continued)

Hazard District Office
233 Birch Street
Hazard, KY 41701
(606) 439-2391

Madisonville District Office
625 Hospital Dr., 4th Fl.
Madisonville, KY 42431-1682
(502) 825-6529

County River Basin

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

Morehead District Office
Mabry Bldg, KY 32 South
Morehead, KY 40351
(606) 784-6635

County River Basin

Bath	Licking
Boyd	Licking
Bracken	Ohio
Carter	Ohio
Elliot	Ohio
Fleming	Licking
Greenup	Ohio
Lawrence	Big Sandy
Lewis	Ohio
Mason	Ohio
Menifee	Licking
Montgomery	Licking
Morgan	Licking
Robertson	Licking
Rowan	Licking

County River Basin

Breckenridge	Ohio
Caldwell	Ohio
Christian	Ohio
Cumberland	Ohio
Crittenden	Green
Daviess	Green
Grayson	Ohio
Hancock	Ohio
Henderson	Ohio
Hopkins	Ohio
Livingston	Ohio
Lyon	Cumberland
McLean	Green
Meade	Ohio
Muhlenberg	Green
Ohio	Green
Todd	Cumberland
Trigg	Ohio
Union	Ohio
Webster	Ohio

London District Office
85 State Police Road
London, KY 40741
(606) 878-0610 Ext. 303

County River Basin

Bell	Cumberland
Clay	Kentucky
Harlan	Cumberland
Jackson	Kentucky
Knox	Cumberland
Laurel	Cumberland
Leslie	Kentucky
McCreary	Cumberland

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
Division of Water Quality
14 Reilly Road
Frankfort, KY 40601
(502) 564-3410

(Continued)

London District Office
(Cont.)

<u>County</u>	<u>River Basin</u>
Owlsley	Kentucky
Rockcastle	Cumberland
Whitley	Cumberland

Paducah District Office
4500 Clarks River Road
Paducah, KY 42003
(502) 898-8468

<u>County</u>	<u>River Basin</u>
Ballard	Ohio
Calloway	Ohio
Carlisle	Ohio
Fulton	Ohio
Graves	Ohio
Hickman	Ohio
Marshall	Ohio
McCracken	Ohio

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water
50 Wolf Road
Albany, NY 12233-3500
(518) 457-6674

Buffalo Regional Office
270 Michigan Avenue
Buffalo, NY 14203-2999
(518) 851-7200

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

STATE OF OHIO
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
P.O. Box 1049, 1800 WaterMark Drive
Columbus, OH 43266-0149
(614) 644-2001

Central District
2305 Westbrook Dr., Bldg. C
P.O. Box 2198
Columbus, OH 43266-2196
(614) 771-7505

Southeast District
2195 Front Street
Logan, OH 43138
(614) 385-8501

<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, OH 44087
(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

<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
Nobel	Ohio
Perry	Muskingum
Pike	Scioto
Ross	Scioto
Tuscarawas	Muskingum
Vinton	Ohio
Washington	Ohio

STATE OF OHIO
ENVIRONMENTAL PROTECTION AGENCY
Division of Water Pollution Control
P.O. Box 1049, 1800 WaterMark Drive
Columbus, OH 43266-0149
(614) 644-2001

(Continued)

Northwest District

347 N. Dunbridge Road

Bowling Green, OH 45402

(419) 352-8461

Southwest District

40 S. Main Street

Dayton, OH 45402

(513) 285-6357

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

<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
Montgomery	Great Miami
Miami	Great Miami
Preble	Great Miami
Shelby	Great Miami
Warren	Great Miami

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Bureau of Water Quality Management
P.O. Box 8465
Harrisburg, PA 17105-8465
(717) 787-2666

Pittsburgh Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222
(412) 442-4000

Meadville Regional Office
1012 Water Street
Meadville, PA 16335
(814) 332-6942

<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
Westmoreland	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
Potter	Allegheny
Venango	Allegheny
Warren	Allegheny

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
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P.O. Box 7017
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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
Wythe	Kanawha

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

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DIVISION OF ENVIRONMENTAL PROTECTION
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Brooke	Ohio
Hancock	Ohio
Harrison	Monongahela
Marion	Monongahela
Marshall	Ohio
Monongahela	Monongahela
Ohio	Ohio
Preston	Monongahela
Taylor	Monongahela
Tucker	Monongahela
Wetzel	Ohio

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Lewis	Monongahela
Nicholas	Kanawha
Pocahontas	Kanawha
Randolph	Monongahela
Upshur	Monongahela
Webster	Kanawha

District 3

Post Office Box 38
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<u>County</u>	<u>River Basin</u>
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Clay	Kanawha
Lewis	Monongahela
Nicholas	Kanawha
Pocahontas	Kanawha
Randolph	Monongahela
Upshur	Monongahela
Webster	Kanawha

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ORSANCO PUBLICATIONS
(Available through the Commission Office)

Analysis of Fundamentals of Acid Mine Drainage: A Basis for Future Investigations. 1961

Annual Reports. 1948 through 1993.

Aquatic-Life Resources of the Ohio River. 1962

Assessment of Nonpoint Sources of Pollutants. 1976

Assessment of ORSANCO Fish Population Data Using the Modified Index of Well Being (MIwb) 1992.

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1978-79.** 1980. (\$5.00).
NTIS Accession No. PB81110397.

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1980-81.** 1982. (\$6.00).

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1982-83.** 1984. (\$5.00).

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1984-85.** 1986. (\$5.00).

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1986-87.** 1988. (\$6.00).

* **Assessment of Water Quality Conditions: Ohio River Mainstem 1988-89.** 1990. (\$6.00).

* **Assessment of Water Quality Conditions of the Ohio River 1990-91.** 1993. (\$6.00)

* **Assessment of Water Quality Conditions of the Ohio River 1992-93.** 1994. (\$6.00)

Assessment of Water Quality Conditions: Ohio River Mainstem 1984-85. (Executive Summary). 1986.

Assessment of Water Quality Conditions: Ohio River Mainstem 1986-87. (Executive Summary). 1988.

Assessment of Water Quality Conditions: Ohio River 1988-89 (Executive Summary). 1991.

Assessment of Water Quality Conditions: Ohio River 1992-93 (Executive Summary). 1994.

Bacterial Quality Objectives for the Ohio River. 1951.

Brine Contamination in the Muskingum River. 1951. (Loan copies only)

*There are charges for these publications

- Clean Streams for the Ohio Valley.** (Undated) (Loan copies only)
- Disposal of Spent Sulfate Pickling Solutions.** 1952. (Loan copies only)
- * **Dust Recovery Practices at Blast Furnaces.** 1958. (\$1.00)
- * **Early-Warning Organics Detection System, Final Report (EWODS).** 1981. (\$7.50)
- Emergency Response Directory.** (Updated every six months).
- Evaluation of the Ohio Valley Region Basal Sandstone as a Wastewater Injection Interval.** 1976. (Loan copy only)
- * **Fishes of the Ohio River: Testimony to Clean Water (Brochure).** 1983. (\$4.00)
- * **Ground Water Report, A Primer.** 1985. (\$5.00)
- Ground Water Studies of Neville Chemical Site, Mile Point 6.2 of the Ohio River: Part of an Investigation of Toxic Substances in the Ohio River Between River Miles 0 and 90.** 1992
- Guidelines for Prevention, Control and Reporting of Chemicals Spills at an Industrial Facility.** 1978.
- How to Get Sewage Treatment Works in Ohio.** 1952.
- Land Use and Hydrologic Impacts on Water Quality: Ohio River Basin.** 1980. NTIS Accession No. PB8015602.
- * **Methods for Treating Metal Finishing Wastes.** 1953. (Loan copy only)
- ****Model State Program for Control and Prevention of Water Pollution from Coal Preparation Plants and Refuse Disposal Areas.** 1979.
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- Monongahela River Sewage Treatment Considerations.** 1959.
- Multiple-Purpose Reservoirs and Pollution Control Benefits.** 1951.
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* There are charges for these publications

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- Nonpoint Source Pollution of the Ohio River (Brochure).** 1990.
- Ohio River Main Stem: Assessment of 1974 (1975, 1976, 1977) and Future Water Quality Conditions.** 1975. (1976, 1977, 1978).
- Ohio River Pollution Abatement Needs: Cincinnati Pool.** 1949.
- Ohio River Pollution Abatement Needs: Cincinnati to Cairo Stretch.** 1953.
- Ohio River Pollution Abatement Needs: Huntington to Cincinnati Stretch.** 1952.
- Ohio River Pollution Abatement Needs: Pittsburgh to Huntington Stretch.** 1953.
- Ohio River Pollution Patterns--1950.** 1951. (Loan copies only)
- Ohio River: Recommended Pollution Control Standards--Pittsburgh to Cairo Point.** 1970.
- * **Ohio River Valley Fish Population Data 1968-1980.** (\$3.50)
- Ohio River Valley Water Sanitation Commission and its Activities.** 1991.
- Ohio River Valley Water Sanitation Compact.** 1948.
- * **Ohio River Water Quality Fact Book.** 1988. (\$7.50)
- * **ORSANCO 24-Hour Bioassay.** 1974. (\$1.00)
- ORSANCO Outlook, Newsletter.** Every six months.
- * **Perspective on the Regulation of Underground Injection of Wastewaters.** 1969. (\$3.00)
- Phenol Wastes Treatment by Chemical Oxidation.** 1951. (Loan copy only)
- * **Planning and Making Industrial Waste Surveys.** 1952. (reprinted 1964 and 1973) (\$2.00).
- * **Plating-Room Controls for Pollution Abatement.** 1951. (\$0.50)
- Pollution Control Standards.** 1990.
- Pollution Control Standards.** 1993.
- Pollution Patterns in the Ohio River--1950.** 1951. (Loan copy only)

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- * **Presence of Toxic Substances in the Ohio River.** 1987. (\$5.00)
- Preventing Stream Pollution from Oil Pipeline Breaks.** 1950. (Loan copy only)
- Principles and Guide to Practices in the Control of Acid-Mine Drainage.** 1963.
- * **Procedures for Investigation of Fish-Kills.** 1956. (\$0.50)
- * **Procedures for Analyzing Metal Finishing Wastes.** 1954. (\$1.00)
- * **Procedures Manual: Organics Detection System.** 1983. (\$3.50)
- * **Quality Assurance Manual.** 1989.
- * **Quality Control Assurance Program.** 1981. (\$5.00) (Loan copy only)
- * **Quality Control Assurance Program.** 1984. (\$6.00) (Loan copy only)
- Quality Control Assurance Program for Primary In-Stream Monitor Network.** 1977.
- Quality Monitor: An Appraisal of Conditions in the Ohio River and Some of its Tributaries.** Published semi-annually.
- Radioactivity in the Ohio River.** 1984.
- * **Reducing Phenol Wastes from Coke Plants.** 1953. (\$1.00)
- * **Registry of Wells for Use in Underground Injection of Wastewater in the Ohio River Valley.** 1974. (\$2.50)
- * **Registry of Wells for Use in Underground Injection of Wastewater 1972-1975.** 1976. (\$2.50)
- Regulatory Actions for the Control of Sewage, Industrial Wastes and Other Substances.** 1961. (Revised in 1963 and 1964).
- Relationships Between Ohio River Water Quality and Drinking Water Quality.** 1991.
- Revenue Programs for Wastewater Agencies.** 1975.
- River Quality Conditions During a 16-Week Shutdown of Upper Ohio Valley Steel Mills.** 1961.
- State and Federal Regulations Affecting the Siting of Major Energy-Related Facilities: Background Paper.** 1979.

*There are charges for these publications

- * **Status of Wastewater Facilities.** 1981. (\$3.00) NTIS Accession No. PB81178808
- * **Status of Wastewater Facilities.** 1983. (\$3.00)
- * **Status of Wastewater Facilities.** 1986. (\$3.00)
- * **Status of Wastewater Facilities.** 1988. (\$3.00)
- * **Thermal Discharges to the Ohio River: An Evaluation of River Temperature Relationships, 1964-1974.** 1975. (\$5.00)
- Toxic Substances Control Program: Cincinnati to Louisville Field Survey.** 1992.
- Toxic Substances Control Program: Pittsburgh to Wheeling Field Survey.** 1992.
- Toxic Substances Control Program: Wheeling to Parkersburg Field Survey.** 1990.
- Transporting Hazardous Materials on the Ohio River.** (Brochure). 1985.
- Treatment Requirements for Sewage Discharged into the Ohio River Between Cincinnati and Cairo: Treatment Standards No. 5,6, and 7.** 1954.
- Treatment Requirements for Sewage Discharged into the Ohio River Between Huntington and Cincinnati: Treatment Standard No. 2.** 1952.
- Treatment Requirements for Sewage Discharged into the Ohio River Between Pittsburgh and Huntington: Treatment Standards No. 3 and 4.** 1953.
- * **Underground Injection of Wastewaters in the Ohio River Valley Region.** 1973. (\$3.00)
- Unfinished Agenda for the Ohio River Valley (Brochure).** 1984.
- Wabash River: Pollution Abatement Needs.** 1950.
- Wastewater Discharges from Water Treatment Plants, April 1981.**
- * **Water Quality and Flow Variations in the Ohio River--1951-55.** 1957. (\$2.00)
- * **Water Quality and Flow Variations in the Ohio River and Tributaries--1956-57.** 1959. (\$2.00)
- * **Water Quality Monitoring Strategy for the Ohio River and Lower Reaches of Major Tributaries.** 1982. (\$3.50)

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Water Quality Trends, Ohio River and Its Tributaries (1977-1987): Statistical Analyses of Data Resulting from Water Quality Monitoring Conducted by ORSANCO. 1990.

Water Quality Trends, Ohio River and Its Tributaries (1980-1990): A Supplement to the 1977-1987 Study. 1992.

Water Quality Trends in the Ohio River and its Tributaries (Brochure). 1991.

Water Quality Trends in the Ohio River and its Tributaries: Organic Compounds. 1992.

Water Treatment Process Modifications for Trihalomethane Control and Organic Substances in the Ohio River. 1979. NTIS Accession No. PB301222/AS.

"What's A River Worth?" - A Valuation Survey of the Ohio River Corridor. 1994

Orders can be made by contacting:

**Ohio River Valley Water Sanitation Commission
5735 Kellogg Avenue
Cincinnati, OH 45228-1112
(513) 231-7719**

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APPENDICES

APPENDIX A

Ohio River Valley Water Sanitation Commission

Pollution Control Standards

for discharges to the Ohio River

1993 Revision

Notice of Requirements

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 9, 1993, 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 revisions as changing conditions require, Pollution Control Standards 1993. 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 the 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.

To the extent that Pollution Control Standards (October 18, 1990 Revision), which were established by Commission action October 18, 1990, have been amended or restated by virtue of Pollution Control Standards 1993 Revision, the Pollution Control Standards 1990 Revision, including any definitions and application procedures appended to or incorporated therein, are rescinded.

Alan H. Vicory, Jr.
Alan H. Vicory, Jr.

Executive Director and Chief Engineer

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I. PREAMBLE¹

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 for the treatment, (i.e., wastewater discharge requirements) of sewage and 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 water quality criteria to assure that the uses will be achieved, and set wastewater discharge requirements needed to attain the established water quality criteria. These regulations also implement the formal decisions of the Commission as they are concerned with pollution control activities, provide for 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 main stem of the Ohio River (unless the state or the Federal government has a more stringent regulation).

II. DEFINITIONS

- A. "Acute criteria" means the highest in-stream concentrations of toxic substances to which organisms can be exposed for a brief period of time without causing unacceptable harmful effects.

¹Specific wastewater discharge requirements are established in these regulations and must be incorporated into discharge permits issued under the authority of the National Pollutant Discharge Elimination System or state discharge permitting programs when they are more stringent than:

1) applicable U.S. EPA technology-based effluent guidelines required under Sections 301, 304, 306, and 307 of the Federal Clean Water Act, or

2) any state treatment requirements, effluent standards, or water quality based effluent limits.

In the absence of promulgated Federal effluent guidelines pursuant to Sections 301, 304, 306, and 307 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 Judgement on a case by case basis.

- B. "Biological integrity" means the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to those best attainable given ecoregional attributes and the modified habitat types of the river.
- C. "Chronic criteria" means the highest in-stream concentrations of toxic substances to which organisms can be exposed indefinitely without causing unacceptable harmful effects.
- D. "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, Kentucky, Pennsylvania, and Virginia, which pledges each to the other of the signatory states faithful cooperation in the control of existing and future pollution of the waters in the Ohio River basin. This Compact created the Ohio River Valley Water Sanitation Commission (ORSANCO).
- E. "Cooling Water" means 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 anti-fouling agents approved by the appropriate regulatory agencies, are added prior to discharge.
- F. "Contact Recreation" means recreational activities where the human body may come in direct contact with water of the Ohio River.
- G. "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.
- H. "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.
- I. "Net Discharge" is determined by excluding the amount of pollutant in an intake water when determining the quality of a discharge if both the intake and discharge are from and to the same body of water.
- J. "96 hour LC₅₀" as used in these regulations means the concentration of a substance that kills 50 percent of the test organisms within 96 hours. The test organisms shall be representative important species indigenous to the Ohio River or standard test organisms.

- K. 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.
- L. "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.
- M. "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.
- N. "Persistent Substances" means those substances which have a half-life for degradation under natural environmental conditions of more than 4 days. All other substances are non-persistent.
- O. "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.
- P. "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.
- Q. "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.
- R. "Substantially Complete Removal" means removal to the lowest practicable level attainable with current technology.
- S. "Toxic Wastes" means wastes containing substances or combinations of substances in concentrations 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.
- T. "Wastewater" means sewage and/or industrial wastes as herein defined.

III. DESIGNATED USES

The Ohio River, as hereinbefore defined, has been designated by the Compact as available 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. It is the purpose of these Pollution Control Standards to safeguard the waters of the Ohio River for these designated uses. No degradation of the water quality of the Ohio River which would interfere with, or become injurious to, these uses shall be permitted.

IV. WATER QUALITY CRITERIA

A. General

The minimum conditions which the wastewater discharge requirements (Section V) are intended to achieve in the receiving waters outside the mixing zone are as follows:

1. Freedom from anything that will settle to form objectionable sludge deposits which interfere with designated water uses.
2. Freedom from floating debris, scum, oil and other floating material in amounts sufficient to be unsightly or deleterious.
3. Freedom from materials producing color or odors to 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. Aquatic Life Protection

To provide protection of warm water aquatic life habitats, the following criteria shall be met outside the mixing zone:

1. **BIOLOGICAL:** The biological integrity of the Ohio River shall be protected and preserved.
2. **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.
3. **TEMPERATURE:** Allowable stream temperatures are:

<u>Month/Date</u>	<u>Period Average</u>		<u>Instantaneous Maximum</u>	
January 1–31	45°F	7.2°C	50°F	10.0°C
February 1–29	45	7.2	50	10.0
March 1–15	51	10.6	56	13.3
March 16–31	54	12.2	59	15.0
April 1–15	58	14.4	64	17.8
April 16–30	64	17.8	69	20.6
May 1–15	68	20.0	73	22.8
May 16–31	75	23.9	80	26.7
June 1–15	80	26.7	85	29.4
June 16–30	83	28.3	87	30.6
July 1–31	84	28.9	89	31.7
August 1–31	84	28.9	89	31.7
September 1–15	84	28.9	87	30.6
September 16–30	82	27.8	86	30.0
October 1–15	77	25.0	82	27.8
October 16–31	72	22.2	77	25.0
November 1–30	67	19.4	72	22.2
December 1–31	52	11.1	57	13.9

4. **pH:** No value below 6.0 nor above 9.0.
5. **AMMONIA:** The concentration of un-ionized ammonia (as NH₃) shall not exceed 0.05 mg/L; un-ionized ammonia shall be determined from values for total ammonia (as nitrogen), pH and temperature, by means of the following equation:

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

$$pK_a = 0.0902 + \frac{2730}{(273.2 + T_c)}$$

Where:

$$T_c = \text{Temperature, degrees Celsius}$$

$$Y = \text{Un-ionized ammonia, milligrams per liter}$$

Combinations of values for total ammonia (as nitrogen), pH, and temperature which yield an un-ionized ammonia concentration of 0.05 mg/L are shown in Appendix A.

6. CHEMICAL CONSTITUENTS:

a. Not to exceed the following concentrations:

<u>Constituent</u>	<u>Chronic Criteria Concentration</u> <u>ug/L</u>	<u>Acute Criteria Concentration</u> <u>ug/L</u>
Cadmium	$e^{(.7852[\ln \text{Hard.}] - 3.490)}$	$e^{(1.128[\ln \text{Hard.}] - 3.828)}$
Chromium (hexavalent)	11	16
Copper	$e^{(.8545[\ln \text{Hard.}] - 1.465)}$	$e^{(.9422[\ln \text{Hard.}] - 1.464)}$
Cyanide (free)	5	22
Lead	$e^{(1.273[\ln \text{Hard.}] - 4.705)}$	$e^{(1.273[\ln \text{Hard.}] - 1.460)}$
Mercury	.012	2.4
Selenium	5	20
Zinc	$e^{(.8473[\ln \text{Hard.}] + .7614)}$	$e^{(.8473[\ln \text{Hard.}] + .8604)}$

- b. Concentrations for metals are total recoverable (except hexavalent chromium which is dissolved) unless it can be demonstrated to the satisfaction of the Commission and the member states, that a more appropriate analytical technique is available which provides a measurement of that portion of the metal present which causes toxicity to aquatic life.
- c. Wastewater discharge requirements for these constituents shall be calculated based on the chronic criteria concentrations, the in-stream concentration above the point of discharge, and the minimum 7-day, 10-year stream flow as contained in Appendix B. The acute criteria concentrations shall not be exceeded in the stream at any time. Criteria for cadmium, copper, lead, and zinc at specified hardness values are listed in Appendix C.

7. OTHER TOXIC SUBSTANCES:

Water quality criteria for substances not otherwise specified in this section shall be derived based on the following:

a. For the Protection of Aquatic Life:

i. Non-Persistent Substances – not to exceed an average of one-twentieth (0.05), nor at any time exceed one-tenth (0.1) of the 96 hour LC_{50} of representative important species indigenous to the Ohio River or standard test organisms.

ii. Persistent Substances – not to exceed an average of one one-hundredth (0.01), nor at any time exceed one-twentieth (0.05) of the 96 hour LC_{50} of representative important species indigenous to the Ohio River or standard test organisms.

- b. Limiting concentrations other than those derived from the above may be used for the protection of aquatic life when justified on the basis of scientifically defensible evidence.

C. Human Health Protection

To provide protection to human health, the following criteria shall be met outside the mixing zone:

1. BACTERIA:

- a. Maximum allowable level of fecal coliform bacteria for use as a source of public water supply -- For the months of November through April, content shall not exceed 2,000/100 mL as a monthly geometric mean based on not less than five samples per month.
- b. Maximum allowable level of fecal coliform bacteria for contact recreation -- For the months of May through October, content 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.
- c. Maximum allowable level of Escherichia coli bacteria for contact recreation -- For the months of May through October, measurements of Escherichia coli bacteria may be substituted for fecal coliform. Content shall not exceed 130/100 mL as a monthly geometric mean, based on not less than five samples per month, nor exceed 240/100 mL in any sample.

2. CHEMICAL CONSTITUENTS:

Not to exceed the following concentrations:

<u>Constituents</u>	<u>Concentration mg/L</u>
Arsenic	.05
Barium	1.0
Chloride	250
Fluoride	1.0
Nitrite + Nitrate Nitrogen	10.0
Nitrite Nitrogen	1.0
Phenolics	.005
Silver	.05
Sulfate	250

3. RADIONUCLIDES: Gross total alpha activity (including radium-226 but excluding radon and uranium) shall not exceed 15 picocuries per liter (pCi/L) and combined radium-226 and radium-228 shall not exceed 4 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.

4. OTHER TOXIC SUBSTANCES: Water quality criteria for substances not otherwise specified in this section shall be derived based on the following:
 - a. For the protection of human health, criteria published by the United States Environmental Protection Agency pursuant to Section 304(a) of the Federal Clean Water Act shall be used.
 - i. For substances identified as human carcinogens, wastewater discharge requirements shall be developed based on the in-stream concentration above the point of discharge, and calculated so as to prevent one additional cancer per one million population at the harmonic mean stream flow (see Appendix B).
 - ii. For substances not identified as human carcinogens, wastewater discharge requirements shall be developed based on the in-stream concentration above the point of discharge and calculated to meet the water quality criteria at the minimum 7-day, 10-year flow (see Appendix B).
 - b. Limiting concentrations other than those derived from the above may be used for the protection of human health when justified on the basis of scientifically defensible evidence.

V. WASTEWATER DISCHARGE REQUIREMENTS

A. General

1. No discharge of 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 wastewater discharge requirements, shall preclude the attainment of any designated use of the mainstem waters of the Ohio River or shall interfere with the attainment of the water quality criteria set forth in Section IV.
2. All discharges 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, 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 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:

Sewage shall be treated, prior to discharge, to meet the following effluent limitations in addition to the requirements of Section V.A.

a. Biochemical Oxygen Demand

i. Five-day biochemical oxygen demand (BOD_5) – the arithmetic mean of the values for effluent samples collected in a month shall not exceed 30 mg/L, and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 45 mg/L.

ii. Five-day carbonaceous biochemical oxygen demand ($CBOD_5$) may be substituted for BOD_5 provided that the arithmetic mean of the values for effluent samples collected in a month shall not exceed 25 mg/L, and the arithmetic mean of the values of effluent samples collected in a week shall not exceed 40 mg/L.

b. Suspended Solids

The arithmetic mean of the values for effluent samples collected in a month shall not exceed 30 mg/L, and the arithmetic mean of the values for effluent samples collected in a week shall not exceed 45 mg/L.

c. pH

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

d. Bacteria

i. During the months of November through April, the geometric mean of the fecal coliform bacteria content of effluent samples collected in a month shall not exceed 2000/100 mL.

ii. During the months of May through October, the geometric mean of the fecal coliform bacteria content of effluent samples collected in a month shall not exceed 200/100 mL, and no more than 10 percent of the values shall exceed 400/100 mL.

iii. During the months of May through October, *Escherichia coli* may be substituted for fecal coliform provided that the geometric mean of the values for effluent samples collected in a month shall not exceed 130/100 mL, and no more than 10 percent of the values shall exceed 240/100 mL.

2. ALTERNATIVE TREATMENT:

Such facilities as waste stabilization ponds and trickling filters shall be deemed to provide effective treatment of sewage provided that the requirements of Sections V.A., V.B.1.(c) and (d) are met, that the effluent does not cause any violations of applicable states' water quality standards or Sections III and IV of these regulations, and that the following requirements are met.

a. Biochemical Oxygen Demand

i. Five-day biochemical oxygen demand (BOD₅) -- the arithmetic mean of the values for effluent samples collected in a month shall not exceed 45 mg/L; the arithmetic mean of the values for effluent samples collected in a week shall not exceed 65 mg/L; and the average percent removal for any month shall not be less than 65 percent.

ii. Five-day carbonaceous biochemical oxygen demand (CBOD₅) may be substituted for BOD₅, provided that the levels are not less stringent than the following: the arithmetic mean of the values for effluent samples collected in a month shall not exceed 40 mg/L; the arithmetic mean of the values for effluent samples collected in a week shall not exceed 60 mg/L; and the average percent removal for any month shall not be less than 65 percent.

b. Suspended Solids

The arithmetic mean of the values for effluent samples collected in a month shall not exceed 45 mg/L; the arithmetic mean of the values for effluent samples collected in a week shall not exceed 65 mg/L; and the average percent removal for any month shall not be less than 65 percent.

C. Industrial Wastes, Including Toxic Wastes

1. The minimum level of treatment for industrial wastes including toxic wastes, prior to discharge shall be in accordance with national effluent limitations and guidelines adopted by the Administrator of the United States Environmental Protection Agency pursuant to Sections 301 and 302 of the Federal Clean Water Act, national standards of performance for new sources adopted pursuant to Section 306 of the Federal Clean Water Act, and national toxic and pretreatment effluent limitations, adopted pursuant to Section 307 of the Federal Clean Water Act or in accordance with the standards of the state in which the discharge occurs.
2. In addition, the net discharge of the following toxic pollutants is prohibited:
 - a. Aldrin (a,s,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1, 4-endo-5, 8-exo-dimethanonaphthalene)
 - b. Dieldrin (a,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
 - i. DDT means 1,1,1-trichloro-2,2-bis(p-chlorophenyl) ethane and some o,p'-isomers
 - ii. DDD (TDE) means 1,1-dichloro-2, 2-bis(p-chlorophenyl) ethane and some o,p'-isomers
 - iii. 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.

E. Publicly Owned Treatment Works Discharges from Regulating Devices and/or Outlets from Combined Wastewater and Stormwater Collection and Conveyance Systems

1. A direct discharge, if caused by temporary excess flows due to stormwater collected and conveyed through combined sewer systems, shall not be considered to be in violation of these wastewater discharge requirements, providing:
 - a. that the discharger is operating the collection system and/or wastewater treatment plant with reasonable care, maintenance, and efficiency and continues to act with due diligence and speed to correct the conditions resulting from the stormwater flow.
 - b. that the discharger is, at a minimum, operating the collection system and/or wastewater treatment plant in accordance with a combined sewer overflow minimization plan approved by the appropriate state regulatory agency.
 - c. that the discharge does not interfere with the attainment of the water quality criteria set forth in Section IV.
2. No discharges to the Ohio River shall occur from combined sewer regulating devices unless there has been rainfall in greater than trace amounts or significant melting of frozen precipitation during the immediately preceding 24–hours, or unless the discharge is caused by river elevation at or above the established flood stage.

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. Acute water quality criteria, as specified in Section IV.B.6, will apply at all points within the mixing zone; however, states may at their discretion allow a smaller zone in the immediate vicinity of the point of discharge, in which acute criteria are exceeded provided the zone does not impact the water of another state.
- 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 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 acquire 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 water quality criteria relating to the designated use at or above the appropriate critical river flow as shown in Appendix B.

VII. 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.

VIII. VARIANCE

- A. The Commission may grant a variance from the provisions of Section V of these regulations, provided that the uses set forth in Section III are maintained. The applicant for a variance shall adhere to the following:
 - 1. The specific reasons for the variance shall be clearly stated in writing;
 - 2. The burden of proof is upon the applicant to assure that the uses set forth in Section III are maintained;
 - 3. Prior concurrence of the state where the applicant's discharge is located and those state(s) which may be affected must be obtained;
 - 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.

IX. ANALYTICAL METHODS

Tests or analytical determinations to determine compliance or non-compliance with the Wastewater Discharge Requirements and stream criteria established herein shall be made in accordance with accepted procedures such as those contained in the: (a) latest edition of 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 Environment Federation (WEF); (b) Annual Book of ASTM Standards, Part 31 – Water published by the American Society for Testing and Materials; (c) Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR 136) by the U.S. Environmental Protection Agency; or (d) by such other methods as are approved by the Commission as equal or superior to or not available within methods in documents listed above, provided such other test methods are available to the public.

X. SEVERABILITY CLAUSE

Should any one or more of the Pollution Control Standards hereby established or should any one or more provisions 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.

APPENDIX A

COMBINATIONS OF VALUES FOR TOTAL AMMONIA (AS NITROGEN), TEMPERATURE AND pH WHICH YIELD AN UN-IONIZED AMMONIA CONCENTRATION OF .05 MG/L

pH	T F 41	45	50	55	59	64	68	70	72	75	77	80	84	86	89
	T C 5	7.2	10	12.8	15	17.8	20	21.1	22.2	23.9	25	26.7	28.9	30	31.7
6.5	106	89	71	58	48	39	33	31	28	25	24	20	18	16	14
6.6	84	71	56	46	38	31	27	25	23	20	19	16	14	13	12
6.7	67	56	46	36	30	25	21	20	18	16	15	13	11	10	9.2
6.8	53	45	36	29	24	20	17	16	14	13	12	10	9.0	8.2	7.3
6.9	42	36	28	23	19	16	13	12	11	10	9.4	8.2	7.2	6.5	5.8
7.0	33	28	22	18	15	12	11	9.8	9.0	8.0	7.5	6.5	5.7	5.2	4.6
7.1	27	22	18	14	12	9.8	8.4	7.8	7.2	6.3	5.9	5.3	4.5	4.1	3.7
7.2	21	18	14	12	9.7	7.8	6.7	6.2	5.7	5.1	4.7	4.1	3.6	3.3	2.9
7.3	17	14	11	9.2	7.7	6.2	5.3	4.9	4.5	4.0	3.8	3.3	2.9	2.6	2.3
7.4	13	11	8.9	7.3	6.1	4.9	4.2	3.9	3.6	3.2	3.0	2.6	2.3	2.1	1.9
7.5	11	8.9	7.1	5.8	4.9	3.9	3.4	3.1	2.9	2.6	2.4	2.1	1.8	1.7	1.5
7.6	8.4	7.1	5.7	4.6	3.9	3.1	2.7	2.5	2.3	2.0	1.9	1.7	1.5	1.3	1.2
7.7	6.7	5.7	4.6	3.7	3.1	2.5	2.1	2.0	1.8	1.6	1.5	1.3	1.2	1.1	.95
7.8	5.3	4.5	3.6	2.9	2.5	2.0	1.7	1.6	1.5	1.3	1.2	1.1	.94	.85	.77
7.9	4.2	3.6	2.9	2.3	2.0	1.6	1.4	1.3	1.2	1.0	.97	.85	.76	.69	.62
8.0	3.4	2.9	2.3	1.9	1.6	1.3	1.1	1.0	.94	.84	.79	.69	.61	.55	.50
8.1	2.7	2.3	1.8	1.5	1.3	1.0	.88	.82	.76	.67	.63	.55	.49	.45	.40
8.2	2.1	1.8	1.5	1.2	1.0	.82	.71	.66	.61	.54	.51	.45	.40	.37	.33
8.3	1.7	1.5	1.2	.94	.81	.66	.57	.53	.49	.44	.41	.37	.33	.30	.27
8.4	1.4	1.2	.93	.76	.65	.53	.46	.43	.40	.36	.34	.30	.27	.25	.22
8.5	1.1	.93	.75	.62	.52	.43	.38	.35	.33	.29	.28	.25	.22	.20	.19
8.6	.88	.75	.60	.50	.43	.35	.31	.29	.27	.24	.23	.20	.18	.17	.16
8.7	.71	.60	.49	.40	.35	.29	.25	.24	.22	.20	.19	.17	.16	.14	.13
8.8	.57	.49	.40	.33	.28	.24	.21	.20	.18	.17	.16	.14	.13	.12	.11
8.9	.46	.40	.32	.27	.23	.20	.17	.16	.16	.14	.14	.12	.11	.11	.10
9.0	.38	.32	.27	.22	.19	.17	.15	.14	.13	.12	.12	.11	.10	.09	.09

T F - Temperature in degrees Fahrenheit
T C - Temperature in degrees Celsius

APPENDIX B

CRITICAL FLOW VALUES

FROM	TO	Minimum 7-day 10-year Low-Flow in cfs ⁽¹⁾	Harmonic Mean Flow in cfs ⁽²⁾
Pittsburgh	Montgomery Dam (M.P. 32.4)	4,800	20,600
Montgomery	Willow Island Dam (M.P. 161.8)	5,800	24,900
Willow Island	Gallipolis Dam (M.P. 279.2)	6,800	29,200
Gallipolis	Greenup Dam (M.P. 341.0)	8,500	36,500
Greenup	Meldahl Dam (M.P. 436.2)	9,800	42,100
Meldahl	McAlpine Dam (M.P. 605.8)	11,000	47,300
McAlpine	Uniontown Dam (M.P. 846.0)	13,000	55,900
Uniontown	Smithland Dam (M.P. 918.5)	18,800	90,800
Smithland	Cairo Point (M.P. 981.0)	46,300	199,000

⁽¹⁾Minimum 7-day, 10-year low flow (in cubic feet per second) based on calculations by the U.S. Corps of Engineers

⁽²⁾Harmonic mean flow (in cubic feet per second) based on analysis of stream flow data from the U.S. Geological Survey

APPENDIX C

NUMERICAL VALUES OF CADMIUM, COPPER, LEAD, AND ZINC CRITERIA AT SPECIFIED HARDNESS LEVELS

Hardness	Cadmium		Copper		Lead		Zinc	
	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)	Chronic Criterion (µg/L)	Acute Criterion (µg/L)
50	0.7	1.8	7	9	1.3	34	59	65
100	1.1	3.9	12	18	3.2	82	106	117
150	1.6	6.2	17	26	5.3	137	149	165
200	2.0	8.6	21	34	7.7	197	191	211
250	2.3	11.0	26	42	10	262	230	254
300	2.7	13.5	30	50	13	331	269	297

APPENDIX B

CONVERSION FACTORS FOR WATER QUALITY ANALYSIS

Flow

1 Million Gallons per day (MGD)	= 1.547 cfs	= 694.4 GPM	= 43.8 LPS
1 Cubic Foot per Second (cfs)	= 0.646 MGD	= 448.8 GPM	= 28.3 LPS
1 Gallon per Minute (GPM)	= 0.00144 MGD	= 0.00223 cfs	= 0.063 LPS
1 Liter per Second (LPS)	= 0.023 MGD	= 0.036 cfs	= 15.9 GPM

Velocity

1 Foot per Second (fps)	= 0.682 MPH	= 0.303 mps	= 1.09 KPH
1 Mile per Hour (MPH)	= 1.47 fps	= 0.444 mps	= 1.61 KPH
1 Meter per Second (mps)	= 3.3 fps	= 2.25 MPH	= 3.6 KPH
1 Kilometer per Hour (KPH)	= 0.92 fps	= 0.62 MPH	= 0.28 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

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

Q = Stream Flow in cfs

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

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

t = duration of spill

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

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

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

$$\text{If t is expressed in seconds,} = \frac{86400}{t}$$

APPENDIX C

Saturation Values of Dissolved Oxygen in Water Exposed to Water-Saturated Air Containing 20.90% Oxygen Under a Pressure of 760 mm Hg

Temperature Deg. C	Chloride Concentration in Water (mg/L)		Difference per 100 mg Chloride
	0	5,000	
Dissolved Oxygen (mg/L)			
0	14.6	13.8	0.017
1	14.2	13.4	0.016
2	13.8	13.1	0.015
3	13.5	12.7	0.015
4	13.1	12.4	0.014
5	12.8	12.1	0.014
6	12.5	11.8	0.014
7	12.2	11.5	0.013
8	11.9	11.2	0.013
9	11.6	11.0	0.012
10	11.3	10.7	0.012
11	11.1	10.5	0.011
12	10.8	10.3	0.011
13	10.6	10.1	0.011
14	10.4	9.4	0.010
15	10.2	9.7	0.010
16	10.0	9.5	0.010
17	9.7	9.3	0.010
18	9.5	9.1	0.009
19	9.4	8.9	0.009
20	9.2	8.7	0.009
21	9.0	8.6	0.009
22	8.8	8.4	0.008
23	8.7	8.3	0.008
24	8.5	8.1	0.008
25	8.4	8.0	0.008
26	8.2	7.8	0.008
27	8.1	7.7	0.008
28	7.9	7.5	0.008
29	7.8	7.4	0.008
30	7.6	7.3	0.008