

04092677 GRAND CALUMET RIVER AT INDUSTRIAL HWY AT GARY, IN

LOCATION.--Lat 41°36'29", long 87°23'39", in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.6, T.37 N., R.8W., Lake County, Hydrologic Unit 04040001, (HIGHLAND, IN quadrangle), on left bank, 30 feet upstream of U.S. 12 (Industrial Highway), 100 feet streamward of the centerline of Interstate 90, 2,000 feet downstream of Norfolk and Western railroad bridge, 6,000 feet southeast of Gary Airport terminal.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to September 1994, (gage heights only), October 1994 to current year.

GAGE.--Water-stage recorder and Acoustic Doppler Velocity Meter. Datum of gage is 580.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. Discharge is primarily from industrial and city effluent. Gage sensors were removed and gage temporarily shutdown from May 2, 2001 through December 5, 2001, due to bridge replacement.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e500	e503	e530	396	487	493	492	569	640	675	655	609
2	e504	e483	e527	374	486	504	497	558	624	685	647	634
3	e508	e501	e522	420	491	484	519	584	623	713	651	609
4	e519	e490	e520	467	456	477	519	587	644	736	637	615
5	e526	e483	e520	475	463	496	510	595	594	759	623	610
6	e539	e492	530	448	471	470	508	611	608	754	617	636
7	e526	e487	520	403	478	477	511	570	637	734	614	643
8	e512	e481	525	401	489	525	544	598	660	738	625	637
9	e509	e495	519	403	495	515	525	632	652	732	623	633
10	e506	e494	528	412	475	504	532	621	658	722	626	621
11	e518	e500	533	393	462	513	524	625	651	744	615	620
12	e505	e503	520	364	476	516	534	665	632	740	610	641
13	e527	e498	519	337	483	522	523	622	643	748	618	659
14	e534	e495	534	347	492	526	540	644	658	717	597	647
15	e521	e501	519	363	498	532	563	649	645	718	588	632
16	e509	e497	514	419	487	521	562	644	655	711	587	641
17	e509	e508	528	388	478	528	567	599	665	705	546	655
18	e508	e499	534	366	492	510	571	599	661	725	564	638
19	e513	e506	510	375	511	515	575	585	673	711	567	663
20	e521	e513	523	427	521	513	588	597	677	716	566	659
21	e516	e516	534	439	486	494	565	610	680	706	556	616
22	e525	e504	521	437	497	497	538	602	683	736	529	620
23	e516	e503	507	440	509	502	557	596	692	703	532	611
24	e531	e506	472	421	503	491	559	619	701	695	554	593
25	e521	e514	454	445	497	477	553	591	e700	691	557	590
26	e509	e515	430	451	499	474	548	602	697	686	578	588
27	e505	e515	445	444	492	507	555	600	700	684	603	594
28	e501	e515	437	448	494	509	542	617	715	671	601	612
29	e492	e515	421	440	---	500	551	613	699	671	589	614
30	e486	e517	431	e479	---	502	564	623	679	654	610	622
31	e494	---	441	e470	---	495	---	627	---	648	617	---
TOTAL	15910	15049	15568	12892	13668	15589	16236	18854	19846	22028	18502	18762
MEAN	513.2	501.6	502.2	415.9	488.1	502.9	541.2	608.2	661.5	710.6	596.8	625.4
MAX	539	517	534	479	521	532	588	665	715	759	655	663
MIN	486	481	421	337	456	470	492	558	594	648	529	588

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999	2000	2001	2002	2002	2002	2002	2002
MEAN	493.3	482.0	469.7	462.4	483.5	494.1	505.3	511.9	536.5	530.1	525.8	526.9
MAX	543	506	523	515	534	548	579	608	662	711	597	625
(WY)	2000	1999	2000	1999	1999	1999	1999	2002	2002	2002	2002	2002
MIN	454	438	425	416	419	404	381	400	459	434	469	478
(WY)	1995	1996	1996	2002	1996	1996	1996	1996	1995	1995	1995	1995

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

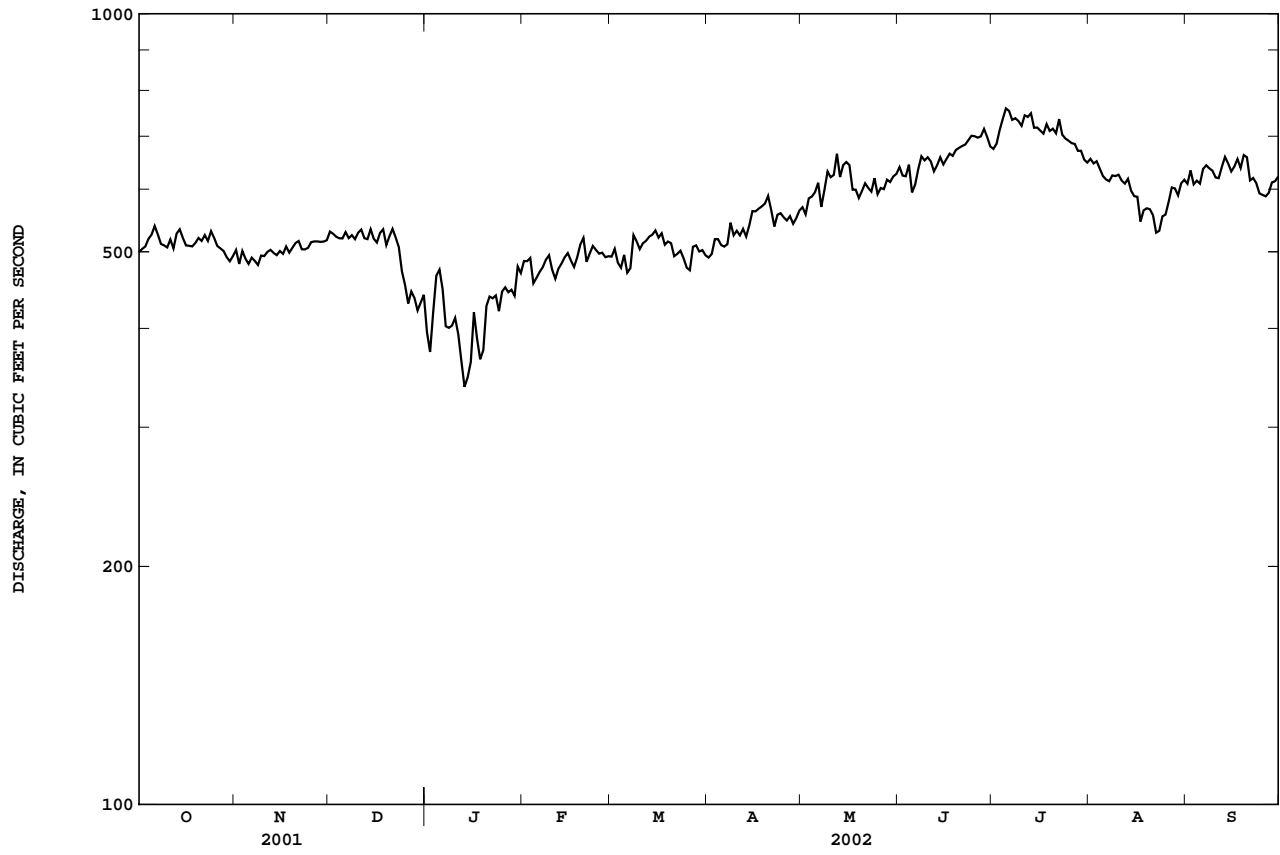
FOR 2002 WATER YEAR

WATER YEARS 1995 - 2002

ANNUAL TOTAL	185543	202904		
ANNUAL MEAN	508.3	555.9	501.8	
HIGHEST ANNUAL MEAN			556	2002
LOWEST ANNUAL MEAN			444	1996
HIGHEST DAILY MEAN	597	Apr 21	759	Jul 5 2002
LOWEST DAILY MEAN	413	Jan 1	337	Jan 13
ANNUAL SEVEN-DAY MINIMUM	423	Jan 1	369	Jan 12
MAXIMUM PEAK FLOW			837	May 12
MAXIMUM PEAK STAGE			3.56	May 12
10 PERCENT EXCEEDS	538		678	588
50 PERCENT EXCEEDS	510		529	498
90 PERCENT EXCEEDS	473		463	431

e Estimated

04092677 GRAND CALUMET RIVER AT INDUSTRIAL HWY AT GARY, IN--Continued



04092750 INDIANA HARBOR CANAL AT EAST CHICAGO, IN

LOCATION.--Lat 41°38'57", long 87°28'07", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.20, T.37N., R.9W., Lake County, Hydrologic Unit 04040001, (WHITING, IN quadrangle), on left bank at the site of the former Canal Street drawbridge, 3,200 ft east of U.S. Highway 20, 3,500 ft north of U.S. Highway 12, 4,300 ft south of 129th Street, and 1,000 ft west of the crossing of the centerlines of Cline Avenue and the Indiana Harbor Canal.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to current year.

REVISED RECORDS.--WDR IN-96-1: Instantaneous peak flow date.

GAGE.--Water-stage recorder, Acoustic Doppler Velocity Meter. Datum of gage not established. Prior to Sept. 22, 2000, gage was located 0.8 mi downstream.

REMARKS.--Records fair. Positive discharges indicate flow towards Lake Michigan; negative discharges indicate flow away from Lake Michigan.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	466	505	577	484	669	547	552	533	519	400	510	465
2	488	601	559	473	656	577	660	707	622	431	727	636
3	521	549	478	527	504	709	666	556	852	444	520	570
4	630	501	421	577	594	614	515	445	851	477	574	520
5	900	518	528	553	551	628	504	393	735	482	553	512
6	616	503	560	529	518	575	530	531	581	406	613	464
7	565	392	508	646	530	670	596	652	623	467	511	496
8	514	485	497	617	520	692	645	702	467	424	503	465
9	506	564	517	522	457	734	780	866	470	621	471	474
10	570	446	487	547	509	663	583	548	415	536	425	475
11	553	511	455	564	677	594	500	792	524	471	460	540
12	724	448	480	531	519	586	569	1390	549	495	512	460
13	741	532	597	564	576	567	575	843	657	528	614	451
14	893	471	600	560	576	630	502	627	533	475	552	462
15	701	492	543	585	546	626	529	637	536	478	518	527
16	728	426	539	564	522	666	453	705	458	489	513	518
17	668	401	621	576	553	600	485	757	445	456	582	444
18	612	454	595	561	541	595	534	567	411	435	545	450
19	621	518	570	561	584	575	670	501	462	550	615	559
20	590	594	562	536	603	637	796	560	391	498	524	645
21	633	454	572	517	537	577	786	430	530	421	494	498
22	604	446	551	537	624	540	727	462	461	545	697	576
23	729	427	572	523	586	520	595	601	443	549	583	479
24	807	442	501	601	565	366	622	766	472	529	523	508
25	687	533	521	606	542	596	666	714	495	526	426	436
26	595	496	533	522	647	616	579	556	578	466	407	429
27	553	491	558	567	579	538	614	412	593	550	414	467
28	527	524	511	552	570	509	696	509	515	551	461	465
29	499	528	547	629	---	620	632	453	436	581	481	518
30	476	658	574	641	---	567	607	439	428	512	463	561
31	572	---	554	721	---	529	---	568	---	480	455	---
TOTAL	19289	14910	16688	17493	15855	18463	18168	19222	16052	15273	16246	15070
MEAN	622.2	497.0	538.3	564.3	566.2	595.6	605.6	620.1	535.1	492.7	524.1	502.3
MAX	900	658	621	721	677	734	796	1390	852	621	727	645
MIN	466	392	421	473	457	366	453	393	391	400	407	429

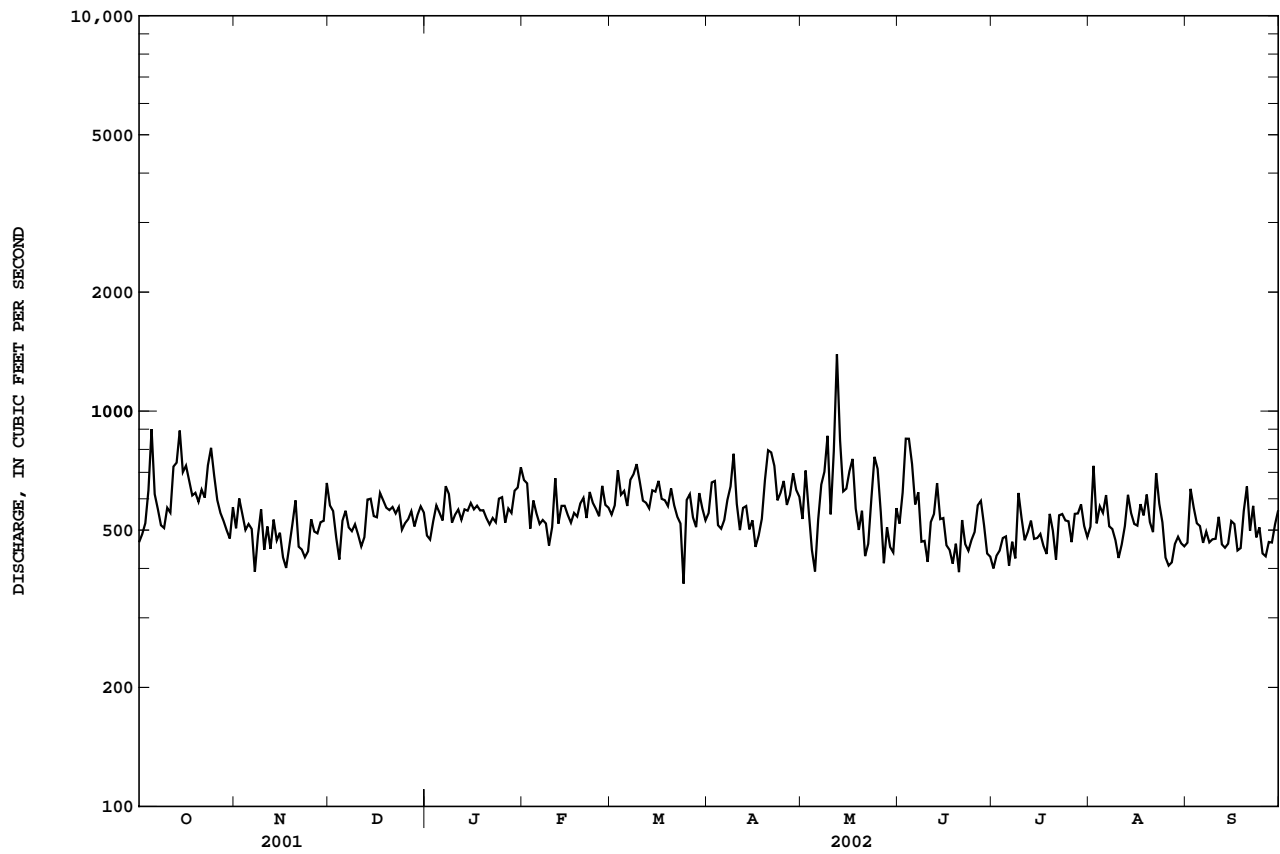
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999	2000	2001	2002			
MEAN	597.1	602.9	636.2	636.6	646.6	664.5	632.3	649.3	615.1	577.3	592.9	575.1
MAX	752	916	1094	963	843	1111	922	1016	724	761	759	759
(WY)	1997	1997	1997	1997	1997	1999	1999	1999	1996	1996	1996	1996
MIN	418	407	429	467	476	508	498	508	439	471	467	416
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1997

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	FOR WATER YEARS 1994 - 2002
ANNUAL TOTAL	207486	202729	
ANNUAL MEAN	568.5	555.4	618.8
HIGHEST ANNUAL MEAN			727 1999
LOWEST ANNUAL MEAN			462 1998
HIGHEST DAILY MEAN	911	Jun 12	1390 May 12 2120 Mar 21 1999
LOWEST DAILY MEAN	298	May 9	366 Mar 24 -641 Oct 21 1993
ANNUAL SEVEN-DAY MINIMUM	421	Apr 25	438 Jun 30 -180 Oct 15 1993
MAXIMUM PEAK FLOW			8970 Jun 3 8970 Jun 3 2002
MAXIMUM PEAK STAGE			11.03 Jun 3 14.41 Mar 9 1998
10 PERCENT EXCEEDS	663	669	782
50 PERCENT EXCEEDS	565	542	596
90 PERCENT EXCEEDS	478	449	448

04092750 INDIANA HARBOR CANAL AT EAST CHICAGO, IN--Continued



## 04093000 DEEP RIVER AT LAKE GEORGE OUTLET AT HOBART, IN

LOCATION.--Lat 41°32'10", long 87°15'25", in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.32, T.36 N., R.7 W., Lake County, Hydrologic Unit 04040001, (GARY, IN quadrangle), on left bank at upstream side of bridge on Ridge Road in Hobart, 300 ft upstream from Duck Creek, and 400 ft downstream from Lake George Dam, 3.3 mi north of Ainsworth, IN.

DRAINAGE AREA.--124 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1947 to current year.

REVISED RECORDS.--WSP 1337: 1953. WSP 1507: 1956. WDR IN-72-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 588.17 ft above National Geodetic Vertical Datum of 1929 (levels by State of Indiana, Department of Natural Resources). Prior to July 29, 1952, nonrecording gage, and July 30, 1952, to July 20, 1955, water-stage recorder at site 400 ft upstream at datum 11.80 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow subject to regulation by operation of Lake George Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

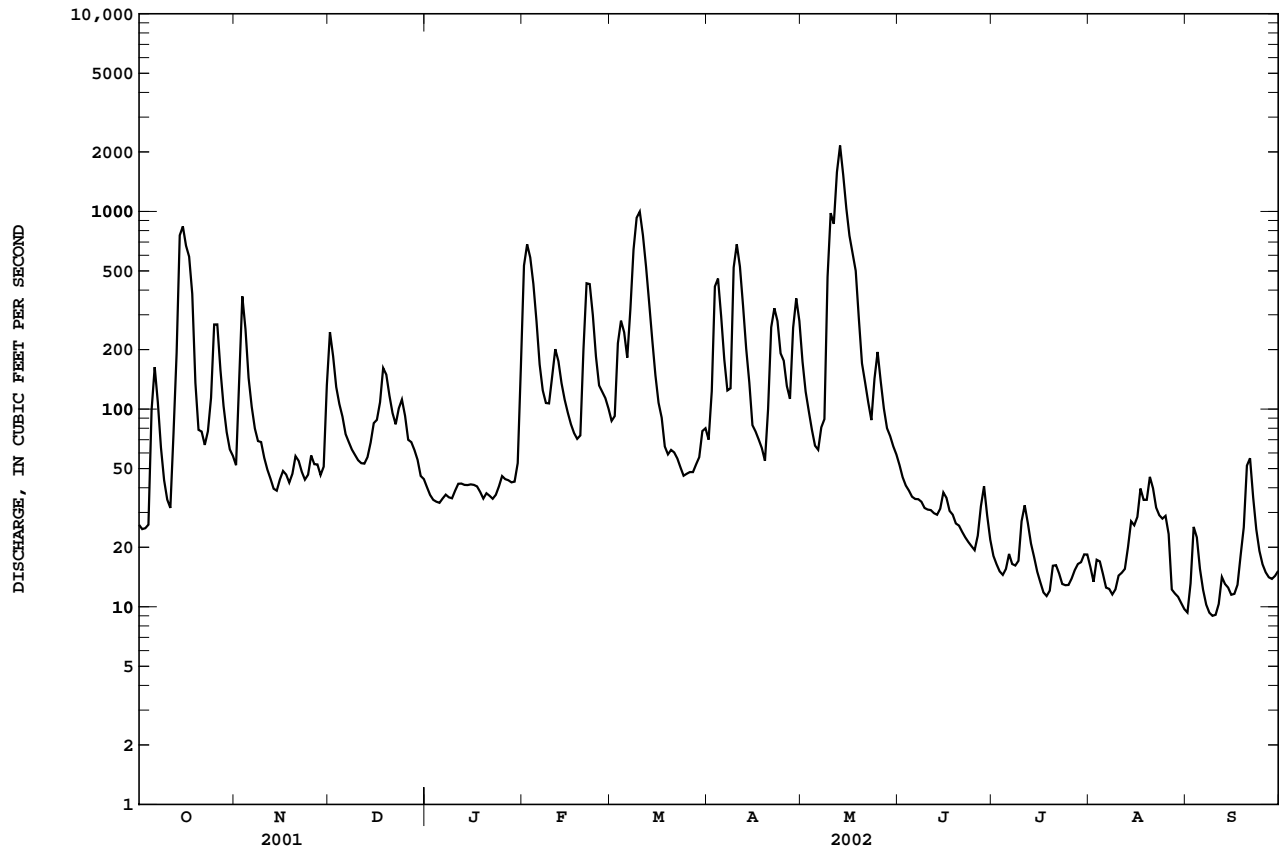
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	52	245	40	532	87	70	174	52	18	16	9.3
2	25	141	185	37	682	92	123	123	45	16	13	13
3	25	372	129	35	585	215	417	98	41	15	17	25
4	26	254	106	34	430	280	458	79	39	14	17	22
5	99	144	92	34	278	245	295	65	36	16	15	16
6	163	103	75	35	168	182	179	62	35	18	12	12
7	108	80	68	37	124	320	124	81	35	16	12	10
8	64	69	62	36	107	641	127	89	34	16	12	9.3
9	44	68	59	35	107	929	520	466	32	17	12	9.0
10	35	57	55	39	146	998	682	980	31	27	14	9.1
11	32	49	53	42	201	758	526	865	31	33	15	10
12	75	44	53	42	175	526	333	1580	30	26	16	14
13	192	40	57	41	135	345	203	2150	29	21	20	13
14	757	39	68	41	112	223	136	1530	31	18	27	12
15	840	44	85	42	96	148	83	1040	38	15	26	12
16	671	49	88	41	84	108	77	754	36	13	28	12
17	591	47	108	41	76	90	70	614	31	12	40	13
18	383	42	161	38	71	65	64	500	29	11	35	18
19	136	47	150	35	74	59	55	287	26	12	35	25
20	79	58	117	38	200	62	100	170	26	16	45	52
21	77	55	95	36	433	60	259	136	24	16	40	56
22	66	48	84	35	429	56	324	108	22	15	32	36
23	77	44	101	37	299	51	279	88	21	13	29	25
24	114	47	112	41	184	46	191	143	20	13	28	19
25	268	58	92	46	132	47	176	195	19	13	29	16
26	268	53	70	44	122	48	131	138	23	14	23	15
27	158	52	68	44	114	48	113	101	32	15	12	14
28	104	46	62	43	101	53	258	80	41	16	12	14
29	76	51	55	43	---	57	363	73	29	17	11	14
30	63	132	46	53	---	77	279	65	22	18	10	15
31	58	---	44	163	---	80	---	59	---	18	9.7	---
TOTAL	5700	2385	2845	1348	6197	6996	7015	12893	940	518	662.7	539.7
MEAN	183.9	79.50	91.77	43.48	221.3	225.7	233.8	415.9	31.33	16.71	21.38	17.99
MAX	840	372	245	163	682	998	682	2150	52	33	45	56
MIN	25	39	44	34	71	46	55	59	19	11	9.7	9.0
CFSM	1.48	0.64	0.74	0.35	1.78	1.82	1.89	3.35	0.25	0.13	0.17	0.15
IN.	1.71	0.72	0.85	0.40	1.86	2.10	2.10	3.87	0.28	0.16	0.20	0.16

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

	MEAN	58.39	91.20	109.7	117.9	153.0	215.2	212.5	151.6	117.7	62.75	48.16	47.05
MAX	433	499	393	475	456	688	477	454	557	315	427	312	
(WY)	1955	1986	1983	1993	1997	1979	1950	1970	1993	1996	1990	1993	
MIN	6.42	10.7	12.5	10.8	14.7	38.3	23.1	21.8	16.4	10.7	8.81	6.91	
(WY)	1957	1957	1963	1977	1964	1957	1963	1958	1988	1988	1964	1948	

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1948 - 2002	
ANNUAL TOTAL	36628		48039.4			
ANNUAL MEAN	100.4		131.6		115.1	
HIGHEST ANNUAL MEAN					234	
LOWEST ANNUAL MEAN					35.3	
HIGHEST DAILY MEAN	1400		Feb 10		2150	
LOWEST DAILY MEAN	14		Jul 14		9.0	
ANNUAL SEVEN-DAY MINIMUM	16		Jul 10		10	
MAXIMUM PEAK FLOW					2310	
MAXIMUM PEAK STAGE					13.87	
ANNUAL RUNOFF (CFSM)	0.81		1.06		0.93	
ANNUAL RUNOFF (INCHES)	10.99		14.41		12.61	
10 PERCENT EXCEEDS	162		322		273	
50 PERCENT EXCEEDS	53		53		48	
90 PERCENT EXCEEDS	23		14		13	

04093000 DEEP RIVER AT LAKE GEORGE OUTLET AT HOBART, IN--Continued



## 04093200 LITTLE CALUMET RIVER AT GARY, IN

LOCATION.--Lat 41°34'19", long 87°19'13", in NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.15, T.36 N., R.8 W., Lake County, Hydrologic Unit 04040001, (GARY, IN quadrangle), on right bank 100 ft upstream of Conrail Railroad bridge, 800 ft upstream of Martin Luther King Avenue bridge at Gary, 1.3 mi downstream of highway 53, and 1.5 mi upstream from confluence with Deep River.

DRAINAGE AREA.--5.82 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--June 1958 to September 1967, October 1968 to September 30, 1971 (discharge), December, 1984 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 580.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage affected by backwater from Deep River during times of flood. Minimum gage height for the period of record may have been lower prior to December 13, 1984.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 13.31 ft, Nov. 30, 1990; minimum gage height, 5.27 ft, Aug. 7, 8, 1991. Minimum gage height was not published prior to December 13, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Flood in October 1954 reached a stage of 13.09 ft, from flood mark.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 12.27 ft, May 15, 16; minimum gage height, 8.51 ft, June 24.

## GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

## DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.20	9.00	9.49	8.72	9.17	9.50	9.46	9.79	8.86	8.72	8.83	8.79
2	9.20	9.02	9.60	8.67	9.44	9.46	9.48	9.74	8.82	8.69	8.79	8.83
3	9.20	9.11	9.58	8.63	9.59	9.48	9.59	9.67	8.78	8.66	8.76	8.92
4	9.20	9.21	9.50	8.60	9.65	9.58	9.71	9.58	8.77	8.65	8.73	8.97
5	9.25	9.25	9.40	8.59	9.66	9.60	9.77	9.50	8.76	8.64	8.71	8.98
6	9.47	9.25	9.31	8.58	9.62	9.61	9.78	9.47	8.74	8.66	8.70	8.97
7	9.65	9.17	9.22	8.56	9.56	9.65	9.75	9.46	8.72	8.69	8.69	8.95
8	9.70	9.08	9.14	8.56	9.49	9.75	9.72	9.46	8.70	8.73	8.69	8.94
9	9.70	9.00	9.05	8.56	9.42	9.96	9.80	9.65	8.68	8.76	8.70	8.91
10	9.68	8.92	8.98	8.57	9.40	10.14	10.00	9.88	8.66	8.80	8.71	8.90
11	9.60	8.89	8.92	8.58	9.44	10.13	10.10	10.06	8.65	8.85	8.72	8.87
12	9.57	8.86	8.89	8.59	9.53	10.12	10.10	10.39	8.63	8.89	8.72	8.86
13	9.63	8.81	8.90	8.60	9.56	10.09	10.02	11.35	8.63	8.89	8.72	8.86
14	9.79	8.77	8.95	8.61	9.56	10.02	9.93	12.11	8.63	8.89	8.74	8.85
15	9.89	8.74	9.04	8.62	9.53	9.93	9.82	12.27	8.68	8.88	8.74	8.84
16	9.97	8.71	9.13	8.62	9.48	9.80	9.71	11.84	8.68	8.87	8.77	8.83
17	9.98	8.70	9.22	8.62	9.42	9.67	9.61	11.24	8.66	8.87	8.80	8.82
18	9.90	8.69	9.27	8.62	9.37	9.54	9.53	10.69	8.63	8.86	8.80	8.82
19	9.79	8.70	9.32	8.62	9.33	9.43	9.45	10.18	8.61	8.85	8.81	8.85
20	9.68	8.76	9.34	8.61	9.38	9.34	9.45	9.96	8.59	8.83	8.81	8.92
21	9.52	8.81	9.32	8.60	9.56	9.26	9.53	9.70	8.58	8.82	8.81	8.97
22	9.37	8.83	9.27	8.59	9.70	9.21	9.61	9.51	8.57	8.80	8.87	8.99
23	9.25	8.85	9.24	8.60	9.75	9.15	9.67	9.38	8.54	8.79	8.89	9.00
24	9.21	8.87	9.21	8.62	9.76	9.10	9.68	9.34	8.51	8.78	8.89	9.00
25	9.23	8.97	9.15	8.62	9.76	9.05	9.68	9.33	8.52	8.78	8.89	8.99
26	9.27	9.08	9.08	8.63	9.72	9.01	9.68	9.27	8.64	8.78	8.87	8.99
27	9.30	9.14	9.02	8.64	9.66	8.98	9.64	9.20	8.76	8.79	8.86	8.99
28	9.30	9.19	8.96	8.66	9.58	9.00	9.69	9.12	8.81	8.80	8.84	8.98
29	9.25	9.21	8.90	8.69	---	9.23	9.76	9.05	8.81	8.83	8.82	8.98
30	9.17	9.30	8.84	8.75	---	9.39	9.80	8.98	8.77	8.85	8.80	8.98
31	9.07	---	8.78	8.89	---	9.45	---	8.91	---	8.84	8.80	---
MEAN	9.48	8.96	9.16	8.63	9.54	9.54	9.72	9.94	8.68	8.79	8.78	8.92
MAX	9.98	9.30	9.60	8.89	9.76	10.14	10.10	12.27	8.86	8.89	8.89	9.00
MIN	9.07	8.69	8.78	8.56	9.17	8.98	9.45	8.91	8.51	8.64	8.69	8.79

WTR YR 2002 MEAN 9.18 MAX 12.27 MIN 8.51

STREAMS TRIBUTARY TO LAKE MICHIGAN

04094000 LITTLE CALUMET RIVER AT PORTER, IN

LOCATION.--Lat 41°37'18", long 87°05'13", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.34, T.37 N., R.6 W., Porter County, Hydrologic Unit 04040001, (CHESTERTON, IN quadrangle), on right bank at downstream end of county road bridge, 200 ft upstream from bridge on U.S. Highway 20, 0.8 mi northwest of Porter, and 4.5 mi upstream from Salt Creek.

DRAINAGE AREA.--66.2 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1945 to current year.

REVISED RECORDS.--WSP 1084: 1945. WSP 1337: 1946-47. WDR IN-72-1: Drainage area. WDR IN-83-1: 1982.

GAGE.--Water-stage recorder. Datum of gage is 603.48 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1952, nonrecording gage at same site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	66	131	e40	285	68	71	77	56	42	28	25
2	33	113	99	e39	254	74	97	76	53	38	35	25
3	32	190	81	e38	126	156	163	69	51	36	31	27
4	33	118	74	e37	105	165	112	62	52	35	29	25
5	99	95	70	e37	81	123	87	59	53	34	28	24
6	116	78	67	e38	76	105	79	64	52	32	27	24
7	73	68	63	e39	70	197	71	73	50	32	26	24
8	52	62	58	e41	69	310	87	66	47	32	26	24
9	50	59	54	e47	81	444	341	180	47	34	28	23
10	42	58	55	56	103	425	336	290	47	33	27	23
11	41	60	55	59	101	187	144	151	46	31	27	23
12	115	55	52	58	82	119	105	735	45	31	26	26
13	231	52	59	57	73	103	89	908	46	30	26	24
14	576	53	63	55	67	90	78	454	48	29	30	23
15	685	56	77	56	64	83	72	228	48	29	29	23
16	386	53	70	54	61	79	67	136	44	29	28	24
17	564	51	84	53	59	73	63	187	43	28	29	27
18	297	55	101	e49	58	70	61	142	43	28	28	25
19	135	62	84	e46	63	67	58	108	41	29	33	32
20	102	71	76	e44	106	66	142	94	40	28	31	42
21	87	64	69	45	151	65	185	84	39	29	28	30
22	80	58	65	46	111	62	129	78	38	28	30	24
23	93	54	77	48	90	63	100	74	38	44	31	23
24	104	52	76	54	79	62	83	109	37	35	30	21
25	171	57	e62	52	72	61	97	114	47	33	31	21
26	150	55	e54	49	75	62	83	88	56	33	28	22
27	97	52	e52	48	75	62	76	77	59	34	27	23
28	81	49	e49	48	70	75	132	71	53	32	26	24
29	73	53	e46	47	---	78	122	68	47	32	25	23
30	68	104	e44	57	---	98	94	64	43	33	25	22
31	64	---	e42	112	---	83	---	60	---	29	25	---
TOTAL	4764	2073	2109	1549	2707	3775	3424	5046	1409	1002	878	746
MEAN	153.7	69.10	68.03	49.97	96.68	121.8	114.1	162.8	46.97	32.32	28.32	24.87
MAX	685	190	131	112	285	444	341	908	59	44	35	42
MIN	32	49	42	37	58	61	58	59	37	28	25	21
CFSM	2.32	1.04	1.03	0.75	1.46	1.84	1.72	2.46	0.71	0.49	0.43	0.38
IN.	2.68	1.16	1.19	0.87	1.52	2.12	1.92	2.84	0.79	0.56	0.49	0.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	MEAN	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	59.58	75.57	79.20	79.96	96.36	121.0	116.8	88.48	74.25	47.83	42.60	43.14
MAX	414	285	186	202	208	319	292	277	272	190	277	143
(WY)	1955	1991	1966	1993	1997	1982	1947	1996	1993	1981	1990	1972
MIN	22.3	27.4	24.5	27.0	30.9	50.4	44.6	33.5	25.6	22.2	23.1	21.4
(WY)	1964	1954	1964	1977	1964	2000	1963	1958	1965	1988	1964	1953

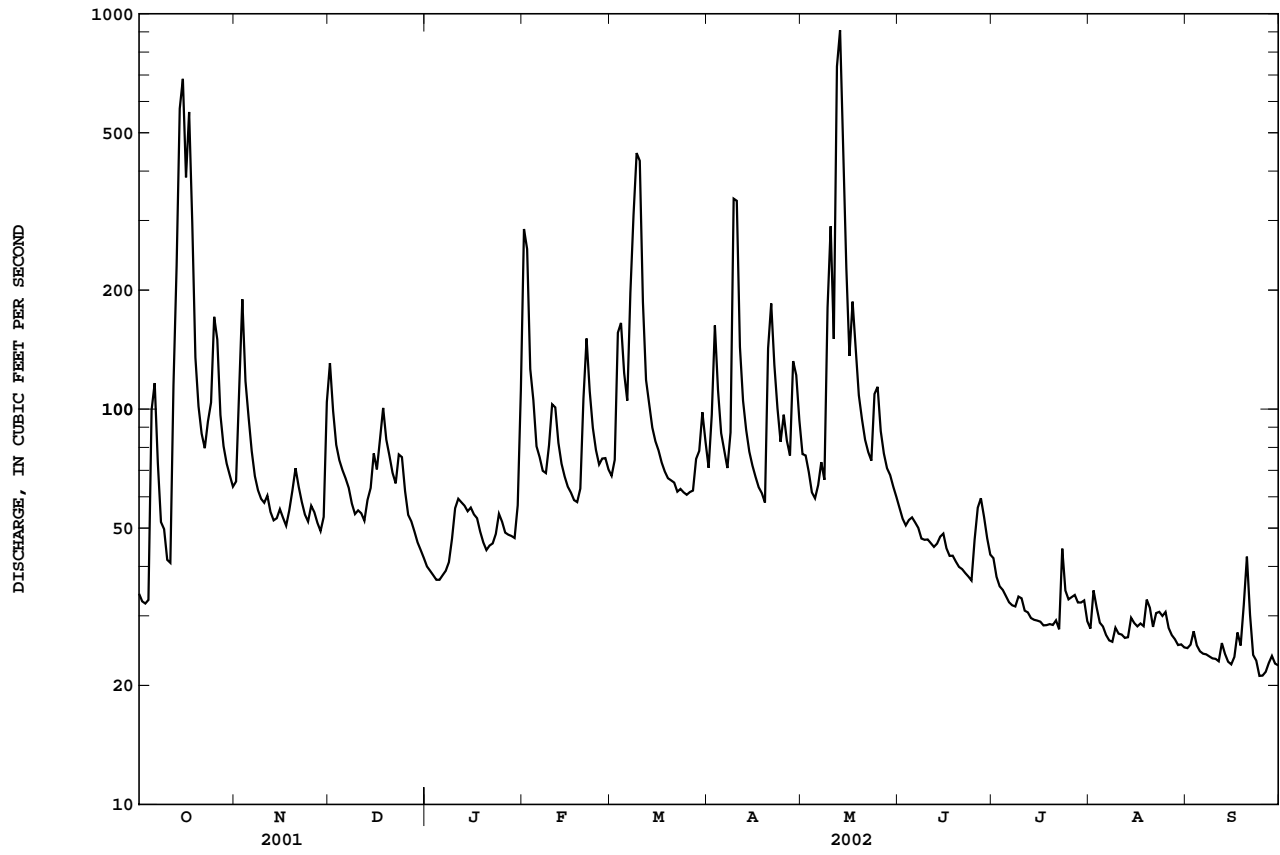
SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1946 - 2002

ANNUAL TOTAL	27112	29482	
ANNUAL MEAN	74.28	80.77	76.91
HIGHEST ANNUAL MEAN			124
LOWEST ANNUAL MEAN			36.5
HIGHEST DAILY MEAN	1010	Feb 10	908
LOWEST DAILY MEAN	24	Aug 14	21
ANNUAL SEVEN-DAY MINIMUM	25	Aug 11	22
MAXIMUM PEAK FLOW			1130
MAXIMUM PEAK STAGE			8.36
ANNUAL RUNOFF (CFSM)	1.12		1.22
ANNUAL RUNOFF (INCHES)	15.24		16.57
10 PERCENT EXCEEDS	109		133
50 PERCENT EXCEEDS	54		58
90 PERCENT EXCEEDS	28		27

e Estimated



04094000 LITTLE CALUMET RIVER AT PORTER, IN--Continued



STREAM TRIBUTARY TO LAKE MICHIGAN

04095090 BURNS DITCH AT PORTAGE, IN

LOCATION.--Lat 41°37'20", long 87°10'35", in NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec. 36, T.37 N., R.7 W., Porter County, Hydrologic Unit 04040001, (PORTAGE, IN quadrangle), on right bank at an industrial road bridge, 1,300 feet north of U.S. Highway 12, 0.7 mi south of the mouth, 1.2 mi west of the State Road 249 overpass over U.S. Highway 12, 2.4 mi east of County Line Road, 3.2 mi north of the intersection of Central Avenue and Willow Creek Road in Portage.

DRAINAGE AREA.--331 mi<sup>2</sup>.

PERIOD OF RECORD.--February 2, 1995 to current year.

REVISED RECORDS.--WDR IN-01-1: 1998-2000 (M).

GAGE.--Water-stage recorder and Acoustic Doppler Velocity Meter. Datum of gage is 575 ft above National Geodetic Vertical Datum of 1929 from topographic map.

REMARKS.--Records poor. Peak stage and peak flow for the period of record probably occurred on May 10, 1996 during period of missing record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	328	518	1020	368	1490	593	650	933	520	333	314	284
2	349	776	853	436	e1900	578	769	832	467	342	353	317
3	349	1120	755	383	e1500	1060	1390	730	444	299	328	334
4	280	1020	714	e471	1210	1120	1360	678	513	282	330	382
5	661	819	727	413	1010	1020	1140	597	498	289	226	367
6	938	708	594	273	e851	877	951	634	485	316	302	345
7	716	604	484	389	710	1190	826	646	466	294	293	298
8	626	526	448	437	e644	1730	877	677	431	274	347	282
9	560	492	468	388	683	2440	1780	1490	370	333	350	282
10	488	340	413	396	678	2800	2320	2180	388	343	323	272
11	423	381	418	458	e856	2280	1810	2080	446	366	347	326
12	701	449	423	403	e760	1700	1390	3610	374	360	288	357
13	1130	472	457	467	e728	1360	1100	5260	409	303	390	333
14	2290	453	459	400	e890	1110	958	4440	433	284	444	314
15	3130	471	578	459	e671	911	833	3450	454	286	384	256
16	2550	423	490	413	568	819	770	2670	405	343	336	291
17	2480	487	613	485	550	666	700	2350	370	373	364	296
18	1950	478	810	542	e652	659	674	2010	409	341	352	338
19	1220	415	732	e455	556	613	569	1630	394	328	282	400
20	828	540	684	e500	854	606	835	1280	389	324	372	e490
21	653	449	589	e396	1200	502	1250	1120	349	374	345	e433
22	581	463	555	e458	1210	593	1320	981	303	348	382	e344
23	673	441	638	371	1060	564	1170	861	256	350	362	e329
24	819	402	581	409	881	461	997	998	278	375	348	e353
25	1040	394	497	e490	685	468	1050	1070	387	386	310	e315
26	1060	447	501	e452	703	487	913	976	435	378	301	e287
27	873	469	494	464	703	549	820	795	475	370	290	e282
28	e804	449	435	352	e668	597	1140	737	437	250	320	e307
29	600	415	413	324	---	602	1320	721	392	286	306	e342
30	580	775	381	440	---	748	1130	684	353	378	289	e342
31	578	---	426	775	---	720	---	587	---	393	277	---
TOTAL	30258	16196	17650	13467	24871	30423	32812	47707	12330	10301	10255	9898
MEAN	976.1	539.9	569.4	434.4	888.2	981.4	1094	1539	411.0	332.3	330.8	329.9
MAX	3130	1120	1020	775	1900	2800	2320	5260	520	393	444	490
MIN	280	340	381	273	550	461	569	587	256	250	226	256

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

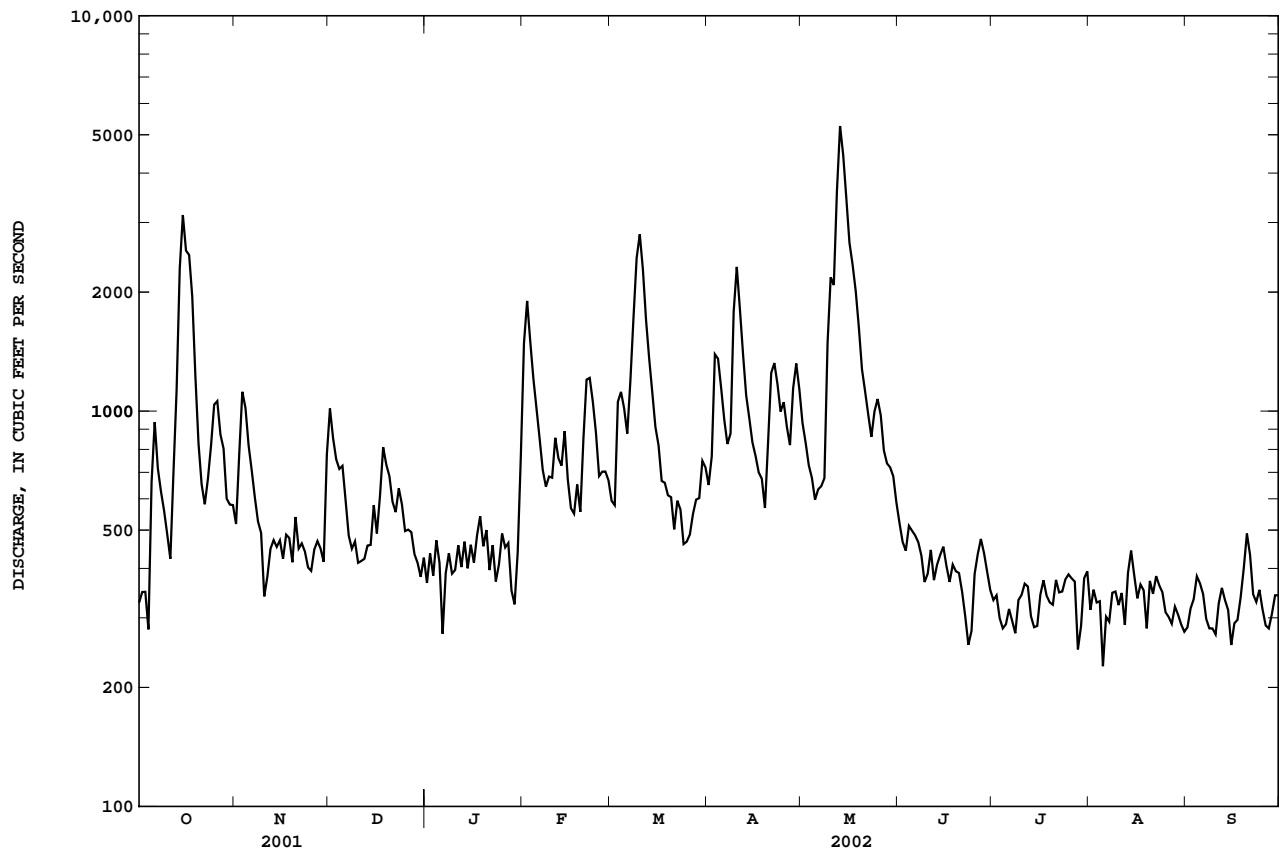
	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	363.0	370.1	407.6	430.9	612.5	570.5	621.7	709.4
MAX	976	540	569	587	1305	981	1094	1539
(WY)	2002	2002	2002	1998	2001	2002	2002	2000
MIN	107	144	179	231	255	321	358	288
(WY)	1996	1999	1999	1996	1996	1996	1997	1999

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1995 - 2002

ANNUAL TOTAL	190449	256168	
ANNUAL MEAN	521.8	701.8	478.1
HIGHEST ANNUAL MEAN			702
LOWEST ANNUAL MEAN			288
HIGHEST DAILY MEAN	4130	Feb 10	5260
LOWEST DAILY MEAN	106	Sep 23	226
ANNUAL SEVEN-DAY MINIMUM	199	Sep 12	295
MAXIMUM PEAK FLOW			5650
MAXIMUM PEAK STAGE			c5.77
10 PERCENT EXCEEDS	823		1210
50 PERCENT EXCEEDS	416		487
90 PERCENT EXCEEDS	223		309

e Estimated  
c Backwater

04095090 BURNS DITCH AT PORTAGE, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04095380 TRAIL CREEK AT MICHIGAN CITY HARBOR, IN

LOCATION.--Lat 41°43'22", long 86°54'15", sec. 29, T.38 N., R.4 W., LaPorte County, Hydrologic Unit 04040001, (MICHIGAN CITY WEST, IN quadrangle), on right bank 2000 ft north of Michigan Street, 2,600 ft southeast of lake end of west breakwater, 0.5 mi southwest of Washington Park, 3000 ft downstream of U.S. Hwy 12 bridge in Michigan City.

DRAINAGE AREA.--59.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder and Acoustic Velocity Meter. Datum of gage is 575 ft above National Geodetic Vertical Datum of 1929 from topographic map.

REMARKS.--Records poor. Positive discharges indicate flow towards Lake Michigan; negative discharges indicate flow away from Lake Michigan.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	62	126	17	380	e105	e154	e157	92	102	61	e55
2	31	130	92	28	204	e172	e265	e134	80	92	152	e48
3	50	116	89	53	121	e220	e254	e125	94	103	79	e57
4	88	105	83	48	193	e200	e222	e111	87	104	79	e64
5	180	89	79	70	113	e167	e176	e144	58	62	77	e71
6	112	71	94	107	104	e235	e153	e135	63	-29	48	e78
7	63	59	86	118	94	e336	e169	e138	79	-8.2	3.5	65
8	36	87	79	81	106	e483	e237	e282	65	46	18	48
9	25	77	82	85	159	e540	e446	e395	75	93	55	65
10	30	85	60	118	e165	e451	e343	e297	68	57	46	53
11	89	92	77	133	e146	e315	e254	e572	78	-2.1	71	41
12	184	75	86	118	e141	e252	e210	e822	60	-17	65	54
13	169	69	92	129	e172	173	e179	e610	82	3.3	68	79
14	449	79	103	121	e129	188	e154	e430	84	4.2	68	53
15	221	71	114	112	e109	e155	e141	211	99	63	70	70
16	257	87	101	108	e106	e126	e131	194	102	90	90	80
17	233	80	127	109	e125	e165	e111	243	81	69	69	66
18	120	75	108	78	e106	e132	e100	144	87	61	67	82
19	118	92	88	71	e164	e116	e137	130	77	73	69	95
20	91	98	86	61	e230	e96	e205	87	86	66	71	80
21	e71	70	88	85	e235	e149	e241	99	57	70	73	57
22	e65	70	78	63	e202	e111	e225	127	63	123	119	49
23	e78	77	87	114	e172	e90	e170	138	54	107	e67	52
24	e90	96	67	140	e131	e90	e240	223	32	83	e84	71
25	e123	94	67	85	e169	e99	e167	149	88	81	e70	e63
26	e125	99	70	82	e145	e107	e144	137	87	101	e69	e76
27	e102	94	69	75	e123	e120	e176	94	121	87	e59	72
28	e93	95	61	105	e112	e112	e252	82	109	79	e57	68
29	e94	103	63	133	---	e151	e208	84	83	90	e53	56
30	96	156	47	177	---	e136	e176	85	96	100	e68	58
31	84	---	41	285	---	e121	---	119	---	70	e57	---
TOTAL	3604	2653	2590	3109	4356	5913	6040	6698	2387	2023.2	2102.5	1926
MEAN	116.3	88.43	83.55	100.3	155.6	190.7	201.3	216.1	79.57	65.26	67.82	64.20
MAX	449	156	127	285	380	540	446	822	121	123	152	95
MIN	25	59	41	17	94	90	100	82	32	-29	3.5	41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2002, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	114.6	123.4	131.2	133.2	147.0	145.3	159.6	151.1	127.4	112.4	98.72	92.59						
MAX	127	173	185	176	208	191	201	216	192	150	126	113						
(WY)	1998	1995	1997	1995	2001	2002	2002	2002	2000	1998	1995	2000						
MIN	97.8	88.4	83.5	100	108	117	124	111	79.6	65.3	67.8	64.2						
(WY)	2001	2002	2002	2002	1998	2000	1998	2001	2002	2002	2002	2002						

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

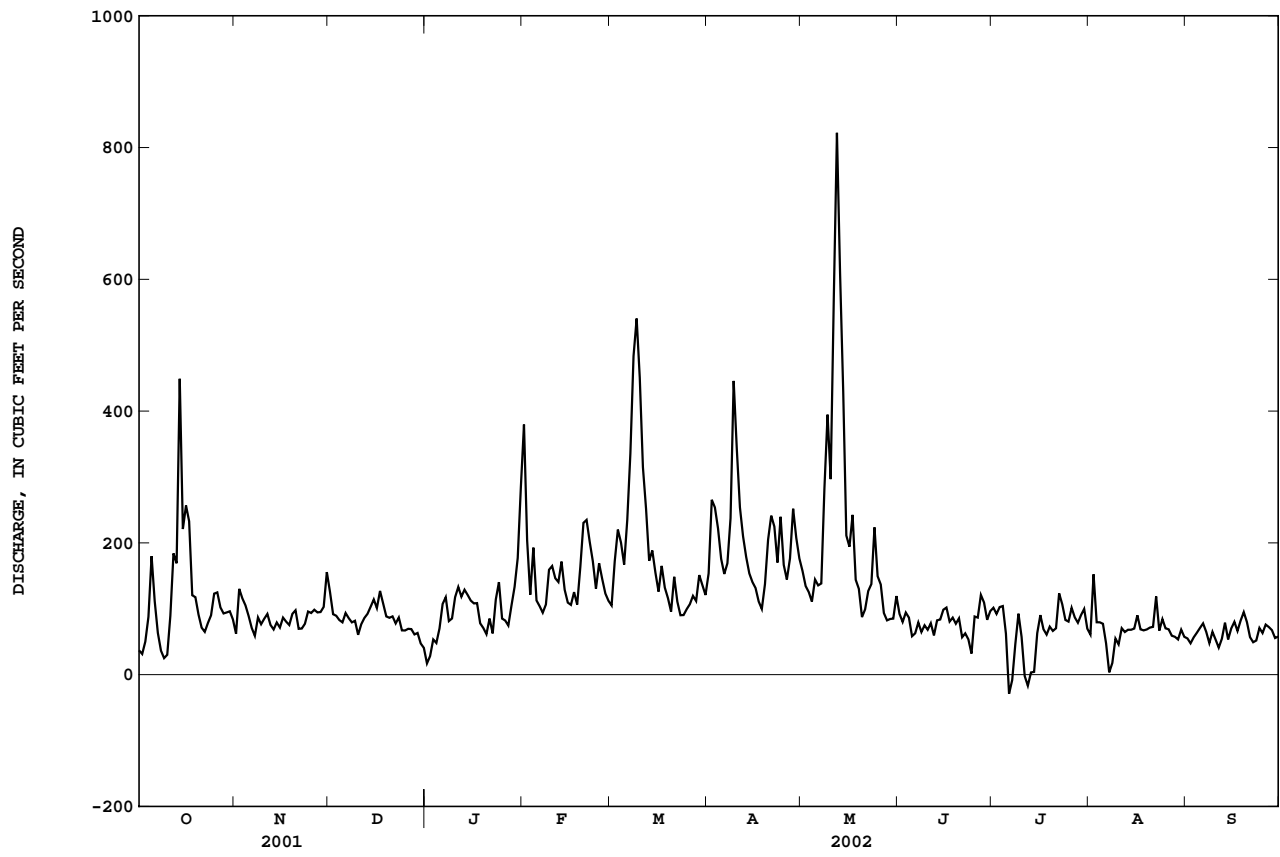
FOR 2002 WATER YEAR

WATER YEARS 1994 - 2002

ANNUAL TOTAL	40867	43401.7		
ANNUAL MEAN	112.0	118.9	127.0	
HIGHEST ANNUAL MEAN			145	1995
LOWEST ANNUAL MEAN			114	2001
HIGHEST DAILY MEAN	650	Feb 10	e822	May 12
LOWEST DAILY MEAN	25	Oct 9	-29	Jul 6
ANNUAL SEVEN-DAY MINIMUM	42	Aug 11	20	Jul 6
MAXIMUM PEAK FLOW			unknown	unknown
MAXIMUM PEAK STAGE			unknown	unknown
10 PERCENT EXCEEDS	160		215	172
50 PERCENT EXCEEDS	101		92	118
90 PERCENT EXCEEDS	67		56	79

e Estimated

04095380 TRAIL CREEK AT MICHIGAN CITY HARBOR, IN--Continued



04096100 GALENA RIVER NEAR LAPORTE, IN

LOCATION---Lat 41°44'54", long 86°40'30", in SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.17, T.38 N., R.2 W., LaPorte County, Hydrologic Unit 04040001, (SPRINGVILLE, IN quadrangle), on left bank at downstream side of bridge on County Road 125 East, 1.3 mi south of Indiana-Michigan State line, 7.5 mi west of LaPorte-St. Joseph County line, and 9.8 mi north of Courthouse in LaPorte.

DRAINAGE AREA---17.2 mi<sup>2</sup>, of which 2.30 mi<sup>2</sup> does not contribute directly to surface runoff.

PERIOD OF RECORD---October 1969 to current year.

REVISED RECORDS---WDR IN-80-1: 1970, 1971(P), 1972, 1973, 1974(P), 1975 (M), 1976 (P), and 1978 (P).

GAGE---Water-stage recorder. Datum of gage is 625.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS---Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD---Maximum instantaneous gage height may have occurred Nov. 28, 1990 during period of no gage height record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	26	32	e18	57	22	26	26	22	17	11	9.6
2	14	50	27	e17	36	28	36	26	21	16	20	9.7
3	14	39	25	e18	29	55	34	25	22	16	14	9.8
4	15	32	24	e17	e25	e34	30	24	22	15	13	9.2
5	57	29	23	e18	e21	e28	28	23	21	15	12	9.1
6	41	27	23	19	23	e20	26	24	21	14	11	8.9
7	25	26	22	20	22	52	27	25	21	14	11	7.6
8	21	26	22	20	23	113	39	24	20	13	9.3	7.2
9	20	25	22	21	26	119	79	47	19	20	9.0	7.2
10	19	24	21	26	30	76	40	32	20	17	8.6	7.6
11	23	24	21	27	26	41	32	42	21	16	8.4	8.6
12	57	23	21	25	24	36	29	387	20	15	8.1	8.2
13	59	23	23	23	22	34	27	201	20	14	8.3	8.2
14	246	24	26	23	21	31	26	59	20	13	11	8.2
15	85	24	27	23	21	29	26	41	20	13	11	8.4
16	95	23	24	22	21	28	25	44	20	13	13	8.3
17	121	23	29	22	21	27	26	60	20	13	13	7.9
18	50	23	27	21	20	27	25	37	20	13	12	8.4
19	38	28	25	20	23	26	23	31	19	13	12	9.0
20	33	27	24	19	42	26	48	29	18	13	12	11
21	32	24	22	19	38	26	37	27	18	12	11	11
22	29	23	22	20	32	25	33	27	18	16	13	9.8
23	44	23	23	21	28	25	28	26	17	23	13	9.9
24	50	23	22	21	25	26	27	40	17	14	21	9.3
25	75	23	22	20	23	26	30	31	18	13	17	9.2
26	42	22	e18	19	25	26	26	28	19	13	13	9.2
27	36	22	e18	19	24	28	28	26	21	12	12	9.4
28	32	22	e19	19	23	30	37	25	19	12	11	9.5
29	30	24	e19	19	---	31	30	25	18	13	9.3	10
30	28	43	e17	22	---	31	27	24	17	13	9.0	10
31	28	---	e18	41	---	28	---	23	---	12	8.8	---
TOTAL	1473	795	708	659	751	1154	955	1509	589	446	365.8	269.4
MEAN	47.52	26.50	22.84	21.26	26.82	37.23	31.83	48.68	19.63	14.39	11.80	8.980
MAX	246	50	32	41	57	119	79	387	22	23	21	11
MIN	14	22	17	17	20	20	23	23	17	12	8.1	7.2
CFSM	2.76	1.54	1.33	1.24	1.56	2.16	1.85	2.83	1.14	0.84	0.69	0.52
IN.	3.19	1.72	1.53	1.43	1.62	2.50	2.07	3.26	1.27	0.96	0.79	0.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

	MEAN	23.16	29.80	29.77	27.26	31.72	36.88	33.98	27.53	24.06	17.52	15.62	16.49
MAX	47.5	64.4	51.8	54.5	65.3	70.1	56.0	65.5	69.7	39.0	28.5	32.6	
(WY)	2002	1991	1973	1998	1997	1982	1970	1996	1993	1996	1996	1993	
MIN	14.8	15.7	15.6	15.0	19.2	19.4	18.2	15.5	12.3	10.3	9.71	8.98	
(WY)	1990	2000	1990	1976	1980	1981	1971	1992	1971	1988	1970	2002	

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

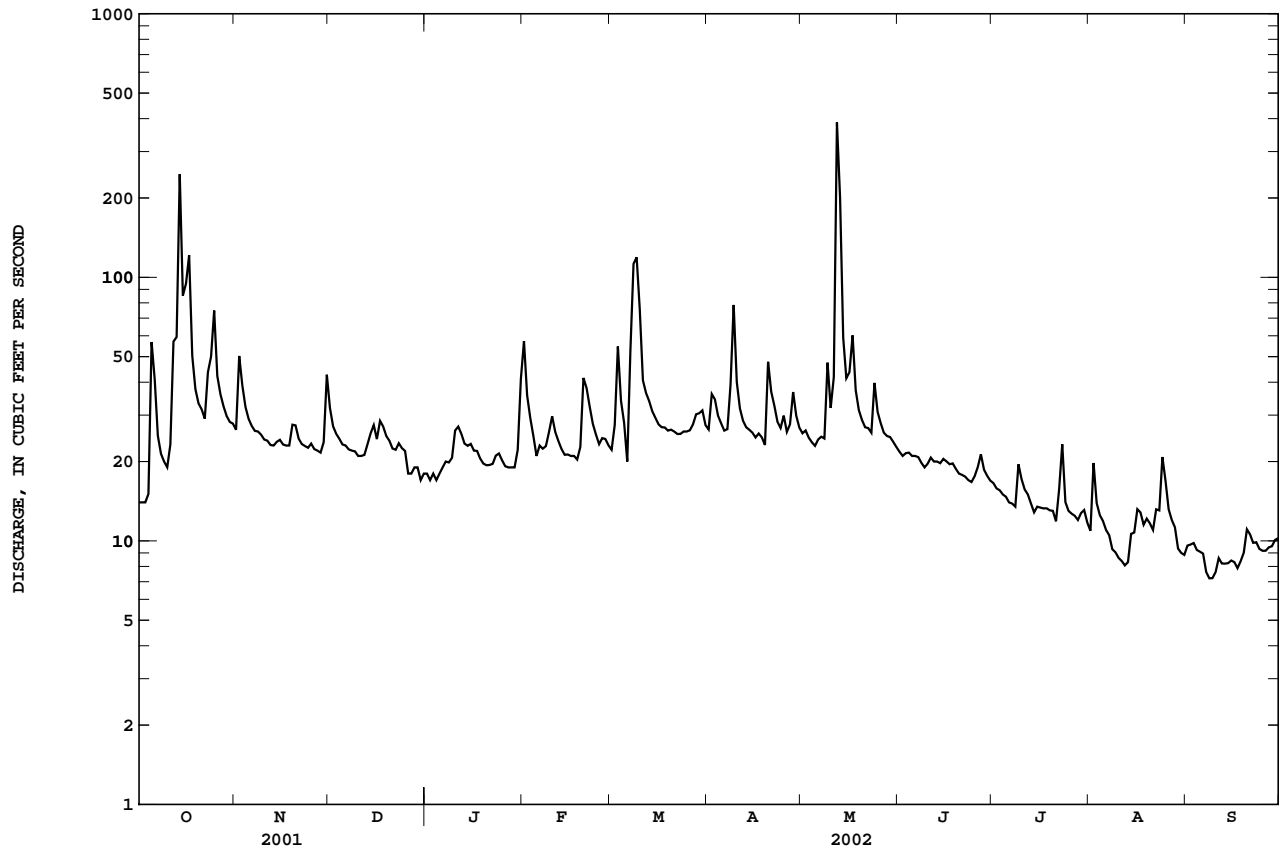
FOR 2002 WATER YEAR

WATER YEARS 1970 - 2002

ANNUAL TOTAL	9091.6	9674.2	
ANNUAL MEAN	24.91	26.50	26.11
HIGHEST ANNUAL MEAN			35.4
LOWEST ANNUAL MEAN			19.1
HIGHEST DAILY MEAN	272	Feb 9	650
LOWEST DAILY MEAN	9.1	Aug 6	6.7
ANNUAL SEVEN-DAY MINIMUM	9.8	Aug 9	7.6
MAXIMUM PEAK FLOW			900
MAXIMUM PEAK STAGE			7.04
ANNUAL RUNOFF (CFSM)	1.45		1.52
ANNUAL RUNOFF (INCHES)	19.66		20.62
10 PERCENT EXCEEDS	36		42
50 PERCENT EXCEEDS	21		21
90 PERCENT EXCEEDS	11		12

e Estimated

04096100 GALENA RIVER NEAR LAPORTE, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04099510 PIGEON CREEK NEAR ANGOLA, IN

LOCATION.--Lat 41°38'04", long 85°06'35", in NW¼/4SE¼/4 sec.26, T.37 N., R.12 E., Steuben County, Hydrologic Unit 04050001, (ANGOLA WEST, IN quadrangle), on left bank 5 ft upstream from bridge on U.S. Highway 20, 1.3 mi downstream from outlet of Hogback Lake, 1.3 mi southeast of Flint, and 5.8 mi west of Angola.

DRAINAGE AREA.--106 mi<sup>2</sup>, of which 22.5 mi<sup>2</sup> does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1947, published as "near Flint". Published as Pigeon Creek at Hogback Lake Outlet near Angola, October 1947 to September 1971, and Pigeon Creek and Hogback Lake near Angola, October 1971 to September 1974.

REVISED RECORDS.--WSP 1144: 1948. WSP 2111: Drainage area. WDR IN 92-1: 1991.

GAGE.--Water-stage recorder. Datum of gage is 940.00 ft above National Geodetic Vertical Datum of 1929. Prior to October 1947, nonrecording gage at site 0.3 mi downstream at different datum. Oct. 1947 to Aug. 3, 1953, nonrecording gage at site 1.2 mi upstream at same datum. Aug. 4, 1953, to Apr. 3, 1974, recording gage at site 1.3 mi upstream at same datum. Apr. 18, 1974, to Sept. 2, 1974, nonrecording gage at same site and datum.

REMARKS.--Records fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	168	127	72	205	96	182	119	118	44	32	23
2	28	157	164	67	315	93	206	114	108	42	30	22
3	28	148	182	63	382	98	260	108	110	42	29	22
4	26	138	178	60	398	115	313	102	116	40	29	22
5	29	127	165	57	380	134	340	97	127	37	27	21
6	31	116	148	55	344	143	339	94	137	36	26	21
7	31	106	134	53	300	149	315	92	140	34	25	20
8	33	98	119	53	260	155	287	92	139	34	25	20
9	34	91	106	51	229	174	299	97	130	36	24	20
10	35	84	95	50	204	219	329	103	120	37	24	20
11	38	78	86	50	188	265	343	112	109	38	23	18
12	56	74	79	50	176	288	340	204	100	38	23	18
13	94	69	76	50	166	285	334	413	92	36	23	18
14	165	66	78	51	156	265	327	547	85	34	25	18
15	234	64	95	50	145	238	314	618	81	33	27	18
16	298	61	124	50	135	211	296	645	76	32	29	17
17	375	59	153	50	125	188	272	630	71	32	31	17
18	432	57	189	50	116	169	249	579	68	31	31	17
19	447	55	218	49	109	154	225	514	64	30	33	18
20	412	53	226	48	108	142	210	449	61	29	33	21
21	352	51	215	47	109	130	198	388	59	29	32	22
22	296	50	196	45	113	120	188	331	58	28	31	23
23	259	48	175	45	118	110	180	283	60	28	31	23
24	236	48	157	45	118	104	170	245	61	28	30	22
25	233	53	143	46	114	100	157	215	60	27	29	22
26	243	57	129	47	111	95	148	191	57	28	28	21
27	252	63	115	48	106	91	140	171	54	30	27	22
28	249	66	104	48	102	88	135	156	50	30	26	22
29	231	70	94	48	---	90	129	145	48	31	25	22
30	208	87	85	61	---	107	124	137	45	32	24	22
31	185	---	77	108	---	147	---	130	---	32	24	---
TOTAL	5598	2462	4232	1667	5332	4763	7349	8121	2604	1038	856	612
MEAN	180.6	82.07	136.5	53.77	190.4	153.6	245.0	262.0	86.80	33.48	27.61	20.40
MAX	447	168	226	108	398	288	343	645	140	44	33	23
MIN	26	48	76	45	102	88	124	92	45	27	23	17
CFSM	2.16	0.98	1.63	0.64	2.28	1.84	2.93	3.14	1.04	0.40	0.33	0.24
IN.	2.49	1.10	1.89	0.74	2.38	2.12	3.27	3.62	1.16	0.46	0.38	0.27

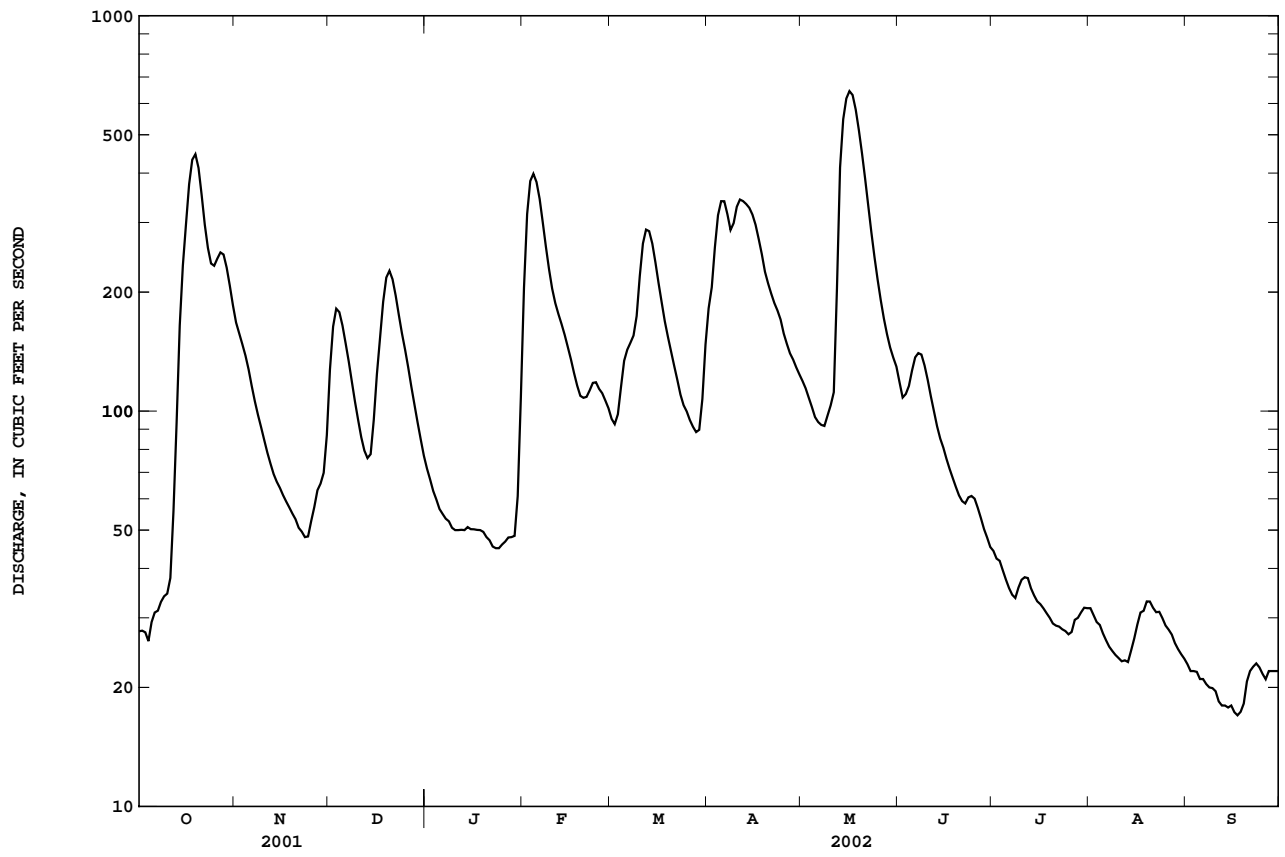
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

MEAN	36.97	54.01	76.63	93.98	111.9	158.9	164.7	117.3	82.11	49.98	37.74	32.58
MAX	181	195	195	385	343	437	491	423	362	164	126	119
(WY)	2002	1993	1968	1993	2001	1982	1950	1996	1996	1981	1981	1981
MIN	4.12	4.51	7.20	7.95	8.55	20.4	48.1	29.8	21.6	10.8	8.12	5.83
(WY)	1965	1965	1964	1964	1963	1964	1946	1963	1988	1963	1964	1963

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1946 - 2002
ANNUAL TOTAL	41825	44634	
ANNUAL MEAN	114.6	122.3	84.53
HIGHEST ANNUAL MEAN			151
LOWEST ANNUAL MEAN			19.5
HIGHEST DAILY MEAN	711	Feb 13	996
LOWEST DAILY MEAN	20	Aug 15	17
ANNUAL SEVEN-DAY MINIMUM	21	Aug 12	18
MAXIMUM PEAK FLOW			648
MAXIMUM PEAK STAGE			10.08
ANNUAL RUNOFF (CFSM)	1.37		1.46
ANNUAL RUNOFF (INCHES)	18.63		19.88
10 PERCENT EXCEEDS	232		287
50 PERCENT EXCEEDS	80		92
90 PERCENT EXCEEDS	28		24



04099510 PIGEON CREEK NEAR ANGOLA, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04099750 PIGEON RIVER NEAR SCOTT, IN

LOCATION.--Lat 41°44'56", long 85°34'35", in SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.14, T.38 N., R.8 E., Lagrange County, Hydrologic Unit 04050001, (SHIPSHAWANA, IN quadrangle), on right bank 20 ft downstream from bridge on County Road 750 North, 1,200 ft downstream from Page Ditch, 0.7 mi south of Indiana-Michigan State line, and 1.2 mi northwest of Scott.

DRAINAGE AREA.--361 mi<sup>2</sup> of which 53.9 mi<sup>2</sup> does not contribute directly to surface runoff.

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WSP 2111: Drainage area. WDR IN-92-1: 1991.

GAGE.--Water-stage recorder. Datum of gage is 815.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	494	416	e270	761	482	447	439	497	e210	177	128
2	133	486	411	e260	998	485	506	438	472	e200	175	129
3	130	459	406	e250	1020	541	656	437	476	194	164	124
4	127	423	429	e245	990	563	745	417	560	183	160	117
5	156	400	428	e240	992	549	723	383	599	178	157	114
6	192	365	423	e232	988	546	724	379	612	171	141	111
7	181	351	408	e224	968	587	739	376	618	168	137	108
8	167	341	382	e219	925	653	769	380	555	164	135	113
9	158	328	357	e214	868	710	869	457	525	215	132	113
10	153	314	324	e210	822	800	940	486	499	290	128	111
11	159	298	311	220	759	841	894	467	474	242	127	107
12	246	286	302	230	699	797	852	773	457	212	129	101
13	374	275	303	224	659	786	846	1370	443	192	126	97
14	367	240	311	220	608	782	834	1650	406	178	156	96
15	466	261	349	220	585	753	815	1480	413	171	158	99
16	521	261	363	219	573	715	778	1430	398	154	153	101
17	629	250	387	216	552	670	754	1470	370	152	155	98
18	669	243	459	213	526	613	723	1500	332	151	152	98
19	672	239	482	207	508	542	682	1450	323	140	156	101
20	689	233	505	203	529	518	691	1380	310	132	160	113
21	696	226	506	202	567	488	708	1290	292	137	154	120
22	694	221	483	200	578	449	685	1200	283	144	150	120
23	697	215	483	201	550	408	626	1080	275	172	149	119
24	697	214	468	207	521	409	578	987	e265	162	165	115
25	699	258	438	206	512	407	555	889	e260	152	161	112
26	709	289	e400	200	458	399	506	798	e320	148	156	112
27	658	271	e370	198	536	389	476	714	e400	170	e150	111
28	627	261	e340	197	493	392	496	648	e360	178	e142	116
29	603	269	e320	198	---	405	491	611	e240	180	e137	115
30	572	334	e300	281	---	442	455	577	e220	215	e132	117
31	528	---	e280	461	---	452	---	538	---	209	129	---
TOTAL	13504	9105	12144	7087	19545	17573	20563	26494	12254	5564	4603	3336
MEAN	435.6	303.5	391.7	228.6	698.0	566.9	685.4	854.6	408.5	179.5	148.5	111.2
MAX	709	494	506	461	1020	841	940	1650	618	290	177	129
MIN	127	214	280	197	458	389	447	376	220	132	126	96
CFSM	1.42	0.99	1.28	0.74	2.27	1.85	2.23	2.78	1.33	0.58	0.48	0.36
IN.	1.64	1.10	1.47	0.86	2.37	2.13	2.49	3.21	1.48	0.67	0.56	0.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002				
MEAN	225.8	294.4	360.0	391.2	452.2	589.6	595.4	464.6	385.6	260.9	220.2	201.4																											
MAX	575	684	719	1169	875	1389	1089	976	1103	654	516	538																											
(WY)	1987	1993	1983	1993	2001	1982	1978	1996	1981	1981	1981	1981																											
MIN	96.3	96.7	157	166	143	279	324	233	132	104	92.5	85.8																											
(WY)	1972	1972	1972	2000	1972	2000	1971	1971	1988	1988	1988	1971																											

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

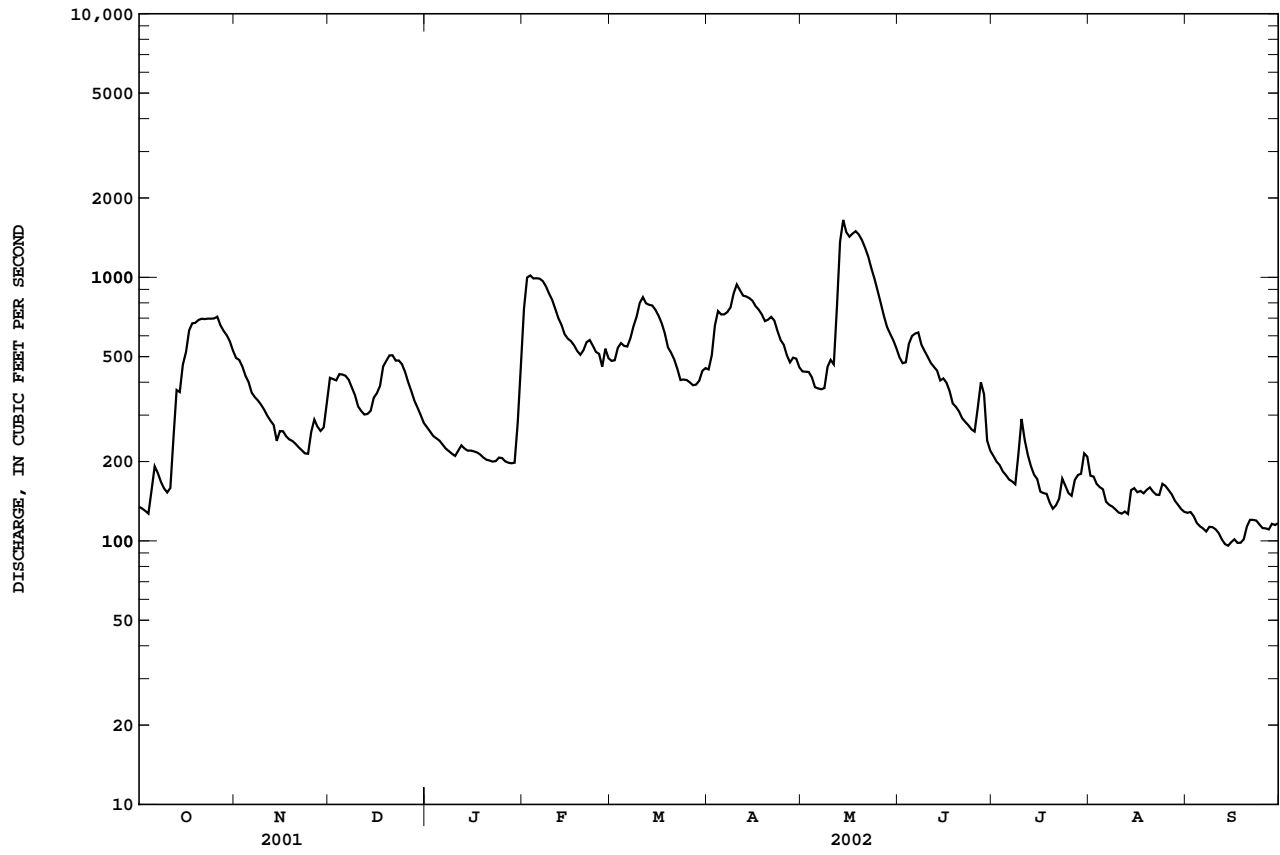
FOR 2002 WATER YEAR

WATER YEARS 1968 - 2002

ANNUAL TOTAL	130852	151772	
ANNUAL MEAN	358.5	415.8	366.7
HIGHEST ANNUAL MEAN			545
LOWEST ANNUAL MEAN			207
HIGHEST DAILY MEAN	1410	Feb 11	2340
LOWEST DAILY MEAN	106	Aug 14	42
ANNUAL SEVEN-DAY MINIMUM	112	Aug 9	99
MAXIMUM PEAK FLOW			1710
MAXIMUM PEAK STAGE			6.88
ANNUAL RUNOFF (CFSM)	1.17		1.35
ANNUAL RUNOFF (INCHES)	15.86		18.39
10 PERCENT EXCEEDS	642		775
50 PERCENT EXCEEDS	311		365
90 PERCENT EXCEEDS	138		130

e Estimated

04099750 PIGEON RIVER NEAR SCOTT, IN--Continued



## STREAMS TRIBUTARY TO LAKE MICHIGAN

## 04099808 LITTLE ELKHART RIVER AT MIDDLEBURY, IN

LOCATION.--Lat 41°40'31", long 85°42'01", in NE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.10, T.37 N., R.7 E., Elkhart County, Hydrologic Unit 04050001, (MIDDLEBURY, IN quadrangle), on left bank 15 ft downstream from bridge on County Road 16, 0.1 mi east of Middlebury, 0.4 mi upstream from intersection of State Road 13 bridge and Little Elkhart River, and 1.7 mi downstream from Rowe Eden Ditch.

DRAINAGE AREA.--97.6 mi<sup>2</sup>, of which 5.89 mi<sup>2</sup> does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1979 to current year.

REVISED RECORDS.--WDR IN-82-1: 1980, 1981. WDR IN-92-1: 1991.

GAGE.--Water-stage recorder. Datum of gage is 810.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	93	108	e68	530	93	120	101	105	70	46	35
2	39	102	92	e67	308	100	167	103	101	66	53	34
3	39	102	85	e66	232	194	264	98	123	63	51	34
4	40	94	80	66	197	164	177	94	125	58	50	33
5	55	90	76	66	168	132	153	91	139	57	50	35
6	61	87	74	66	151	132	138	91	141	56	48	34
7	56	85	72	65	140	186	129	91	122	57	44	32
8	52	83	70	64	133	172	146	105	111	55	41	34
9	50	81	69	65	127	243	266	166	104	68	39	35
10	49	80	67	65	125	250	193	138	100	67	40	35
11	51	78	66	65	118	179	164	124	97	63	41	36
12	102	76	66	64	114	162	150	871	94	59	40	36
13	103	74	68	63	108	151	141	777	93	56	37	35
14	153	73	78	63	104	139	134	423	95	52	43	35
15	154	72	116	64	102	132	127	307	95	51	45	35
16	163	71	96	65	99	124	120	259	90	46	45	35
17	183	68	124	65	97	118	116	331	87	46	45	35
18	146	68	131	63	93	114	113	246	90	48	45	35
19	124	68	110	62	95	110	108	211	84	50	49	36
20	110	66	101	61	116	108	139	190	80	50	47	39
21	102	65	93	61	131	105	134	176	78	47	44	39
22	99	64	89	60	115	101	128	163	77	50	45	38
23	114	63	89	61	105	100	119	152	76	49	46	37
24	126	64	86	62	101	98	112	144	74	46	46	36
25	165	66	82	61	97	98	108	138	79	42	44	36
26	135	63	80	60	99	98	102	132	88	45	43	36
27	121	63	79	59	98	97	102	125	84	54	42	36
28	111	62	77	59	95	102	115	120	77	54	37	37
29	104	65	75	59	---	121	109	118	74	55	35	37
30	98	114	e70	133	---	169	104	114	72	56	35	36
31	95	---	e69	356	---	132	---	111	---	50	34	---
TOTAL	3039	2300	2638	2324	3998	4224	4198	6310	2855	1686	1350	1066
MEAN	98.03	76.67	85.10	74.97	142.8	136.3	139.9	203.5	95.17	54.39	43.55	35.53
MAX	183	114	131	356	530	250	266	871	141	70	53	39
MIN	39	62	66	59	93	93	102	91	72	42	34	32
CFSM	1.07	0.84	0.93	0.82	1.56	1.49	1.53	2.22	1.04	0.59	0.47	0.39
IN.	1.23	0.93	1.07	0.94	1.62	1.71	1.70	2.56	1.16	0.68	0.55	0.43

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	76.74	93.23	103.8	110.2	126.3	143.1	134.9	111.6	100.7	69.32	61.44	59.85												
MAX	172	202	207	307	280	404	210	264	278	189	160	118												
(WY)	1991	1986	1991	1993	1985	1982	1985	1996	1993	1981	1998	1981												
MIN	36.0	38.6	36.4	42.7	52.4	56.8	78.5	55.3	36.7	34.9	37.7	35.5												
(WY)	1995	1981	2001	2000	2000	2000	2000	1988	1988	2001	2001	2002												

## SUMMARY STATISTICS

## FOR 2001 CALENDAR YEAR

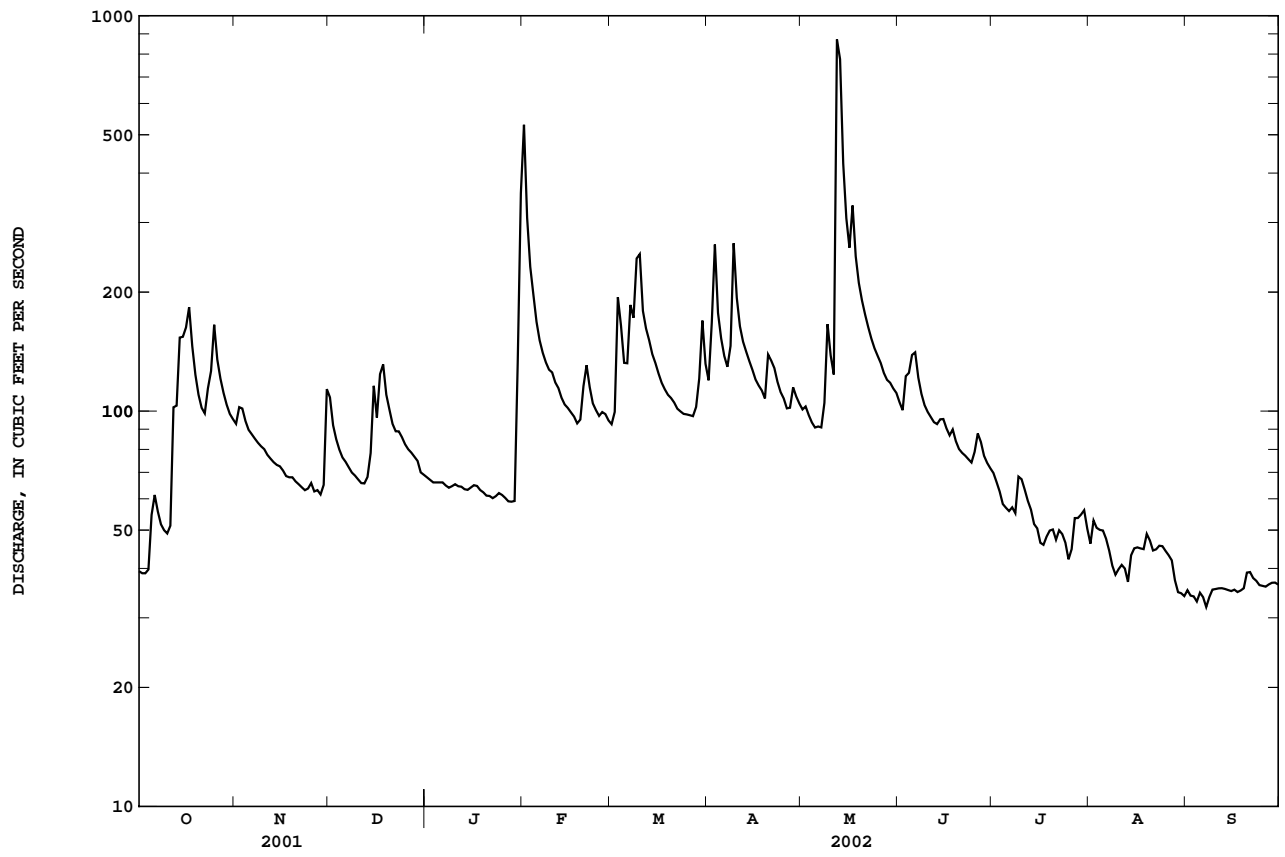
## FOR 2002 WATER YEAR

## WATER YEARS 1980 - 2002

ANNUAL TOTAL	27942	35988	
ANNUAL MEAN	76.55	98.60	99.09
HIGHEST ANNUAL MEAN			155
LOWEST ANNUAL MEAN			53.0
HIGHEST DAILY MEAN	659	Feb 10	871
LOWEST DAILY MEAN	22	Aug 14	32
ANNUAL SEVEN-DAY MINIMUM	24	Aug 8	34
MAXIMUM PEAK FLOW			1700
MAXIMUM PEAK STAGE			9.60
ANNUAL RUNOFF (CFSM)	0.83		1.08
ANNUAL RUNOFF (INCHES)	11.34		14.60
10 PERCENT EXCEEDS	121		157
50 PERCENT EXCEEDS	67		84
90 PERCENT EXCEEDS	32		39

e Estimated

04099808 LITTLE ELKHART RIVER AT MIDDLEBURY, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04099850 PINE CREEK NEAR ELKHART, IN

LOCATION.--Lat 41°40'53", long 85°52'57", in NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.7, T.37 N., R.6 E., Elkhart County, Hydrologic Unit 04050001, (ELKHART, IN quadrangle), on right bank 50 ft upstream from bridge on County Road 14, 0.3 mi east of the intersection of County Roads 17 and 14, 3.1 mi east of Elkhart, and at mile 2.0.

DRAINAGE AREA.--31.0 mi<sup>2</sup>, of which 8.75 mi<sup>2</sup> does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 755.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	18	27	e11	175	e16	21	16	22	21	11	11
2	7.8	26	20	e11	55	19	42	16	22	20	21	11
3	7.6	25	18	e11	32	57	43	15	28	19	20	11
4	7.5	21	17	e11	28	e20	25	14	31	18	19	11
5	13	19	16	12	23	e23	21	13	31	18	18	11
6	21	18	15	12	20	27	19	13	29	17	17	11
7	15	18	15	12	19	43	18	13	26	17	16	10
8	13	17	14	12	18	40	28	17	24	16	16	10
9	12	17	14	12	19	78	46	49	23	20	15	10
10	11	17	13	12	21	64	27	58	22	18	15	9.9
11	11	16	13	12	20	e30	23	41	23	17	14	9.8
12	34	15	13	12	18	e26	22	110	22	e13	14	9.8
13	27	15	14	12	17	e25	20	128	21	e13	14	9.4
14	64	15	20	12	16	e23	20	67	21	e12	15	9.4
15	40	15	32	12	16	e21	18	53	22	e11	16	9.5
16	59	14	22	12	16	e20	17	46	21	e11	15	9.5
17	61	14	31	12	16	e19	17	54	20	e10	15	9.3
18	36	14	30	11	15	e18	16	48	21	e11	14	9.3
19	27	14	23	11	16	e17	16	e36	20	e12	15	9.4
20	23	14	21	11	23	e17	26	e33	19	e13	15	10
21	20	13	19	11	26	e16	23	e31	18	e12	14	9.7
22	20	13	18	10	21	e16	21	e30	18	e13	14	9.3
23	27	13	18	11	18	e15	18	e29	18	e12	14	9.2
24	31	13	17	11	18	e15	17	e28	17	e12	14	9.0
25	45	13	e15	11	17	e15	17	e27	32	9.5	14	9.0
26	28	13	e14	11	19	e15	16	e26	63	12	14	8.6
27	25	13	e14	11	20	e16	16	e25	33	16	13	8.4
28	22	12	e14	10	e17	e19	22	e24	26	13	12	8.3
29	21	14	e12	10	---	e24	18	e22	23	12	11	8.4
30	19	35	e10	36	---	33	17	23	21	12	12	8.0
31	19	---	e11	108	---	24	---	23	---	11	11	---
TOTAL	774.8	494	550	473	739	811	670	1128	737	441.5	458	289.2
MEAN	24.99	16.47	17.74	15.26	26.39	26.16	22.33	36.39	24.57	14.24	14.77	9.640
MAX	64	35	32	108	175	78	46	128	63	21	21	11
MIN	7.5	12	10	10	15	15	16	13	17	9.5	11	8.0
CFSM	0.81	0.53	0.57	0.49	0.85	0.84	0.72	1.17	0.79	0.46	0.48	0.31
IN.	0.93	0.59	0.66	0.57	0.89	0.97	0.80	1.35	0.88	0.53	0.55	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

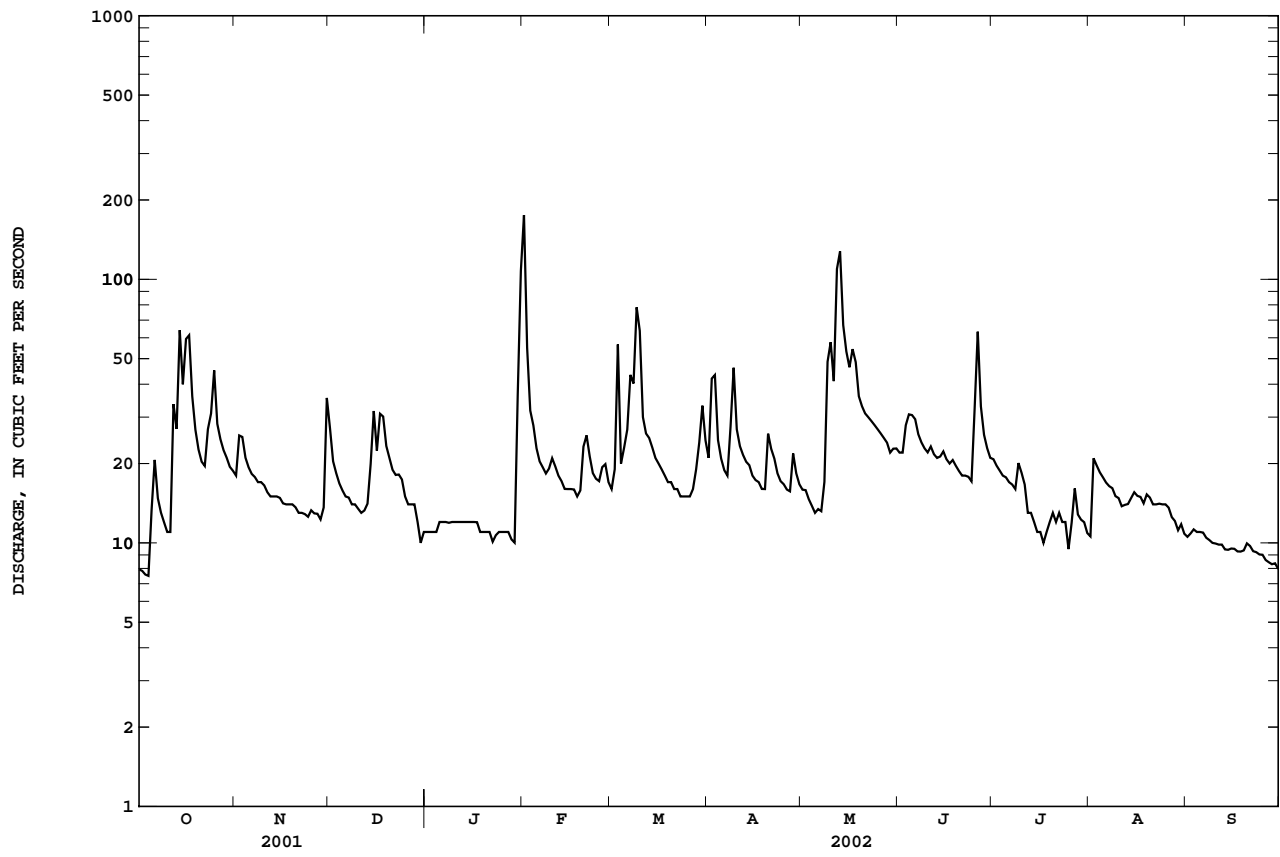
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
MEAN	14.76	16.53	19.22	19.30	22.92	26.07	25.91	21.71	21.98	15.44	13.02	12.03												
MAX	42.4	32.8	52.7	45.6	47.6	82.3	42.7	50.7	68.1	39.2	26.7	23.7												
(WY)	1991	1986	1991	1993	1985	1982	1999	1996	1993	1981	1997	1981												
MIN	4.12	5.26	4.44	4.96	8.13	9.71	12.5	8.00	7.79	6.17	5.01	3.22												
(WY)	2001	2001	2001	2001	2000	2000	2000	2000	1988	2001	2000	2000												

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1980 - 2002

ANNUAL TOTAL	5688.6	7565.5		
ANNUAL MEAN	15.59	20.73	19.05	
HIGHEST ANNUAL MEAN			30.1	1993
LOWEST ANNUAL MEAN			8.29	2000
HIGHEST DAILY MEAN	262	Feb 10	175	Feb 1
LOWEST DAILY MEAN	1.8	Aug 9	7.5	Oct 4
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 8	8.5	Sep 24
MAXIMUM PEAK FLOW			210	May 12
MAXIMUM PEAK STAGE			5.29	Feb 1
ANNUAL RUNOFF (CFSM)	0.50		0.67	9.74
ANNUAL RUNOFF (INCHES)	6.83		9.08	Jul 26 1981
10 PERCENT EXCEEDS	25		32	31
50 PERCENT EXCEEDS	12		17	15
90 PERCENT EXCEEDS	4.5		11	7.2

e Estimated

04099850 PINE CREEK NEAR ELKHART, IN--Continued



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04100222 NORTH BRANCH ELKHART RIVER AT COSPERVILLE, IN

LOCATION.--Lat 41°28'54", long 85°28'32", in NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec.22, T.35 N., R.9 E., Noble County, Hydrologic Unit 04050001, (ALBION, IN quadrangle), on right bank at downstream side of bridge on County Road 900 North at Cosperville, 1,300 ft downstream from Boyd Ditch, 1.7 mi upstream from Hustin Ditch, and 3.1 mi downstream from Waldron Lake.

DRAINAGE AREA.--142 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 880.12 ft above National Geodetic Vertical Datum of 1929 (levels by State of Indiana, Department of Natural Resources).

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated at times by dam at Waldron Lake.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	241	195	e155	269	159	225	205	203	61	26	20
2	15	235	201	e147	318	158	249	199	189	56	26	19
3	14	231	202	e140	335	176	292	191	178	53	26	17
4	13	223	201	134	342	183	311	182	171	49	24	16
5	24	215	198	128	342	184	314	172	183	46	23	15
6	44	204	193	122	336	184	314	165	187	42	22	14
7	44	194	190	118	327	194	312	161	180	39	19	14
8	42	183	184	113	315	199	318	159	168	35	17	13
9	38	174	176	109	302	219	347	171	158	38	15	12
10	34	165	169	107	290	248	361	180	146	37	14	12
11	40	158	163	105	278	260	360	187	136	23	14	11
12	104	149	158	103	261	260	358	264	128	17	13	10
13	148	144	156	102	248	259	360	331	120	16	12	9.6
14	189	134	164	101	232	259	359	363	114	16	12	9.1
15	212	129	186	100	217	254	349	379	107	14	11	8.7
16	238	124	195	99	206	251	341	386	102	14	11	8.1
17	257	120	220	96	194	245	331	401	96	14	11	7.4
18	266	116	244	95	182	236	321	402	94	14	11	7.6
19	267	110	253	93	175	229	305	399	90	14	13	7.7
20	265	106	253	93	178	220	302	393	84	14	16	7.9
21	259	102	251	90	183	210	299	380	79	15	18	6.6
22	262	98	247	87	186	199	289	363	76	16	19	5.9
23	265	95	241	86	183	188	279	348	72	16	21	5.4
24	273	95	234	87	178	183	267	333	67	17	24	5.1
25	289	130	225	87	171	181	250	319	70	18	26	5.6
26	288	135	215	86	170	176	239	302	89	18	28	7.2
27	287	136	205	86	168	171	229	284	81	19	28	11
28	283	133	195	86	164	169	224	266	77	19	27	15
29	274	138	185	86	---	178	219	249	72	21	25	17
30	265	175	e172	110	---	205	212	233	67	25	24	19
31	253	---	e163	175	---	218	---	217	---	26	22	---
TOTAL	5268	4592	6234	3326	6750	6455	8936	8584	3584	822	598	336.9
MEAN	169.9	153.1	201.1	107.3	241.1	208.2	297.9	276.9	119.5	26.52	19.29	11.23
MAX	289	241	253	175	342	260	361	402	203	61	28	20
MIN	13	95	156	86	164	158	212	159	67	14	11	5.1
CFSM	1.20	1.08	1.42	0.76	1.70	1.47	2.10	1.95	0.84	0.19	0.14	0.08
IN.	1.38	1.20	1.63	0.87	1.77	1.69	2.34	2.25	0.94	0.22	0.16	0.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

	MEAN	81.16	114.5	138.9	156.5	163.4	249.3	242.0	172.4	142.6	81.89	61.00	61.92
MAX	272	314	341	542	307	553	354	405	211	171	161		
(WY)	1987	1973	1986	1993	2001	1985	1985	1996	1996	1981	1997	1972	
MIN	17.8	17.8	46.5	42.2	43.2	87.2	111	67.2	18.1	16.4	18.3	9.59	
(WY)	1975	1972	1972	1977	1972	2000	2000	1988	1988	1988	1978	1999	

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

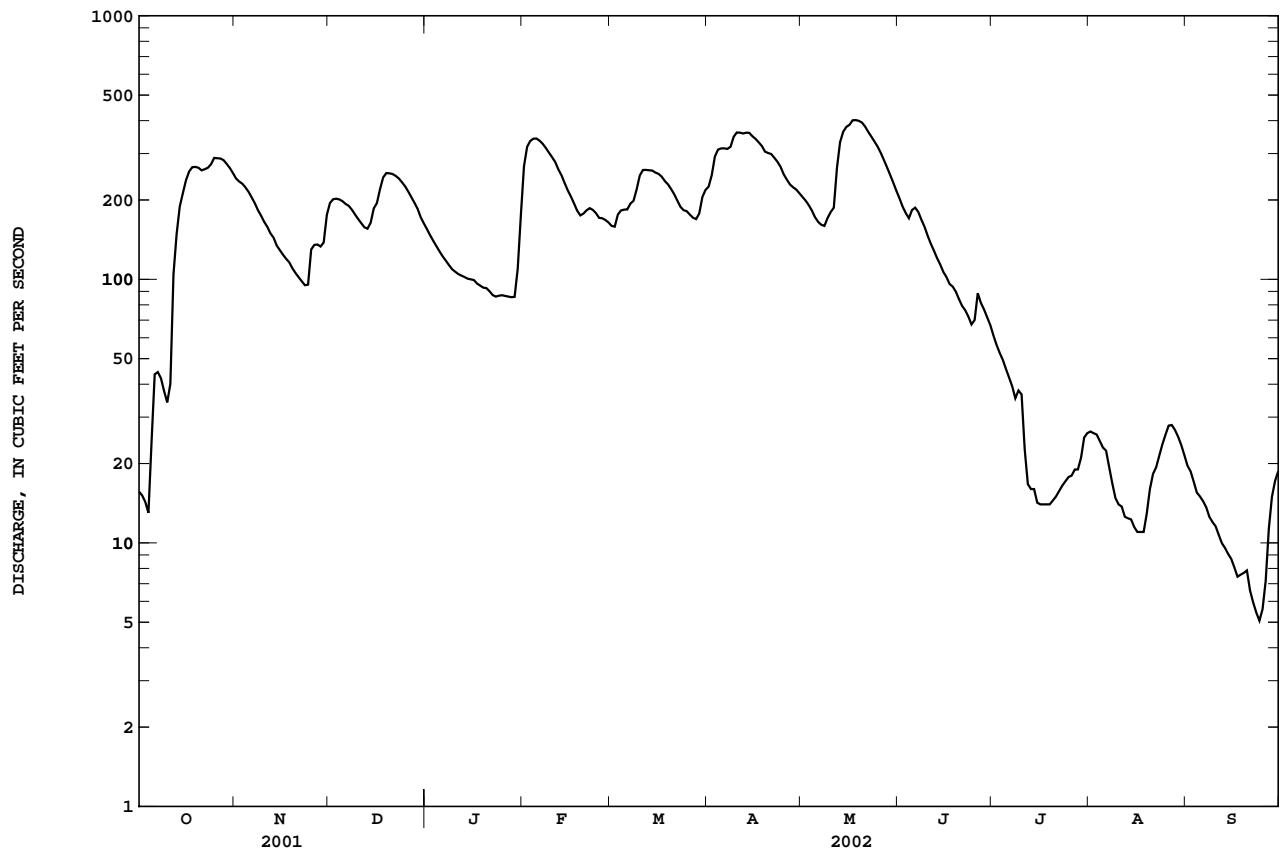
WATER YEARS 1972 - 2002

ANNUAL TOTAL	46042.1	55485.9	
ANNUAL MEAN	126.1	152.0	138.6
HIGHEST ANNUAL MEAN			222
LOWEST ANNUAL MEAN			69.5
HIGHEST DAILY MEAN	429	Feb 15	402
LOWEST DAILY MEAN	8.0	Aug 13	5.1
ANNUAL SEVEN-DAY MINIMUM	8.5	Aug 12	6.2
MAXIMUM PEAK FLOW			403
MAXIMUM PEAK STAGE			6.19
ANNUAL RUNOFF (CFSM)	0.89		1.07
ANNUAL RUNOFF (INCHES)	12.06		14.54
10 PERCENT EXCEEDS	265		303
50 PERCENT EXCEEDS	108		163
90 PERCENT EXCEEDS	17		14
			8.12
			0.98
			13.26
			296
			108
			30

e Estimated



04100222 NORTH BRANCH ELKHART RIVER AT COSPERVILLE, IN--Continued



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04100252 FORKER CREEK NEAR BURR OAK, IN

LOCATION.--Lat 41°19'58", long 85°25'25", in SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.12, T.33 N., R.9 E., Noble County, Hydrologic Unit 04050001, (MERRIAM, IN quadrangle), on right bank 300 ft downstream from bridge on State Highway 9, and 400 ft downstream from Miller Lake Outlet, 0.8 mi northeast of Burr Oak, and 4.5 mi south of Albion.

DRAINAGE AREA.--19.2 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 889.00 ft above National Geodetic Vertical Datum of 1929 (Indiana Department of Highways bench mark).

REMARKS.--Records fair except for estimated daily discharges, which are poor. Occasional regulation at Miller Lake Outlet.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.76	32	64	21	89	e14	e64	33	16	e5.6	e1.9	e1.4
2	0.76	30	64	21	109	e16	e80	32	14	e5.0	e1.9	e1.6
3	0.69	30	54	21	93	e43	e104	31	14	e4.1	e1.8	e1.5
4	0.78	29	46	20	72	e33	e80	30	14	e3.7	e1.8	e1.4
5	1.2	26	39	19	54	e29	e66	29	16	e2.8	e1.7	e1.2
6	1.5	25	35	20	42	e27	e56	29	16	e2.3	e1.7	e1.1
7	1.4	25	32	21	33	e30	e45	29	15	e2.4	e1.6	e1.2
8	1.3	23	29	23	28	e28	e56	29	14	e2.5	e1.6	e1.3
9	1.2	22	27	23	24	e60	e96	35	12	e4.7	e1.7	e1.3
10	1.9	21	26	24	21	e76	e88	40	12	e8.4	e1.7	e1.4
11	5.7	21	25	24	19	e60	79	43	11	e6.0	e1.8	e1.5
12	25	20	25	24	17	e50	65	78	11	e4.8	e1.9	e1.4
13	55	19	25	24	e16	e40	66	112	e10	e4.1	e2.1	e1.3
14	79	19	29	25	e15	e35	66	105	e12	e3.6	e2.5	e1.3
15	87	19	43	25	e14	e30	58	82	e12	e3.3	e2.7	e1.2
16	91	19	54	26	e13	e26	49	64	e10	e3.0	e3.0	e1.1
17	97	19	66	26	e12	e23	44	55	e9.0	e2.7	e2.9	e1.1
18	89	18	83	26	e12	e20	45	46	e7.6	e2.5	e2.5	e1.4
19	72	18	81	25	e13	e19	41	39	e6.6	e2.4	e2.9	e1.7
20	59	18	65	25	e17	e17	40	34	e6.0	e2.3	e2.7	e3.5
21	50	17	53	25	e22	16	42	29	e20	e2.2	e2.1	e3.3
22	52	17	44	26	e21	e14	43	26	e26	e2.4	e2.2	e2.5
23	63	17	39	26	e17	e12	41	24	e20	e2.7	e2.9	e1.8
24	75	18	35	26	e16	e12	38	22	e16	e2.0	e2.7	e1.5
25	84	20	e32	26	e15	e13	34	20	e13	e1.9	e2.5	e1.2
26	79	22	e29	26	e18	e13	32	19	e12	e6.8	e2.0	e1.2
27	67	23	27	26	e16	e15	31	17	e10	e9.0	e1.8	e2.5
28	54	23	26	27	e15	e17	34	16	e8.3	e5.4	e1.7	e2.1
29	46	26	e24	27	---	e32	36	17	e7.2	e3.8	e1.6	e1.7
30	40	44	e23	27	---	e64	35	17	e6.4	e2.8	e1.6	e1.4
31	35	---	22	39	---	e80	---	17	---	e2.0	e1.5	---
TOTAL	1316.19	680	1266	764	853	964	1654	1199	377.1	117.2	65.0	48.1
MEAN	42.46	22.67	40.84	24.65	30.46	31.10	55.13	38.68	12.57	3.781	2.097	1.603
MAX	97	44	83	39	109	80	104	112	26	9.0	3.0	3.5
MIN	0.69	17	22	19	12	12	31	16	6.0	1.9	1.5	1.1
CFSM	2.21	1.18	2.13	1.28	1.59	1.62	2.87	2.01	0.65	0.20	0.11	0.08
IN.	2.55	1.32	2.45	1.48	1.65	1.87	3.20	2.32	0.73	0.23	0.13	0.09

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

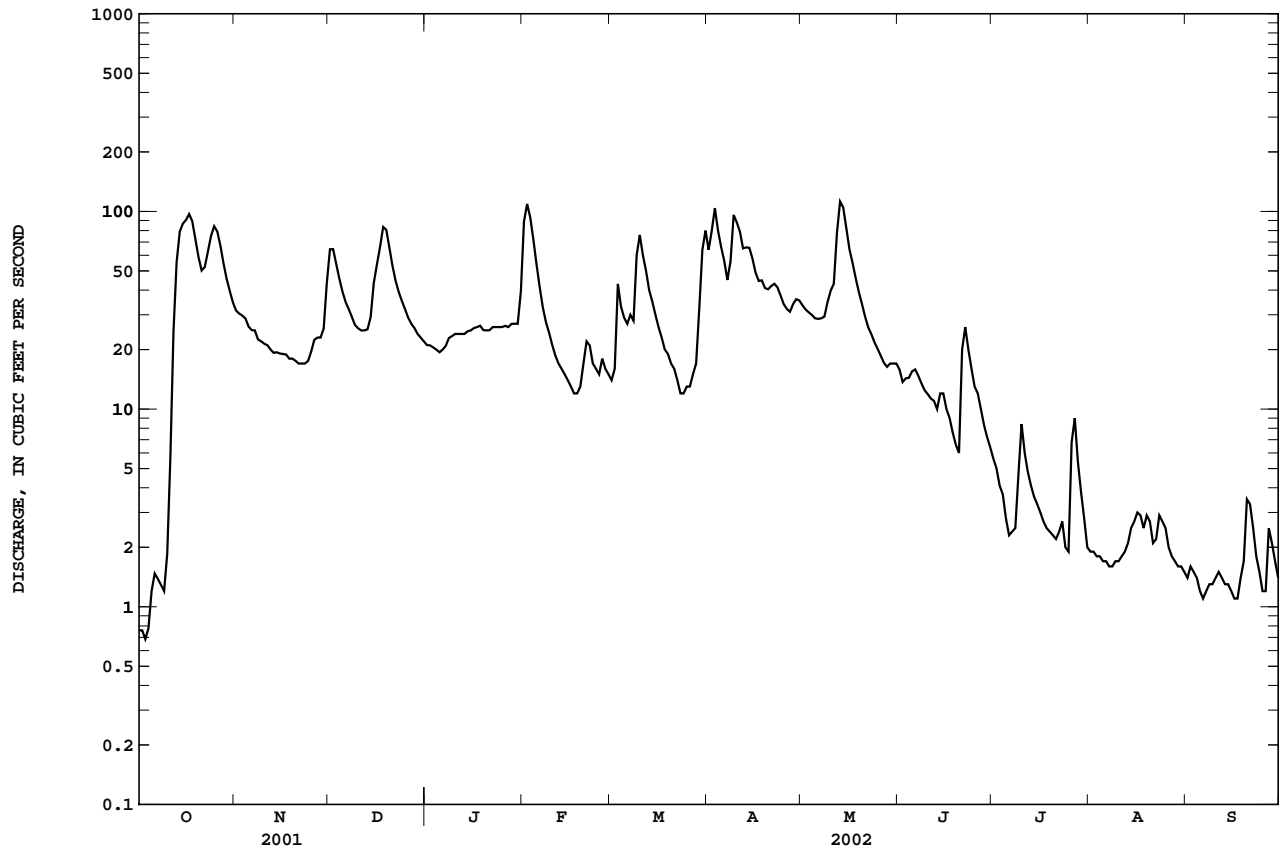
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002			
MEAN	8.113	13.28	18.64	18.05	24.29	34.24	33.91	19.34	19.27	8.661	4.748	4.948																								
MAX	50.6	48.8	52.5	67.1	62.5	111	60.5	41.9	90.7	49.5	36.4	33.4																								
(WY)	1991	1989	1978	1993	1985	1982	1978	1996	1981	1986	1990	1990																								
MIN	0.31	0.25	0.21	0.81	2.96	9.28	9.61	4.70	1.98	0.41	0.25	0.23																								
(WY)	1995	1995	2000	2000	1979	2000	1971	1988	1988	1971	1971	1978																								

## SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR	FOR 2002 WATER YEAR	WATER YEARS 1970 - 2002
ANNUAL TOTAL	6596.11	9303.59	
ANNUAL MEAN	18.07	25.49	17.23
HIGHEST ANNUAL MEAN			29.0
LOWEST ANNUAL MEAN			6.54
HIGHEST DAILY MEAN	152	Feb 10	431
LOWEST DAILY MEAN	0.30	Aug 19	0.10
ANNUAL SEVEN-DAY MINIMUM	0.43	Aug 15	0.12
MAXIMUM PEAK FLOW			480
MAXIMUM PEAK STAGE			7.03
ANNUAL RUNOFF (CFSM)	0.94		0.90
ANNUAL RUNOFF (INCHES)	12.78		12.19
10 PERCENT EXCEEDS	48		43
50 PERCENT EXCEEDS	11		8.9
90 PERCENT EXCEEDS	0.81	1.7	0.78

e Estimated

04100252 FORKER CREEK NEAR BURR OAK, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04100377 SOLOMON CREEK NEAR SYRACUSE, IN

LOCATION.--Lat 41°27'30", long 85°43'12", in NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> sec.28, T.35 N., R.7 E., Elkhart County, Hydrologic Unit 04050001, (LAKE WAWASEE, IN quadrangle), on right bank 40 ft upstream from County Road 52 East bridge over Solomon Creek, and 2.5 mi northeast of Syracuse, and 6.8 mi west of Ligonier.

DRAINAGE AREA.--36.1 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 840.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	66	65	41	163	40	71	76	45	54	18	6.8
2	21	69	59	38	129	41	99	77	43	51	19	10
3	20	70	56	38	97	66	149	73	44	47	18	13
4	19	66	53	37	79	e57	110	71	48	45	17	10
5	24	63	51	36	69	58	94	69	72	47	15	9.4
6	33	60	49	36	65	58	83	70	108	47	13	9.6
7	31	58	47	35	61	70	79	69	97	45	11	8.0
8	29	57	45	34	58	70	86	70	89	42	10	7.2
9	27	55	43	34	56	96	133	84	84	53	10	9.3
10	25	54	41	33	56	114	110	88	81	52	12	12
11	26	52	38	33	53	87	96	86	79	50	12	9.8
12	70	50	38	33	52	78	92	242	77	49	11	14
13	80	50	40	33	50	73	101	226	75	46	9.5	16
14	112	52	48	32	48	69	95	157	74	41	8.8	15
15	123	51	63	31	47	67	88	120	74	34	8.1	16
16	129	49	61	31	46	64	82	105	72	32	8.0	16
17	133	47	73	32	44	61	80	112	70	29	6.9	16
18	116	46	84	33	42	59	77	97	68	29	8.6	16
19	102	46	77	31	42	59	75	87	66	29	11	17
20	90	44	70	30	51	58	91	81	64	29	13	17
21	83	43	65	30	56	56	98	74	63	27	14	18
22	84	40	61	29	52	54	97	69	63	24	17	18
23	98	38	61	29	50	53	88	65	61	22	18	17
24	110	38	59	29	47	52	83	61	60	19	17	17
25	134	39	56	29	46	52	80	59	60	20	14	16
26	113	39	54	28	48	52	76	56	66	20	13	16
27	96	39	52	28	45	51	76	54	63	20	11	17
28	86	36	51	28	43	52	86	51	59	21	9.2	16
29	78	38	48	28	---	61	83	49	57	21	8.2	16
30	73	60	46	44	---	87	79	48	55	22	7.7	16
31	69	---	44	96	---	77	---	47	---	19	7.3	---
TOTAL	2256	1515	1698	1079	1695	1992	2737	2693	2037	1086	376.3	415.1
MEAN	72.77	50.50	54.77	34.81	60.54	64.26	91.23	86.87	67.90	35.03	12.14	13.84
MAX	134	70	84	96	163	114	149	242	108	54	19	18
MIN	19	36	38	28	42	40	71	47	43	19	6.9	6.8
CFSM	2.02	1.40	1.52	0.96	1.68	1.78	2.53	2.41	1.88	0.97	0.34	0.38
IN.	2.32	1.56	1.75	1.11	1.75	2.05	2.82	2.78	2.10	1.12	0.39	0.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

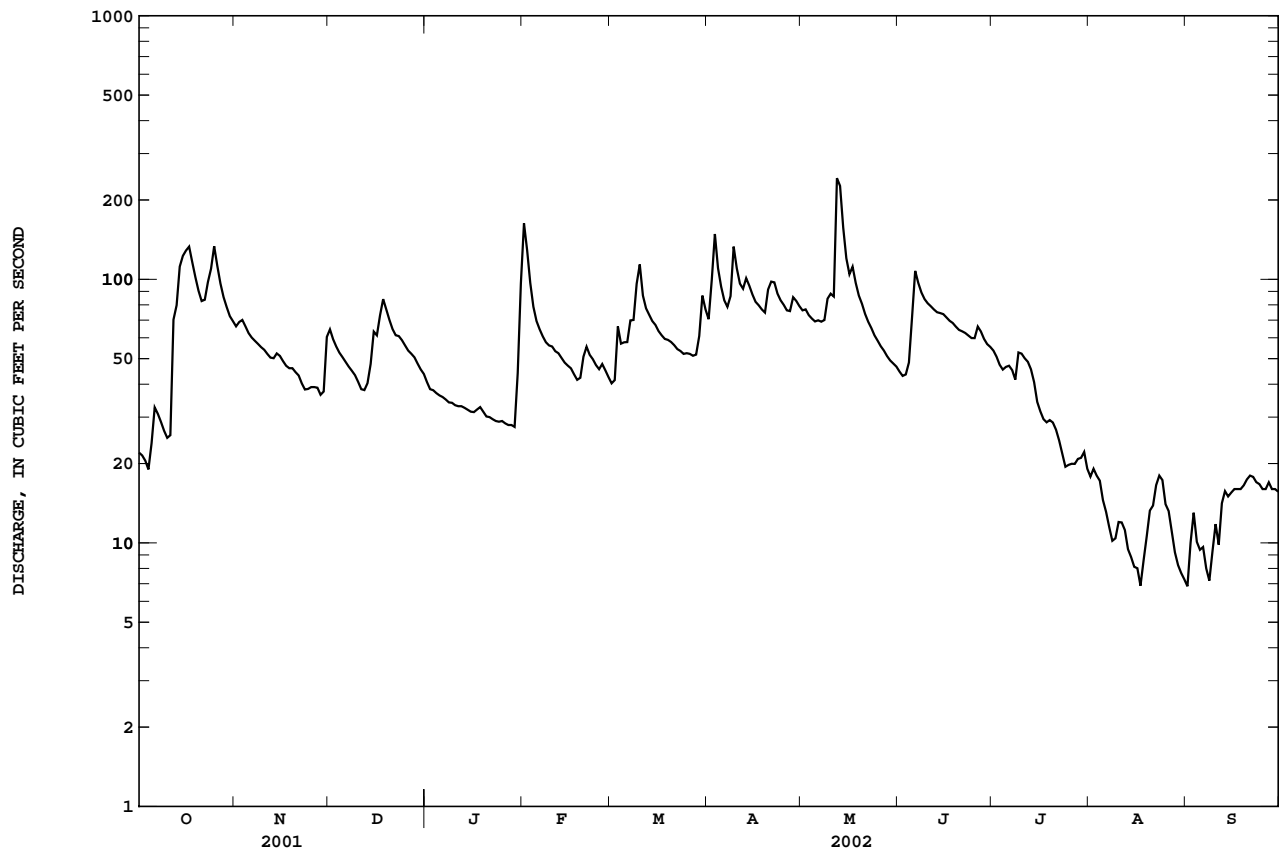
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	26.71	31.40	32.84	41.05	40.92	44.18	49.86	41.01	47.20	28.97	22.33	21.01			
MAX	72.2	60.1	60.3	94.8	79.9	75.4	85.8	59.4	82.3	56.3	38.3	36.5			
(WY)	2002	1993	1991	1993	2001	1998	1998	1990	1993	1997	2001	1990			
MIN	11.2	12.5	14.8	13.7	15.3	18.7	23.4	24.4	16.5	12.1	10.5	11.7			
(WY)	1996	2000	1990	2000	2000	2000	2000	1989	1988	1988	1988	1994			

SUMMARY STATISTICS FOR 2001 CALENDAR YEAR FOR 2002 WATER YEAR WATER YEARS 1988 - 2002

ANNUAL TOTAL	16537	19579.4		
ANNUAL MEAN	45.31	53.64	35.10	
HIGHEST ANNUAL MEAN			53.2	1993
LOWEST ANNUAL MEAN			17.5	2000
HIGHEST DAILY MEAN	201	Feb 10	242	May 12
LOWEST DAILY MEAN	10	Aug 8	6.8	Sep 1
ANNUAL SEVEN-DAY MINIMUM	12	Jan 1	8.6	Aug 27
MAXIMUM PEAK FLOW			309	May 12
MAXIMUM PEAK STAGE			6.05	May 12
ANNUAL RUNOFF (CFSM)	1.26		1.49	6.35
ANNUAL RUNOFF (INCHES)	17.04		20.18	13.21
10 PERCENT EXCEEDS	79		94	63
50 PERCENT EXCEEDS	41		51	30
90 PERCENT EXCEEDS	14		15	14

e Estimated

04100377 SOLOMON CREEK NEAR SYRACUSE, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04100500 ELKHART RIVER AT GOSHEN, IN

LOCATION.--Lat 41°35'36", long 85°50'55", in NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.8, T.36 N., R.6 E., Elkhart County, Hydrologic Unit 04050001, (GOSHEN, IN quadrangle), on right bank 20 ft downstream from River Avenue bridge at Goshen, 0.4 mi upstream from Rock Run, 9.1 mi northwest of Millersburg and at mile 16.1.

DRAINAGE AREA.--594 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1931 to current year.

REVISED RECORDS.--WSP 1337: 1939(M). WSP 1557: 1954. WSP 2111: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 769.43 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 20, 1931, nonrecording gage at same site and datum.

REMARKS.--Records fair except estimated daily discharges and those for July 26 to Sept. 30, which are poor. Occasional low-flow regulation at Goshen Dam, 3.4 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	1170	1150	e602	2610	833	1120	1110	e825	e487	229	166
2	225	1170	979	e600	2390	847	1200	1100	e790	e457	225	162
3	216	1190	902	e600	1740	1130	1800	1070	e789	e434	215	159
4	219	1120	883	e606	1420	1260	1840	1040	e793	e408	208	149
5	300	1040	875	e612	1290	1070	1550	1010	e838	e386	210	144
6	501	991	870	615	1250	1000	1460	995	e925	e367	190	150
7	483	943	859	592	1230	1200	1420	988	e873	e356	179	142
8	420	902	831	560	1190	1260	1440	1030	e823	e341	175	139
9	382	856	811	567	1160	1390	1810	1210	e791	e363	172	141
10	362	814	786	582	1120	1750	1930	1320	e771	e415	174	136
11	357	784	754	582	1090	1530	1640	1100	e798	e354	174	131
12	699	755	733	571	1050	1290	1540	2460	e768	e327	176	138
13	1150	723	745	559	1010	1250	1530	4160	e736	e311	169	129
14	1260	716	793	556	967	1240	1540	2770	e729	e297	176	126
15	1690	707	1130	565	941	1220	1490	2140	e722	e277	195	133
16	1660	666	1070	554	916	1190	1450	1880	e686	e252	189	136
17	1870	642	1070	503	893	1130	1420	1980	e647	e234	194	135
18	1900	634	1360	491	868	1100	1380	1940	e636	e227	188	136
19	1630	601	1240	479	874	1070	1330	1730	e604	e217	201	140
20	1420	533	1140	490	945	1050	1460	1640	e585	e219	213	156
21	1310	513	1100	492	1070	1030	1760	1550	e559	e207	202	164
22	1290	499	1090	489	1010	993	1630	1460	e545	e226	206	156
23	1430	484	1070	479	937	963	1460	1400	e531	e300	218	150
24	1740	483	1050	487	903	944	1340	1320	e526	e177	222	144
25	1870	495	1010	492	886	942	1280	1270	e529	e172	212	144
26	1900	548	946	465	898	898	1230	1220	e563	182	208	146
27	1600	587	921	416	887	868	1190	1150	e606	215	194	152
28	1420	583	900	389	861	884	1270	1070	e561	219	185	160
29	1330	606	865	395	---	971	1290	957	e528	223	183	161
30	1270	879	e680	683	---	1250	1150	901	e508	256	175	156
31	1220	---	e610	1490	---	1240	---	861	---	241	171	---
TOTAL	33351	22634	29223	17563	32406	34793	43950	45832	20585	9147	6028	4381
MEAN	1076	754.5	942.7	566.5	1157	1122	1465	1478	686.2	295.1	194.5	146.0
MAX	1900	1190	1360	1490	2610	1750	1930	4160	925	487	229	166
MIN	216	483	610	389	861	833	1120	861	508	172	169	126
CFSM	1.81	1.27	1.59	0.95	1.95	1.89	2.47	2.49	1.16	0.50	0.33	0.25
IN.	2.09	1.42	1.83	1.10	2.03	2.18	2.75	2.87	1.29	0.57	0.38	0.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2002, BY WATER YEAR (WY)

	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	321.0	395.5	499.9	595.6	709.2	938.5	948.9	717.5	517.1	358.0	271.4	250.8	1652	1132	1276	2058	1657	2497	2424	2354	1521	1079	712	784	1955	1973	1983	1993	1959	1982	1950	1943	1996	1951	1958	1958	75.9	95.9	122	122	108	301	363	222	101	94.0	73.0	58.5	1965	1965	1964	1963	1963	1964	1946	1958	1934	1934	1941	1941											

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

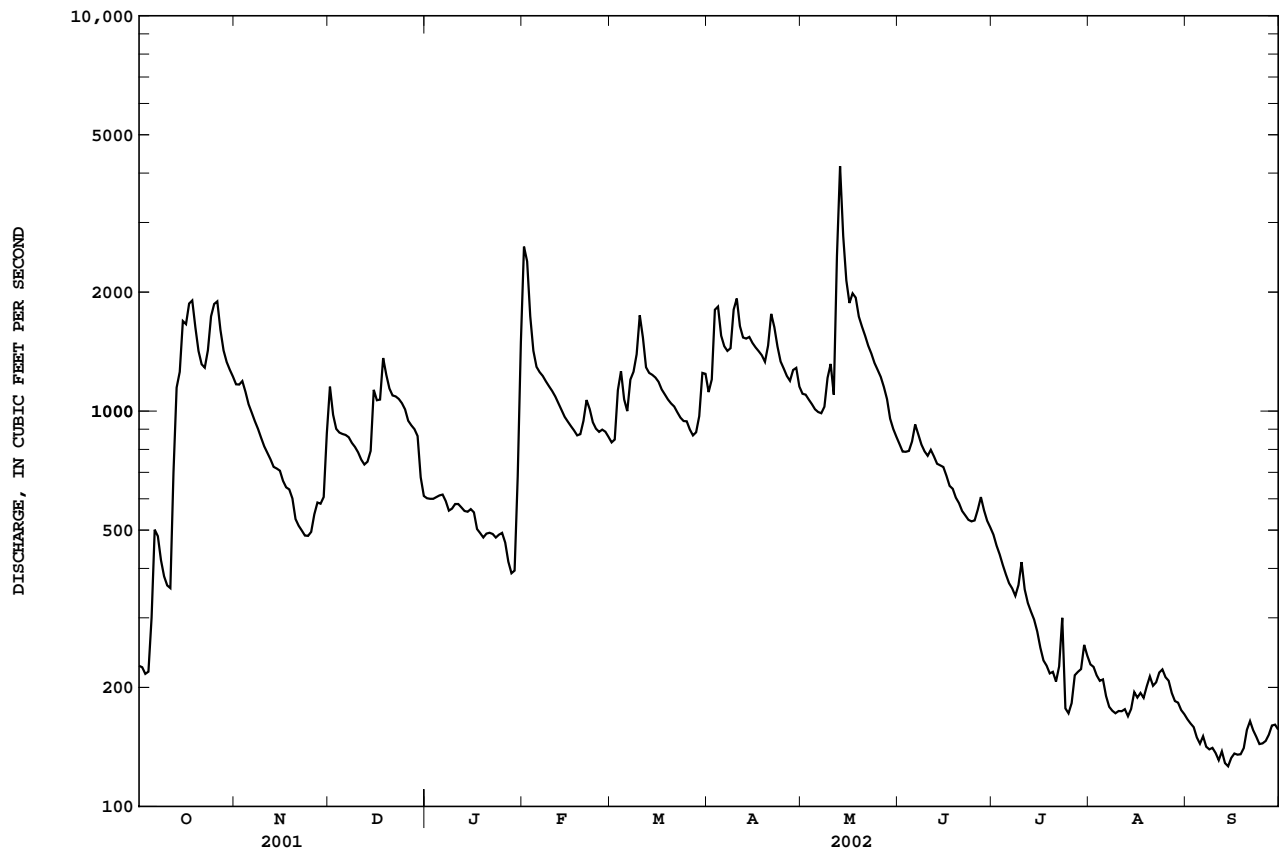
FOR 2002 WATER YEAR

WATER YEARS 1932 - 2002

ANNUAL TOTAL	237168	299893	
ANNUAL MEAN	649.8	821.6	542.5
HIGHEST ANNUAL MEAN			1005
LOWEST ANNUAL MEAN			197
HIGHEST DAILY MEAN	3700	Feb 10	6010
LOWEST DAILY MEAN	68	Aug 9	7.0
ANNUAL SEVEN-DAY MINIMUM	102	Aug 8	50
MAXIMUM PEAK FLOW			4510
MAXIMUM PEAK STAGE			9.57
INSTANTANEOUS LOW FLOW			7.0
ANNUAL RUNOFF (CFSM)	1.09		0.91
ANNUAL RUNOFF (INCHES)	14.85		12.41
10 PERCENT EXCEEDS	1270	1490	1120
50 PERCENT EXCEEDS	513	793	391
90 PERCENT EXCEEDS	219	175	157

e Estimated

04100500 ELKHART RIVER AT GOSHEN, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04101000 ST. JOSEPH RIVER AT ELKHART, IN

LOCATION.--Lat 41°41'30", long 85°58'30", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec.5, T.37 N., R.5 E., Elkhart County, Hydrologic Unit 04050001, (ELKHART, IN quadrangle), on left bank 200 ft downstream from Elkhart River, 200 ft upstream from Main Street bridge in Elkhart, 2,000 ft downstream from Christiana Creek, 0.5 mi downstream from Elkhart Hydroelectric Plant, and at mile 76.5.

DRAINAGE AREA.--3,370 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1947 to current year. Gage heights at site 0.8 mi downstream at different datum from September 1924 to March 1926 are available from the district office.

REVISED RECORDS.--WSP 2111: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. The flow is regulated by Elkhart Hydroelectric Plant.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1660	4970	4510	e3100	6240	4500	4710	4180	4460	2320	1490	1230
2	1810	5170	4510	e3050	6350	4450	4880	4070	4230	2170	1720	1200
3	1770	5060	4590	e3000	5670	5090	5670	3850	4040	2060	1890	1060
4	1740	5110	4490	e3000	5390	5290	5940	3710	4270	1960	1690	1020
5	2150	5020	4460	e3050	5270	5080	5660	3610	4340	1880	1480	1070
6	2520	4800	4420	e3100	5340	5030	5400	3600	4490	1840	1510	1040
7	2590	4710	4290	e3150	5330	5380	5270	3600	4390	1710	1370	1060
8	2630	4530	4140	3180	5160	5600	5460	3720	4230	1650	1420	1020
9	2650	4060	4070	3160	5130	6150	6130	4170	3980	2030	1360	994
10	2590	4170	3990	3150	5100	6760	6580	4400	3780	2190	1320	913
11	2470	4120	3840	3130	4950	7060	6330	4300	3780	2220	1200	971
12	3010	3970	3740	3180	4930	6580	6150	6680	3640	2090	1180	968
13	3620	3790	3720	3240	4940	6590	6140	10200	3450	1940	1080	980
14	4430	3750	3640	3250	4910	6520	6040	9580	3480	1780	1180	965
15	4970	3690	4160	3280	4760	6430	5940	8990	3400	1670	1230	995
16	5550	3610	4260	3210	4570	6210	5800	8790	3220	1510	1610	994
17	6080	3440	4530	3160	4470	5920	5730	9030	3230	1610	1670	933
18	6370	3400	4960	3130	4320	5590	5490	8800	3200	1490	1660	900
19	6340	3460	4900	3060	4270	5390	5140	8130	3020	1550	1670	1050
20	6340	3380	4860	2990	4410	5150	5360	7830	2900	1510	1810	1180
21	6090	3270	4740	2980	4800	4940	5640	7520	2760	1470	1660	1180
22	6000	3210	4720	2880	4930	4750	5500	7040	2750	1460	1600	1160
23	6000	3160	4660	2930	4900	4700	5250	6650	2640	1520	1670	1110
24	6120	3060	4530	2990	4880	4560	5010	6380	2490	1400	1850	1110
25	6290	3200	4540	2960	4870	4480	4820	6060	2540	1360	1710	1070
26	6140	3270	e4150	2970	4840	4390	4620	5920	2450	1250	1740	1110
27	5960	3460	e3800	2900	4650	4310	4330	5530	2540	1250	1670	1080
28	5700	3500	e3600	2880	4590	4280	4520	4940	2700	1290	1500	1080
29	5500	3610	e3400	2890	---	4390	4490	5140	2550	1430	1420	1070
30	5350	4060	e3250	3330	---	4630	4330	4970	2380	1600	1390	1110
31	5130	---	e3150	4420	---	4790	---	4630	---	1580	1330	---
TOTAL	135570	118010	130620	96700	139970	164990	162330	186020	101330	52790	47080	31623
MEAN	4373	3934	4214	3119	4999	5322	5411	6001	3378	1703	1519	1054
MAX	6370	5170	4960	4420	6350	7060	6580	10200	4490	2320	1890	1230
MIN	1660	3060	3150	2880	4270	4280	4330	3600	2380	1250	1080	900
CFSM	1.30	1.17	1.25	0.93	1.48	1.58	1.61	1.78	1.00	0.51	0.45	0.31
IN.	1.50	1.30	1.44	1.07	1.55	1.82	1.79	2.05	1.12	0.58	0.52	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

	MEAN	2216	2637	3195	3585	3932	5085	5193	4137	3281	2363	1960	1885
MAX	5752	5883	5795	9270	7039	10760	12690	7725	7535	4409	4180	3855	
(WY)	1987	1993	1991	1993	1968	1982	1950	1956	1989	1968	1981	1981	
MIN	791	856	958	1127	1120	1679	2633	1911	1280	898	737	721	
(WY)	1964	1965	1964	1964	1963	1964	1958	1958	1988	1988	1964	1964	

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

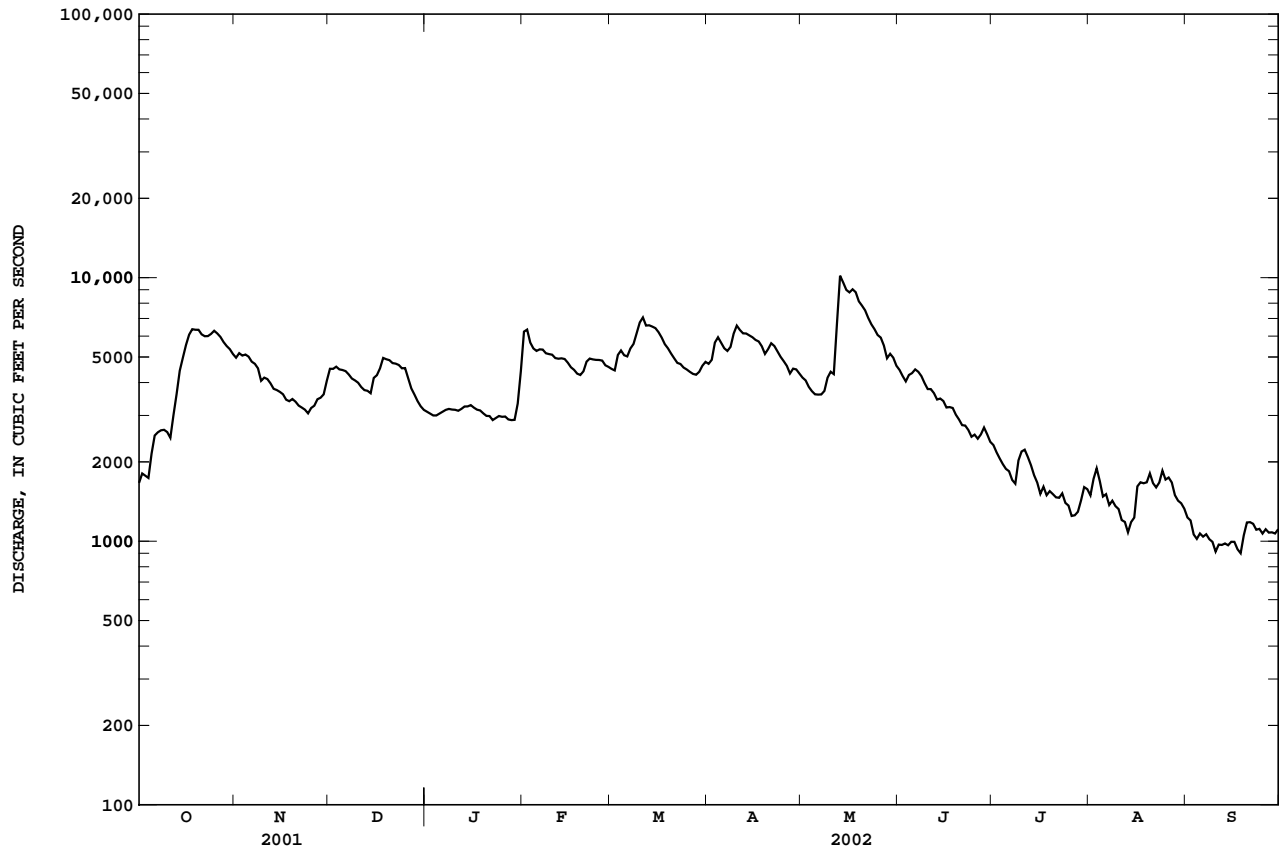
WATER YEARS 1948 - 2002

ANNUAL TOTAL		1329770		1367033									
ANNUAL MEAN		3643		3745						3285			
HIGHEST ANNUAL MEAN										5264			1950
LOWEST ANNUAL MEAN										1283			1964
HIGHEST DAILY MEAN			9480	Feb 11		10200	May 13		18500	Mar 21	1982		
LOWEST DAILY MEAN			1040	Aug 15		900	Sep 18		336	Aug 5	1964		
ANNUAL SEVEN-DAY MINIMUM			1150	Aug 9		962	Sep 12		561	Aug 2	1964		
MAXIMUM PEAK FLOW						11200	May 13		18800	Feb 27	1985		
MAXIMUM PEAK STAGE						24.06	May 13		27.91	Mar 21	1982		
ANNUAL RUNOFF (CFSM)			1.08			1.11			0.97				
ANNUAL RUNOFF (INCHES)			14.68			15.09			13.24				
10 PERCENT EXCEEDS			5950			6070			5820				
50 PERCENT EXCEEDS			3420			3780			2800				
90 PERCENT EXCEEDS			1700			1250			1390				

e Estimated



04101000 ST. JOSEPH RIVER AT ELKHART, IN--Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04101370 JUDAY CREEK NEAR SOUTH BEND, IN

LOCATION.--Lat 41°43'43", long 85°15'46", in NW¼/4SE¼/4 sec.23, T. 38 N., R. 2 E., St. Joseph County, Hydrologic Unit 04050001, (SOUTH BEND WEST, IN quadrangle), on right bank at downstream side of bridge on access road to Izaak Walton League property, 0.1 mi south of Darden Road in Roseland, 0.5 mi northeast of intersection of St. Joseph River and Interstate 80/90, 0.6 mi from mouth.

DRAINAGE AREA.--Approx. 38 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is about 690.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.4	e15	21	e16	31	17	24	23	23	13	8.0	5.6
2	e4.5	e14	23	16	31	18	26	24	22	12	9.9	5.6
3	e4.0	e13	23	16	24	25	28	22	25	12	8.9	5.7
4	e5.0	e12	21	16	21	26	28	22	25	12	8.2	5.3
5	9.5	e12	20	16	21	24	26	22	24	11	8.2	5.1
6	11	e11	20	16	21	22	25	23	23	11	7.8	4.9
7	9.6	e11	19	16	20	25	25	23	23	11	7.6	4.7
8	8.6	e10	18	15	19	30	28	24	22	10	7.3	4.5
9	7.9	e10	17	15	18	35	31	30	22	15	6.9	4.3
10	7.4	e9.8	17	16	19	33	29	30	22	13	6.7	4.5
11	7.2	e9.6	17	16	18	29	27	30	23	11	6.5	4.2
12	12	e9.4	17	15	18	26	27	72	22	11	6.1	4.5
13	14	9.2	17	14	17	24	25	73	21	10	6.5	4.5
14	23	9.5	18	14	17	24	25	51	21	9.5	8.5	4.4
15	25	9.4	22	14	17	27	25	43	20	9.3	7.9	4.4
16	29	9.5	22	14	17	25	24	41	20	9.1	9.0	4.6
17	34	9.2	24	14	16	25	23	44	20	8.8	8.9	4.5
18	28	9.1	24	14	17	25	22	40	19	8.5	8.0	4.5
19	24	9.6	23	14	16	24	22	36	18	8.4	8.6	5.3
20	22	10	22	14	18	26	26	34	18	8.4	8.4	6.3
21	20	10	21	13	18	26	25	32	17	8.3	7.8	7.0
22	19	11	20	13	19	25	24	30	17	7.9	8.0	6.0
23	20	11	19	13	18	25	23	29	16	8.2	9.0	5.9
24	21	11	19	12	18	24	23	32	16	8.4	8.4	5.7
25	20	12	19	12	18	24	23	29	17	8.7	8.0	5.4
26	18	12	18	12	18	24	22	27	17	8.5	7.7	5.3
27	18	12	18	12	18	23	23	27	16	8.8	7.2	5.3
28	17	12	18	12	17	24	26	27	14	8.4	6.7	4.9
29	e16	13	17	12	---	25	24	26	14	9.9	6.3	5.0
30	e16	18	e17	14	---	27	23	25	13	9.6	6.2	4.8
31	e15	---	e17	20	---	26	---	24	---	8.5	5.9	---
TOTAL	491.1	334.3	608	446	540	783	752	1015	590	309.2	239.1	152.7
MEAN	15.84	11.14	19.61	14.39	19.29	25.26	25.07	32.74	19.67	9.974	7.713	5.090
MAX	34	18	24	20	31	35	31	73	25	15	9.9	7.0
MIN	4.0	9.1	17	12	16	17	22	22	13	7.9	5.9	4.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002		
MEAN	13.97	16.90	16.37	19.73	20.50	23.62	26.76	23.05	22.17	15.51	14.43	11.59
MAX	27.3	31.6	23.6	38.3	30.5	33.8	47.0	32.7	44.9	28.6	36.4	24.0
(WY)	1994	1994	1993	1993	1997	1993	1998	2002	1993	1996	1995	1993
MIN	4.19	3.32	4.49	7.82	10.6	12.8	15.3	11.3	11.0	7.18	6.25	4.01
(WY)	2000	2000	2000	2000	2000	2000	2001	2001	2001	2001	2001	1999

SUMMARY STATISTICS

	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	4391.2		6260.4			
ANNUAL MEAN	12.03		17.15		18.70	
HIGHEST ANNUAL MEAN					27.7	
LOWEST ANNUAL MEAN					10.1	
HIGHEST DAILY MEAN	34	Oct 17	73	May 13	163	Jun 9 1993
LOWEST DAILY MEAN	2.6	Aug 15	4.0	Oct 3	2.6	Aug 15 2001
ANNUAL SEVEN-DAY MINIMUM	3.5	Aug 9	4.4	Sep 9	3.0	Nov 12 1999
MAXIMUM PEAK FLOW			93	May 12	226	Jun 9 1993
MAXIMUM PEAK STAGE			2.94	May 12	4.62	Jan 7 2001
10 PERCENT EXCEEDS	19		27		31	
50 PERCENT EXCEEDS	11		17		17	
90 PERCENT EXCEEDS	5.1		6.3		7.6	

e Estimated

04101370 JUDAY CREEK NEAR SOUTH BEND, IN--Continued

