

Peak Flow Analysis of Michigan USGS Gages

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The following is a peak flow gage analysis of all USGS Michigan gages with at least 10 years of record. The analysis was performed using PKFQWin 5.2.0 on December 10, 2007. Skew is 0.12, 0.081, and -0.17 for the upper peninsula, southwest lower peninsula (Galien, Black, St. Joe, Macatawa, Kalamazoo, and Grand), and the remainder of the lower peninsula respectively, based on the work of Croskey and Holtschlag. Generalized error used is 0.45.

This document was prepared to assist the Michigan Stream Team. The results of the statistical analysis may not be the flows the MDEQ uses to evaluate permit applications for its regulatory programs. A minimum of 10 years of record may produce sufficiently accurate estimates of the 80%, 67%, and 50% chance floods (1¼, 1½, and 2-year) needed for the Stream Team's regional reference reach project. However, the MDEQ typically regulates to the 1% chance flood (100-year). We may extend gages with relatively short periods of record by correlating their annual flows to gages with significantly longer periods of record. Any flows taken from these tables and used as the basis for an MDEQ permit application should be verified by the MDEQ Land and Water Management Division's Hydrologic Studies Unit. See www.michigan.gov/deqhydrology for more information.

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4001000	13	167	203	248	39	no	WASHINGTON CREEK AT WINDIGO, MI
4031000	200	2430	2950	3670	34	no	BLACK RIVER NEAR BESSEMER, MI
4031500	171	841	997	1200	38	no	PRESQUE ISLE RIVER AT MARENISCO, MI
4032000	261	1770	2060	2410	38	no	PRESQUE ISLE RIVER NEAR TULA, MI
4033000	164	590	699	837	59	no	MIDDLE BRANCH ONTONAGON RIVER NEAR PAULDIN
4034500	203	166	235	342	64	yes	MIDDLE BRANCH ONTONAGON RIVER NR TROUT CRE
4035000	272	2030	2340	2710	37	no	EAST BR ONTONAGON RIVER NEAR MASS, MI
4036000	162	658	756	868	63	yes	WEST BRANCH ONTONAGON RIVER NEAR BERGLAND,
4037500	51	164	178	193	62	no	CISCO BRANCH ONTONAGON R AT CISCO LAKE OUT
4039500	348	2700	3220	3880	44	no	SOUTH BRANCH ONTONAGON RIVER AT EWEN, MI
4040000	1340	10400	12100	14200	65	no	ONTONAGON RIVER NEAR ROCKLAND, MI
4040500	171	1510	1790	2130	67	no	STURGEON RIVER NEAR SIDNAW, MI
4041000	63	319	372	437	38	no	PERCH RIVER AT STATE HWY-28 NEAR SIDNAW, M
4041500	346	2570	2960	3420	75	no	STURGEON RIVER NEAR ALSTON, MI
4042300	506	3250	3730	4320	11	no	STURGEON RIVER NEAR PELKIE, MI
4042500	162	2020	2350	2740	37	no	OTTER RIVER NR ELO, MI
4043000	705	4220	4990	5980	32	no	STURGEON RIVER NR ARNHEIM, MI
4043050	28	517	606	713	40	no	TRAP ROCK RIVER NEAR LAKE LINDEN, MI
4044724	81	229	292	374	13	yes	AU TRAIN RIVER AT FOREST LAKE, MI
4044813	200	1020	1180	1390	33	no	TWO HEARTED RIVER NEAR PARADISE, MI
4045500	790	3420	3830	4290	53	no	TAHQAMENON RIVER NEAR PARADISE, MI
4045538	41	387	462	557	34	no	W BRANCH WAISKA RIVER AT TILSON RD NEAR BR
4045559	32	513	602	710	19	no	EAST BRANCH WAISKA RIVER NEAR BRIMLEY, MI
4046000	28	165	191	225	55	no	BLACK RIVER NEAR GARNET, MI

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4049500	341	1050	1140	1260	45	no	MANISTIQUE RIVER AT GERMFASK, MI
4054500	92	649	755	884	17	no	DUCK CREEK NEAR BLANEY, MI
4055000	704	2860	3250	3750	42	no	MANISTIQUE RIVER AT COOKSON BRIDGE NEAR BL
4056000	322	1900	2200	2580	19	no	W BR MANISTIQUE R NR MANISTIQUE, MI
4056500	1100	4980	5770	6740	69	no	MANISTIQUE RIVER NEAR MANISTIQUE, MI
4057000	302	629	693	772	45	no	INDIAN RIVER NEAR MANISTIQUE, MI
4057510	183	862	975	1110	40	no	STURGEON RIVER NEAR NAHMA JUNCTION, MI
4057800	46	429	516	630	47	no	MIDDLE BRANCH ESCANABA RIVER AT HUMBOLDT,
4057820	73	771	822	882	3	no	M BR ESCANABA RIVER NR GREENWOOD, MI
		536	626	734	13	yes	
4057900	34	217	257	310	29	no	BLACK RIVER AT COUNTY ROAD NEAR REPUBLIC,
4058000	128	850	986	1160	18	no	M BR ESCANABA RIVER NR ISHPEMING, MI
4058100	210	1070	1250	1460	11	no	MIDDLE BRANCH ESCANABA RIVER NR PRINCETON,
		823	998	1230	39	yes	
4058200	24	113	148	196	45	yes	SCHWEITZER CREEK NEAR PALMER, MI
4058300	14	149	172	202	16	no	WARNER CREEK NR PALMER, MI
4058400	38	235	268	309	15	no	GOOSE LAKE OUTLET NR SANDS STATION, MI
		209	248	297	21	yes	
4058500	124	679	798	954	27	no	EAST BRANCH ESCANABA RIVER AT GWINN, MI
4059000	870	6540	7160	7870	5	no	ESCANABA RIVER AT CORNELL, MI
		4220	4940	5810	61	yes	
4059400	39	0	320	365	36	no	TENMILE CREEK AT PERRONVILLE, MI
4059500	450	2090	2430	2850	52	no	FORD RIVER NEAR HYDE, MI
4060500	92	320	398	498	35	no	IRON RIVER AT CASPIAN, MI
4060993	366	1020	1210	1460	64	no	BRULE RIVER AT US HIGHWAY 2 NEAR FLORENCE,
4061000	389						4060993 considered equivalent
4061500	597	2740	3260	3920	54	yes	PAINT RIVER AT CRYSTAL FALLS, MI
4062000	631	1180	1620	2250	54	yes	PAINT RIVER NR ALPHA, MI
4062011	1020	2360	2920	3670	17	yes	BRULE RIVER NEAR COMMONWEALTH, WI
4062200	133	2000	2260	2590	28	no	PESHEKEE RIVER NEAR CHAMPION, MI
4062230	194	1560	1760	2000	14	no	MICHIGAMME RIVER NR MICHIGAMME, MI
4062300	240	1580	1880	2240	30	no	MICHIGAMME RIVER AT REPUBLIC, MI
4062400	316	2030	2320	2670	18	no	MICHIGAMME RIVER NEAR WITCH LAKE, MI
4062500	656	1770	2160	2660	62	yes	MICHIGAMME RIVER NEAR CRYSTAL FALLS, MI
4063000	1760	5760	6800	8050	26	no	MENOMINEE RIVER NEAR FLORENCE, WI
		5110	6140	7440	89	yes	
4063500	1800	4620	5350	6280	17	yes	MENOMINEE RIVER AT TWIN FALLS NEAR IRON MT
4065000	2420	10300	11000	11800	12	no	MENOMINEE RIVER NEAR IRON MOUNTAIN, MI
4065106	2470	6070	7220	8690	13	no	MENOMINEE RIVER AT NIAGARA, WI
4065300	56	257	290	329	23	no	WEST BRANCH STURGEON RIVER NEAR RANDVILLE,
4065393	62	300	342	393	11	no	E B STURGEON RIVER BELOW SKUNK C NR FELCH,
4065500	237	910	1030	1190	25	no	STURGEON RIVER NEAR FOSTER CITY, MI
4065600	17	130	151	177	6	no	PINE CREEK NEAR IRON MOUNTAIN, MI
		117	134	155	10	yes	

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4065722	2900	7100	8220	9660	19	no	MENOMINEE RIVER NEAR VULCAN, MI
4066800	3700	8750	10100	11800	9	no	MENOMINEE RIVER AT KOSS, MI
		9120	10900	13000	77	yes	
4067000	3720	9200	11000	13200	69	yes	MENOMINEE RIVER NEAR KOSS, MI
4067500	3930	10300	11900	14000	54	no	MENOMINEE RIVER NEAR MC ALLISTER, WI
4096015	81	871	1020	1200	11	no	GALIEN RIVER NEAR SAWYER, MI
4096272	42	228	271	325	17	no	BEEBE CREEK AT MOORE ROAD NEAR HILLSDALE,
4096340	144	428	488	562	17	no	ST. JOSEPH RIVER AT CLARENDON, MI
4096400	201						04096405 considered equivalent
4096405	206	450	531	630	44	no	ST. JOSEPH RIVER AT BURLINGTON, MI
4096500	60	122	166	229	25	yes	SAUK RIVER AT JAY STREET AT COLDWATER, MI
4096515	49	176	215	264	37	no	SOUTH BRANCH HOG CREEK NEAR ALLEN, MI
4096600	293	837	995	1190	27	no	COLDWATER RIVER NEAR HODUNK, MI
4096900	162	418	485	573	31	no	NOTTAWA CREEK NEAR ATHENS, MI
4097060	27	156	194	247	11	no	LITTLE PORTAGE CREEK AT 38TH ST NEAR FULTO
4097170	68	134	154	179	47	no	PORTAGE RIVER AT W AVENUE NEAR VICKSBURG,
4097370	43	57.1	63.4	70.6	16	no	FLOWERFIELD CREEK AT FLOWERFIELD, MI
4097500	1350	2790	3190	3650	46	no	ST. JOSEPH RIVER AT THREE RIVERS, MI
4097540	106	246	288	341	44	no	PRAIRIE RIVER NEAR NOTTAWA, MI
4098500	192	303	349	402	25	no	FAWN RIVER NEAR WHITE PIGEON, MI
4099000	1866	3800	4280	4870	82	no	ST. JOSEPH RIVER AT MOTTVILLE, MI
		3810	4290	4890	83	yes	
4100500	594	1980	2370	2860	79	no	ELKHART RIVER AT GOSHEN, IN
4101000	3370	7130	8260	9690	25	no	ST. JOSEPH RIVER AT ELKHART, IN
		7280	8350	9650	85	yes	
4101500	3666	8160	9310	10700	76	no	ST. JOSEPH RIVER AT NILES, MI
4101800	255	783	857	942	46	no	DOWAGIAC RIVER AT SUMNERVILLE, MI
4102000	4081	8910	10200	11600	36	no	ST. JOSEPH RIVER AT BERRIEN SPRINGS, MI
4102500	390	1070	1220	1420	55	no	PAW PAW RIVER AT RIVERSIDE, MI
4102700	84	602	705	838	40	no	SOUTH BRANCH BLACK RIVER NEAR BANGOR, MI
4102776	83	362	463	607	12	no	MIDDLE BRANCH BLACK RIVER NEAR SOUTH HAVEN
4103010	267	527	585	653	20	no	KALAMAZOO RIVER NEAR MARENGO, MI
4103500	449	766	869	994	39	no	KALAMAZOO RIVER AT MARSHALL, MI
4104945	48	189	243	317	12	no	WANADOGA CREEK NEAR BATTLE CREEK, MI
4105000	241	921	1090	1300	74	no	BATTLE CREEK AT BATTLE CREEK, MI
4105500	824	1890	2190	2570	69	no	KALAMAZOO RIVER NEAR BATTLE CREEK, MI
4105700	39	96.3	109	127	42	no	AUGUSTA CREEK NEAR AUGUSTA, MI
4105800	38	62.7	71.3	82	10	no	GULL CREEK AT 37TH STREET NEAR GALESBURG,
4106000	1010	2160	2510	2940	69	no	KALAMAZOO RIVER AT COMSTOCK, MI
4106180	17	52.6	57.5	63.5	24	no	PORTAGE CREEK AT PORTAGE, MI
4106300	22	120	136	156	42	no	PORTAGE CREEK NEAR KALAMAZOO, MI
4106320	13	10.9	12.4	14.3	34	no	WEST FORK PORTAGE CREEK NEAR OSHTEMO, MI
4106400	19	19.1	21.6	24.7	47	no	WEST FORK PORTAGE CREEK AT KALAMAZOO, MI
4106500	47	170	195	228	22	no	PORTAGE CREEK AT KALAMAZOO, MI

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4108500	1600	3330	3840	4490	62	no	KALAMAZOO RIVER NEAR FENNVILLE, MI
4108600	71	423	506	620	41	no	RABBIT RIVER NEAR HOPKINS, MI
4108645	274	1580	1870	2270	28	no	RABBIT RIVER AT STATE HIGHWAY 40 AT HAMILT
4108800	66	1410	1770	2270	43	no	MACATAWA RIVER AT STATE ROAD NEAR ZEELAND,
4108801	69	1380	1730	2190	46	no	MACATAWA RIVER NEAR ZEELAND, MI
4109000	174	492	539	597	71	no	GRAND RIVER AT JACKSON, MI
4109500	55	183	224	278	12	no	PORTAGE RIVER AT PORTAGE LAKE RD NEAR MUNI
4110000	49	273	352	460	12	no	ORCHARD CREEK AT STATE HWY-106 NEAR MUNITH
4111000	661	1590	1860	2170	45	no	GRAND RIVER NEAR EATON RAPIDS, MI
4111379	163	504	610	752	20	no	RED CEDAR RIVER NEAR WILLIAMSTON, MI
4111500	16	164	198	242	52	no	DEER CREEK NEAR DANSVILLE, MI
4112000	9	126	161	211	52	no	SLOAN CREEK NEAR WILLIAMSTON, MI
4112500	355	1310	1580	1940	98	no	RED CEDAR RIVER AT EAST LANSING, MI
4112700	40	259	304	364	32	no	SYCAMORE CREEK AT HARPER ROAD NEAR MASON,
4112850	81	437	527	648	10	no	SYCAMORE CREEK AT HOLT ROAD NEAR HOLT, MI
4113000	1230	3430	4150	5100	106	no	GRAND RIVER AT LANSING, MI
4113090	7	96.8	118	146	20	no	CARRIER CREEK NEAR GRAND LEDGE, MI
4114000	1385	4130	4750	5500	47	no	GRAND RIVER AT PORTLAND, MI
4114498	280	825	1010	1240	57	no	LOOKING GLASS RIVER NEAR EAGLE, MI
4114500	281	824	1010	1250	52	no	LOOKING GLASS RIVER AT HINMAN RD NEAR EAGL
4115000	434	1260	1660	2180	61	no	MAPLE RIVER AT MAPLE RAPIDS, MI
4115265	40	163	192	229	19	no	FISH CREEK NEAR CRYSTAL, MI
4116000	2840	7960	9550	11500	58	no	GRAND RIVER AT IONIA, MI
4116500	528	1240	1400	1600	38	no	FLAT RIVER AT SMYRNA, MI
4117000	8	79.5	102	132	52	no	QUAKER BROOK NEAR NASHVILLE, MI
4117500	385	1510	1840	2250	62	no	THORNAPPLE RIVER NEAR HASTINGS, MI
4118000	773	2210	2700	3290	60	no	THORNAPPLE RIVER NEAR CALEDONIA, MI
		2210	2690	3270	61	yes	
4118500	234	1000	1170	1370	48	no	ROGUE RIVER NEAR ROCKFORD, MI
		981	1150	1350	50	yes	
4119000	4900	12100	14500	17500	106	no	GRAND RIVER AT GRAND RAPIDS, MI
4119160	51	532	634	761	33	no	BUCK CREEK AT WILSON AVENUE AT GRANDVILLE,
4120295	39	238	276	324	14	no	BLACK CREEK NEAR MUSKEGON, MI
4121000	355	599	687	787	32	no	MUSKEGON RIVER NEAR MERRITT, MI
4121300	243	381	453	542	39	no	CLAM RIVER AT VOGEL CENTER, MI
4121500	1433	3020	3530	4130	73	no	MUSKEGON RIVER AT EVART, MI
4121900	138	424	495	587	30	no	LITTLE MUSKEGON RIVER NEAR MORLEY, MI
4121944	345	874	1030	1220	11	no	LITTLE MUSKEGON RIVER NEAR OAK GROVE, MI
4121970	2313	4810	5450	6180	11	no	MUSKEGON RIVER NEAR CROTON, MI
4122000	2350	4880	5540	6380	68	no	MUSKEGON RIVER AT NEWAYGO, MI
4122100	17	127	155	193	41	no	BEAR CREEK NEAR MUSKEGON, MI
4122200	406	1080	1300	1590	49	no	WHITE RIVER NEAR WHITEHALL, MI
4122223	78	241	270	303	10	no	PENTWATER RIVER NEAR HART, MI
4122230	42	180	218	268	32	no	NORTH BRANCH PENTWATER RIVER NEAR PENTWATE

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4122500	681	1430	1650	1910	67	no	PERE MARQUETTE RIVER AT SCOTTVILLE, MI
4123000	127	272	308	349	33	no	BIG SABLE RIVER NEAR FREESOIL, MI
4123500	123	263	277	293	40	no	MANISTEE RIVER NEAR GRAYLING, MI
4124000	857	2010	2170	2350	86	no	MANISTEE RIVER NEAR SHERMAN, MI
4124500	60	212	270	347	50	no	EAST BRANCH PINE RIVER NEAR TUSTIN, MI
4125000	128	436	510	604	11	no	PINE RIVER NEAR LEROY, MI
4125460	245	773	890	1040	40	no	PINE RIVER AT HIGH SCHOOL BRIDGE NR HOXEYV
4125500	251						04125460 considered equivalent
4125550	1451	3440	3700	3990	10	no	MANISTEE RIVER NEAR WELLSTON, MI
4126000	1677	4310	4790	5320	42	no	MANISTEE RIVER NEAR MANISTEE, MI
4126200	178	312	353	399	26	no	LITTLE MANISTEE RIVER NEAR FREESOIL, MI
4126600	170	579	630	688	32	no	BETSIE RIVER AT US HIGHWAY 31 NEAR BENZONI
4126740	118	291	319	352	16	no	PLATTE RIVER AT HONOR, MI
4127000	182	483	543	616	37	no	BOARDMAN RIVER NEAR MAYFIELD, MI
4127800	68	541	599	668	40	no	JORDAN RIVER NEAR EAST JORDAN, MI
4127850	64	315	349	389	16	no	BOYNE RIVER AT DAM ROAD NEAR BOYNE CITY, M
4127918	184	1960	2230	2550	34	no	PINE RIVER NEAR RUDYARD, MI
4127997	192	566	623	690	64	no	STURGEON RIVER AT WOLVERINE, MI
4128000	198						04127997considered equivalent
4128500	598	751	817	890	41	no	INDIAN RIVER AT INDIAN RIVER, MI
4128990	58	337	378	430	55	no	PIGEON RIVER NEAR VANDERBILT, MI
4129000	63	312	359	417	39	no	PIGEON RIVER AT PIGEON RIVER HQ NR VANDERB
4129500	139	481	561	653	39	no	PIGEON RIVER AT AFTON, MI
4130000	889	1240	1310	1400	40	no	CHEBOYGAN RIVER NEAR CHEBOYGAN, MI
4130500	311	962	1070	1200	48	no	BLACK RIVER NEAR TOWER, MI
4131000	79	188	243	313	11	no	RAINY RIVER NEAR ONAWAY, MI
4131500	88	299	359	432	30	no	RAINY RIVER NEAR OCQUEOC, MI
4132000	558	1160	1340	1550	35	no	BLACK RIVER NEAR CHEBOYGAN, MI
4132500	232	629	725	837	37	no	THUNDER BAY RIVER NEAR HILLMAN, MI
4133500	588						04133501 considered equivalent.
4133501	586	1590	1910	2290	39	no	THUNDER BAY RIVER AT HERRON ROAD NEAR BOLT
4134000	184	1020	1230	1470	35	no	NORTH BRANCH THUNDER BAY RIVER NR BOLTON,
4135000	1238	3150	3990	5060	20	no	THUNDER BAY RIVER NEAR ALPENA, MI
4135500	110	142	158	176	52	no	AU SABLE RIVER AT GRAYLING, MI
4135600	76	84.6	97.5	113	27	no	EAST BRANCH AU SABLE RIVER AT GRAYLING, MI
4135700	401	445	515	597	38	no	SOUTH BRANCH AU SABLE RIVER NEAR LUZERNE,
4136000	1108	1400	1620	1880	11	no	AU SABLE RIVER NEAR RED OAK, MI
4136500	1361	2460	2660	2880	54	no	AU SABLE RIVER AT MIO, MI
4137000	1420	2910	3190	3510	11	no	AU SABLE RIVER AT BAMFIELD, MI
4137005	1598	2140	2510	2970	10	no	AU SABLE RIVER NEAR CURTISVILLE, MI
4137500	1739	3090	3430	3830	19	no	AU SABLE RIVER NEAR AU SABLE, MI
4138000	84	320	400	498	32	no	EAST BRANCH AU GRES RIVER NEAR McIVOR, MI
4138500	154	805	1010	1260	31	no	AU GRES RIVER AT COX ROAD NEAR NATIONAL CI
4138600	9	56.8	67.1	80.1	23	no	GAMBLE CREEK AT LUPTON, MI

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4138700	3	55.1	68.4	86.3	27	no	BIXBY CREEK NEAR ROSE CITY, MI
4138800	13	167	207	262	25	no	HOUGHTON CREEK AT ROSE CITY, MI
4138900	9	85.7	105	132	26	no	WILKINS CREEK NEAR ROSE CITY, MI
4139000	30	247	284	331	39	no	HOUGHTON CREEK NEAR LUPTON, MI
4139500	57	345	403	475	28	no	RIFLE RIVER AT "THE RANCH" NEAR LUPTON, MI
4139900	3	108	147	205	12	no	AMMOND CREEK NEAR SELKIRK, MI
4140000	21	149	170	196	28	no	PRIOR CREEK NEAR SELKIRK, MI
4140200	8	66.4	79.2	96.3	38	no	KLACKING CREEK AT CAMPBELL ROAD NEAR SELKI
4140500	117	655	765	903	55	no	RIFLE RIVER AT STATE ROAD AT SELKIRK, MI
4141000	1	35.6	47.1	62.4	36	no	SOUTH BRANCH SHEPARDS CREEK NEAR SELKIRK,
4141100	4	84.2	115	159	27	no	SHEPARDS CREEK NEAR SELKIRK, MI
4141500	52	506	591	694	12	no	WEST BRANCH RIFLE RIVER NEAR SELKIRK, MI
4142000	320	1620	1880	2190	70	no	RIFLE RIVER NEAR STERLING, MI
4143500	101	444	576	743	32	no	NORTH BRANCH KAWKAWLIN RIVER NEAR KAWKAWLI
4143900	84	162	181	205	30	no	SHIAWASSEE RIVER AT LINDEN, MI
4144000	365	1000	1200	1450	36	no	SHIAWASSEE RIVER AT BYRON, MI
4144180	8	66.9	83.3	104	14	no	JONES CREEK NR GAINES, MI
4144200	5	38.5	49.8	64.5	14	no	PORTER DRAIN NR GAINES, MI
4144220	23	255	301	355	14	no	JONES CREEK AT DUFFIELD, MI
4144500	538	1650	2030	2510	76	no	SHIAWASSEE RIVER AT OWOSSO, MI
4145000	637	2270	2800	3460	56	no	SHIAWASSEE RIVER NEAR FERGUS, MI
4145500	89	742	956	1230	18	no	BAD RIVER AT HEMLOCK ROAD NEAR BRANT, MI
4146000	55	159	206	272	74	no	FARMERS CREEK NEAR LAPEER, MI
4146020	160	0	571	712	18	no	SOUTH BRANCH FLINT RIVER NEAR MILLVILLE, M
4146063	221	702	851	1050	27	no	SOUTH BRANCH FLINT RIVER NEAR COLUMBIAVILL
4146450	223	782	1020	1350	13	no	NORTH BRANCH FLINT RIVER NEAR COLUMBIAVILL
4147500	530	1410	1780	2270	53	no	FLINT RIVER NEAR OTISVILLE, MI
4147800	9	0	168	217	14	no	POWERS CULLEN DRAIN NR GENESEE, MI
4147900	5	51.4	63.2	78.1	14	no	LEFLER-SCOTHAN DRAIN NR OTISVILLE, MI
4147990	35	294	420	601	14	no	BUTTERNUT CREEK NEAR GENESEE, MI
4148000	593	1840	2300	2900	22	no	FLINT RIVER AT GENESEE, MI
4148120	56	189	236	299	14	no	KEARSLEY CREEK NR ATLAS, MI
4148139	23	161	196	240	14	no	BLACK CREEK NR DAVISON, MI
4148140	99	394	476	580	41	no	KEARSLEY CREEK NEAR DAVISON, MI
4148144	5	73.3	100	139	14	no	CHIPMUNK CREEK NR GENESEE, MI
4148160	6	112	137	168	14	no	GILKEY CREEK NEAR FLINT, MI
4148200	12	35.7	42.7	51.9	29	no	SWARTZ CREEK NEAR HOLLY, MI
4148255	36	77.6	92.6	111	14	no	SWARTZ CREEK NR GRAND BLANC, MI
4148260	67	408	522	668	14	no	SWARTZ CREEK NR SWARTZ CREEK, MI
4148265	11	116	146	184	19	no	KIMBALL DRAIN NR SWARTZ CREEK, MI
4148270	41	493	610	760	14	no	WEST BRANCH SWARTZ CREEK NR SWARTZ CREEK,
4148300	115	954	1160	1410	30	no	SWARTZ CREEK AT FLINT, MI
4148410	29	0	153	177	14	no	THREAD CREEK AT BALDWIN ROAD NEAR GOODRICH
4148440	54	278	338	417	30	no	THREAD CREEK NEAR FLINT, MI

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4148500	956	3280	3990	4900	73	no	FLINT RIVER NEAR FLINT, MI
4148610	9	110	139	179	19	no	COLE CREEK NEAR FLUSHING, MI
4148620	8	124	158	200	14	no	FREEMAN DRAIN NR MONTROSE, MI
4148640	12	122	161	218	19	no	ARMSTRONG CREEK NR MONTROSE, MI
4148720	21	299	368	453	14	no	BRENT RUN NEAR MONTROSE, MI
4148740	15	117	143	176	14	no	CENTRAL STADLER DRAIN NR MONTROSE, MI
4148800	28	308	385	480	14	no	PINE RUN NR MONTROSE, MI
4148900	4	61.2	68.2	76.3	14	no	SILVER CREEK NR CLIO, MI
4149000	1153	4050	4920	6020	55	no	FLINT RIVER NEAR FOSTERS, MI
4149300	17	360	481	640	14	no	MISTEGUAY CREEK NR FLUSHING, MI
4150000	238	1840	2330	2950	32	no	SOUTH BRANCH CASS RIVER NEAR CASS CITY, MI
4150500	359	2580	3220	4040	55	no	CASS RIVER AT CASS CITY, MI
4150800	645	4640	5520	6620	26	no	CASS RIVER AT WAHJAMEGA, MI
4151000	710	3900	4930	6220	35	no	CASS RIVER AT VASSAR, MI
4151500	841	4660	5930	7530	67	no	CASS RIVER AT FRANKENMUTH, MI
4152238	160	642	774	934	20	no	SOUTH BRANCH TOBACCO RIVER NEAR BEAVERTON,
4152500	487	2320	2780	3360	35	no	TOBACCO RIVER AT GLIDDEN ROAD AT BEAVERTON
4153500	138	1080	1520	2160	48	no	SALT RIVER NEAR NORTH BRADLEY, MI
4154000	416	1140	1380	1700	74	no	CHIPPEWA RIVER NEAR MOUNT PLEASANT, MI
4154500	597	2430	2940	3570	31	no	CHIPPEWA RIVER NEAR MIDLAND, MI
4155000	288	955	1190	1490	72	no	PINE RIVER AT ALMA, MI
		938	1170	1470	76	yes	
4155500	390	1710	2110	2610	60	no	PINE RIVER NEAR MIDLAND, MI
4156000	2400	8410	10600	13400	97	no	TITTAWASSEE RIVER AT MIDLAND, MI
4157000	6060	22100	25600	29900	73	no	SAGINAW RIVER AT SAGINAW, MI
4157500	67	1300	1510	1760	15	no	STATE DRAIN (SEBEWAING RIVER) NEAR SEBEWAI
4158000	34	566	671	803	18	no	COLUMBIA DRAIN AT GETTEL ROAD NEAR SEBEWAI
4158500	53	541	701	904	30	no	PIGEON RIVER NEAR OWENDALE, MI
4159492	464	3590	4590	5820	63	no	BLACK RIVER NEAR JEDDO, MI
4159500	480	3430	4430	5660	48	no	BLACK RIVER NEAR FARGO, MI
4159900	169	889	1130	1450	35	no	MILL CREEK NEAR AVOCA, MI
4160000	208	860	1130	1490	17	no	MILL CREEK NEAR ABBOTTSFORD, MI
4160050	684	3670	4590	5810	11	no	BLACK RIVER NEAR PORT HURON, MI
4160350	135	1270	1550	1920	33	no	PINE RIVER AT GRATIOT ROAD NEAR RATTLE RUN
4160570	18	109	130	156	36	no	NORTH BRANCH BELLE RIVER AT IMLAY CITY, MI
4160600	151	971	1210	1510	44	no	BELLE RIVER AT MEMPHIS, MI
4160800	21	56.6	65.9	77.7	47	no	SASHABAW CREEK NEAR DRAYTON PLAINS, MI
4160900	79	116	129	145	47	no	CLINTON RIVER NEAR DRAYTON PLAINS, MI
4161000	123	494	629	804	44	no	CLINTON RIVER AT AUBURN HILLS, MI
4161100	18	91.3	113	143	32	no	GALLOWAY CREEK NEAR AUBURN HEIGHTS, MI
4161500	39	98.9	123	154	36	no	PAINT CREEK NEAR LAKE ORION, MI
4161540	71	278	351	447	47	no	PAINT CREEK AT ROCHESTER, MI
4161580	26	80.6	95.7	115	42	no	STONY CREEK NEAR ROMEO, MI
4161760	23	61.7	83.2	112	40	no	WEST BRANCH STONY CREEK NEAR WASHINGTON, M

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4161800	68	175	206	244	38	no	STONY CREEK NEAR WASHINGTON, MI
		181	211	247	47	yes	
4161820	309	1310	1530	1810	11	no	CLINTON RIVER AT STERLING HEIGHTS, MI
4162900	24	264	333	422	35	no	BIG BEAVER CREEK NEAR WARREN, MI
4163400	17	264	317	386	40	no	PLUM BROOK AT UTICA, MI
4163500	23	212	282	377	13	no	PLUM BROOK NEAR UTICA, MI
4164000	444	2800	3330	3970	60	no	CLINTON RIVER NEAR FRASER, MI
4164010	10	0	0	223	48	no	NORTH BRANCH CLINTON RIVER AT ALMONT, MI
4164050	50	460	600	788	48	no	N BRANCH CLINTON RIVER AT 33 MILE RD NR RO
4164100	22	79	100	129	48	no	EAST POND CREEK AT ROMEO, MI
4164150	90	749	965	1250	48	no	N BRANCH CLINTON RIVER AT 27 MILE RD NR ME
4164200	10	121	154	198	48	no	COON CREEK AT NORTH AVENUE NEAR ARMADA, MI
4164250	9	102	132	171	22	no	TUPPER BROOK AT RAY CENTER, MI
4164300	13	217	277	352	48	no	EAST BRANCH COON CREEK AT ARMADA, MI
4164360	36	556	695	877	48	no	EAST BRANCH COON C AT 29-MILE RD NR NEW HA
4164400	13	299	345	399	48	no	DEER CREEK AT 25 1/2 MILE ROAD NEAR MEADE,
4164450	6	97.3	111	127	47	no	McBRIDE DRAIN AT 24 MILE ROAD NEAR MACOMB,
4164500	199	1550	1940	2450	59	no	NORTH BRANCH CLINTON RIVER NEAR MT. CLEMEN
4164600	22	399	468	555	47	no	MIDDLE BR CLINTON R AT SCHOENHERR RD NR MA
4164800	41	743	836	944	33	no	MIDDLE BRANCH CLINTON RIVER AT MACOMB, MI
4165200	16	210	247	292	35	no	GLOEDE DITCH NEAR WALDENBURG, MI
4165500	734	3950	4850	6040	72	no	CLINTON RIVER AT MORAVIAN DRIVE AT MT. CLE
4166000	33	249	320	411	56	no	RIVER ROUGE AT BIRMINGHAM, MI
4166100	88	874	1060	1300	48	no	RIVER ROUGE AT SOUTHFIELD, MI
4166200	9	335	406	493	45	no	EVANS DITCH AT SOUTHFIELD, MI
		338	408	494	48	yes	
4166300	18	186	239	310	48	no	UPPER RIVER ROUGE AT FARMINGTON, MI
4166500	187	1350	1670	2100	76	no	RIVER ROUGE AT DETROIT, MI
4167000	100	792	931	1100	62	no	MIDDLE RIVER ROUGE NEAR GARDEN CITY, MI
4168000	83	900	1090	1330	62	no	LOWER RIVER ROUGE AT INKSTER, MI
4168660	19	237	267	304	35	no	FRANK AND POET DRAIN AT KING RD AT TRENTON
4169500	57	0	0	104	34	no	HURON RIVER AT COMMERCE, MI
4170000	132	242	277	318	58	no	HURON RIVER AT MILFORD, MI
4170500	148	282	319	361	30	no	HURON RIVER NEAR NEW HUDSON, MI
4171500	34	59.4	69.6	82.2	17	no	SOUTH ORE CREEK AT HAMBURG RD NEAR BRIGHTO
4172000	308	490	561	645	55	no	HURON RIVER NEAR HAMBURG, MI
4172500	79	122	146	177	35	no	PORTAGE RIVER AT TIPLADY ROAD NEAR PINCKNE
4173000	522	810	978	1190	34	no	HURON RIVER NEAR DEXTER, MI
4173250	47	326	378	438	20	no	MILL CREEK NEAR LIMA CENTER, MI
4173500	128	600	685	785	43	no	MILL CREEK NEAR DEXTER, MI
4174500	729	1470	1800	2190	100	no	HURON RIVER AT ANN ARBOR, MI
4174800	807	2630	2940	3290	15	no	HURON RIVER AT YPSILANTI, MI
4175340	68	464	529	603	13	no	STONY CREEK AT OAKVILLE, MI
4175600	132	306	337	375	34	no	RIVER RAISIN NEAR MANCHESTER, MI

Station ID	Drainage Area (sq. mi.)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
4175700	267	875	990	1130	24	no	RIVER RAISIN NEAR TECUMSEH, MI
4175960	165	1510	1790	2110	13	no	SOUTH BRANCH RIVER RAISIN NEAR ADRIAN, MI
4176000	463	1960	2350	2820	53	no	RIVER RAISIN NEAR ADRIAN, MI
4176400	95	807	973	1180	41	no	SALINE RIVER NEAR SALINE, MI
4176500	1042	4110	5010	6140	69	no	RIVER RAISIN NEAR MONROE, MI
4176605	51	692	871	1110	19	no	OTTER CREEK AT LA SALLE, MI

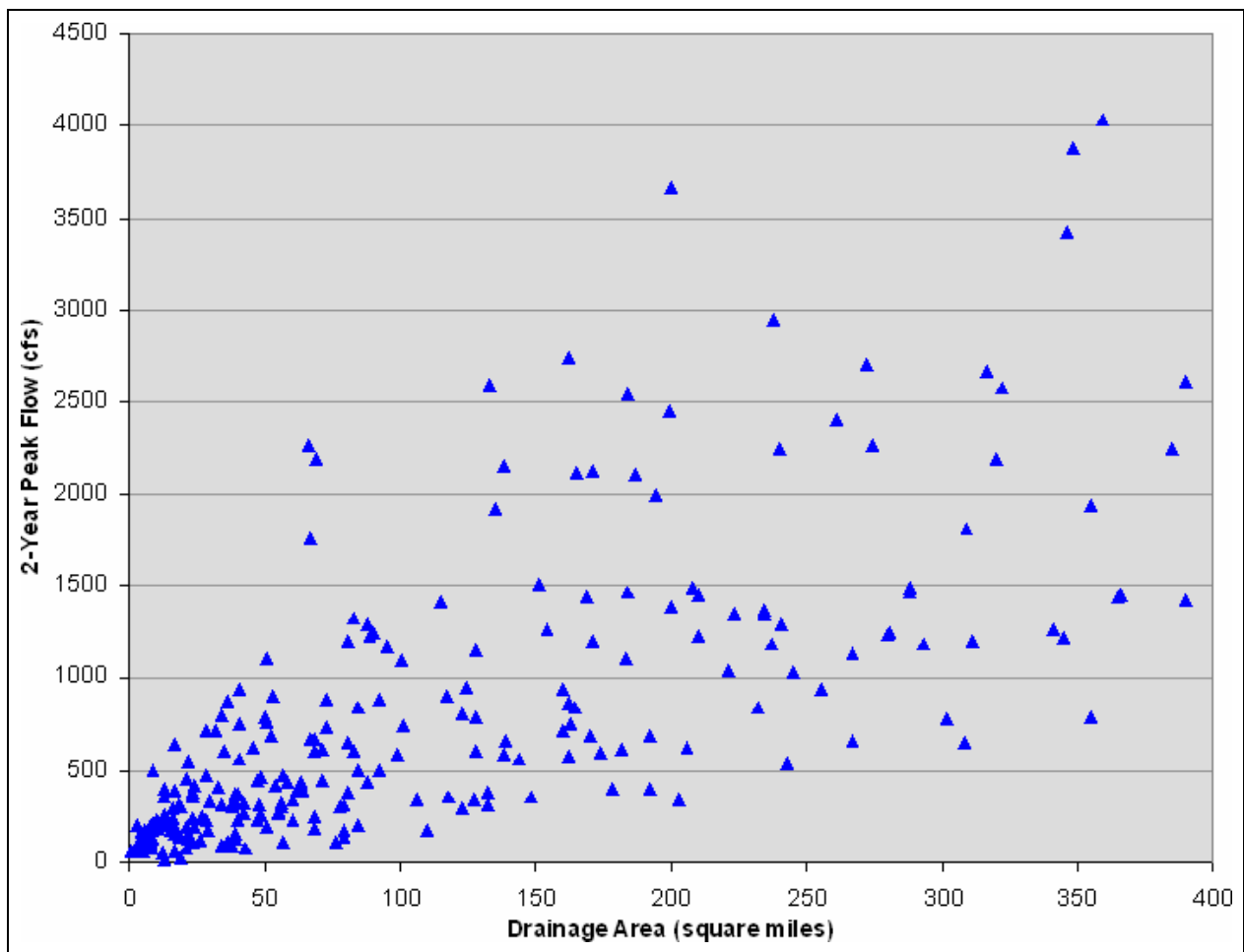


Figure 1: Drainage Area vs. 2-Year Peak Flow for drainage areas less than 400 square miles, which is the anticipated maximum for the regional reference reach project

Addendum 11/2008

Staff working on Michigan's reference reach project requested the analysis include the 1.05, 1.11, 2.33, 5.0, and 10.0 year return intervals for eight gages. The results below are computed with PKFQWin 5.2.0 software and the same input data as the original analysis. Because these gages' periods of record are short, the results have more uncertainty than gages with longer periods or record. Figures 1 through 8 illustrate the uncertainty. The results reported in the table are Bulletin 17-B frequencies.

Station ID	Drainage Area (sq. mi.)	95% Flood (1.05 year)	90% Flood (1.11 year)	80% Flood (1.25 year)	67% Flood (1.5 year)	50% Flood (2 year)	43% Flood (2.33 year)	20% Flood (5 year)	10% Flood (10 year)	Number of Peaks	Regulated Flow, Historic Peaks	Station Name
04065600	17	96	110	130	151	177	189	243	286	6	no	Pine Creek near Iron Mountain
				117	134	155	165	209	245	10	yes	
04096015	81	661	746	871	1015	1205	1297	1733	2129	11	no	Galien River near Sawyer
04096340	144	334	373	428	488	563	597	751	878	17	no	St. Joseph River at Clarendon
04097370	43		51	57	63	71	74	87	97	16	no	Flowerfield Creek at Flowerfield
04102776	83	231	282	362	463	607	682	1076	1484	12	no	Middle Branch Black River near South Haven
04103010	267	430	472	527	585	653	684	811	909	20	no	Kalamazoo River near Marengo
04104945	48	115	144	189	243	317	354	532	698	12	no	Wanadoga Creek near Battle Creek
04111379	163	356	415	504	610	752	823	1170	1497	20	no	Red Cedar River near Williamston

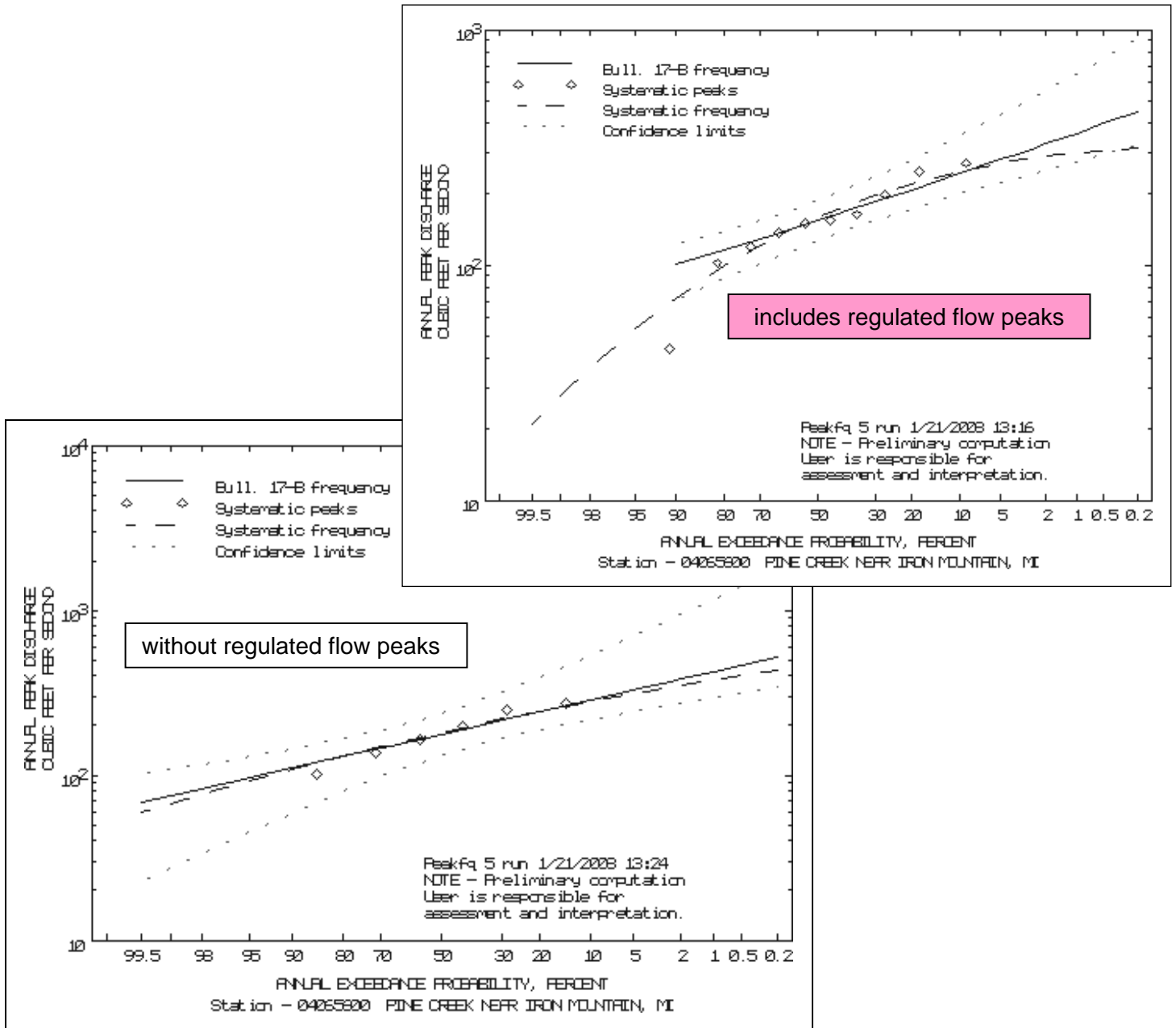


Figure 1: USGS Gage 04065600, Pine Creek near Iron Mountain

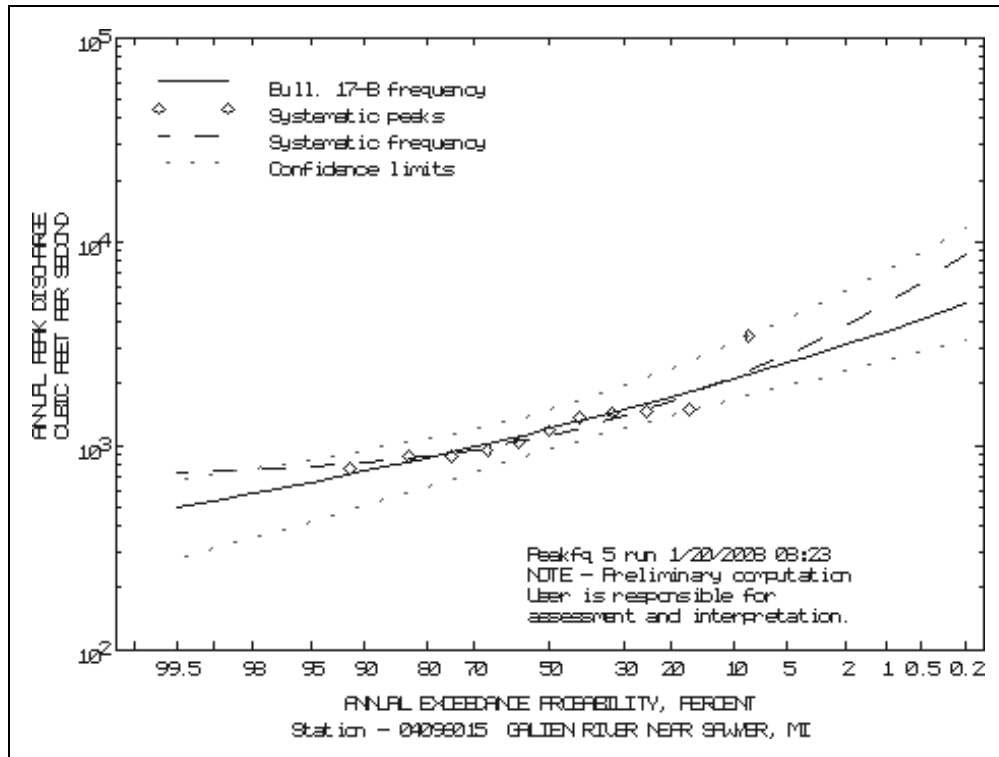


Figure 2: USGS Gage 04096015, Galien River near Sawyer

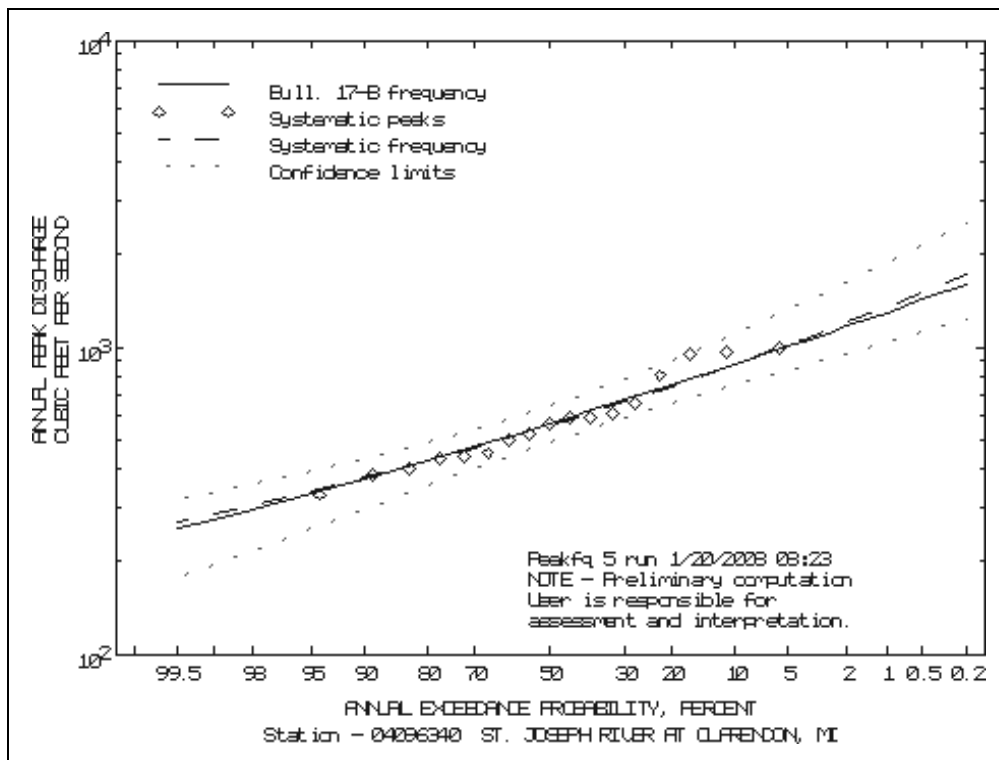


Figure 3: USGS Gage 04096340, St. Joseph River at Clarendon

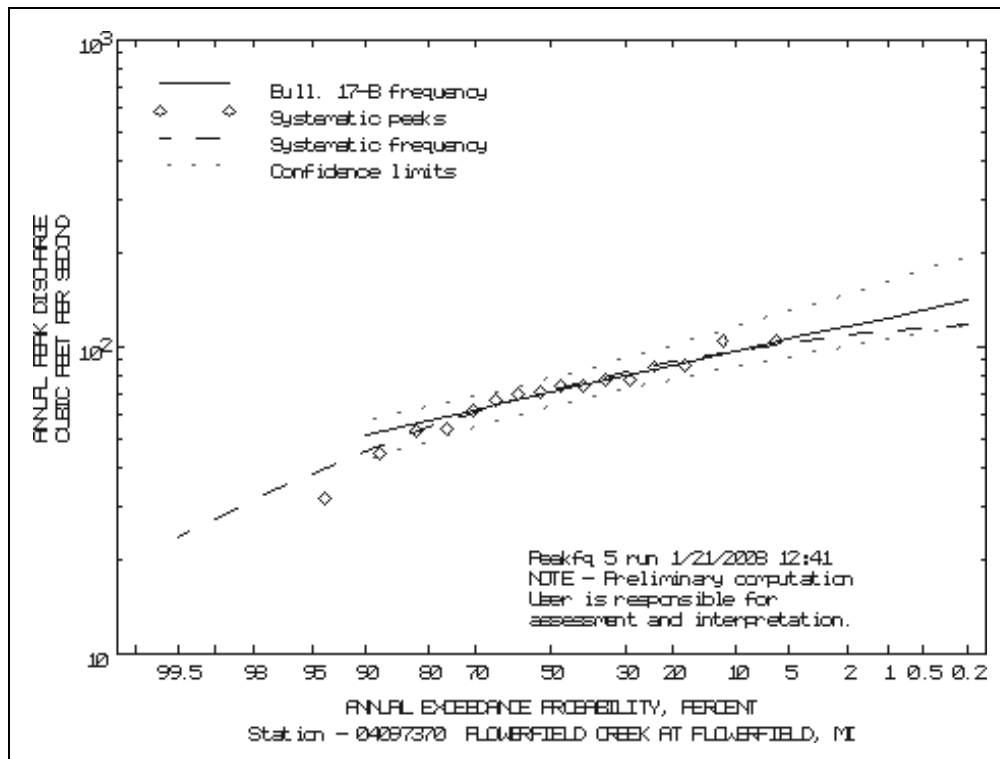


Figure 4: USGS Gage 04097370, Flowerfield Creek at Flowerfield

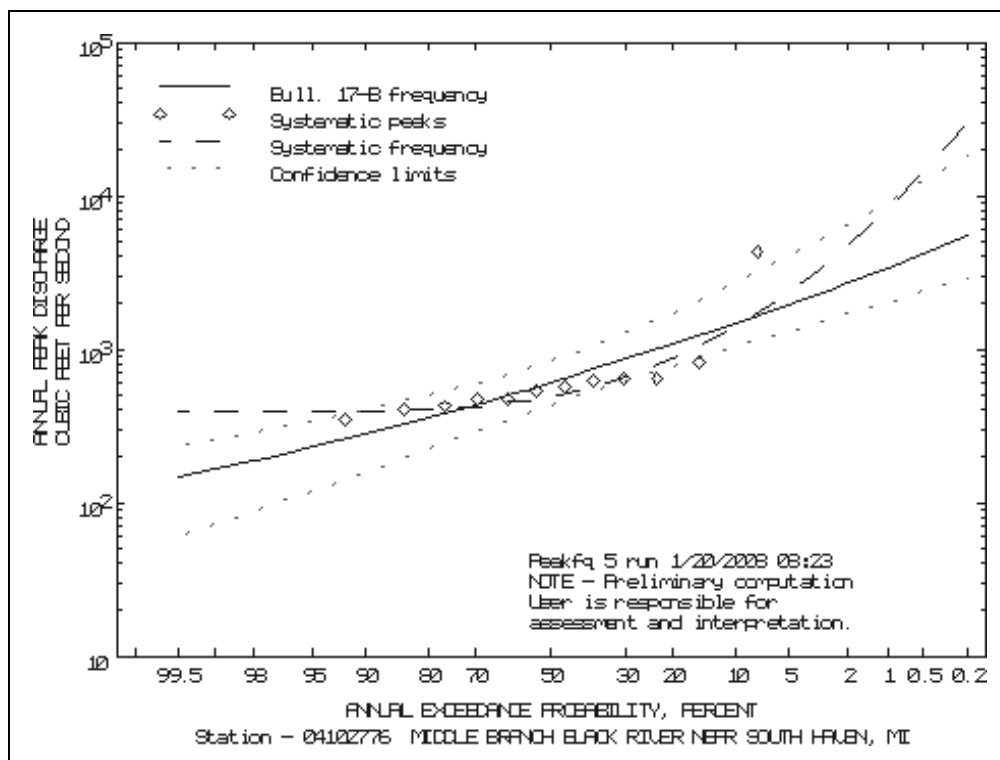


Figure 5: USGS Gage 04102776, Middle Branch Black River near South Haven

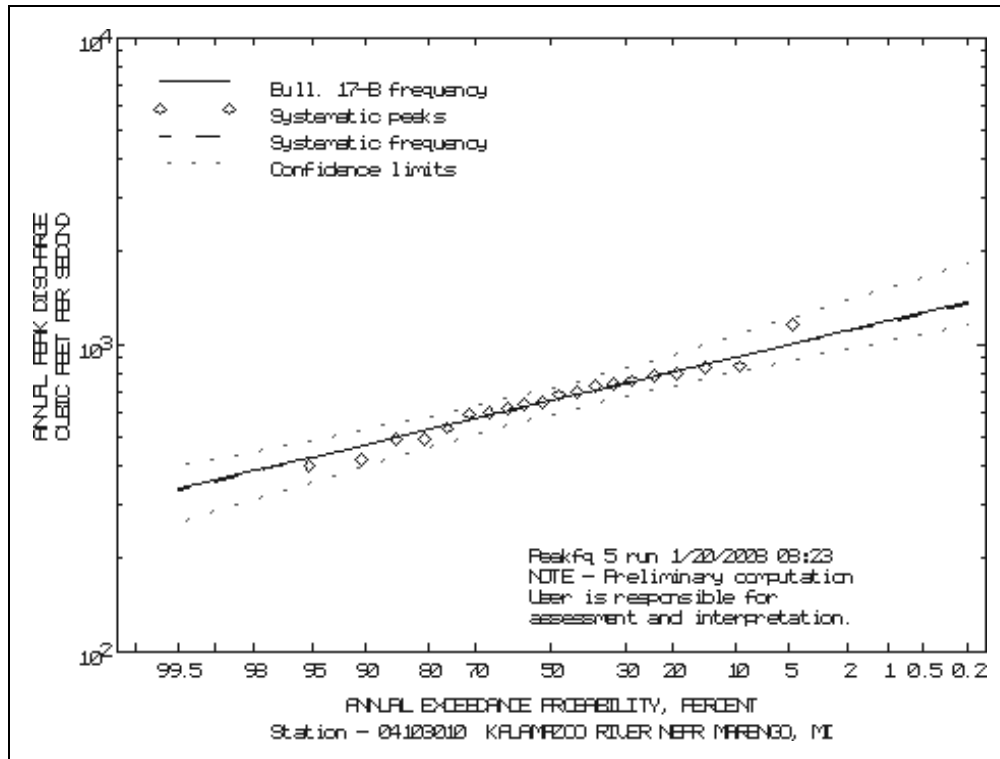


Figure 6: USGS Gage 04103010, Kalamazoo River near Marengo

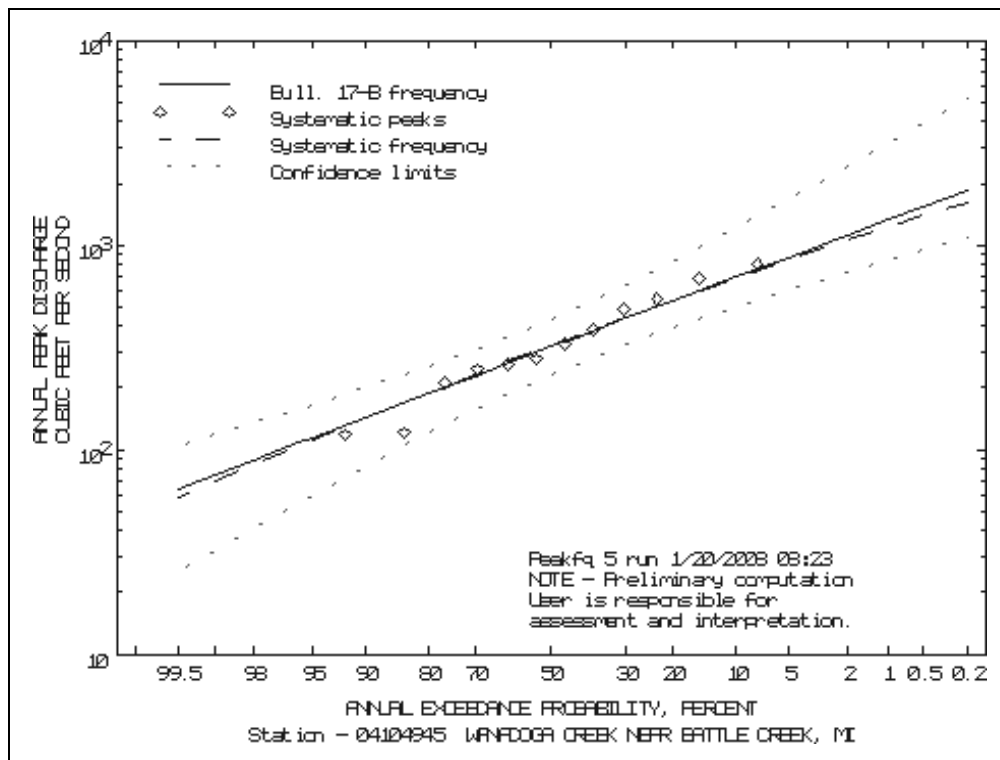


Figure 7: USGS Gage 04104945, Wanadoga Creek near Battle Creek

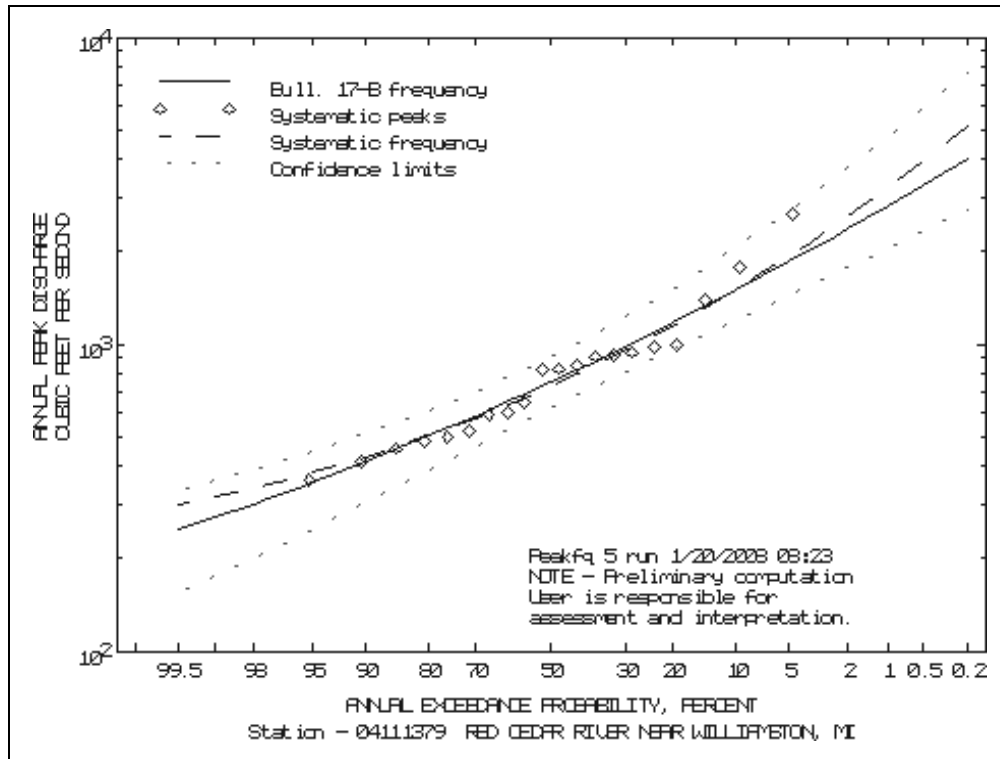


Figure 8: USGS Gage 04111379, Red Cedar River near Williamston