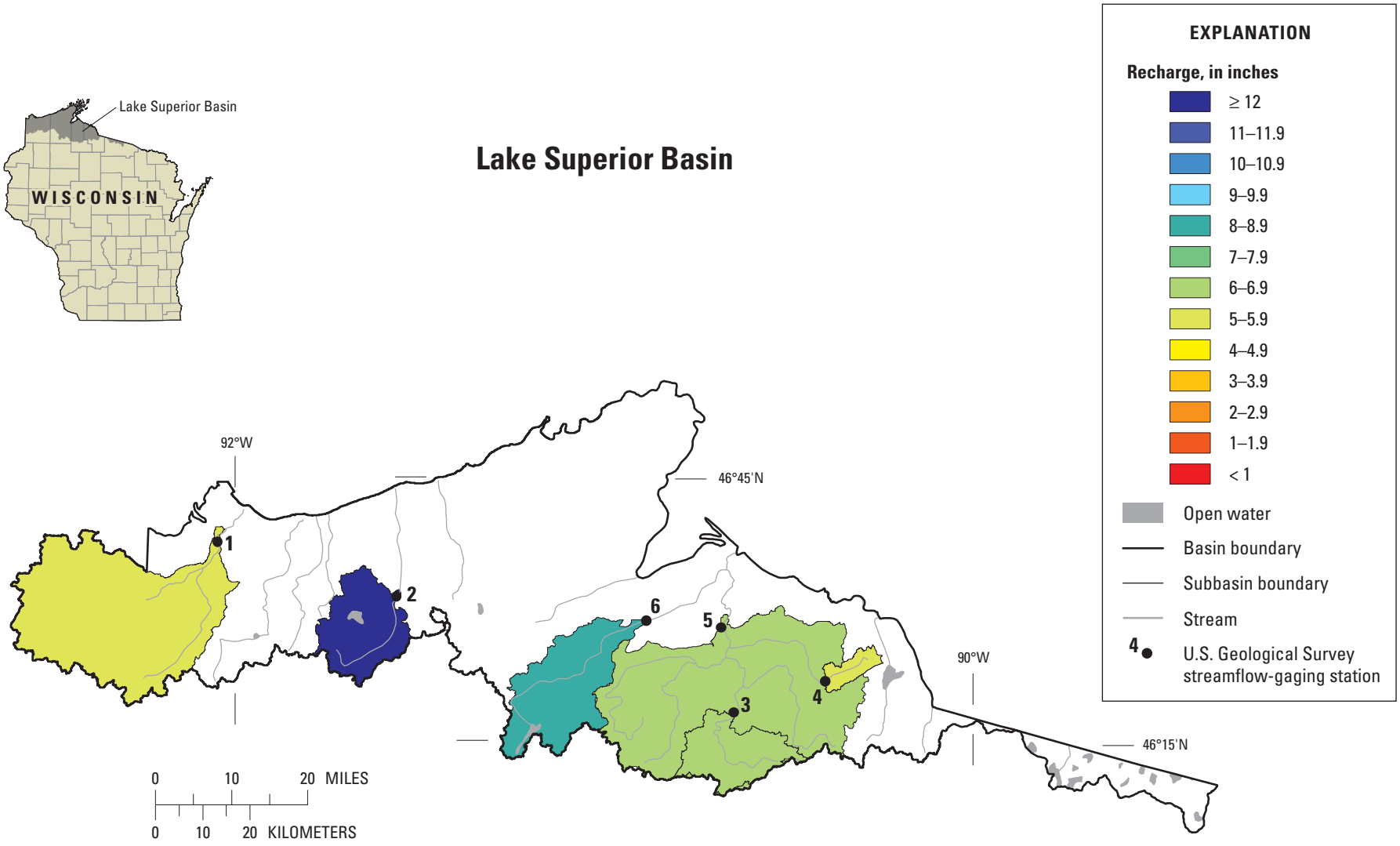
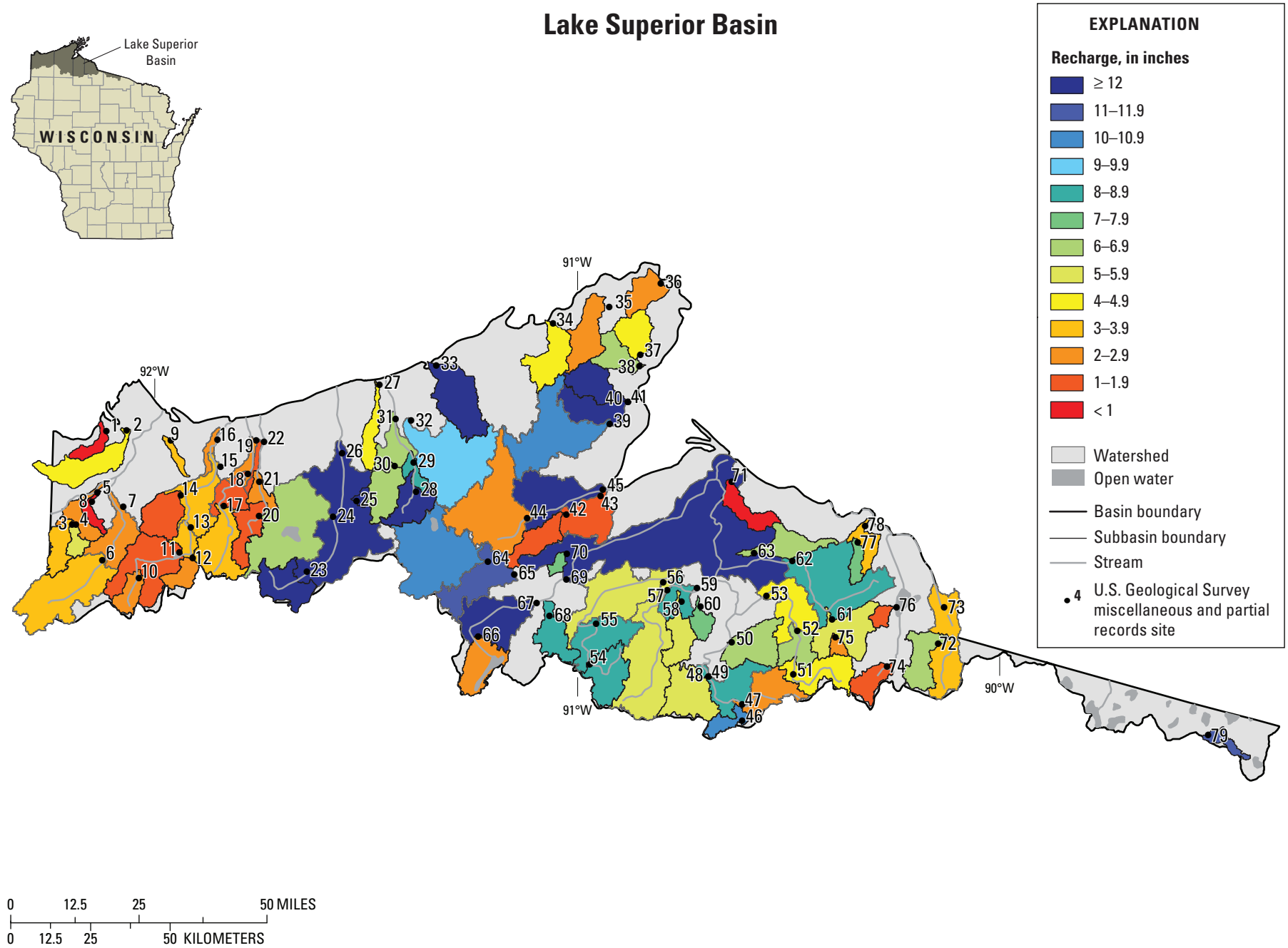
Appendixes 1–12

A, Locations of streamflow-gaging stations and spatial distribution of average annual recharge; *B*, locations of miscellaneous and partial-record sites and spatial distribution of estimated average annual recharge; *C*, average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations; and *D*, average annual base flow and corresponding recharge, 1970–99, for partial-record stations.

1. Lake Superior Basin 16
2. St. Croix River Basin 23
3, Chippewa River Basin 29
4. Upper Wisconsin River Basin 41
5. Menominee-Oconto-Peshtigo River Basin 47
6. Trempealeau-Black River Basin 56
7. Central Wisconsin River Basin 64
8 LFox-Wolf River Basin 72
9. Lake Michigan Basin 82
10. Lower Wisconsin River Basin 91
11. Pecatonica-Sugar River Basin 101
12. Rock-Fox River Basin 109



Appendix 1–*A*. Locations of streamflow-gaging stations in the Lake Superior Basin and spatial distribution of estimated average annual recharge.



Appendix 1–*B*. Locations of miscellaneous and partial-record sites in the Lake Superior Basin and spatial distribution of estimated average annual recharge.

Appendix 1*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Lake Superior Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	04024430	Nemadji R nr South Superior	420	1975–1999	BFI	0.4060	164	5.3	410	13.1	63
2	04025500	Bois Brule R at Brule	118	1970–1999	BFI	.8690	152	17.5	180	20.1	120
3	04026500	Bad R at Mellen	98.3	1949–1955	ex rec	--	45	6.2	--	--	26
4	04026870	Alder Ck at Upson	22.2	1973–1977	ex rec	--	9.0	5.5	--	--	3.0
5	04027000	Bad R nr Odanah	597	1970–1999	BFI	.4850	301	6.8	630	14.3	130
6	04027500	White R nr Ashland	301	1970–1999	BFI	.6900	187	8.4	270	12.4	160

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 1*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Superior Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	04024036	Little Pokegama R nr S Superior	46°39'36"	92°10'01"	04025500	6.27	0.0032	equation	0.3	0.6
2	04024067	Pokegama R at S. Superior	46°39'43"	92°07'07"	04025500	26.4	.1071	equation	8.0	4.1
3	04024310	Balsam Ck nr Patzau	46°30'13"	92°14'37"	05333500	12	.1005	equation	3.5	3.9
4	04024315	Little Balsam Ck nr Patzau	46°30'13"	92°14'05"	05333500	5.05	.1882	equation	2.0	5.3
5	04024325	Balsam Ck nr Dedham	46°33'28"	92°11'05"	05333500	29.8	.0848	equation	8.0	3.7
6	04024350	Black R nr Patzau	46°26'45"	92°10'05"	05333500	54.5	.0170	relation	13.0	3.2
7	04024370	Black R nr Patzau	46°32'09"	92°07'16"	05333500	76.7	.0358	equation	13.4	2.4
8	04024380	Miller Ck Tr at Dedham	46°32'29"	92°11'52"	05333500	4.19	.0055	equation	.3	.8
9	04024467	Bear Ck nr S Range	46°38'51"	92°00'40"	05333500	3.53	.0727	equation	.8	3.2
10	04024550	Bear Ck nr Patzua	46°25'02"	92°04'45"	04025500	9.65	.0331	equation	1.6	2.2
11	04024660	Amnicon R nr Solon Springs	46°27'42"	91°59'01"	04025500	49.8	.0201	equation	6.4	1.7
12	04024710	Cranberry Ck nr Solon Springs	46°27'09"	91°58'05"	04025500	9.69	.0401	equation	1.7	2.4
13	04024790	Amnicon R nr Hines	46°30'13"	91°57'27"	04025500	65.4	.0642	equation	15.5	3.2
14	04024810	Little Amnicon R nr S Range	46°33'25"	91°59'00"	04025500	19.8	.0186	equation	2.4	1.6
15	04025000	Amnicon R nr Poplar	46°36'20"	91°53'20"	04025500	110	--	relation	25.0	3.1
16	04025010	Amnicon R nr S Range	46°39'00"	91°53'54"	04025500	115	.0531	equation	24.9	2.9
17	04025057	Middle R nr Hines	46°32'27"	91°52'44"	04025500	28.2	--	relation	6.6	3.2
18	04025070	Middle R nr Poplar	46°35'42"	91°49'22"	04025500	43.1	.0386	equation	7.8	2.4
19	04025100	Middle R nr Poplar	46°39'05"	91°48'15"	04025500	48.4	.0850	relation	7.8	2.2
20	04025110	Poplar R nr Hawthorne	46°31'32"	91°47'38"	04025500	13.8	.0137	equation	1.4	1.4
21	04025120	Poplar R at Poplar	46°34'58"	91°47'41"	04025500	26.3	.0273	equation	3.9	2.0
22	04025140	Poplar R nr Poplar	46°38'54"	91°47'08"	04025500	31.1	.0183	equation	3.8	1.6
23	04025300	Bois Brule R nr Solon Springs	46°26'02"	91°40'32"	04025500	24.2	1.0709	equation	24.2	13.6
24	04025450	Nebagamon Ck nr Brule	46°31'34"	91°36'54"	04025500	60.2	.2186	equation	26.9	6.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 1*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Superior Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	04025518	Sandy Run at Brule	46°33'13"	91°33'33"	04025500	2.53	--	relation	4.9	[2]26.3
26	04026001	Bois Brule R nr Brule	46°37'59"	91°35'49"	04025500	162	0.8614	equation	150.5	12.6
27	04026030	Reefer Ck nr Port Wing	46°44'54"	91°30'32"	04025500	11.6	.2900	relation	3.7	4.3
28	04026040	Iron R at Iron R	46°34'16"	91°24'59"	04025500	15	--	relation	14.0	[2]12.7
29	04026045	Iron R nr Iron R	46°37'08"	91°25'24"	04025500	24.4	.4690	equation	15.9	8.9
30	04026060	Muskeg Ck nr Iron R	46°36'47"	91°28'11"	04025500	17.9	.2974	equation	9.2	6.9
31	04026070	Iron R nriron R	46°41'31"	91°28'07"	04025500	58.5	.3458	equation	33.1	7.7
32	04026110	E Fk nr Iron R	46°41'23"	91°25'54"	04025500	56.7	.4937	equation	38.6	9.3
33	04026120	Flag R, Flag R at Port Wing	46°46'55"	91°22'25"	04025500	31.75	.9260	relation	32.0	[2]13.7
34	04026160	Siskiwit R at Cornucopia	46°51'17"	91°05'29"	04025500	47.4	.1386	equation	16.6	4.8
35	04026190	Sand R nr Red Cliff	46°53'00"	90°57'20"	04025500	27.4	.1550	relation	5.8	2.9
36	04026215	Raspberry R nr Sand Bay	46°55'24"	90°49'51"	04025500	13.8	.0462	equation	2.7	2.6
37	04026230	N Pikes Ck nr Bayfield	46°48'17"	90°52'45"	04027000	15.1	.1134	equation	4.7	4.2
38	040262301	Pikes Ck nr Bayfield	46°47'08"	90°52'53"	04027000	30.2	--	relation	15.0	6.7
39	04026300	Sioux R nr Washburn	46°41'20"	90°57'02"	04027000	13.6	.2400	relation	10.5	10.5
40	04026309	Sioux R nr Washburn	46°43'32"	90°54'27"	04027000	51.3	1.0240	equation	51.0	[2]13.5
41	04026315	Little Sioux R nr Washburn	46°43'36"	90°54'26"	04027000	19.1	1.4110	equation	22.0	[2]15.6
42	04026335	S Fish Ck nr Benoit	46°32'15"	91°03'11"	04025500	17.1	.0078	equation	1.3	1.0
43	04026341	S Fish Ck nr Ashland	46°34'06"	90°58'14"	04025500	38.4	.0112	equation	3.6	1.3
44	04026346	N Fish Ck nr Benoit	46°31'49"	91°08'51"	04025500	36	.0389	equation	6.5	2.4
45	04026350	N Fish Ck nr Ashland	46°34'45"	90°57'55"	04025500	74.4	.9290	relation	80.0	[2]14.6
46	04026400	Spillerberg Ck nr Cayuga	46°11'48"	90°37'32"	04027000	6.59	.2270	relation	5.2	10.7
47	04026410	Bad R at Morse	46°13'27"	90°37'32"	04027000	32.1	.1167	equation	10.2	4.3
48	04026449	Iron R nr Mellen	46°16'11"	90°42'23"	04027000	26.7	.1916	equation	11.0	5.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 1*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Superior Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
49	04026450	Bad R nr Mellen	46°16'14"	90°42'26"	04027000	82	0.2270	BFI	44.0	7.3
50	04026510	Montreal Ck at Mellen	46°19'36"	90°39'08"	04027000	26	.2776	equation	12.9	6.8
51	04026530	Tyler Fks R nr Mellen	46°16'29"	90°30'11"	04027000	21.4	.1391	equation	7.4	4.7
52	04026550	Tyler Fks R nr Upson	46°20'50"	90°29'40"	04027000	36.9	.1400	relation	19.0	7.0
53	04026560	Tyler Fks R nr Mellen	46°24'20"	90°34'09"	04027000	64.9	.1492	equation	23.8	5.0
54	04026580	Marengo R nr Grandview	46°17'20"	90°59'31"	04027000	25.5	.3917	equation	15.2	8.1
55	04026590	Marengo R nr Grandview	46°21'20"	90°58'41"	04027000	50.5	.3878	equation	30.3	8.1
56	04026600	Marengo R at Marengo	46°25'35"	90°49'05"	04027000	101	.6060	relation	52.0	7.0
57	04026620	Brunsweiler R at Marengo	46°24'47"	90°48'28"	04027000	63.4	.2118	equation	27.9	6.0
58	04026650	Trout R nr High Bridge	46°23'40"	90°46'25"	04027000	13.5	.2110	relation	5.6	5.6
59	04026740	Marengo R nr Mellen	46°25'00"	90°44'13"	04027000	195	.4048	equation	122.8	8.6
60	04026760	Silver Ck nr Mellen	46°23'12"	90°43'37"	04027000	7.69	.3412	equation	4.2	7.3
61	04026859	Potato R at Upson	46°21'59"	90°24'38"	04027000	31.1	.1595	equation	11.6	5.1
62	04026900	Potato R at Gurney	46°27'50"	90°30'25"	04027000	93.1	.2190	relation	45.0	6.6
63	04026950	Vaughncreek nr Gurney	46°28'33"	90°36'00"	04027000	18	.2597	equation	8.6	6.5
64	04027045	White R nr Delta	46°27'25"	91°14'25"	04025500	106	.5665	equation	78.5	10.1
65	04027095	White R nr Mason	46°26'10"	91°10'35"	04025500	127	.6823	equation	104.0	11.1
66	04027110	Long Lk Br at Drummond	46°29'17"	91°16'45"	04025500	23.4	.0551	equation	5.0	2.9
67	04027140	Long Lk Br nr Grandview	46°23'19"	91°07'17"	04027000	54.5	1.1370	equation	57.2	14.3
68	04027200	Twenty Mile Ck at Grandview	46°22'05"	91°05'27"	04027000	18.7	.4940	relation	12.0	8.7
69	04027250	White R at Mason	46°25'47"	91°03'02"	04027000	264	1.1527	equation	288.2	14.8
70	04027265	Spring Crek nr Mason	46°28'16"	91°03'02"	04027000	3.35	.3620	equation	1.8	7.4
71	04027650	Denomie Ck nr Odanah	46°35'40"	90°39'17"	04027000	13.9	.0016	equation	.5	.5
72	04027900	Laymans Ck nr Hurley	46°19'35"	90°09'20"	04027000	13.8	.0320	relation	6.4	6.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

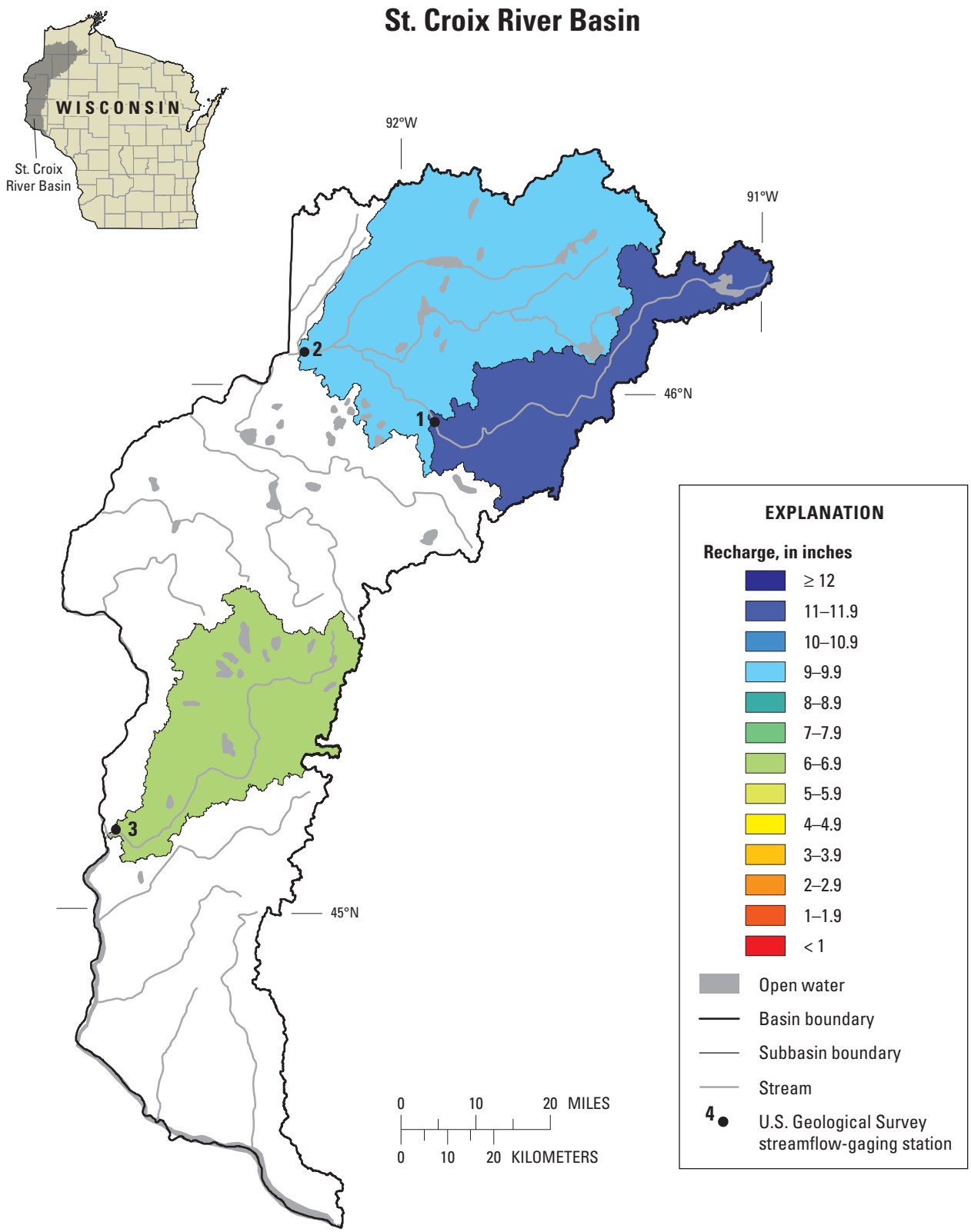
Appendix 1*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Superior Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

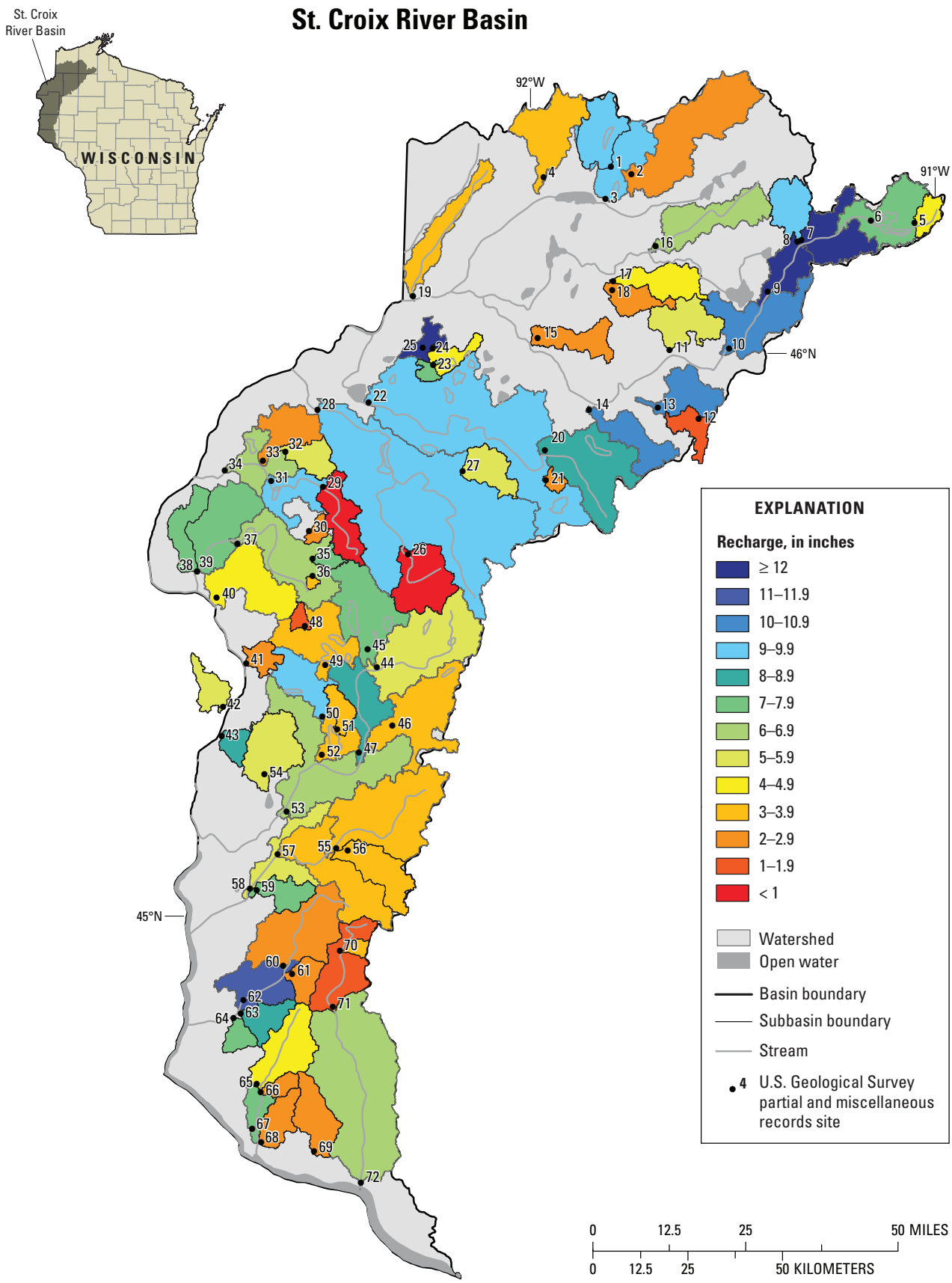
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
73	04027950	Montreal Ck nr Hurley	46°23'15"	90°08'29"	04027000	49.1	0.1060	equation	15.0	4.1
74	04028650	W Fk Montreal R nr Upson	46°24'49"	90°24'16"	04027000	10.5	.0273	equation	1.5	2.0
75	04028710	W Fk Montreal R Tr nr Montreal	46°20'10"	90°24'11"	04027000	7.38	.0598	equation	1.6	3.0
76	04028985	E R nr Montreal	46°23'15"	90°15'22"	04027000	4.73	.0093	equation	.4	1.1
77	04029700	Boomer Ck nr Saxon	46°29'40"	90°21'02"	04027000	5.33	.0280	relation	2.8	7.1
78	04029780	Fourche Ck nr Saxon	46°21'30"	90°15'55"	04027000	14.9	.0799	equation	3.8	3.5
79	04038400	S Br Ontonogon R nr Boulder Jct	46°10'24"	89°45'32"	05359500	6.14	.8384	equation	5.3	11.7

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 2–*A*. Locations of streamflow-gaging stations in the St. Croix River Basin and spatial distribution of average annual recharge.



Appendix 2–*B*. Locations of miscellaneous and partial-record sites in the St. Croix Basin and spatial distribution of estimated average annual recharge.

Appendix 2*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-streamflow-gaging stations in the St. Croix River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total stream-flow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	05332500	Namekagon R nr Trego	488	1988–1998	BFI	--	400	11.1	--	--	270
2	05333500	St. Croix R nr Danbury	1580	1970–1999	BFI	0.8000	1,100	9.5	1,400	11.9	780
3	05341500	Apple R nr Somerset	579	1970–1999	BFI	.7150	290	6.7	400	9.3	190

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 2*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the St. Croix River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
1	05331582	St Croix R nr Solon Springs	46°18'24"	91°47'16"	05333500	34.8	--	relation	23.8	9.3
2	05331590	Lower Ox Ck nr Gordon	46°17'40"	91°44'13"	05333500	100	0.1700	relation	18.7	2.5
3	05331603	Eau Claire R at Gordon	46°15'09"	91°47'57"	05333500	140	--	relation	103.0	10.0
4	05331700	Moose R nr Solon Springs	46°17'10"	91°57'10"	05333500	47.8	.0220	relation	14.0	4.0
5	05331795	Castle Ck nr Clam Lk	46°13'13"	91°02'28"	05332500	13.1	.1448	equation	4.6	4.7
6	05331801	Namekegon R nr Cable	46°13'26"	91°08'52"	05332500	46.8	.2687	equation	23.1	6.7
7	05331820	Namekagon R nr Cable	46°11'18"	91°19'06"	05332500	98.8	.5196	equation	69.9	9.6
8	05331830	Big Bk nr Cable	46°11'06"	91°19'39"	05332500	25	.5102	equation	17.0	9.3
9	05331850	Namekagon R nr Seeley	46°05'57"	91°23'52"	05332500	157	.6804	equation	129.0	11.2
10	05331870	Namekagon R at Hayward	46°00'07"	91°29'24"	05332500	206	.5380	relation	167.0	11.0
11	05331900	Chippanazie R at Stanberry	45°59'50"	91°38'05"	05333500	34.4	.2110	relation	14.3	5.6
12	05331945	Godfrey Ck nr Stone Lk	45°52'52"	91°33'40"	05333500	7.45	.2500	relation	.8	1.5
13	05331950	Bean Bk nr Spring Bk	45°54'00"	91°39'40"	05333500	45.5	.7620	relation	33.5	10.0
14	05332100	Potato Ck at Trego	45°53'32"	91°49'39"	05333500	30.4	.5340	relation	22.9	10.2
15	05332700	Stuntz Ck nr Minong	46°00'45"	91°57'25"	05333500	21.1	.0980	relation	4.3	2.8
16	05333060	Ounce R nr Gordon	46°10'25"	91°40'30"	05333500	43.6	.2630	relation	21.2	6.6
17	05333080	Frog Ck nr Minong	46°06'45"	91°46'35"	05333500	29.4	.0940	relation	9.1	4.2
18	05333100	Little Frog Ck nr Minong	46°05'48"	91°46'39"	05333500	16.6	.0570	relation	2.6	2.1
19	05333510	Chases Bk nr Danbury	46°04'40"	92°15'50"	05333500	37.7	.0670	relation	9.2	3.3
20	05333996	Yellow R nr Spooner	45°49'20"	91°55'58"	05333500	74.3	.4270	relation	44.5	8.1
21	05334110	Sawyer Ck Tr nr Shell Lk	45°46'17"	91°55'44"	05332500	29.6	.1560	relation	5.7	2.6
22	05334500	Yellow R at Webster	45°53'45"	92°21'53"	05333500	284	.4920	relation	180.0	8.6
23	05335008	Spring Ck nr Danbury	45°57'44"	92°12'35"	05333500	5.44	--	relation	2.9	7.2
24	05335010	Loon Ck nr Danbury	45°59'24"	92°12'43"	05333500	17.6	--	relation	6.6	5.1
25	05335017	Loon Ck nr Danbury	45°59'28"	92°14'13"	05333500	27.7	--	relation	17.7	8.7
26	05335300	Clam R nr Frederic	45°38'23"	92°15'29"	05332500	41.6	.0210	relation	1.5	0.5
27	05335380	Bashaw Bk nr Shell Lk	45°47'02"	92°07'51"	05368000	26.6	.2720	relation	10.0	5.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 2*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the St. Croix River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
28	05335500	Clam R nr Webster	45°52'52"	92°29'16"	05333500	361	0.3693	equation	219.4	8.3
29	05338900	Wood R nr Siren	45°45'00"	92°28'10"	05333500	29.2	.0180	relation	1.0	.5
30	05338915	Wood R Tr nr Frederic	45°40'27"	92°29'58"	05341500	5.54	--	relation	1.1	2.7
31	05338928	Wood R nr Alpha	45°45'29"	92°35'41"	05333500	73	.2770	relation	32.9	6.1
32	05338940	N Fk Wood R nr Grantsburg	45°48'30"	92°33'48"	05333500	17.9	.2095	equation	7.6	5.8
33	05338950	N Fk Wood R nr Grantsburg	45°47'30"	92°37'00"	05333500	54.8	.0860	relation	9.1	2.3
34	05338975	Wood R at Grantsburg	45°46'22"	92°42'29"	05333500	153	.2360	relation	53.7	4.8
35	05340300	Trade R nr Fredric	45°37'41"	92°29'19"	05368000	6.16	.2450	relation	3.3	7.3
36	05340309	Trade R Tr nr Luck	45°35'55"	92°29'16"	05368000	2.18	.1820	relation	.5	3.1
37	05340340	Trade R at Trade	45°38'55"	92°40'19"	05341500	78.3	.2436	equation	37.2	6.4
38	05340370	Trade R nr Trade R	45°35'58"	92°46'02"	05341500	134	.3255	equation	74.8	7.6
39	05340385	Cowan Ck nr Trade R	45°35'57"	92°46'02"	05341500	23.7	.3050	equation	12.4	7.1
40	05340400	Wolf Ck nr St Croix Falls	45°33'20"	92°43'05"	05341500	24.9	.1500	relation	7.6	4.1
41	05340460	Big Rock Ck nr St Croix Falls	45°26'45"	92°38'28"	05341500	10.5	.0544	equation	2.2	2.8
42	05340550	Lawerence Ck at Franconia	45°22'16"	92°41'37"	05341500	16.2	.2570	relation	6.5	5.5
43	053405548	Trout Bk at Osceola	45°19'18"	92°41'40"	05341500	10.5	.2339	relation	6.5	8.4
44	05340970	Apple R nr Balsam Lk	45°26'44"	92°19'35"	05341500	81.7	.2008	equation	35.1	5.8
45	05341100	Fox Ck nr Balsam Lk	45°28'34"	92°20'59"	05341500	53.9	.3373	equation	30.1	7.6
46	05341250	Beaver Bk nr Joel	45°20'51"	92°17'05"	05341500	59.8	.0958	equation	17.4	3.9
47	05341305	Apple R nr Amery	45°18'04"	92°21'48"	05341500	250	--	relation	116.0	6.3
48	05341370	Rice Ck nr Milltown	45°30'44"	92°30'07"	05341500	3.98	.0670	relation	.5	1.7
49	05341402	Balsam Br at Balsam Lk	45°26'49"	92°27'01"	05341500	52.8	.1210	relation	13.0	3.3
50	05341410	Balsam Br nr Wanderoos	45°21'35"	92°27'13"	05341500	87.6	.2101	equation	38.6	6.0
51	05341418	Friday Ck nr Deronda	45°20'20"	92°25'02"	05341500	12.2	.0945	equation	3.4	3.8
52	05341426	Wapogasset Br nr Deronda	45°17'40"	92°27'10"	05341500	117	.1696	equation	46.4	5.4
53	05341437	Apple R at Star Prairie	45°11'49"	92°31'57"	05341500	459	--	relation	206.0	6.1

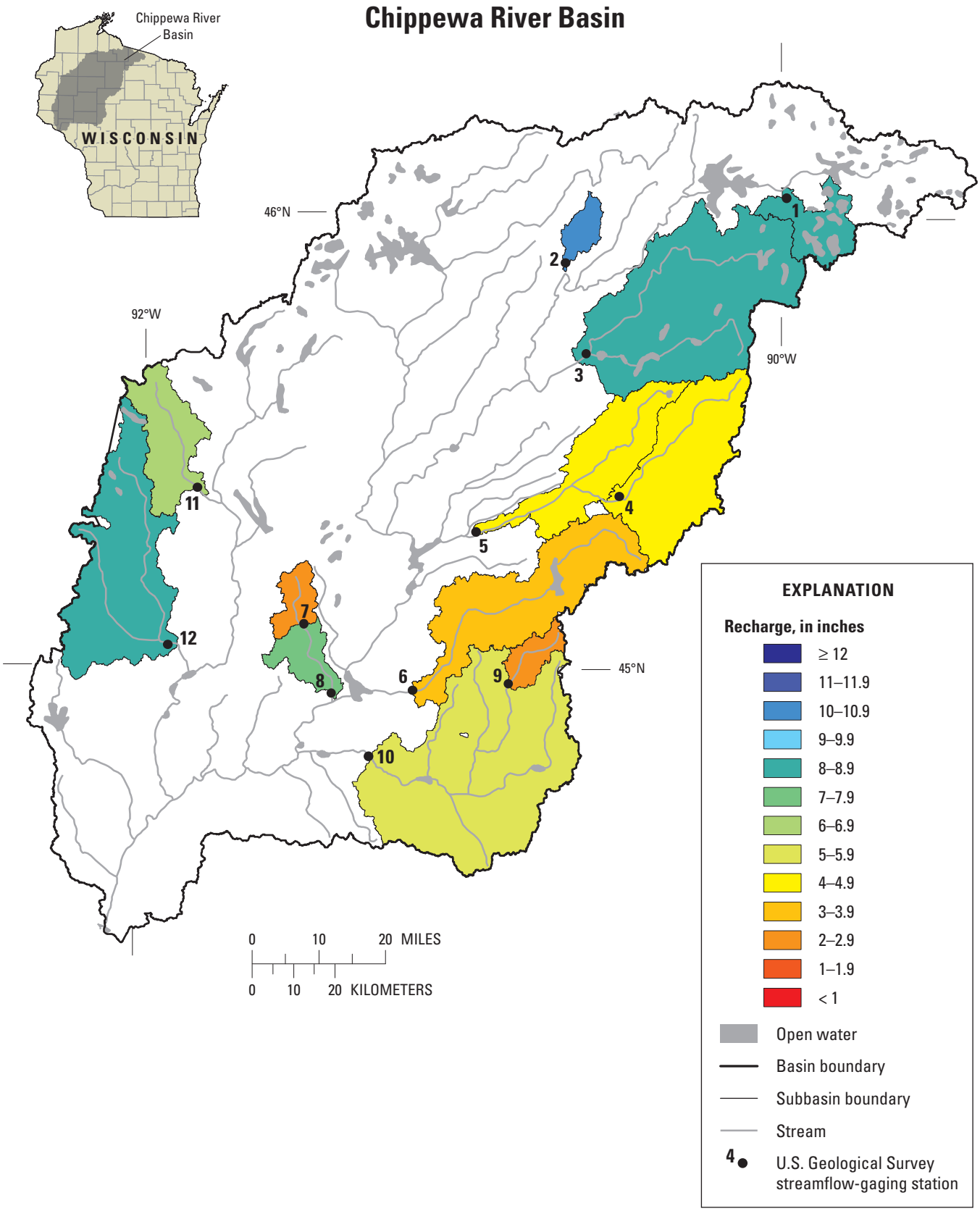
[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 2*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the St. Croix River Basin—Continued.

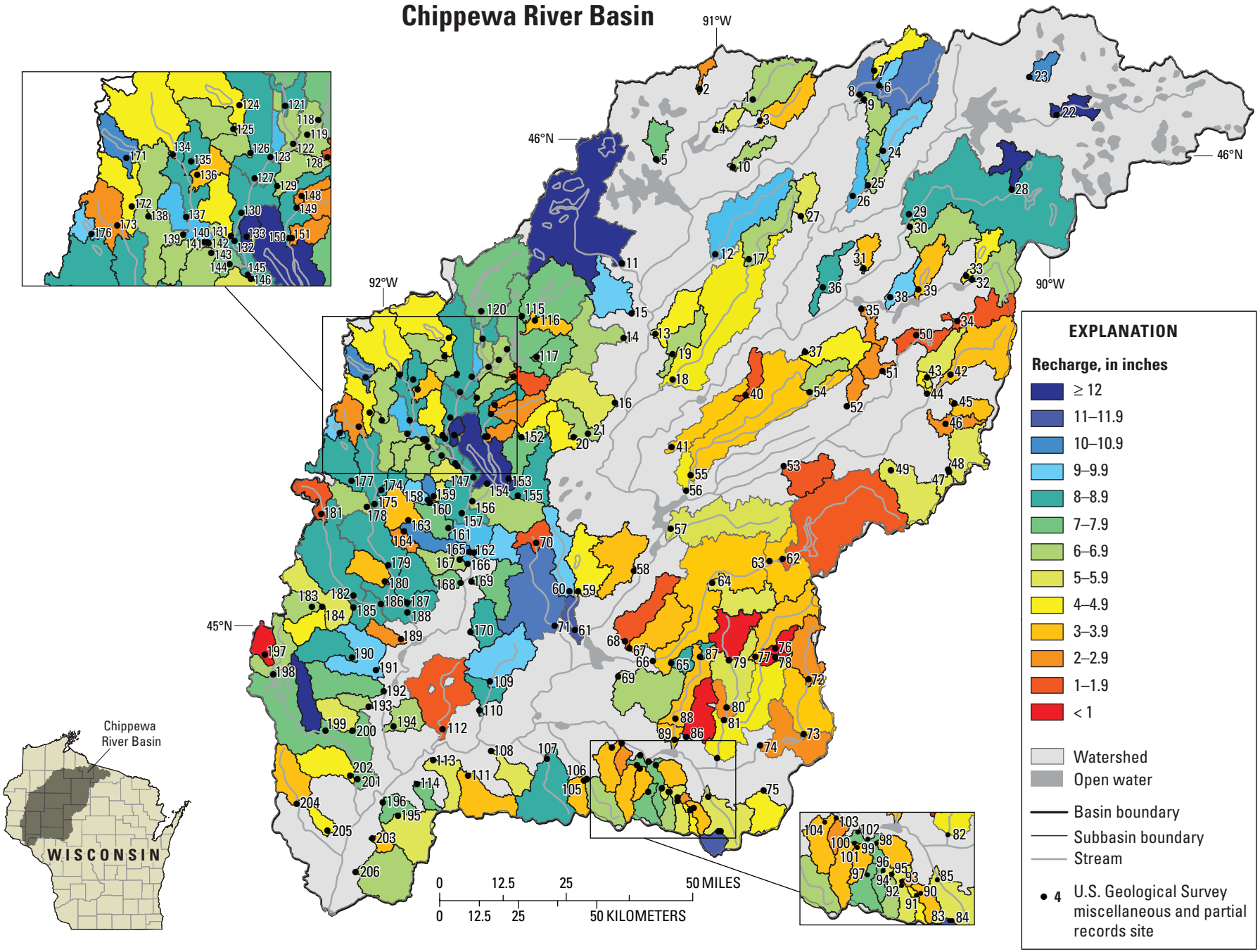
[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
54	05341450	Horse Ck nr Star Prairie	45°15'30"	92°35'19"	05341500	47.1	0.3270	relation	17.7	5.1
55	05341690	Willow R nr New Richmond	45°08'13"	92°24'40"	05368000	87.9	.1270	relation	24.5	3.8
56	05341694	S Fk Willow R nr Cylon	45°08'01"	92°23'00"	05368000	33.3	.0870	equation	9.1	3.7
57	05341699	Willow R at New Richmond	45°07'24"	92°33'02"	05368000	196	.1660	relation	55.0	3.8
58	05341720	Willow R at Boardman	45°03'51"	92°36'52"	05368000	225	.0967	equation	67.5	4.1
59	05341730	Tenmile Ck at Boardman	45°03'43"	92°35'54"	05368000	17.5	.3300	equation	9.4	7.3
60	05341850	Kinnickinnic R nr Hammond	44°56'07"	92°31'48"	05368000	67.3	.2030	relation	11.8	2.4
61	05341860	Parker Ck nr Hammond	44°55'15"	92°30'26"	05368000	13.9	.0588	equation	3.0	3.0
62	05341880	Kinnickinnic R nr R Falls	44°52'29"	92°37'18"	05368000	115	.4190	relation	43.7	5.2
63	05341889	S Fk Kinnickinnic R at R Falls	44°51'06"	92°37'36"	05368000	18.1	.4571	equation	11.6	8.7
64	05341920	Kinnickinnic R Tr nr R Falls	44°50'36"	92°38'38"	05368000	10.4	.3549	equation	5.8	7.5
65	05346300	Trimbelle R at Trimbelle	44°43'55"	92°35'00"	05368000	43.3	.2530	relation	13.1	4.1
66	05346400	Spring Ck nr Ellsworth	44°43'09"	92°34'22"	05368000	7.93	.0292	equation	1.2	2.0
67	05346500	Trimbelle R nr Diamond Bluff	44°39'24"	92°35'28"	05368000	63.5	.3460	equation	36.0	7.7
68	05346600	Little Trimbelle R nr Bay City	44°38'01"	92°34'05"	05368000	19.4	.1150	relation	3.5	2.5
69	05355300	Isabelle Ck nr Bay City	44°37'15"	92°26'33"	05368000	31.1	.2320	relation	6.1	2.7
70	05355304	Rush R Tr at Baldwin	44°57'47"	92°23'42"	05379500	4.03	.0898	equation	1.1	3.6
71	05355308	Rush R nr Martell	44°52'03"	92°24'31"	05379500	47.3	.0210	equation	6.2	1.8
72	05355325	Rush R nr Maiden Rock	44°34'15"	92°19'44"	05379500	213	--	relation	80.0	5.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.



Appendix 3–A, Locations of streamflow-gaging stations in the Chippewa River Basin and spatial distribution of average annual recharge.



Appendix 3–*B*. Locations of miscellaneous and partial-record sites in the Chippewa River Basin and spatial distribution of estimated average annual recharge.

Appendix 3*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-streamflow-gaging stations in the Chippewa River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total streamflow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	05357335	Bear R nr Manitowish Waters	81.3	1970–1999	ex rec	--	50	8.4	--	--	21
2	05358300	Pine Ck nr Oxbow	38.9	1971–1975	ex rec	--	29	10.1	--	--	14
3	05359500	S Fork Flambeau R nr Phillips	609	1941–1975	ex rec	--	390	8.7	--	--	170
4	05361500	S Fork Jump R nr Ogema	327	1945–1954	ex rec	--	120	5.0	--	--	39
5	05362000	Jump R at Sheldon	576	1970–1999	BFI	0.3610	190	4.5	540	12.8	65
6	05364000	Yellow R at Cadott	364	1943–1961	ex rec	--	90	3.4	--	--	28
7	05364500	Duncan Ck at Bloomer	50.3	1945–1951	BFI	--	10	2.7	--	--	
8	05365000	Duncan Ck at Chippewa Falls	117	1943–1955	ex rec	--	61	7.1	--	--	25
9	05365707	North Fork Eau Claire R nr Thorp	51	1970–1999	ex rec	--	8.8	2.3	--	--	1.5
10	05366500	Eau Claire R nr Fall Ck	760	1943–1955	ex rec	--	280	5.0	--	--	140
11	053674464	Yellow R at Barron	153	1992–1998	ex rec	--	74	6.6	--	--	50
12	05368000	Hay R nr Wheeler	418	1970–1999	BFI	.7600	260	8.6	350	11.3	189

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	05355355	Torch R nr Clam Lk	46°06'51"	90°53'00"	05359500	43.9	0.2229	equation	19.7	6.1
2	05355361	Ghost Ck nr New Post	46°08'07"	91°02'34"	05332500	5.27	.0384	equation	.9	2.3
3	05355370	Moose R nr Clam Lk	46°04'16"	90°51'40"	05359500	26.8	.0310	relation	6.6	3.3
4	05355390	Little Moose R nr New Post	46°03'02"	90°59'39"	05359500	8.58	.2258	equation	3.7	5.9
5	05355420	Hay Ck nr Hayward	45°59'19"	91°10'12"	05332500	18.5	.3080	relation	10.3	7.6
6	05355522	Willerth Ck nr Glidden	46°08'47"	90°30'22"	04027000	4.05	.5602	equation	2.8	9.4
7	05355524	Magee Ck nr Glidden	46°10'36"	90°31'17"	04027000	14.8	.1368	equation	5.0	4.6
8	05355530	E Fk Chippewa R nr Glidden	46°07'35"	90°33'55"	04027000	96.7	.3920	relation	66.6	9.4
9	05355534	Schraum Ck nr Glidden	46°06'58"	90°33'05"	04027000	15.37	.2715	equation	7.5	6.6
10	05355585	Fishtrap Ck nr New Post	45°58'27"	90°56'26"	05362000	13.1	.2455	equation	6.0	6.2
11	05356130	Couderay R nr Raddison	45°46'15"	91°15'59"	05362000	187	--	relation	279.0	[2]20.3
12	05356170	Brunet R nr Winter	45°47'36"	90°59'23"	05362000	66.4	.3960	relation	47.3	9.7
13	05356290	Nail Ck nr Exeland	45°37'35"	91°09'50"	05362000	26.6	.1178	equation	8.5	4.3
14	05356309	Big Weirgor Ck nr Exeland	45°36'59"	91°15'25"	05362000	41.7	.2700	relation	20.5	6.7
15	05356320	Little Weirgor Ck at Exeland	45°40'06"	91°14'07"	05362000	30.6	.9190	relation	20.5	9.1
16	05356375	Devils Ck nr Bruce	45°28'56"	91°16'48"	05362000	44.1	.1803	equation	17.7	5.5
17	05356400	Thornapple R nr Winter	45°47'02"	90°53'23"	05362000	30.9	.2140	relation	14.4	6.3
18	05356443	Thornapple R nr Ladysmith	45°31'52"	91°06'40"	05362000	159	.1499	equation	59.5	5.1
19	05356450	Little Thornapple R nr Ladysmith	45°35'05"	91°06'43"	05362000	16.3	.1680	relation	8.3	6.9
20	05356650	Soft Maple Ck at Weyerhauser	45°24'30"	91°23'59"	05362000	15.9	.2110	relation	5.0	4.3
21	05356700	Soft Maple Ck nr Bruce	45°25'04"	91°21'30"	05362000	32	.3470	relation	13.2	5.6
22	05357350	Lost Ck nr Powell	46°05'10"	89°58'40"	05359500	15	.3810	relation	15.8	14.3
23	05357395	Little Turtle R at Mercer	46°09'50"	90°03'32"	05359500	10.4	.4360	relation	8.3	10.8
24	05358168	Butternut Ck at Butternut	46°00'37"	90°29'41"	05359500	26.2	--	relation	18.9	9.8

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	05358190	Flambeau R nr Park Falls	45°56'20"	90°32'18"	05359500	47.6	0.2529	equation	22.8	6.5
26	05358220	Butternut Ck nr Park Falls	45°55'00"	90°35'01"	05359500	60.9	.5209	equation	42.7	9.5
27	05358337	Log Ck nr Oxbo	45°52'24"	90°44'10"	05359500	14.8	.2127	equation	6.3	5.8
28	05359100	Springstead Ck nr Park Falls	45°55'55"	90°06'40"	05359500	17	.3060	relation	16.6	13.3
29	05359215	S Fk Flambeau R at Fifield	45°52'48"	90°24'56"	05359500	241	--	relation	158.0	8.9
30	05359249	Sailor Ck nr Fifield	45°51'13"	90°24'45"	05359500	35.3	.2531	equation	16.8	6.5
31	05359277	Smith Ck nr Lugerville	45°45'57"	90°32'58"	05359500	11.4	.0637	equation	2.6	3.1
32	05359350	Elk R nr Phillips	45°44'40"	90°13'40"	05359500	34	.2130	relation	15.8	6.3
33	05359355	Popple Ck nr Phillips	45°45'05"	90°14'46"	05359500	18.3	.1072	equation	5.5	4.1
34	053593626	Little Elk R nr Phillips	45°39'31"	90°16'17"	05362000	23.7	.0198	equation	3.0	1.7
35	05359447	Carpenter Ck nr Phillips	45°40'54"	90°33'19"	05359500	12.4	.0410	equation	2.2	2.5
36	05359600	Price Ck nr Phillips	45°43'33"	90°40'12"	05359500	16.9	.4560	relation	10.9	8.8
37	05359700	Skinner Ck nr Hawkins	45°35'29"	90°43'14"	05362000	29.8	.0520	relation	9.3	4.2
38	05359809	Deer Ck nr Phillips	45°42'24"	90°28'15"	05359500	12.9	.5069	equation	8.6	9.1
39	05359871	Squaw Ck nr Phillips	45°43'25"	90°23'11"	05359500	23	.0979	equation	6.6	3.9
40	05361050	Deer Tail Ck at Glen Flora	45°30'10"	90°53'41"	05362000	11.1	.0269	equation	1.6	2.0
41	05361100	Deer Tail Ck nr Ladysmith	45°23'33"	91°06'37"	05362000	43.9	.0440	relation	9.4	2.9
42	05361390	S Fk Jump R at Prentice	45°32'51"	90°17'30"	05362000	57.2	.0320	relation	14.2	3.4
43	05361400	Hay Ck nr Prentice	45°32'32"	90°21'37"	05362000	22.6	.0500	relation	8.6	5.2
44	05361405	Hay Ck nr Prentice	45°30'31"	90°21'35"	05362000	27.4	.1300	equation	9.2	4.6
45	05361424	Mondeaux Ck nr Ogema	45°29'18"	90°16'46"	05362000	11.1	.0685	equation	2.6	3.2
46	05361438	Holmes Ck at Ogema	45°26'45"	90°18'21"	05362000	10.4	.0130	relation	1.9	2.5
47	05361478	Fisher Ck at Wboro	45°20'47"	90°17'39"	05362000	5.48	.2300	equation	2.4	5.9
48	05361490	Silver Ck at Wboro	45°21'02"	90°17'49"	05362000	36.4	.0740	relation	14.2	5.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
49	053614983	Mondeaux Ck nr Wboro	45°20'53"	90°27'52"	05362000	39.2	0.1713	equation	15.3	5.3
50	05361600	N Fk Jump R nr Phillips	45°37'45"	90°23'32"	05362000	10.5	.0252	equation	1.5	1.9
51	05361606	Needle Ck nr Catawba	45°33'15"	90°29'32"	05362000	8.9	.0366	equation	1.5	2.3
52	05361828	Web Ck nr Catawba	45°28'52"	90°35'48"	05362000	9.5	.0437	equation	1.8	2.5
53	05361920	Levitt Ck at Jump R	45°21'22"	90°46'48"	05362000	28.4	.0136	equation	2.9	1.4
54	05362472	S Fk Main Ck at Hawkins	45°30'32"	90°42'25"	05362000	16.2	.0550	relation	7.5	6.3
55	05362485	Main Ck nr Sheldon	45°20'07"	91°03'16"	05362000	138	.0771	equation	36.4	3.6
56	05362487	Main Ck nr Coranth	45°18'09"	91°03'59"	05362000	149	.0994	equation	45.0	4.1
57	05363000	Fisher R at Holcombe	45°13'20"	91°06'35"	05381000	81.5	.0390	relation	33.0	5.5
58	05363110	N Fk Ck Bob Ck nr Cornell	45°08'03"	91°12'58"	05364000	42	.0775	equation	10.9	3.5
59	05363290	O'Neil Ck nr Eagleton	45°05'26"	91°22'46"	05368000	38.6	.1529	equation	14.2	5.0
60	05363360	Mccann Ck nr Eagleton	45°05'22"	91°24'17"	05368000	29.7	.5010	equation	20.1	9.2
61	05363500	O'Neil Ck nr Chippewa Falls	45°00'32"	91°23'13"	05368000	78.1	.3730	relation	68.0	11.8
62	05363765	Yellow R nr Gilman	45°09'47"	90°46'54"	05364000	146	.0174	equation	17.8	1.7
63	05363810	Yellow R at Gilman	45°09'26"	90°49'12"	05364000	187	--	relation	46.3	3.4
64	05363943	Otter Ck at Huron	45°06'45"	90°59'11"	05364000	30.7	.1818	equation	12.3	5.4
65	05363990	Lotz R nr Boyd	44°56'39"	91°06'13"	05364000	7.66	.4715	equation	4.9	8.7
66	05364005	Yellow R at Cadott	44°56'54"	91°09'29"	05364000	365	.0767	equation	98.0	3.6
67	05364120	Big Drywood Ck nr Cadott	44°58'27"	91°13'36"	05362000	33.5	.1580	relation	8.0	3.2
68	05364125	Little Drywood Ck nr Cadott	44°59'16"	91°14'22"	05364000	33	.0180	equation	4.0	1.6
69	05364160	Paint Ck nr Chippewa Falls	44°54'52"	91°15'27"	05381000	55.5	.2620	relation	25.1	6.1
70	05364260	Duncan Ck nr New Auburn	45°11'21"	91°30'13"	05368000	11.5	.3140	relation	1.6	1.9
71	05364750	Duncan Ck at Tilden	45°01'06"	91°26'43"	05368000	97.5	.5384	equation	70.2	9.8
72	05365570	S Fk Eau Claire R nr Withee	44°54'54"	90°42'08"	05381000	28.2	.0333	equation	4.7	2.2

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
73	05365600	S Fk Eau Claire R nr Greenwood	44°47'58"	90°42'53"	05381000	77.6	0.0280	relation	19.0	3.3
74	05365619	S Fk Eau Claire R nr Thorp	44°46'33"	90°50'29"	05381000	122	.0321	equation	20.4	2.3
75	05365650	Hay Ck nr Fairchild	44°41'01"	90°49'49"	05366500	22.5	.0450	relation	7.8	4.7
76	05365700	Goggle-Eye Ck nr Thorp	44°58'40"	90°48'00"	05362000	6.42	.0200	relation	.3	.7
77	05365710	N Fk Eau Claire R nr Thorp	44°57'33"	90°51'30"	05364000	52.9	--	relation	11.6	3.0
78	05365720	Mcgrogan Ck at Thorp	44°57'28"	90°48'01"	05381000	2.22	.0050	equation	.1	.8
79	05365840	Wolf R at Stanley	44°57'06"	90°56'05"	05381000	30.8	.0006	equation	.6	.3
80	05365900	Wolf R nr Stanley	44°51'14"	90°56'23"	05381000	71.2	.0800	relation	18.0	3.4
81	05365910	Wolf R nr Stanley	44°49'40"	90°56'53"	05381000	81.3	.0490	equation	16.8	2.8
82	05365928	N Fk Eau Claire R nr Augusta	44°44'53"	90°58'00"	05366500	205	.0735	equation	53.2	3.5
83	05365954	Schoolhouse Ck at Fairchild	44°35'51"	90°57'35"	05379500	6.52	.2451	equation	3.0	6.2
84	05365958	Schoolhouse Ck at Fairchild	44°64'05"	90°57'11"	05364000	9.6	.8489	equation	8.4	11.8
85	05365970	Black Ck nr Fairchild	44°40'07"	90°59'26"	05366500	43.9	.2595	equation	21.3	6.6
86	05366080	Muskrat Ck nr Augusta	44°47'30"	91°03'28"	05366500	29.6	.0062	equation	2.0	.9
87	05366090	Hay Ck nr Boyd	44°57'31"	91°01'11"	05364000	2.62	.5760	relation	1.7	8.8
88	05366165	Hay Ck nr Ludington	44°49'44"	91°05'24"	05381000	31.1	.0918	equation	8.7	3.8
89	05366180	Hay Ck nr Augusta	44°47'08"	91°05'29"	05366500	39.9	.0851	equation	10.8	3.7
90	05366264	Bridge Ck nr Fairchild	44°38'43"	91°01'57"	05379500	6.01	.0972	equation	1.7	3.8
91	05366267	Travis Ck nr Fairchild	44°38'25"	91°02'34"	05379500	3.53	.1537	equation	1.2	4.8
92	05366271	Bridge Ck nr Augusta	44°39'58"	91°04'45"	05379500	13.7	.0560	equation	2.9	2.9
93	05366274	Hay Ck nr Augusta	44°39'33"	91°04'47"	05379500	7.85	.1800	equation	3.0	5.3
94	05366280	Bridge Ck at Augusta	44°40'41"	91°06'15"	05379500	26.7	.1854	equation	10.8	5.5
95	05366285	Diamomd Valley Ck at Augusta	44°40'41"	91°06'24"	05379500	8.26	.2672	equation	3.9	6.5
96	05366320	Bridge Ck at Augusta	44°41'04"	91°07'33"	05379500	35.6	.1640	relation	14.0	5.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
97	05366325	Thompson Valley Ck nr Augusta	44°40'35"	91°09'52"	05366500	11.1	0.3255	equation	5.9	7.2
98	05366339	Browns Ck nr Augusta	44°43'56"	91°08'39"	05366500	11.8	.0938	equation	3.3	3.8
99	05366350	Bridge Ck nr Augusta	44°44'21"	91°09'55"	05366500	71.5	.3318	equation	39.8	7.6
100	05366400	Bears Grass Ck nr Fall Ck	44°43'51"	91°11'57"	05366500	16.2	.2710	relation	3.8	3.2
101	05366405	Bears Grass Ck Tr nr Augusta	44°43'28"	91°11'29"	05366500	7.84	.1042	equation	2.3	4.0
102	05366408	Bears Grass Ck nr Fall Ck	44°45'07"	91°11'26"	05366500	28	.3390	equation	15.5	7.5
103	05366419	Rush Ck nr Fall Ck	44°46'34"	91°14'42"	05366500	6.19	.0300	equation	.9	2.1
104	05366440	Fall Ck at Fall Ck	44°46'05"	91°16'21"	05379500	15.9	.0860	relation	4.0	3.4
105	05366600	Otter Ck at Brackett	44°42'05"	91°20'35"	05379500	23.7	.2584	equation	11.3	6.5
106	05366660	Beaver Ck at Brackett	44°41'52"	91°21'10"	05379500	12.4	.0626	equation	2.8	3.1
107	05367032	Lowes Ck nr Eau Claire	44°44'31"	91°27'40"	05379500	53.8	.2900	relation	34.4	8.7
108	05367041	W Ck nr Eau Claire	44°45'21"	91°37'26"	05366500	18.4	.1776	equation	7.2	5.3
109	05367051	Elk Ck nr Elk Mound	44°54'00"	91°37'55"	05366500	49.5	.4975	equation	33.8	9.3
110	05367052	Elk Ck nr Elk Mound	44°50'26"	91°39'36"	05366500	64	.3722	equation	37.7	8.0
111	05367057	Rock Ck nr Rock Falls	44°42'15"	91°41'20"	05379500	30.5	.0956	equation	8.7	3.9
112	05367060	Muddy Ck nr Menomonie	44°48'00"	91°46'02"	05366500	67.4	.0450	relation	7.1	1.4
113	05367063	Cranberry Ck at Meridean	44°44'06"	91°47'31"	05379500	16.9	.2022	equation	7.1	5.7
114	05367072	Fall Ck nr Meridean	44°41'02"	91°50'57"	05379500	8.21	.3516	equation	4.5	7.5
115	05367102	Red Cedar R at Birchwood	45°39'33"	91°33'36"	05362000	70.8	.1050	relation	37.0	7.1
116	05367150	Sucker Ck nr Birchwood	45°39'00"	91°31'15"	05362000	8.6	.0702	equation	2.0	3.2
117	05367190	Hemlock Ck nr Mikana	45°34'27"	91°30'46"	05368000	20.4	.3114	equation	10.7	7.1
118	05367202	Red Cedar Ck at Red Cedar Lk Outlet	45°35'21"	91°36'06"	05368000	151	.3530	equation	88.1	7.9
119	05367210	Red Cedar Ck nr Mikana	45°33'59"	91°37'27"	05368000	159	.2078	equation	70.5	6.0

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

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Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
120	05367301	Brill R nr Nobleton	45°40'03"	91°40'48"	05368000	73.8	0.3551	equation	42.6	7.8
121	05367310	Brill R at Brill	45°36'36"	91°40'24"	05368000	84.6	.3590	relation	52.0	8.3
122	05367340	Red Cedar R nr Campia	45°33'08"	91°39'15"	05368000	258	.2444	equation	125.7	6.6
123	05367350	Red Cedar R nr Rice Lk	45°31'49"	91°42'10"	05368000	264	.4474	equation	176.2	9.1
124	05367401	Bear Ck at Haugen	45°36'35"	91°46'24"	05368000	47.6	--	relation	14.7	4.2
125	05367402	Little Bear Ck nr Haugen	45°34'21"	91°47'09"	05368000	17.2	.2353	equation	7.8	6.1
126	05367404	Bear Ck nr Rice Lk	45°32'12"	91°44'52"	05368000	77.8	.2345	equation	36.2	6.3
127	05367405	Red Cedar R at Rice Lk	45°29'55"	91°44'12"	05368000	372	.4164	equation	240.8	8.8
128	05367409	Spring Ck nr Campia	45°31'57"	91°34'48"	05368000	11.3	.0078	equation	.9	1.0
129	05367412	Spring Ck nr Rice Lk	45°29'14"	91°41'15"	05368000	30.8	.1118	equation	9.6	4.2
130	05367417	Red Cedar ? nr Rice Lk	45°26'42"	91°45'54"	05368000	421	.4306	equation	278.0	9.0
131	05367420	Barker Ck nr Barron	45°24'31"	91°47'11"	05368000	16.5	.1850	relation	5.7	4.7
132	05367425	Red Cedar R nr Cameron	45°24'05"	91°46'39"	05368000	442	.3953	equation	279.5	8.6
133	05367427	Cranberry Ck at Cameron	45°24'30"	91°45'05"	05368000	3.45	.8150	relation	4.2	[2]16.5
134	05367430	Yellow R nr Cumberland	45°31'54"	91°54'56"	05368000	50.4	.2360	relation	16.4	4.4
135	05367433	Hickey Ck nr Haugen	45°31'22"	91°52'33"	05368000	8.59	.4261	equation	5.2	8.3
136	05367434	Eagle Ck nr Rice Lk	45°30'09"	91°51'43"	05368000	7.04	.0976	equation	2.0	3.8
137	05367436	Yellow R nr Barron	45°26'15"	91°53'00"	05368000	85.5	.4487	equation	55.9	8.9
138	05367440	Vermillion R nr Almena	45°26'12"	91°57'56"	05341500	18.2	.3270	relation	9.3	6.9
139	05367443	Vermillion R nr Poskin	45°24'36"	91°53'20"	05368000	40.2	.2635	equation	19.6	6.6
140	05367444	Yellow R at Barron	45°23'57"	91°50'07"	05368000	141	.3640	relation	97.2	9.4
141	05367445	Quaderer Ck at Barron	45°23'57"	91°50'33"	05368000	11.5	.2455	equation	5.3	6.2
142	05367446	Yellow R at Barron	45°23'53"	91°49'59"	05368000	153	.2405	equation	73.1	6.5
143	05367447	Fourmile Ck nr Barron	45°22'58"	91°49'39"	05368000	15.6	.2386	equation	7.1	6.2

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
144	05367448	Yellow R nr Wickware	45°21'56"	91°47'12"	05368000	176	0.3539	equation	103.1	8.0
145	05367450	Red Cedar R nr Chetek	45°21'03"	91°44'47"	05368000	631	.3861	equation	396.9	8.5
146	05367452	Brown Ck nr Chetek	45°20'40"	91°44'25"	05368000	9.91	.1763	equation	3.8	5.2
147	05367454	Red Cedar R nr Chetek	45°19'17"	91°41'28"	05368000	648	.3653	equation	396.3	8.3
148	05367457	Silver Ck nr Rice Lk	45°28'22"	91°38'03"	05368000	3.57	.0532	equation	.7	2.7
149	05367459	Rock Ck nr Canton	45°27'19"	91°38'37"	05368000	18.9	.0542	equation	4.0	2.9
150	05367460	Pokegama Ck nr Cameron	45°24'29"	91°39'36"	05368000	39.7	.3200	relation	23.4	8.0
151	05367461	German Ck nr Cameron	45°24'28"	91°39'10"	05368000	8.16	.0490	equation	1.6	2.7
152	05367462	Moose Ear Ck nr Strickland	45°24'28"	91°33'16"	05368000	13.2	.1107	equation	4.0	4.1
153	05367463	Moose Ear Ck nr Chetek	45°19'15"	91°35'17"	05368000	38.2	.2390	equation	17.7	6.3
154	053674633	Chetek R at Chetek	45°18'32"	91°39'04"	05368000	135	--	relation	125.0	12.6
155	05367464	Tenmile Ck nr Chetek	45°17'09"	91°33'40"	05368000	30.3	.4512	equation	19.5	8.7
156	05367468	Chetek R nr Chetek	45°16'22"	91°41'41"	05368000	212	.6017	equation	164.0	10.5
157	05367469	Red Cedar R nr Dallas	45°14'52"	91°43'26"	05368000	887	.3996	equation	571.9	8.8
158	05367474	Upper Pine Ck nr Dallas	45°16'24"	91°49'31"	05368000	8.79	--	relation	6.3	9.7
159	05367480	E Br Upper Pine Ck Tr nr Dallas	45°16'52"	91°48'30"	05368000	3.95	.3130	relation	1.5	5.2
160	05367481	E Br Upper Pine Ck at Dallas	45°16'03"	91°49'04"	05368000	9.66	.6749	equation	7.5	10.5
161	053674825	Upper Pine Ck nr Dallas	45°12'57"	91°45'46"	05368000	36.3	.4360	equation	23.0	8.6
162	05367487	Sand Ck at Sand Ck	45°10'00"	91°41'08"	05368000	20	.4899	equation	13.3	9.0
163	053674879	Lower Pine Ck nr Ridgeland	45°13'49"	91°52'49"	05368000	19.7	.0602	equation	4.4	3.0
164	05367488	S Fk Lower Pine Ck at Ridgeland	45°12'26"	91°53'37"	05368000	7.93	--	relation	1.5	2.6
165	05367490	Lower Pine Ck at Sand Ck	45°10'04"	91°42'03"	05368000	51	.3130	relation	40.9	10.9
166	05367491	Red Cedar R nr Sand Ck	45°08'34"	91°42'15"	05368000	1020	.4344	equation	688.8	9.2
167	05367492	Hay Ck nr Sand Ck	45°09'05"	91°43'40"	05368000	15.2	.2349	equation	6.9	6.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 3*D*. Average annual baseflow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
168	05367495	Popple Ck nr Sand Ck	45°06'12"	91°43'25"	05368000	8.04	0.3123	equation	4.2	7.0
169	05367497	Trout Ck nr Sand Ck	46°06'19"	91°41'31"	05333500	30	.3202	equation	16.1	7.3
170	05367515	Eighteenmile Ck nr Colfax	45°00'06"	91°41'29"	05368000	21.5	.4177	equation	13.2	8.3
171	05367630	Hay R at Cumberland	45°31'29"	92°00'58"	05368000	12	.6948	equation	9.5	10.7
172	05367642	Hay R nr Cumberland	45°27'03"	92°00'05"	05368000	27.9	.3318	equation	15.2	7.4
173	05367700	Lightning Ck at Almena	45°25'17"	92°01'57"	05368000	19	--	relation	3.2	2.3
174	05367750	Dority Ck nr Arland	45°17'32"	91°57'45"	05368000	7.62	.4931	equation	5.0	8.9
175	05367770	Hay R nr Prairie Farm	45°15'45"	91°58'49"	05368000	92.1	--	relation	46.6	6.9
176	05367772	Turtle Ck nr Turtle Lk	45°24'27"	92°05'15"	05368000	3.76	.5350	equation	2.5	9.0
177	05367800	Turtle Ck nr Almena	45°18'33"	92°03'02"	05368000	39.4	.2740	relation	24.8	8.5
178	05367807	Turtle Ck nr Arland	45°15'20"	92°00'13"	05368000	60.8	.2856	equation	31.2	7.0
179	05367834	Hay R nr Ridgeland	45°08'10"	91°56'14"	05368000	200	.4154	equation	127.7	8.7
180	05367860	Big Beaver Ck nr Wheeler	45°06'09"	91°56'44"	05368000	18.9	.0810	equation	4.9	3.5
181	05367880	S Fk Hay R at Reeve	45°14'19"	92°08'10"	05368000	15.8	.0095	equation	1.3	1.2
182	05367930	S Fk Hay R nr Boyceville	45°04'17"	92°02'08"	05368000	89.8	.3710	relation	45.0	6.8
183	05367942	Tiffany Ck at Glenwood City	45°02'47"	92°09'24"	05368000	13.7	.3310	relation	6.6	6.5
184	05367970	Beaver Ck at Downing	45°02'46"	92°07'32"	05368000	17.6	.2440	relation	6.3	4.9
185	05367975	Tiffany Ck at Boyceville	45°02'48"	92°02'08"	05368000	69.9	.2910	relation	28.9	5.6
186	05367995	S Fk Hay R nr Wheeler	45°03'19"	91°57'21"	05368000	180	.4331	equation	117.2	8.8
187	05368100	Otter Ck nr Wheeler	45°03'36"	91°52'43"	05368000	25.8	.2660	relation	16.7	8.8
188	05368120	Hay R nr Wheeler	45°02'19"	91°52'38"	05368000	466	.4015	equation	297.3	8.7
189	05368168	Lambs Ck nr Menomonie	44°59'02"	91°53'39"	05368000	10.5	.0325	equation	1.7	2.2
190	05368740	Wilson Ck nr Knapp	44°56'37"	92°02'10"	05368000	28	.3880	relation	18.5	9.0
191	05368785	Wilson Ck nr Menomonie	44°55'05"	91°57'54"	05368000	65.3	.4979	equation	44.8	9.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

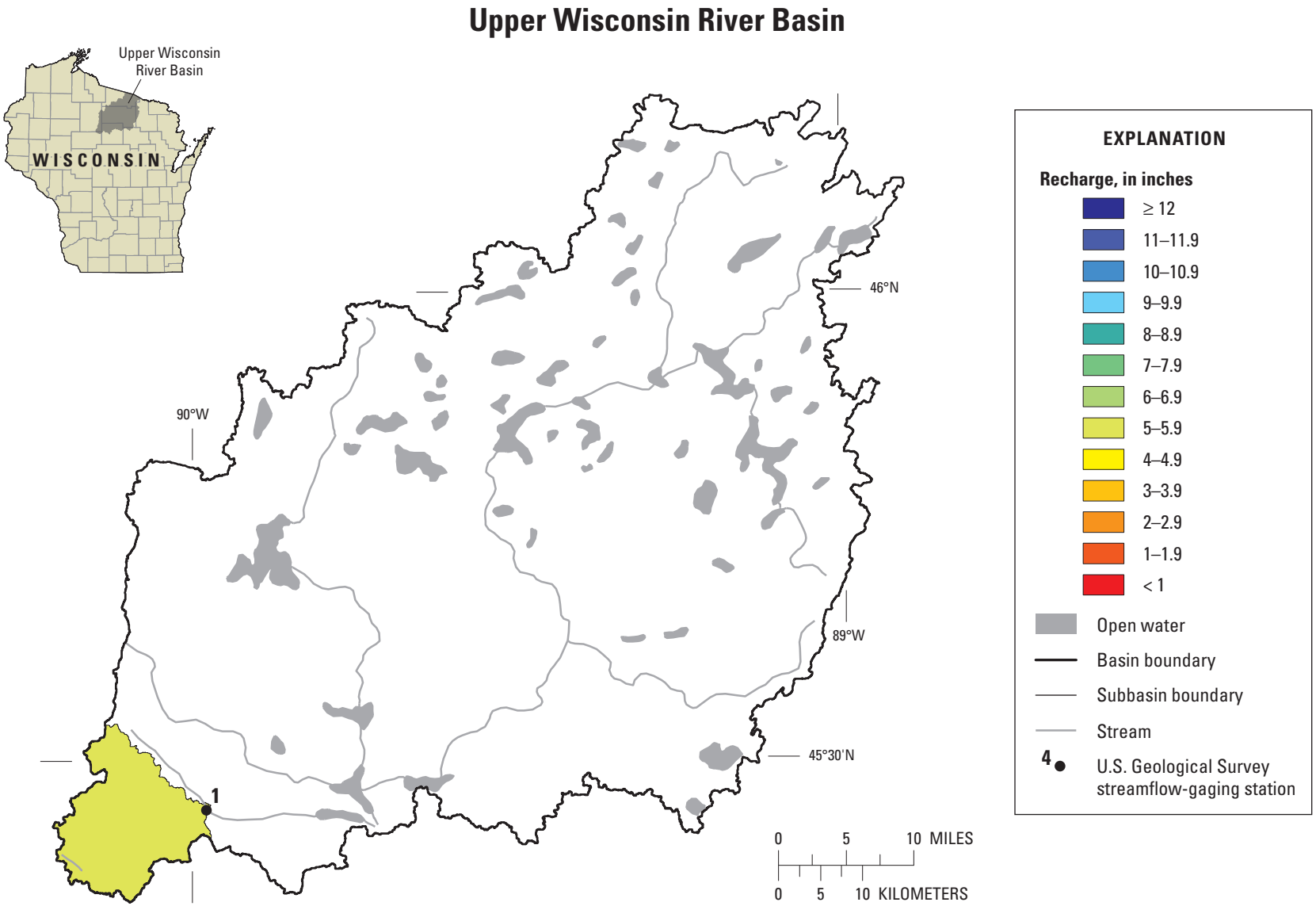
Appendix 3*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Chippewa River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

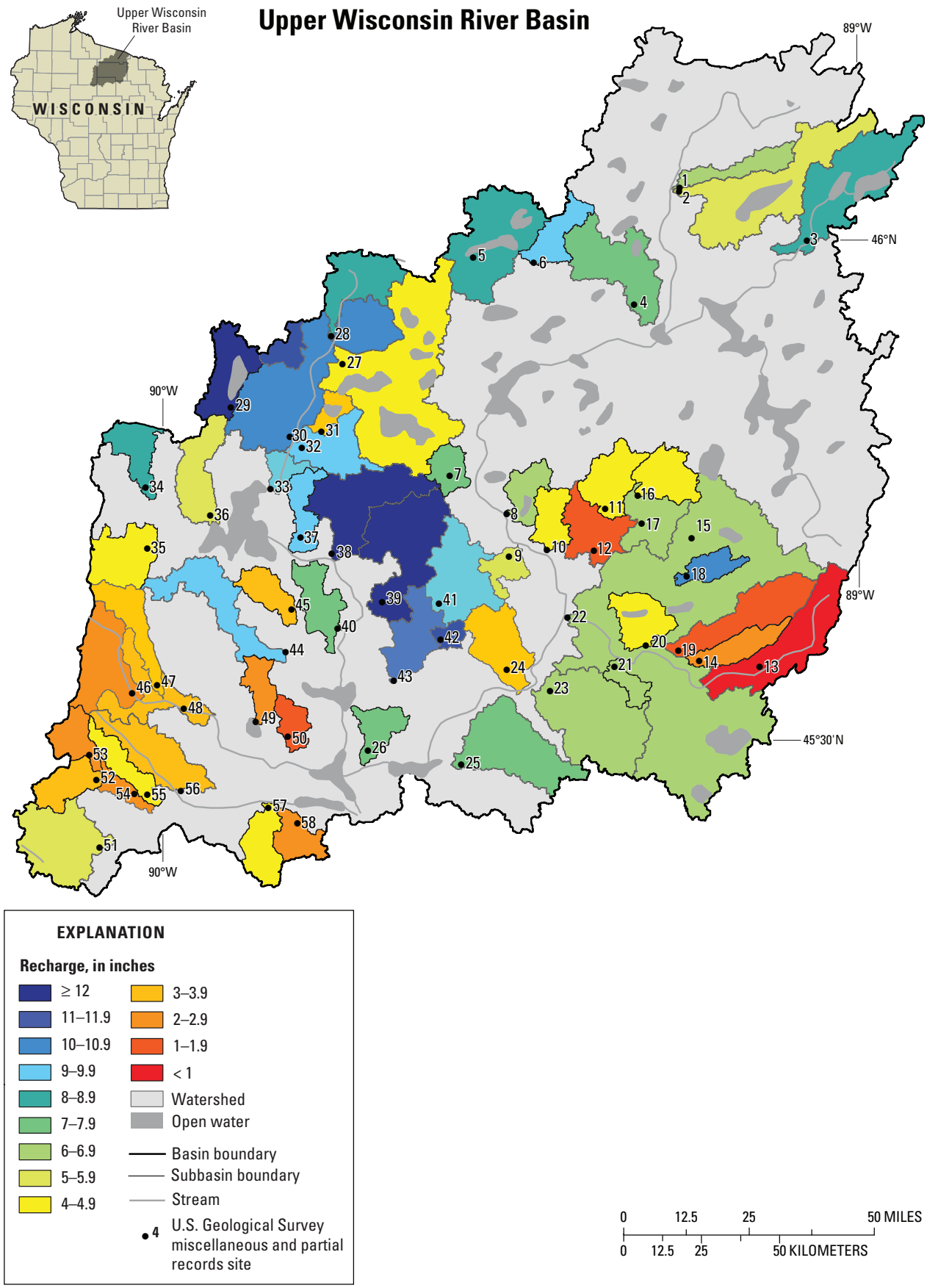
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
192	05369030	Gilbert Ck at Menomonie	44°52'27"	91°56'30"	05368000	36.4	0.3530	relation	18.9	7.1
193	05369050	Irving Ck nr Irvington	44°50'35"	91°59'00"	05379500	8.54	.2777	equation	4.2	6.6
194	05369110	Little Elk Ck nr Downsville	44°48'08"	91°54'35"	05379500	15.4	.2416	equation	7.0	6.2
195	05369380	Bear Ck nr Durand	44°37'04"	91°53'25"	05379500	37.9	.2029	equation	16.1	5.8
196	05369400	Bear Ck nr Durand	44°38'42"	91°56'09"	05379500	48.1	.2530	relation	26.0	7.3
197	05369850	Carr Ck at Woodville	44°56'38"	92°17'24"	05368000	11.8	.0006	equation	.2	.3
198	05369900	Eau Galle R nr Woodville	44°54'18"	92°15'51"	05368000	39.4	.1212	equation	12.8	4.4
199	05370510	Cady Ck nr Elmwood	44°47'26"	92°06'25"	05379500	22.4	1.0493	equation	22.2	13.4
200	05370525	Knights Ck nr Won	44°47'34"	92°01'46"	05379500	19.1	.1952	equation	7.9	5.6
201	05370550	Eau Galle R at Eau Galle	44°41'31"	92°00'39"	05379500	181	.3258	equation	101.7	7.6
202	05370557	Missouri Ck at Eau Galle	44°41'55"	92°01'57"	05379500	28.2	.1430	equation	9.9	4.8
203	05370900	Spring Ck nr Durand	44°34'13"	91°57'48"	05379500	6.45	.1480	relation	1.6	3.4
204	05371000	Plum Ck at Plum City	44°38'13"	92°11'10"	05379500	31.6	.1130	relation	7.7	3.3
205	05371035	Porcupine Ck at Porcupine	44°35'03"	92°05'42"	05379500	7.24	.1633	equation	2.7	5.0
206	05371270	Little Bear Ck nr Misha Mokwa	44°29'55"	92°00'35"	05379500	48.4	.2555	equation	23.3	6.5

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 4–*A*. Locations of streamflow-gaging stations in the Upper Wisconsin River Basin and spatial distribution of average annual recharge.



Appendix 4–*B*. Locations of miscellaneous and partial-record sites in the Upper Wisconsin River Basin and spatial distribution of estimated average annual recharge.

Appendix 4*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-streamflow-gaging stations in the Upper Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total streamflow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	05393500	Spirit R at Spirit Falls	81.6	1970–1999	BFI	0.3440	32	5.3	93	15.5	10

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 4*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Upper Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[a]	Drainage area (mi²)	Baseflow factor (ft³/s/mi²)	Baseflow method	Baseflow (ft³/s)	Recharge (inches)
1	05390140	Muskrat Ck at Conover	46°03'27"	89°15'24"	04061000	10.2	--	relation	5.1	6.8
2	05390170	Pioneer Ck at Conover	46°03'14"	89°15'27"	04061000	42	--	relation	18.5	6.0
3	05390450	Deerskin R nr Eagle R	46°00'11"	89°04'30"	04061000	32.4	--	relation	20.0	8.4
4	05390619	Rice Ck nr Eagle R	45°56'28"	89°19'27"	04061000	26.5	--	relation	15.5	7.9
5	05390725	Plum Ck nr Sayner	45°59'23"	89°33'14"	04061000	31.6	--	relation	20.5	8.8
6	05390741	Stella Ck nr Sayner	45°59'02"	89°28'02"	04061000	6.22	--	relation	4.3	9.4
7	05391028	Horsehead Ck nr Lk Tomahawk	45°46'17"	89°35'23"	05394500	5.58	0.3565	equation	3.1	7.5
8	05391042	Tom Doyle Ck nr Mc Naughton	45°43'57"	89°30'29"	05394500	10.2	.2925	equation	5.1	6.8
9	05391055	Newbold Ck nr Rhinelander	45°41'24"	89°30'20"	05394500	10.9	.2062	equation	4.6	5.7
10	05391069	Skunk Ck nr Rhinelander	45°41'47"	89°27'04"	05394500	7.3	.1249	equation	2.3	4.3
11	05391085	N Pine Lk Ck nr Rhinelander	45°44'14"	89°22'05"	04074950	14	.1290	relation	4.4	4.3
12	05391088	Pine Lk Ck nr Rhinelander	45°41'44"	89°23'04"	05394500	26.3	.0203	equation	3.4	1.7
13	05391200	Monico Ck at Monico	45°34'39"	89°08'57"	04074950	20.8	.0090	relation	1.5	1.0
14	05391223	Neptune Ck nr Monico	45°35'04"	89°14'08"	04074950	9.04	.0526	equation	1.9	2.8
15	05391250	Gudegast Ck nr Rhinelander	45°42'27"	89°14'40"	04074950	12.4	.0620	relation	5.6	6.1
16	05391265	Lost Ck nr Sugar Camp	45°45'00"	89°19'16"	04074950	12.7	--	relation	4.0	4.3
17	05391269	Jennie Webber Ck nr Rhinelander	45°43'20"	89°18'57"	04074950	18.9	.2794	equation	9.4	6.7
18	05391278	Starks Ck nr Rhinelander	45°40'08"	89°15'06"	04074950	8.59	.6901	equation	6.7	10.6
19	053913035	Haymeadow Ck nr Rhinelander	45°35'40"	89°15'55"	04074950	20.5	.0103	equation	1.8	1.2
20	05391350	Lk George Ck nr Rhinelander	45°36'00"	89°18'42"	05394500	11.9	.1289	equation	3.9	4.5
21	05391360	Bergman Ck nr Rhinelander	45°34'44"	89°21'23"	05394500	5.48	.2370	equation	2.4	6.0
22	05391450	Pelican R at Rhinelander	45°37'43"	89°25'21"	05394500	264	--	relation	130.0	6.7
23	05391900	Noisy Ck nr Rhinelander	45°33'21"	89°26'54"	05394500	35.6	.1820	relation	17.5	6.7

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

[3] Recharge likely altered by regulation.

Appendix 4*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Upper Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[a]	Drainage area (mi²)	Baseflow factor (ft³/s/mi²)	Baseflow method	Baseflow (ft³/s)	Recharge (inches)
24	05391958	Crescent Ck nr Woodboro	45°34'37"	89°30'35"	05394500	14.8	0.0809	equation	3.8	3.5
25	05392020	Big Pine Ck nr Harrison	45°28'56"	89°34'30"	05394500	29.4	.3638	equation	16.9	7.8
26	05392031	Muskelunge Ck nr Tomahawk	45°29'48"	89°42'29"	05394500	8.18	.3238	equation	4.3	7.1
27	05392102	Tomahawk R nr Minocqua	45°53'00"	89°44'32"	05394500	73	.1135	equation	23.3	4.3
28	05392150	Mishonagon Ck nr Woodruff	45°54'41"	89°45'30"	04061000	17.6	1.4130	relation	11.5	8.9
29	05392202	Squirrel R nr Minocqua	45°50'25"	89°54'08"	05393500	15.5	1.8020	equation	20.2	17.7[c]
30	05392220	Tomahawk R nr Hazelhurst	45°48'40"	89°49'05"	05394500	165	.3966	equation	102.5	8.4
31	05392227	Threemile Ck nr Hazelhurst	45°48'57"	89°46'22"	05394500	4.97	.0737	equation	1.2	3.3
32	05392233	Kaubashine Ck nr Hazelhurst	45°47'59"	89°48'04"	05394500	18.4	.5758	equation	13.3	9.8
33	05392240	Tomahawk R nr Hazelhurst	45°45'31"	89°50'44"	05394500	189	.3989	equation	118.0	8.5
34	05392290	Willow R nr Hazelhurst	45°45'37"	90°01'28"	05394500	9.92	.4350	relation	6.0	8.2
35	053922926	Thunder R nr Tripoli	45°41'56"	90°01'19"	05394500	11.8	.1124	equation	3.6	4.2
36	05392298	Swamsauger Ck nr Hazelhurst	45°43'55"	89°55'54"	05394500	15.8	.1867	equation	6.3	5.4
37	05392305	Bear Ck nr Goodnow	45°42'37"	89°48'10"	05394500	6.2	.5407	equation	4.2	9.3
38	05392320	Rocky Run Ck nr Goodnow	45°41'37"	89°45'31"	05394500	23.2	.8660	relation	23.5	13.8
39	05392350	Bearskin Ck nr Harshaw	45°38'43"	89°41'12"	05393500	31.1	1.1680	relation	36.5	15.9[b]
40	05392378	Swamp Ck nr Bradley	45°37'08"	89°45'03"	05394500	11.7	.3778	equation	6.7	7.8
41	05392405	Rice Ck nr Harshaw	45°38'36"	89°36'21"	05394500	18.1	.4508	equation	11.5	8.6
42	05392407	Trout Ck nr Woodboro	45°36'26"	89°36'13"	05394500	2.22	2.1841	equation	3.1	18.8[b]
43	05392410	Little Rice Ck nr Haefford Junction	45°34'00"	89°40'15"	05394500	36.9	.5867	equation	27.3	10.0
44	05392450	Little Rice R nr Bradley	45°35'43"	89°49'28"	05394500	21.4	.0890	relation	15.1	9.6
45	05392460	Brown Ck nr Mccord	45°38'18"	89°48'58"	05394500	7.49	.0824	equation	1.9	3.5
46	05393160	Somo Ck at Clifford	45°33'17"	90°02'36"	05393500	18.8	.0409	equation	3.4	2.5

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

[3] Recharge likely altered by regulation.

Appendix 4*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Upper Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

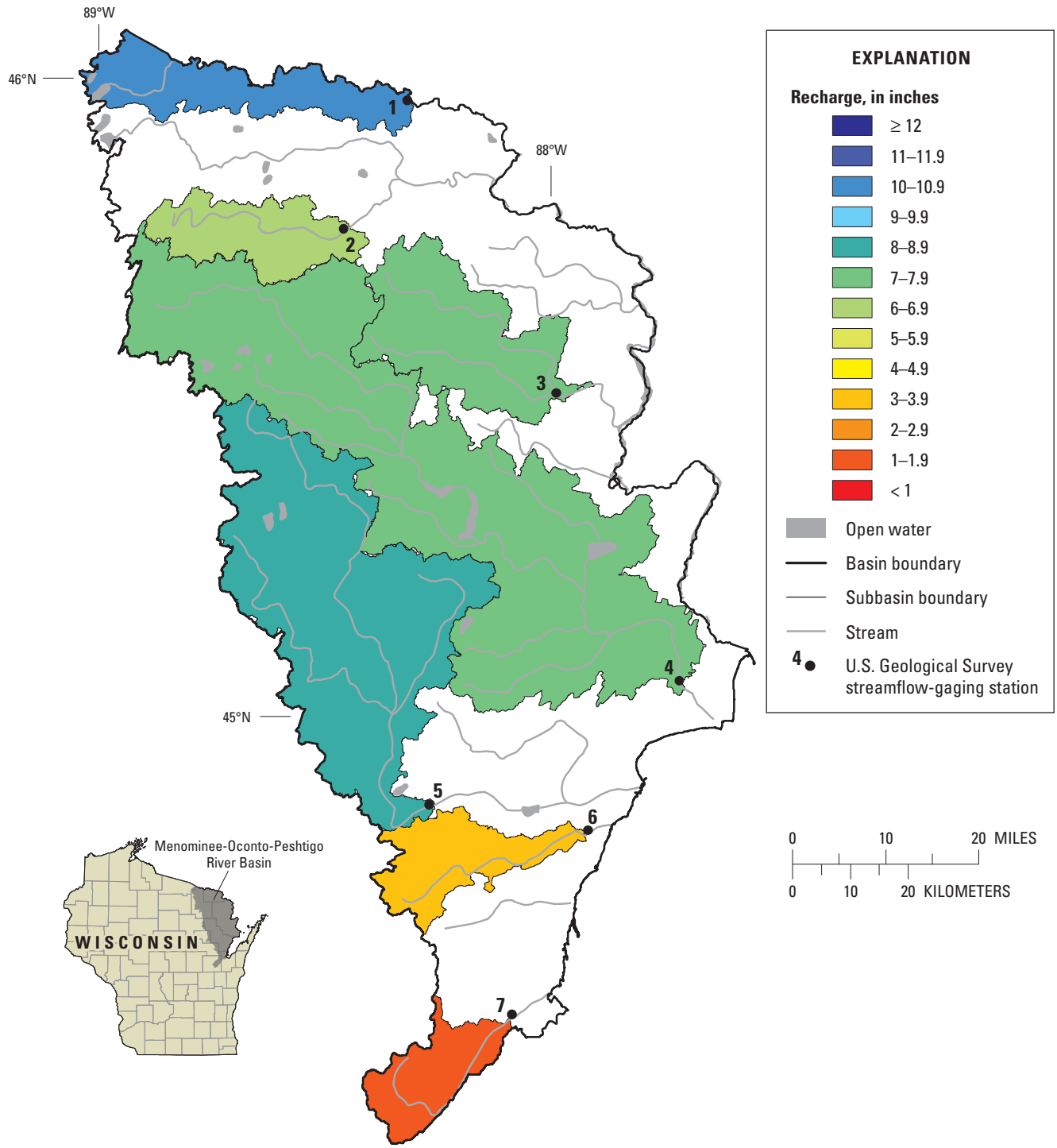
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[a]	Drainage area (mi²)	Baseflow factor (ft³/s/mi²)	Baseflow method	Baseflow (ft³/s)	Recharge (inches)
47	05393194	Scott Ck at Tripoli	45°33'44"	90°00'27"	05393500	11.3	0.0885	equation	3.0	3.7
48	05393200	Somo R nr Tripoli	45°32'20"	89°58'10"	05393500	43.5	.1230	relation	12.0	3.7
49	05393360	Johnson Ck nr Tomahawk	45°31'33"	89°52'03"	05393500	6.41	.0588	equation	1.4	2.9
50	05393380	Hay Ck nr Tomahawk	45°30'39"	89°49'17"	05393500	3.99	.0218	equation	.5	1.7
51	05393402	Spirit R nr Spirit	45°24'01"	90°05'22"	05393500	22	.1943	equation	9.1	5.6
52	05393440	N Fk Spirit R nr Spirit	45°28'04"	90°05'38"	05393500	10.5	.0718	equation	2.5	3.3
53	05393450	Knox Ck nr Spirit	45°29'34"	90°06'16"	05393500	7.07	.0369	equation	1.2	2.3
54	05393460	N Fk Spirit R nr Spirit	45°27'14"	90°02'24"	05393500	22.8	.0559	equation	4.9	2.9
55	05393480	Ritchie Ck nr Spirit	45°27'11"	90°01'18"	05393500	7.15	.1115	equation	2.2	4.1
56	05393520	Squaw Ck at Spirit Falls	45°27'23"	89°58'27"	05393500	19.7	.1010	relation	5.4	3.7
57	05393560	Armstrong Ck nr Tomahawk	45°26'23"	89°50'58"	05393500	13	.0410	relation	4.5	4.7
58	05393572	Coffee Ck nr Tomahawk	45°25'29"	89°48'30"	05393500	4.68	.0372	equation	.8	2.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

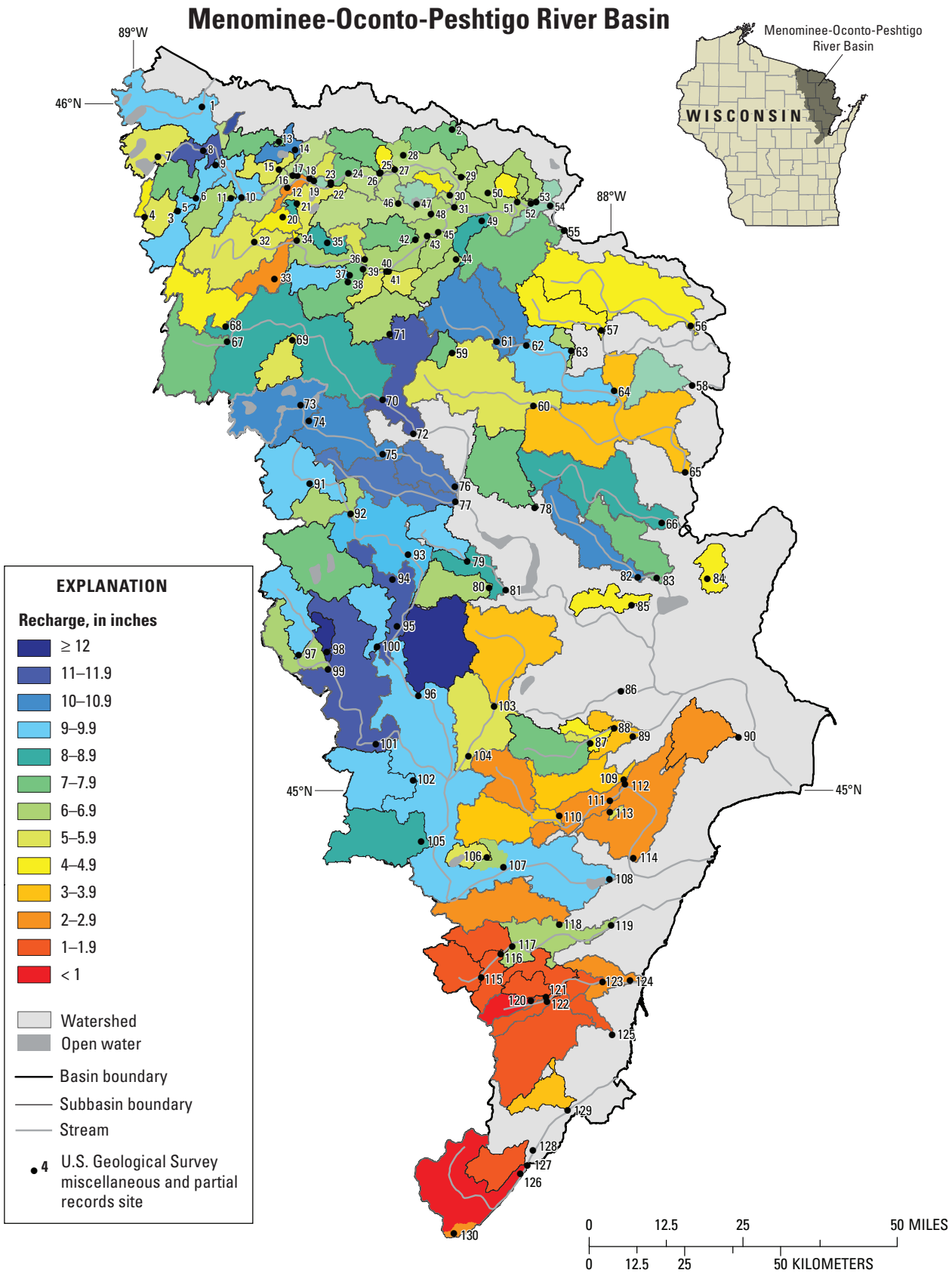
[2] Mismatch between surface-water and ground-water drainage area.

[3] Recharge likely altered by regulation.

Menominee-Oconto-Peshtigo River Basin



Appendix 5–*A*. Locations of streamflow-gaging stations in the Menominee-Oconto-Peshtigo River Basin and spatial distribution of average annual recharge.



Appendix 5–*B*. Locations of miscellaneous and partial-record sites in the Menominee-Oconto-Peshtigo River Basin and spatial distribution of estimated average annual recharge.

Appendix 5*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Menominee-Oconto-Peshtigo River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total streamflow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	04060993	Brule R nr Florence	366	1970–1999	BFI	0.8130	280	10.5	350	13.1	120
2	04063700	Popple R nr Fence	139	1970–1999	BFI	.5980	68	6.6	120	11.2	33
3	04066500	Pike R at Amberg	255	1914–1970	ex rec	--	140	7.5	--	--	98
4	04069500	Peshtigo R at Peshtigo	1,080	1970–1999	BFI	.6350	600	7.6	950	12.0	370
5	04071000	Oconto R nr Gillett	705	1970–1999	BFI	.7710	450	8.7	590	11.3	276
6	04071858	Pensaukee R nr Pensaukee	134	1973–1996	BFI	.3370	31	3.1	92	9.3	6.3
7	04072150	Duck Ck nr Howard	108	1970–1999	ex rec	--	12	1.5	--	--	--

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	04059800	Brule Ck nr Alvin	45°59'36"	88°51'44"	04063700	35.6	0.4800	relation	26.0	9.9
2	04060990	Montagne Ck nr Florence	45°57'13"	88°20'25"	04063700	14.6	.3000	relation	7.8	7.3
3	040636005	Pine R above Kimball Ck	45°50'30"	88°54'56"	04063700	15.3	.1078	equation	4.6	4.1
4	04063602	Kimball Ck nr Three Lks	45°50'01"	88°59'03"	04063700	3.09	.1654	equation	1.1	4.9
5	04063604	Kimball Ck at Mouth nr Three Lks	45°50'32"	88°54'56"	04063700	13.2	.1645	equation	4.9	5.1
6	04063611	Mcdonald Ck at Mouth	45°51'38"	88°52'36"	04063700	13.5	.3518	equation	7.5	7.5
7	04063635	N Br Pine R nr Alvin	45°54'16"	88°52'17"	04063700	12.6	.1871	equation	5.0	5.4
8	04063640	N Br Pine R nr Windsor Dam	45°55'43"	88°51'38"	04063700	27.8	.2530	relation	18.0	8.8
9	04063643	Pine R Below N Br nr Alvin	45°54'32"	88°50'05"	04063700	86	--	relation	62.0	9.8
10	04063646	Pine R nr Alvin	45°51'39"	88°46'55"	04063700	93.3	.2675	equation	46.7	6.8
11	04063648	Jones Ck nr Alvin	45°51'34"	88°48'16"	04063700	13.6	.2298	equation	6.0	6.0
12	04063653	Pine R nr Long Lk	45°52'26"	88°41'10"	04063700	127	--	relation	85.0	9.1
13	040636535	Lilypad Ck nr Tipler	45°56'29"	88°42'06"	04063700	10	.3470	equation	5.5	7.4
14	04063654	Stevens Ck nr Tipler	45°55'43"	88°40'08"	04063700	18.2	--	relation	12.0	9.0
15	040636545	Meadowbrook Ck nr Tipler	45°54'00"	88°42'12"	04063700	8.98	.2102	equation	3.8	5.7
16	04063655	Stevens Ck nr Long Lk	45°53'29"	88°40'29"	04063700	30.9	.2430	equation	14.4	6.3
17	040636555	Pine R Tr nr Tipler	45°53'26"	88°39'53"	04063700	3.97	.0614	equation	.9	3.0
18	04063656	Johnson Ck nr Tipler	45°53'09"	88°38'21"	04063700	7.95	.2340	equation	3.5	6.0
19	04063657	Pine R nr Tipler	45°52'57"	88°37'51"	04063700	171	.2783	equation	88.4	7.0
20	040636575	Coldwater Ck	45°49'51"	88°41'49"	04063700	3.59	.1399	equation	1.2	4.5
21	04063658	Long Lk Outlet at Long Lk	45°50'00"	88°40'04"	04063700	10.1	.2983	equation	5.1	6.9
22	04063659	Fay Lk Outlet nr Tipler	45°52'37"	88°35'42"	04063700	22.2	.2327	equation	10.0	6.1
23	040636595	Pine R Tr nr Tipler	45°52'49"	88°35'45"	04063700	4.16	.1690	equation	1.5	5.0
24	04063660	Pine R nr Tipler	45°53'37"	88°33'30"	04063700	204	--	relation	119.0	7.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	04063663	Lautermans Ck nr Tipler	45°53'36"	88°29'30"	04063700	14.5	0.0297	equation	2.2	2.1
26	04063664	Pine R nr Tipler	45°53'34"	88°29'38"	04063700	227	.2362	equation	108.4	6.5
27	040636645	Kieper Ck nr Florence	45°53'50"	88°27'42"	04063700	3.06	.1532	equation	1.1	4.7
28	04063665	Wakefield Ck nr Florence	45°55'02"	88°26'35"	04063700	2.58	.2495	equation	1.2	6.1
29	04063668	Pine R Tr nr Florence	45°53'04"	88°19'26"	04063700	7.43	.2452	equation	3.4	6.2
30	04063669	Seidel Ck nr Fence	45°51'29"	88°20'54"	04063700	4.37	.1546	equation	1.5	4.8
31	04063671	Pine R nr Florence	45°50'26"	88°20'22"	04063700	266	.2365	equation	127.5	6.5
32	04063672	Popple R nr Newald	45°47'45"	88°45'26"	04063700	36.5	.1703	equation	14.2	5.3
33	040636725	Little Popple R at Newald	45°44'27"	88°43'00"	04063700	9.29	.0560	equation	2.0	2.9
34	04063674	Popple R nr Long Lk	45°47'47"	88°40'05"	04063700	58.8	.1407	equation	20.9	4.8
35	04063677	Riley Ck nr Long Lk	45°47'34"	88°36'20"	04063700	2.22	.4250	equation	1.3	8.0
36	04063680	Popple R nr Fence	45°46'00"	88°31'40"	04063700	85.4	.1550	relation	38.0	6.0
37	04063690	S Br Popple R nr Fence	45°44'40"	88°33'35"	04063700	12.3	.3600	relation	9.0	9.9
38	04063693	Simpsons Ck nr Fence	45°44'05"	88°33'50"	04063700	15.4	.3382	equation	8.4	7.4
39	04063695	S Br Popple R nr Fence	45°45'13"	88°31'54"	04063700	32.1	.3170	equation	17.2	7.3
40	04063697	Rock Ck nr Fence	45°44'59"	88°29'00"	04063700	6.53	.3206	equation	3.4	7.1
41	04063699	Mud Ck nr Fence	45°44'58"	88°28'00"	04063700	7.55	.2090	equation	3.2	5.7
42	04063710	Hendricks Ck nr Fence	45°47'42"	88°25'17"	04063700	13	.3304	equation	7.0	7.3
43	04063720	Popple R nr Florence	45°48'00"	88°23'48"	04063700	161	.2357	equation	76.2	6.4
44	04063740	Lamon Tangue Ck nr Fence	45°45'53"	88°20'17"	04063700	14.4	.2972	equation	7.3	6.9
45	04063752	Lamon Tangue Cr nr Fence	45°48'17"	88°22'24"	04063700	24.1	.2717	equation	11.8	6.7
46	04063780	Haley Cr nr Fence	45°50'50"	88°27'19"	04063700	5.32	.2811	equation	2.6	6.6
47	04063790	Patten Cr nr Fence	45°50'46"	88°25'02"	04063700	5.67	.3183	equation	2.9	7.0
48	04063800	Woods Cr nr Fence	45°49'53"	88°23'17"	04066500	41.9	.3300	relation	20.5	6.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
49	04064200	Halls Cr nr Florence	45°49'11"	88°16'57"	04063700	6.7	0.4125	equation	4.0	8.1
50	04064400	Pine R Tr nr Florence	45°51'37"	88°16'09"	04063700	7.77	.2522	equation	3.6	6.3
51	04064525	Johnson Cr nr Florence	45°50'46"	88°12'28"	04063700	4.63	.1169	equation	1.4	4.2
52	04064550	Pine Cr nr Florence	45°50'39"	88°10'46"	04063700	5.64	.0763	equation	1.4	3.3
53	04064580	Lepage Cr nr Spread Eagle	45°50'45"	88°10'09"	04063700	9.84	.2775	equation	4.8	6.6
54	04064600	Pine R nr Spread Eagle	45°50'24"	88°08'24"	04063700	563	.2693	equation	293.0	7.1
55	04064900	Little Popple R at Mouth nr Aurora	45°48'11"	88°06'43"	04066500	41.3	.3076	equation	21.9	7.2
56	04065950	N Br Pemebonwon R nr Pembine	45°39'36"	87°51'15"	04066500	77.5	.1401	equation	27.6	4.8
57	04065970	S Br Pemebonwon R nr Pembine	45°39'23"	88°02'25"	04066500	26.1	.1360	relation	8.5	4.4
58	04066015	Miscauno Ck nr Pembine	45°34'24"	87°51'17"	04066500	20.4	.3377	equation	11.2	7.4
59	04066050	Chemical Ck at Goodman	45°37'43"	88°21'00"	04066500	4.66	.2500	relation	2.5	7.3
60	04066250	S Br Pike R nr Dunbar	45°32'59"	88°11'03"	04066500	79.9	--	relation	35.0	6.0
61	04066280	N Br Pike R nr Goodman	45°38'38"	88°15'00"	04066500	33.5	.6856	equation	26.8	10.9
62	04066290	N Br Pike R nr Dunbar	45°38'16"	88°11'00"	04066500	57.2	.6588	equation	45.3	10.8
63	04066300	Cole Ck nr Dunbar	45°37'42"	88°06'09"	04066500	3.62	.1100	relation	1.7	6.4
64	04066400	N Br Pike R nr Amberg	45°34'06"	88°01'00"	04066500	107	.5584	equation	78.7	10.0
65	04066550	Pike R nr Wausaukee	45°26'49"	87°52'25"	04066500	287	.3604	equation	171.5	8.1
66	04066690	Wausaukee R nr Wausaukee	45°22'26"	87°55'28"	04066500	52.9	.3766	equation	31.3	8.0
67	04067690	S Br Peshtigo R nr Argonne	45°39'02"	88°49'00"	04066500	38.5	.3499	equation	21.8	7.7
68	04067700	N Br Peshtigo R nr Argonne	45°40'22"	88°49'07"	04066500	33.6	.2300	relation	12.0	4.9
69	04067750	Camp Eight Ck nr Cavour	45°39'06"	88°40'52"	04066500	13.6	.1940	relation	6.0	6.0
70	04067790	Peshtigo R nr Asmstrong Ck	45°33'44"	88°29'44"	04066500	203	.3337	equation	115.7	7.7
71	04067800	Armstrong Ck nr Armstrong Ck	45°39'29"	88°28'44"	04063700	23.2	.2300	relation	10.4	6.1
72	04067840	Peshtigo R nr Blackwell	45°30'42"	88°26'00"	04066500	268	.3631	equation	160.5	8.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
73	04067882	Rat R at Laona	45°33'27"	88°40'00"	04066500	32	0.5500	relation	25.0	10.6
74	04067890	Rat R nr Laona	45°31'59"	88°39'00"	04066500	42.8	.6785	equation	34.2	10.9
75	04067900	Rat R nr Wabeno	45°29'00"	88°29'52"	04066500	82.1	.6410	relation	66.0	10.9
76	04067920	Rat R nr Wabeno	45°26'04"	88°21'00"	04066500	105	.6096	equation	80.8	10.5
77	04067950	Otter Ck nr Lkwood	45°24'44"	88°21'00"	04066500	32.1	.5937	equation	23.8	10.1
78	04067990	Eagle Ck nr athelstane	45°24'04"	88°11'10"	04066500	37.5	.2620	relation	22.0	8.0
79	04068100	N Fk Thunder R nr Lkwood	45°19'31"	88°19'40"	04066500	17	.4760	relation	11.5	9.2
80	04068190	S Fk Thunder R nr Mountain	45°17'09"	88°17'00"	04066500	21	.2882	equation	10.6	6.9
81	04068200	Thunder R nr Lkwood	45°16'58"	88°15'00"	04066500	53.5	.4689	equation	35.4	9.0
82	04069200	Middle Inlet at Middle Inlet	45°17'47"	87°58'37"	04066500	32.6	.6339	equation	25.0	10.4
83	04069290	Middle Inlet nr Middle Inlet	45°17'38"	87°56'16"	04066500	59.2	.4570	relation	33.0	7.6
84	04069295	Upper Inlet nr Mcallister	45°17'29"	87°50'01"	04066500	7.35	.1575	equation	2.7	4.9
85	04069297	Smith Ck nr Crivitz	45°15'21"	87°59'29"	04066500	11.3	--	relation	4.1	4.9
86	04069350	S Br Beaver Ck at Beaver	45°07'50"	88°01'02"	04066500	51	.3010	relation	25.0	6.7
87	04069380	Little Peshtigo R nr Colman	45°03'23"	88°05'00"	04071000	21.3	.3521	equation	11.9	7.6
88	04069387	Little Peshtigo R at Coleman	45°04'39"	88°02'00"	04071000	34.3	.2090	relation	12.2	4.8
89	04069390	Little Peshtigo R nr Coleman	45°03'54"	87°59'44"	04071000	41.6	.2180	relation	14.0	4.6
90	04069480	Trout Ck nr Peshtigo	45°03'35"	87°46'44"	04071000	24.4	.0309	equation	3.9	2.2
91	04069690	N Br Oconto R at Wabeno	45°26'32"	88°39'00"	04071000	31.3	--	relation	22.0	9.5
92	04069800	N Br Oconto R nr Carter	45°23'50"	88°34'00"	04071000	58.2	.3995	equation	35.5	8.3
93	04069900	N Br Oconto R nr Lkwood	45°20'13"	88°27'00"	04071000	98.3	.5558	equation	72.0	9.9
94	04070063	Mccaslin Bk nr Lkwood	45°18'04"	88°29'00"	04071000	53.1	.3200	relation	28.0	7.2
95	04070100	N Br Oconto R nr Mountain	45°13'57"	88°28'30"	04071000	174	.5240	relation	150.0	11.7
96	04070300	Waupee Ck nr Mountain	45°07'52"	88°26'01"	04071000	51.4	.3380	relation	26.5	7.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
97	04070420	S Br Oconto R nr Langlade	45°11'34"	88°40'00"	04071000	24	0.5432	equation	16.9	9.6
98	04070600	Hills Pond Ck nr Langlade	45°11'50"	88°37'15"	04071000	8.92	.9280	relation	12.5	[2]19.0
99	04070606	S Br Oconto R nr Boulder Lk	45°10'17"	88°37'07"	04071000	50.47	.6024	equation	38.0	10.2
100	04070680	1st S Br Oconto R nr Mountain	45°12'14"	88°31'00"	04071000	20.2	.5389	equation	14.1	9.5
101	04070720	S Br Oconto R nr Breed	45°03'40"	88°31'24"	04071000	143	.6156	equation	111.3	10.6
102	04070800	Pecore Ck nr Hayes	45°00'28"	88°26'55"	04071000	31.2	.3930	relation	21.0	9.1
103	04070850	Peshtigo Bk nr Suring	45°06'48"	88°16'00"	04071000	60.5	.0920	equation	17.2	3.9
104	04070860	Peshtigo Bk nr Suring	45°02'31"	88°20'00"	04071000	109	.1227	equation	36.5	4.5
105	04070950	Linzy Ck nr Underhill	44°55'09"	88°26'00"	04071000	35.8	.4699	equation	23.6	8.9
106	04071090	Christie Ck at Gillett	44°53'38"	88°18'00"	04071000	7.27	.1330	relation	2.7	5.0
107	04071100	Christie Ck nr Gillett	44°52'43"	88°16'00"	04071000	12.7	.1908	equation	5.1	5.5
108	04071500	Oconto R at Stiles	44°51'31"	88°03'00"	04071000	771	.3879	equation	488.1	8.6
109	04071703	Little R nr Lena	45°00'09"	88°01'00"	04071000	23.2	.0719	equation	5.7	3.3
110	04071720	Kelly Bk nr Oconto Falls	44°57'05"	88°09'00"	04071000	57.9	.0959	equation	16.8	3.9
111	04071730	Kelly Bk nr Lena	44°58'22"	88°12'45"	04071000	80	.0660	relation	15.0	2.5
112	04071733	Kelly Bk nr Lena	44°59'24"	88°01'00"	04071000	81.44	.0461	equation	16.3	2.7
113	04071746	Little R atLena, Little R Tr at Lena	44°57'23"	88°02'00"	04071000	2.41	.2027	equation	1.0	5.5
114	04071760	Little R nr Stiles	44°53'19"	88°00'00"	04071000	170	.0542	equation	37.5	3.0
115	04071788	Pensaukee R nr Zachow	44°43'09"	88°19'00"	04071000	19.3	.1000	relation	2.5	1.8
116	04071795	Pensaukee R nr Krakow	44°45'09"	88°16'35"	04071000	35.8	.0167	equation	4.1	1.6
117	04071800	Pensaukee R nr Pulaski	44°45'48"	88°15'07"	04071000	48.8	--	relation	6.0	1.7
118	04071843	N Br Pensaukee R nr Sampson	44°47'36"	88°09'18"	04071000	39.9	.0453	equation	7.8	2.7
119	04071850	Pensaukee R nr Abrams	44°47'28"	88°02'56"	04071000	116	.0600	relation	27.0	3.2
120	04071888	Little Suamico R nr Pulaski	44°41'03"	88°12'58"	04071000	9.73	--	relation	.7	1.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

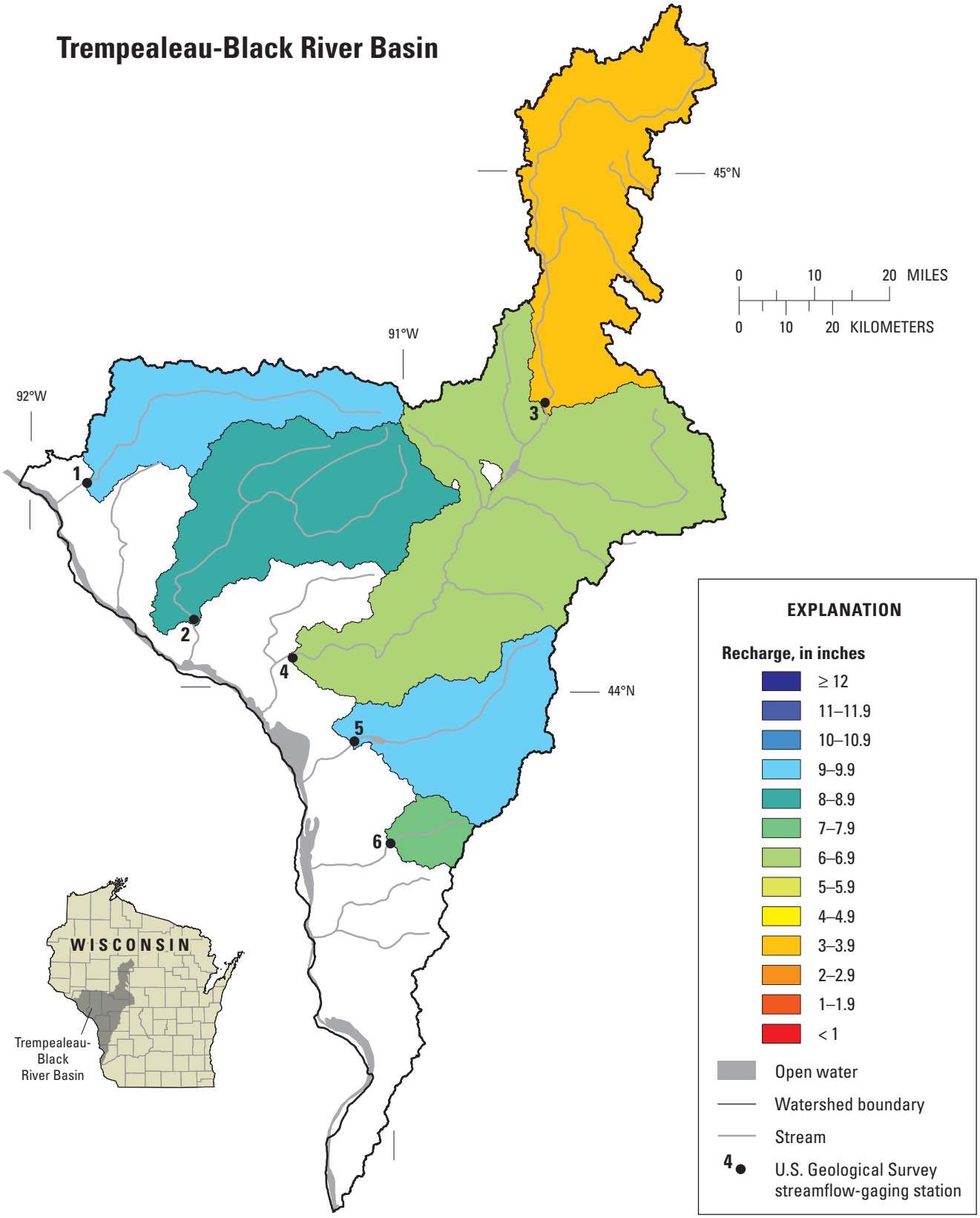
Appendix 5*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Menominee-Oconto-Peshtigo River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

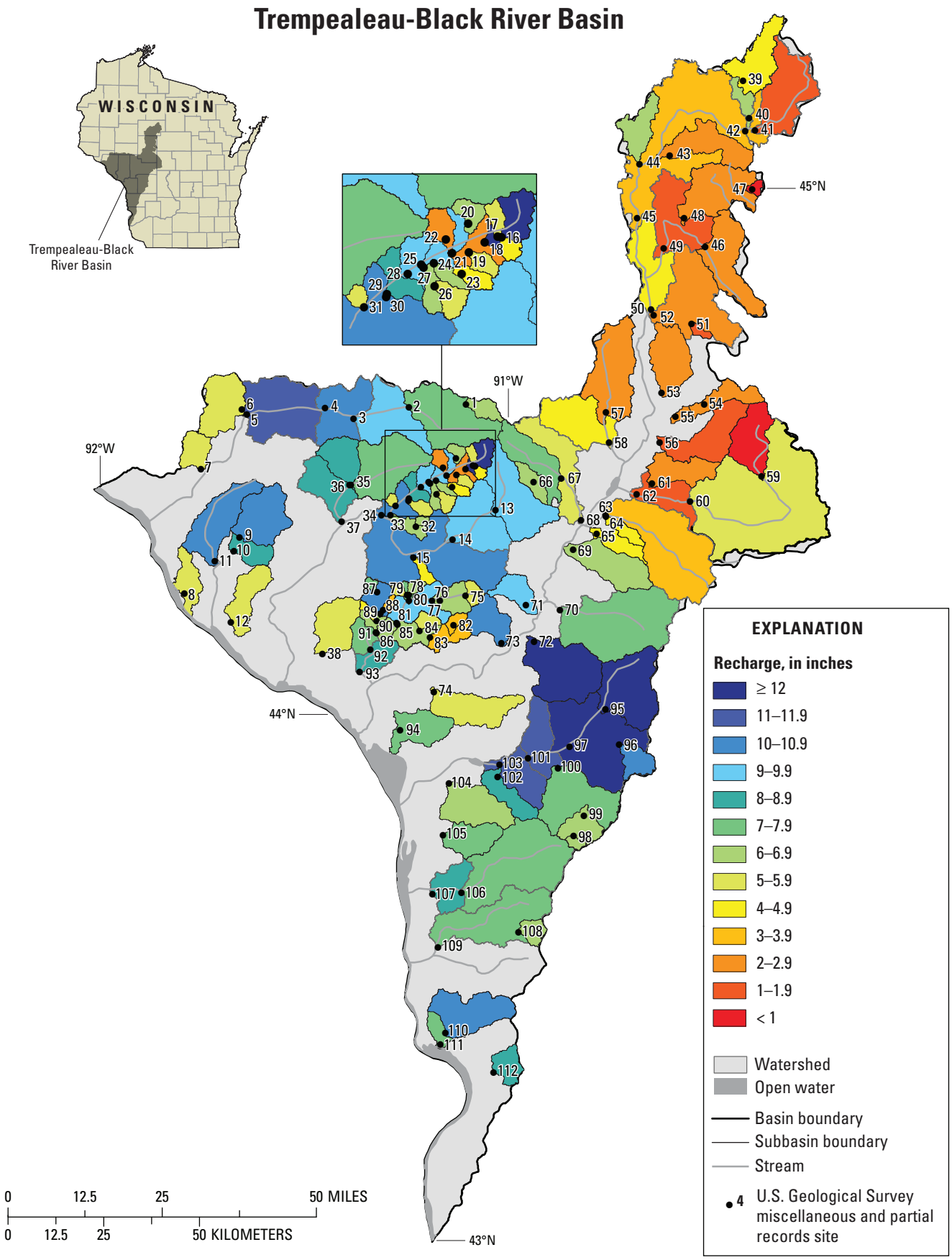
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
121	04071894	Little Suamico R Tr nr Pulaski	44°41'17"	88°11'06"	04071000	9.05	0.0126	equation	0.9	1.3
122	04071899	Little Suamico R Tr nr Pulaski	44°40'57"	88°11'02"	04071000	6.87	.0180	equation	.8	1.6
123	04071906	Little Suamico R nr Sobieski	44°42'34"	88°04'09"	04071000	45.9	--	relation	4.4	1.3
124	04071915	Little Suamico R at Little Suamico	44°42'38"	88°00'48"	04071000	59.5	.0165	equation	6.9	1.6
125	04072000	Suamico R at Suamico	44°37'55"	88°03'09"	04071000	55.64	.0440	relation	6.2	1.5
126	04072036	Duck Ck nr Freedom	44°25'55"	88°14'45"	04071000	24	.0050	equation	1.5	.8
127	04072041	Duck Ck Tr nr Oneida	44°26'40"	88°13'53"	04071000	17.1	.0122	equation	1.7	1.3
128	04072050	Duck Ck nr Oneida	44°27'57"	88°13'08"	04071000	95.5	.0030	relation	1.6	.2
129	04072175	Trout Ck nr Oneida	44°31'24"	88°08'48"	04071000	14.9	.0687	equation	3.5	3.2
130	04084426	Mud Ck at Appleton	44°20'53"	88°23'00"	04071000	10.4	.0453	equation	2.0	2.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 6–*A*. Locations of streamflow-gaging stations in the Trempealeau-Black River Basin and spatial distribution of average annual recharge.



Appendix 6–*B*. Locations of miscellaneous and partial-record sites in the Trempealeau-Black River Basin and spatial distribution of estimated average annual recharge.

Appendix 6*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Trempealeau-Black River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	05372000	Buffalo R nr Tell	406	1970–1999	ex rec	--	270	9.0	--	--	140
2	05379500	Trempealeau R at Dodge	643	1970–1999	BFI	0.7590	400	8.5	530	11.3	200
3	05381000	Black R at Neillsville	749	1970–1999	BFI	.3130	200	3.7	660	12.0	54
4	05382000	Black R nr Galesville	2080	1970–1999	BFI	.5390	1,000	6.7	2,000	12.8	510
5	05383000	La Crosse R nr W Salem	396	1915–1970	ex rec	--	280	9.7	--	--	180
6	05386500	Coon Ck at Coon Valley	77.2	1936–1940; 1979–1981	ex rec	--	45	7.9	--	--	31

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 6*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Trempealeau-Black River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
1	05371798	N Fk Buffalo R nr Osseo	44°35'07"	91°05'40"	05379500	8.93	0.2748	equation	4.3	6.6
2	05371830	Buffalo R at Osseo	44°34'41"	91°14'48"	05379500	72.8	--	relation	41.9	7.8
3	05371850	Buffalo R at Strum	44°33'16"	91°23'36"	05379500	123	--	relation	90.2	10.0
4	05371860	Buffalo R at Eleva	44°34'26"	91°28'09"	05379500	165	--	relation	121.8	10.0
5	05371895	Buffalo R at Mondovi	44°33'35"	91°40'38"	05379500	238	--	relation	184.9	10.6
6	05371910	Harvey Ck at Mondovi	44°34'06"	91°41'27"	05379500	36.9	.2000	equation	15.6	5.7
7	05371960	Tamarack Ck at Mondovi	44°27'14"	91°47'48"	05379500	15.4	.2149	equation	6.6	5.8
8	05377700	Cochrane Ditch at Cochrane	44°12'57"	91°49'59"	05379500	17.7	--	relation	7.3	5.6
9	05378050	Waumandee Ck nr Waumandee	44°19'34"	91°41'22"	05379500	41.6	--	relation	32.7	10.7
10	05378060	Waumandee Ck at Waumandee	44°17'54"	91°42'14"	05379500	56.1	.4613	equation	36.9	8.9
11	05378100	Little Waumandee Ck nr Cream	44°16'42"	91°45'17"	05379500	46.2	.3940	relation	35.3	10.4
12	05378200	Eagle Ck nr Fountain City	44°09'49"	91°42'28"	05379500	26.6	.3500	relation	11.0	5.6
13	05379180	Trempealeau R at Hixton	44°23'07"	91°00'48"	05379500	57.6	--	relation	39.2	9.2
14	05379200	Trempealeau R at Taylor	44°19'38"	91°07'30"	05379500	110	.3720	relation	74.0	9.1
15	05379212	Tappen Coulee at Blair	44°17'31"	91°13'42"	05379500	4.48	--	relation	1.5	4.5
16	05379220	Lyons Ck nr Nfield	44°28'06"	91°04'07"	05379500	2.18	.1444	equation	.7	4.6
17	05379224	Ellison Coulee nr Nfield	44°28'07"	91°04'29"	05379500	2.49	.2140	equation	1.0	5.6
18	05379226	Pigeon Ck at Nfield	44°27'44"	91°05'40"	05379500	13.9	.5977	equation	10.2	9.9
19	05379228	May Coulee nr York	44°27'02"	91°07'05"	05379500	2.85	.1990	equation	1.1	5.4
20	05379230	Beaver Ck nr Nfield	44°28'55"	91°07'13"	05379500	3.38	.3036	equation	1.7	6.8
21	05379232	Beaver Ck at York	44°26'59"	91°08'39"	05379500	6.58	.3702	equation	3.7	7.6
22	05379234	Pigeon Ck at York	44°27'52"	91°09'13"	05379500	33.7	.4059	equation	20.5	8.3
23	05379238	Schermerhorn Ck nr York	44°25'39"	91°07'45"	05379500	3.06	.1281	equation	1.0	4.3
24	05379240	Schermerhorn Ck nr York	44°26'20"	91°10'17"	05379500	6.06	.2010	equation	2.5	5.5
25	05379242	Pigeon Ck nr Pigeon Falls	44°26'12"	91°11'27"	05379500	43.5	.4782	equation	29.0	9.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 6*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Trempealeau-Black River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
26	05379244	Big Slough nr Pigeon Falls	44°24'49"	91°10'11"	05379500	4.67	0.1752	equation	1.8	5.1
27	05379248	Big Slough nr Pigeon Falls	44°26'02"	91°11'16"	05379500	8.53	.2031	equation	3.5	5.6
28	05379249	Pigeon Ck at Pigeon Falls	44°25'36"	91°12'41"	05379500	58.4	--	relation	42.5	9.9
29	05379254	Pigeon Ck nr Pigeon Falls	44°24'15"	91°14'33"	05379500	65.6	.4432	equation	42.4	8.8
30	05379260	Fitch Coulee nr Pigeon Falls	44°24'03"	91°14'37"	05379500	5.11	.2266	equation	2.2	5.9
31	05379263	Thompson Coulee nr Whitehall	44°23'14"	91°16'33"	05379500	2.06	.2239	equation	.9	5.7
32	05379268	Fly Ck nr Blair	44°21'07"	91°13'24"	05379500	2.39	.2513	equation	1.1	6.1
33	05379275	Fly Ck nr Whitehall	44°22'23"	91°17'29"	05379500	9.54	.2372	equation	4.3	6.1
34	05379276	Trempealeau R at Whitehall	44°22'19"	91°18'57"	05379500	323	--	relation	219.0	9.2
35	05379296	Elk Ck nr Independence	44°25'46"	91°23'49"	05379500	56.2	.3174	equation	30.4	7.4
36	05379300	Elk Ck at Elk Ck	44°25'43"	91°24'02"	05379500	80.2	.2190	relation	50.0	8.5
37	05379320	Elk Ck at Independence	44°21'30"	91°25'11"	05379500	113	--	relation	67.0	8.1
38	05379550	Tamarack Ck nr Galesville	44°06'25"	91°27'54"	05379500	34.6	.1682	equation	13.3	5.2
39	05380801	Black R nr Whittlesey	45°12'21"	90°21'43"	05381000	34.8	.1034	equation	10.4	4.1
40	05380807	Black R at Medford	45°08'04"	90°20'41"	05381000	48.1	--	relation	21.5	6.1
41	05380820	Little Black R nr Medford	45°06'41"	90°19'45"	05381000	54.7	.0170	equation	6.9	1.7
42	05380825	Black R nr Medford	45°06'34"	90°21'17"	05381000	114	.0833	equation	31.2	3.7
43	05380870	Pine Ck nr Medford	45°03'44"	90°33'24"	05381000	36.7	.0230	relation	6.2	2.3
44	05380880	Mckenzie Ck nr Lublin	45°02'45"	90°38'20"	05381000	22.4	--	relation	10.3	6.2
45	05380886	Black R nr Withee	44°56'33"	90°38'35"	05381000	324	.0810	equation	89.3	3.7
46	05380889	S Fk Poplar R nr Riplingler	44°53'23"	90°27'37"	05381000	49.1	.0266	equation	7.3	2.0
47	05380891	N Fk Poplar R at Dorchester	44°59'55"	90°20'08"	05381000	2.41	--	relation	.1	.4
48	05380895	N Fk Poplar R nr Owen	44°56'37"	90°31'04"	05381000	52.6	--	relation	9.0	2.3
49	05380900	Poplar R nr Owen	44°53'10"	90°34'17"	05381000	155	.0460	relation	21.0	1.8
50	05380915	Black R at Greenwood	44°46'12"	90°36'18"	05381000	527	--	relation	177.0	4.6
51	05380945	Bear Ck at Loyal	44°44'32"	90°29'45"	05381000	3.32	--	relation	.4	1.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 6*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Trempealeau-Black River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
52	05380950	Rock Ck at Greenwood	44°45'30"	90°35'52"	05381000	77	--	relation	16.3	2.9
53	05380970	Cawley Ck nr Neillsville	44°36'41"	90°34'29"	05381000	38.2	0.0520	relation	7.2	2.6
54	05380985	S Br O'Neill Ck at Granton	44°35'25"	90°27'40"	05381000	16.4	--	relation	2.8	2.3
55	05380990	S Br O'Neill Ck nr Neillsville	44°33'59"	90°32'14"	05381000	22.5	--	relation	3.8	2.3
56	05381055	Cunningham Ck nr Neillsville	44°31'01"	90°34'42"	05381000	44.4	.0121	equation	4.4	1.3
57	05381090	Wedges Ck nr Neillsville	44°34'24"	90°43'21"	05381000	61.2	.0489	equation	12.5	2.8
58	05381110	Wedges Ck nr Neillsville	44°30'58"	90°42'46"	05381000	110	--	relation	37.8	4.7
59	05381150	E Fk Black R nr Pittsville	44°27'12"	90°18'28"	05381000	37	.0050	equation	2.3	.8
60	05381167	E Fk Black R nr Pray	44°24'15"	90°29'51"	05381000	238	--	relation	88.5	5.1
61	05381170	Rock Ck nr Neillsville	44°26'21"	90°35'54"	05402000	27.3	.0480	equation	5.5	2.7
62	05381173	E Fk Black R nr Hatfield	44°25'04"	90°38'22"	05381000	292	.0197	equation	38.5	1.8
63	05381240	Morrison Ck nr Hatfield	44°22'40"	90°43'16"	05379500	104	.0685	equation	25.7	3.4
64	05381250	Hay Ck nr Hatfield	44°22'29"	90°43'14"	05379500	7.83	.1206	equation	2.5	4.3
65	05381260	Dickey Ck nr Hatfield	44°20'30"	90°44'41"	05379500	11.9	.1238	equation	3.8	4.4
66	05381283	S Fk Halls Ck at Alma Center	44°26'24"	90°54'44"	05379500	8.91	--	relation	4.1	6.3
67	05381285	Halls Ck at Merrillan	44°26'50"	90°50'22"	05379500	47.2	--	relation	25.0	7.2
68	05381290	Halls Ck nr Black R Falls	44°22'01"	90°47'10"	05379500	89.3	.1837	equation	36.7	5.6
69	05381350	Levis Ck nr Black R Falls	44°18'42"	90°48'23"	05379500	39	.1860	relation	19.5	6.8
70	05381400	Robinson Ck nr Black R Falls	44°11'48"	90°50'21"	05379500	108	.3401	equation	61.4	7.7
71	05381420	Trout Run nr Melrose	44°12'18"	90°55'49"	05379500	13.7	.5232	equation	9.3	9.3
72	05381450	Big Ck nr Cataract	44°08'08"	90°54'26"	05383000	64.6	.6030	relation	57.8	12.2
73	05381495	Douglas Ck at Melrose	44°07'56"	90°59'35"	05379500	22.8	--	relation	16.9	10.1
74	05381800	Fleming Ck at Stevenstown	44°02'17"	91°10'09"	05379500	39.5	.3060	relation	16.1	5.5
75	05382010	Beaver Ck nr Taylor	44°13'16"	91°05'22"	05379500	5.62	.1811	equation	2.2	5.2
76	05382022	Beaver Ck nr Hegg	44°12'43"	91°09'26"	05379500	17.8	.2166	equation	7.7	5.9
77	05382027	N Fk Beaver Ck at Hegg	44°12'38"	91°10'40"	05379500	20.1	.2429	equation	9.3	6.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 6*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Trempealeau-Black River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
78	05382044	Bear Ck nr Beachs Corners	44°13'21"	91°14'21"	05379500	3.01	0.3065	equation	1.5	6.8
79	05382048	Bear Ck Tr nr Beachs Corners	44°13'16"	91°14'37"	05379500	2.53	.1789	equation	1.0	5.1
80	05382051	Bear Ck at Beaches Corners	44°12'37"	91°14'21"	05379500	7.21	.2632	equation	3.4	6.4
81	05382060	N Fk Beaver Ck at Ettrick	44°10'03"	91°16'13"	05379500	50.8	--	relation	37.0	9.9
82	05382071	German Coulee nr N Bend	44°09'56"	91°07'10"	05379500	2.67	.0937	equation	.7	3.7
83	05382080	S Fk Beaver Ck nr N Bend	44°08'28"	91°10'54"	05379500	15.4	.0896	equation	4.2	3.7
84	05382087	S Fk Beaver Ck Tr nr Ettrick	44°09'12"	91°12'36"	05379500	5.3	.1980	equation	2.1	5.5
85	05382100	S Fk Beaver Ck at Ettrick	44°09'55"	91°16'05"	05379500	33.4	.1640	relation	12.5	5.1
86	05382120	Beaver Ck nr Ettrick	44°08'52"	91°19'21"	05379500	90.9	.2547	equation	44.3	6.6
87	05382130	French Ck nr Ettrick	44°13'32"	91°19'25"	05379500	2.13	.3760	equation	1.2	7.5
88	05382180	French Ck Tr nr Ettrick	44°11'31"	91°18'22"	05379500	2.23	.1015	equation	.6	3.8
89	05382200	French Ck nr Ettrick	44°11'04"	91°18'49"	05379500	14.7	.3170	relation	10.1	9.3
90	05382204	French Ck Tr nr Ettrick	44°10'18"	91°19'24"	05379500	2.57	.1524	equation	.9	4.7
91	05382206	French Ck nr Ettrick	44°08'57"	91°19'30"	05379500	22	.2548	equation	10.4	6.4
92	05382209	Beaver Ck nr Galesville	44°07'02"	91°20'18"	05379500	124	.2560	equation	61.0	6.7
93	05382211	Beaver Ck at Galesville	44°04'26"	91°21'58"	05379500	139	--	relation	92.0	9.0
94	05382237	Halfway Ck at Holmen	43°57'50"	91°15'25"	05379500	30.4	--	relation	16.1	7.2
95	05382265	La Crosse R nr Angelo	44°00'30"	90°42'59"	05379500	59.2	--	relation	72.0	16.5
96	05382280	Silver Ck nr Sparta	43°56'30"	90°40'49"	05382500	14.8	.4500	relation	11.2	10.3
97	05382330	La Crosse R at Sparta	43°56'11"	90°48'39"	05379500	167	--	relation	164.5	13.4
98	05382380	Little La Crosse R at Cashton	43°45'59"	90°47'52"	05408000	2.97	--	relation	1.4	6.4
99	05382410	Little La Crosse R at Helvina	43°48'21"	90°46'15"	05408000	18.3	--	relation	8.5	6.3
100	05382500	Little La Crosse R nr Leon	43°53'45"	90°50'25"	05379500	76.8	.3322	equation	42.8	7.6
101	05382560	La Crosse R at Rockland	43°54'48"	90°55'11"	05379500	284	--	relation	250.0	12.0
102	05382590	Dutch Ck nr Bangor	43°52'41"	90°59'53"	05379500	16.4	.4509	equation	10.4	8.6
103	05382610	La Crosse R at Bangor	43°54'02"	90°59'38"	05379500	332	--	relation	274.0	11.2

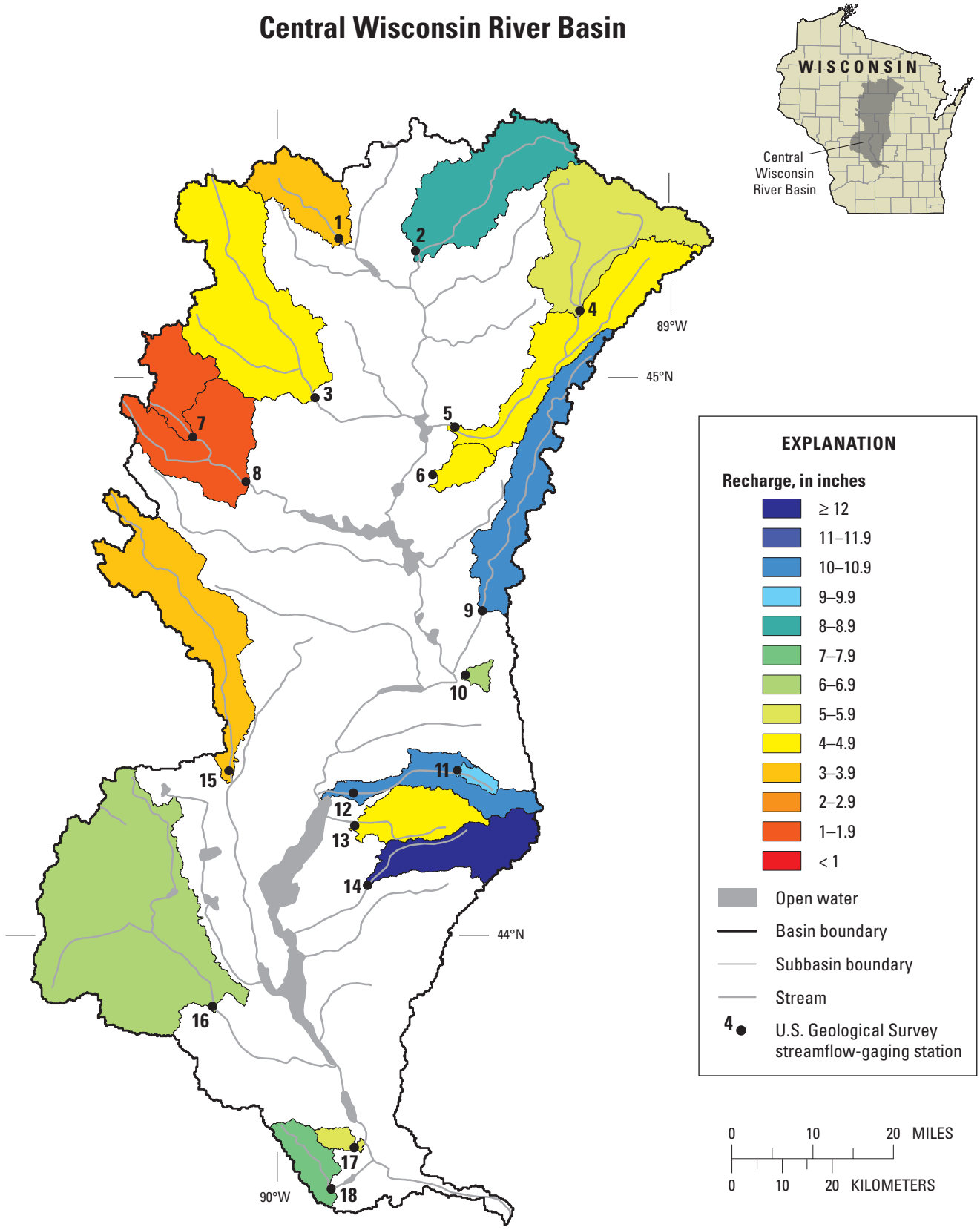
[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 6*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Trempealeau-Black River Basin—Continued.

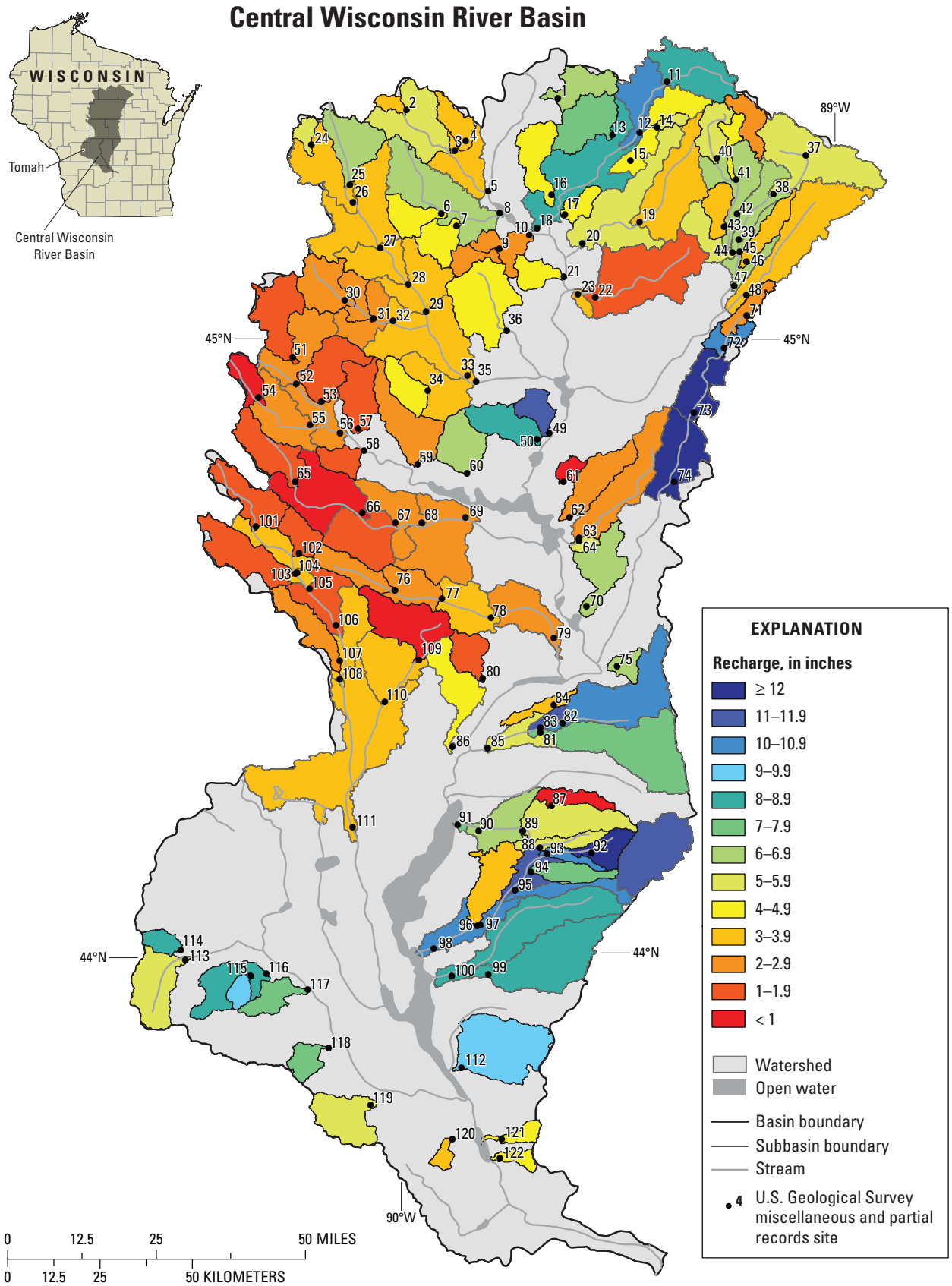
[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
104	05383050	Bostwick Ck nr Barre Mills	43°51'53"	91°07'37"	05379500	40.3	0.2905	equation	20.7	7.0
105	05386300	Morman Ck nr La Crosse	43°46'00"	91°08'27"	05382500	25.2	.3800	relation	14.2	7.7
106	05386850	Coon Ck at Chaseburg	43°39'28"	91°05'22"	05379500	104	--	relation	59.0	7.7
107	05387005	Coon Ck nr Stoddard	43°39'10"	91°09'58"	05379500	128	.4184	equation	81.3	8.6
108	05387090	Springville Br Bad Axe R at Springville	43°35'00"	90°56'20"	05382500	8.73	--	relation	4.4	6.8
109	05387100	N Fk Bad Axe R nr Genoa	43°33'10"	91°08'58"	05408000	80.8	.3000	relation	46.6	7.8
110	05388370	Rush Ck nr Ferryville	43°23'22"	91°07'36"	05408500	44.8	.2530	relation	33.0	10.0
111	05388375	Sugar Ck at Ferryville	43°22'04"	91°08'22"	05408000	25.1	--	relation	13.6	7.4
112	05388380	Copper Ck nr Mt Sterling	43°18'58"	90°59'59"	05409890	14.2	.3900	relation	8.7	8.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.



Appendix 7–*A*. Locations of streamflow-gaging stations in the Central Wisconsin River Basin and spatial distribution of average annual recharge.



Appendix 7–*B*. Locations of miscellaneous and partial-record sites in the Central Wisconsin River Basin and spatial distribution of estimated average annual recharge.

Appendix 7*C*. Average annual baseflow and corresponding recharge, 1970–99, for gaging stations in the Central Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	05394000	New Wood R nr Merrill	82.2	1953–1961	ex rec	--	22	3.6	--	--	--
2	05394500	Prairie R nr Merrill	184	1970–1999	BFI	0.6440	110	8.4	180	13.3	79
3	05396000	Rib R at Rib Falls	303	1926–1957	ex rec	--	100	4.7	--	--	33
4	05397110	Eau Claire R nr Antigo	185	1975–1981	ex rec	--	72	5.3	--	--	3.7
5	05397500	Eau Claire R at Kelly	375	1970–1999	BFI	.5230	140	4.9	260	9.6	68
6	05398500	Bull Ck Jr nr Rothschild	27.4	1945–1951	ex rec	--	10	5.0	--	--	4.4
7	05399000	Big Eau Pleine R nr Colby	78.1	1942–1954	ex rec	--	7.4	1.3	--	--	1.4
8	05399500	Big Eau Pleine R at Stratford	224	1970–1999	BFI	.1850	32	1.9	180	11.1	6.8
9	05400500	Plover R nr Stevens Point	145	1915–1919; 1945–1951	ex rec	--	120	10.8	--	--	85
10	05400650	Little Plover R at Plover	19	1960–1987	ex rec	--	9.6	6.9	--	--	4.3
11	05401020	Tenmile Ck Ditch 5 nr Bancroft	9.73	1965–1973	ex rec	--	7.0	9.8	--	--	3.7
12	05401050	Tenmile Ck nr Nekoosa	73.3	1970–1999	BFI	.8730	54	10.0	63	11.7	26
13	05401100	Fourteenmile Ck nr New Rome	91.1	1965–1979	ex rec	--	31	4.6	--	--	7.6
14	05401535	Big Roche A Cri Ck nr Adams	52.8	1964–1978	ex rec	--	61	15.7	--	--	42
15	05402000	Yellow R at Babcock	215	1970–1999	BFI	.2580	48	3.0	190	12.1	10
16	05403500	Lemonweir R at New Lisbon	507	1945–1987	ex rec	--	240	6.4	--	--	85
17	05403630	Hulbert Ck nr Wisconsin Dells	11.2	1971–1977	ex rec	--	4.2	5.1	--	--	2.8
18	05403700	Dell Ck nr Lake Delton	44.9	1958–1980	ex rec	--	26	7.9	--	--	20

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 7*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Central Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
1	05393630	Little Pine Ck nr Tomahawk	45°23'30"	89°39'05"	05394500	21	0.2390	relation	9.9	6.4
2	05393850	Center Fk New Wood R nr Spirit Falls	45°22'24"	89°59'56"	05393500	5.43	.0721	equation	1.3	3.2
3	05393910	New Wood R nr Irma	45°18'28"	89°53'21"	05393500	53	.1360	relation	19.2	4.9
4	05393916	Averill Ck nr New Wood	45°19'23"	89°51'49"	05393500	10.6	.0711	equation	2.5	3.3
5	05394002	New Wood R nr Merrill	45°14'31"	89°48'45"	05393500	85.9	.0709	equation	21.5	3.4
6	05394110	M Fk Copper R nr Hamburg	45°12'22"	89°55'12"	05393500	16.4	.1526	equation	5.9	4.9
7	05394130	S Fk Copper R nr Hamburg	45°11'07"	89°53'06"	05393500	15.8	.1183	equation	5.0	4.3
8	05394160	Copper R nr Hamburg	45°12'23"	89°47'10"	05393500	94.4	.1250	relation	39.3	5.7
9	05394200	Devil Ck nr Merrill	45°08'56"	89°47'13"	05393500	9.58	.1320	relation	2.0	2.8
10	05394207	Devil Ck at Merrill	45°10'15"	89°43'07"	05393500	27.1	.0548	equation	5.8	2.9
11	05394250	Prairie R at Parrish	45°25'04"	89°24'06"	05394500	37.3	.4199	equation	23.2	8.4
12	05394310	Prairie R nr Gleason	45°20'10"	89°27'53"	05394500	61.4	.6206	equation	47.2	10.4
13	05394380	N Br Prairie R nr Gleason	45°19'57"	89°31'37"	05394500	34.8	.2790	relation	20.3	7.9
14	05394420	Silver Ck nr Parrish	45°20'39"	89°25'27"	05394500	4.08	.1790	equation	1.6	5.2
15	05394450	Big Hay Meadow Ck nr Gleason	45°17'24"	89°29'10"	05394500	32.3	.1507	equation	11.7	4.9
16	05394750	Meadow Ck nr Merrill	45°14'08"	89°40'02"	05394500	23.8	.1290	equation	7.9	4.5
17	05394768	Barnes Ck nr Merrill	45°12'13"	89°38'14"	05394500	9.9	.1147	equation	3.0	4.2
18	05394797	Prairie Ck at Merrill	45°10'55"	89°42'01"	05394500	231	.4046	equation	145.9	8.6
19	05395030	Pine R nr Merrill	45°11'27"	89°27'58"	05394500	55.2	.0520	relation	13.5	3.3
20	05395063	Pine R nr Merrill	45°09'26"	89°35'50"	05394500	118	.1114	equation	37.6	4.3
21	05395068	County Line Ck nr Merrill	45°06'14"	89°38'24"	05394500	12.7	.1285	equation	4.2	4.5
22	05395130	Trappe R nr Wausau	45°04'09"	89°34'07"	05394500	73.6	.0310	relation	8.1	1.5
23	053951312	Trappe R nr Brokaw	45°04'31"	89°36'30"	05394500	79.2	.0791	equation	21.0	3.6
24	05395504	Sheep Ranch Ck at Rib Lk	45°18'59"	90°13'01"	05393500	7.84	.1160	relation	3.2	5.5
25	05395550	Wood Ck nr Rib Lk	45°15'07"	90°07'44"	05396000	31.4	.2280	relation	15.1	6.5

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 7*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Central Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
26	05395580	Rib R nr Goodrich	45°13'24"	90°07'16"	05393500	71.8	0.0941	equation	20.8	3.9
27	05395650	Rib R at Goodrich	45°08'59"	90°03'34"	05393500	131	.0866	equation	36.7	3.8
28	05395700	Rib R nr Hamburg	45°05'27"	89°59'41"	05393500	159	.0790	equation	42.6	3.6
29	05395750	Rib R nr athens	45°02'51"	89°57'17"	05393500	193	.0792	equation	52.0	3.7
30	05395850	Black Ck above Beaver Ck	45°03'58"	90°08'23"	05399500	25.4	.0296	equation	3.9	2.1
31	05395870	Black Ck at athens	45°02'09"	90°04'24"	05399500	39.9	.0780	relation	8.2	2.8
32	05395900	Black Ck nr athens	45°01'58"	90°01'48"	05393500	58.8	.0331	equation	9.8	2.3
33	05396015	Rib R nr Marathon	44°56'39"	89°51'36"	05393500	316	.0696	equation	80.4	3.5
34	05396060	Scotch Ck at Edgar	44°55'12"	89°57'02"	05399500	16.9	.0470	relation	5.2	4.2
35	05396200	Rib R at Marathon	44°56'06"	89°50'25"	05393500	365	.1250	relation	85.3	3.2
36	05396400	Little Rib R nr Hamburg	45°01'01"	89°46'14"	05397500	51	.1408	equation	18.1	4.8
37	05396830	E Br Eau Claire R nr Kempster	45°17'48"	89°05'06"	05397500	38.6	.0040	equation	6.4	2.3
38	05396920	E Br Eau Claire R at Deerbrook	45°14'02"	89°09'33"	05397500	65.7	.2430	relation	26.0	5.4
39	05397015	E Br Eau Claire R nr Antigo	45°09'39"	89°14'24"	05397500	87.2	--	relation	37.0	5.8
40	05397025	W Br Eau Claire R nr Kempster	45°17'33"	89°17'18"	05397500	17	.1722	equation	6.5	5.2
41	05397030	Sucker Cr nr Dempster	45°15'28"	89°14'42"	05397500	6.93	.1305	equation	2.3	4.4
42	05397045	W Br Eau Claire R nr Antigo	45°12'08"	89°14'37"	05397500	51.9	.2565	equation	25.1	6.6
43	05397085	Black Bk Tr nr Antigo	45°10'54"	89°16'22"	05397500	11.4	.0787	equation	2.9	3.4
44	05397090	W Br Eau Claire R nr Antigo	45°08'25"	89°15'17"	05397500	89.7	.1290	relation	27.6	4.2
45	05397100	Eau Claire R nr Antigo	45°08'29"	89°14'15"	05397500	179	.2030	relation	86.9	6.6
46	05397120	Eau Claire R Tr nr Antigo	45°07'33"	89°13'24"	05397500	15	.0834	equation	3.9	3.6
47	05397140	Eau Claire R nr Antigo	45°05'13"	89°15'06"	05397500	215	.2309	equation	101.3	6.4
48	05397200	Spring Bk nr Antigo	45°04'18"	89°13'26"	05397500	79.2	.1380	relation	22.3	3.8
49	05398100	Black Ck nr Mosinee	44°51'04"	89°40'29"	05399500	13	.0880	relation	11.4	11.9
50	05398233	Fourmile Ck nr Mosinee	44°50'26"	89°42'08"	05397500	24.3	.4011	equation	14.6	8.2
51	05398800	W Br Big Eau Pleine R nr Abbotsford	44°58'25"	90°15'33"	05399500	33.1	.0175	equation	3.9	1.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS streamflow-gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 7*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Central Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
52	05398950	Big Eau Pleine R nr Abbotsford	44°55'52"	90°15'02"	05399500	73.1	0.0228	equation	10.1	1.9
53	05399210	Randall Ck nr Colby	44°54'07"	90°11'33"	05399500	30.9	.0181	equation	3.7	1.6
54	05399250	Dill Ck at Colby	44°54'28"	90°20'09"	05399500	12.3	.0670	relation	.7	.8
55	05399350	Dill Ck nr Unity	44°51'50"	90°13'06"	05399500	46.7	.0251	equation	6.7	2.0
56	05399400	Big Ea Pleine R nr Stratford	44°51'05"	90°09'00"	05399500	174	.0307	equation	28.6	2.2
57	05399448	Hamann Ck nr Stratford	44°51'31"	90°06'35"	05399500	25.8	.0182	equation	3.1	1.6
58	05399479	Noisy Ck nr Stratford	44°49'21"	90°05'44"	05399500	12.7	.0102	equation	1.1	1.2
59	05399550	Fenwood Ck nr Stratford	44°48'03"	89°58'25"	05399500	36.9	.0421	equation	6.9	2.6
60	05399580	Freeman Ck nr Halder	44°47'11"	89°51'44"	05399500	26.5	.1210	relation	12.0	6.2
61	05400005	Peplin Ck nr Mosinee	44°46'18"	89°38'34"	05397500	6.37	.0030	equation	.3	.6
62	05400030	Johnson Ck nr Knowlton	44°42'51"	89°37'46"	05397500	28.6	.0515	equation	5.9	2.8
63	05400040	Little Eau Claire R nr Knowlton	44°40'49"	89°36'28"	05397500	49.2	.0274	equation	7.4	2.1
64	05400041	Little Eau Clair R Tr nr Dancy	44°40'34"	89°36'28"	05397500	3.95	.2045	equation	1.6	5.5
65	05400050	Little Eau Pleine R nr Spencer	44°46'18"	90°15'05"	05399500	28.2	.0142	equation	3.0	1.4
66	05400100	Little Eau Plein R nr Marshfield	44°43'20"	90°05'58"	05399500	78	.0070	relation	4.4	.8
67	05400150	Little Eau Pleine R nr Rozeville	44°42'21"	90°01'27"	05399500	119	.0225	equation	16.5	1.9
68	05400200	Little Eau Pleine R nr Auburndale	44°42'21"	89°57'51"	05399500	147	.0266	equation	22.4	2.1
69	05400250	Little Eau Pleine R nr Millador	44°42'53"	89°51'55"	05399500	200	.0390	equation	37.3	2.5
70	05400300	Hay Meadow Ck nr Stevens Point	44°34'12"	89°35'32"	05398500	30.4	--	relation	14.3	6.4
71	05400330	Plover R nr Aniwa	45°02'18"	89°13'26"	05397500	6.86	.0528	relation	1.4	2.8
72	05400370	Plover R nr Aniwa	44°59'11"	89°16'33"	05397500	19.6	.6754	equation	15.4	10.7
73	05400410	Plover R at Hatley	44°52'54"	89°20'46"	05397500	47	.7847	equation	40.6	11.7
74	05400440	Plover R at Bevent	44°46'15"	89°23'30"	05397500	80	.8667	equation	73.5	12.5
75	05400645	Little Plover R nr Plover	44°28'22"	89°31'26"	05400650	18.1	--	relation	9.3	7.0
76	05400670	Mill Ck nr Auburndale	44°35'48"	90°01'30"	05399500	20.1	.4769	equation	4.3	2.9
77	05400685	Mill Ck at Sherry	44°34'57"	89°55'07"	05399500	41.6	.0316	equation	6.7	2.2

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 7*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Central Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
78	05400700	Mill Ck at Junction City	44°33'10"	89°48'28"	05399500	68.7	0.0350	relation	17.0	3.4
79	05400710	Mill Ck nr Stevens Point	44°31'08"	89°39'59"	05399500	102	.0542	equation	22.3	3.0
80	05400750	Mosquito Ck nr Rudolph	44°27'16"	89°49'38"	05400650	16.3	.0172	equation	1.9	1.6
81	05400840	Four Mile Ck nr Keller	44°22'04"	89°41'52"	05401050	75	.2850	relation	41.9	7.6
82	05400850	Buena Vista Cr nr Wisconsin Rapids	44°22'54"	89°38'51"	05401050	45.7	.3620	relation	34.0	10.1
83	05400853	Buena Vista Cr nr Wisconsin Rapids	44°22'26"	89°41'52"	05401050	53.1	.7420	relation	45.0	11.5
84	05400885	Twomile Ck nr Meehan	44°24'38"	89°40'03"	05401050	2.79	.0902	equation	.7	3.6
85	05400905	Fourmile Ck at Wisconsin Rapids	44°20'26"	89°50'44"	05401050	165	.1388	equation	59.4	4.9
86	05400950	Moccasin Ck at Nekoosa	44°20'37"	89°53'45"	05402000	22.3	.1880	relation	8.1	4.9
87	05401075	Ditch N0 7 nr New Rome	44°14'49"	89°40'24"	05401050	10.8	.0042	equation	.6	.8
88	05401085	Fourteenmile Ck Tr nr Hancock	44°10'52"	89°41'58"	05401050	9.58	.1974	equation	3.9	5.5
89	05401095	Fourteenmile Ck nr New Rome	44°12'29"	89°44'15"	05401050	77	.1395	equation	27.4	4.8
90	05401110	Fourteenmile Ck nr New Rome	44°12'26"	89°50'15"	05401050	98.8	.2663	equation	49.4	6.8
91	05401149	Fourteenmile Ck at New Rome	44°13'04"	89°53'03"	05401050	102	.3484	equation	58.7	7.8
92	05401510	Big Roche at Chi Crk nr Handcock	44°10'15"	89°34'59"	05401535	9.61	.4880	relation	9.9	14.0
93	05401516	Big Roche A Cri Ck nr Hancock	44°10'13"	89°41'03"	05401535	23.2	.6527	equation	17.9	10.5
94	05401520	Big Roche A Ck Tr nr Hancock	44°08'26"	89°43'09"	05401535	15.7	.3703	equation	9.0	7.8
95	05401530	Big Roche A Cri Ck nr Friendship	44°06'43"	89°45'22"	05400650	51.4	.4230	relation	44.7	11.8
96	05401545	Big Roche A Cri Ck nr Arkdale	44°03'18"	89°50'02"	05401535	107	.5867	equation	80.8	10.3
97	05401550	Dead Horse Ck nr Arkdale	44°03'15"	89°50'25"	05401535	30.7	.0720	equation	7.6	3.4
98	05401558	Big Roche A Cri Ck nr Arkdale	44°01'04"	89°56'16"	05401535	151	.6064	equation	116.7	10.5
99	05401580	Little Roche A Cri Ck at Friendship	43°58'30"	89°49'00"	05401535	57.5	.4650	relation	36.9	8.7
100	05401608	Little Roche A Cri Ck nr Adams	43°58'25"	89°53'52"	05401535	133	.4055	equation	83.2	8.5
101	05401630	Yellow R nr Spencer	44°41'57"	90°20'25"	05399500	27.6	.0171	equation	3.2	1.6
102	05401700	E Br Yellow R nr Marshfield	44°39'22"	90°14'33"	05381000	15.5	.0130	relation	1.4	1.2
103	05401710	Yellow R nr Marshfield	44°37'27"	90°14'47"	05402000	62.9	.0266	equation	9.4	2.0

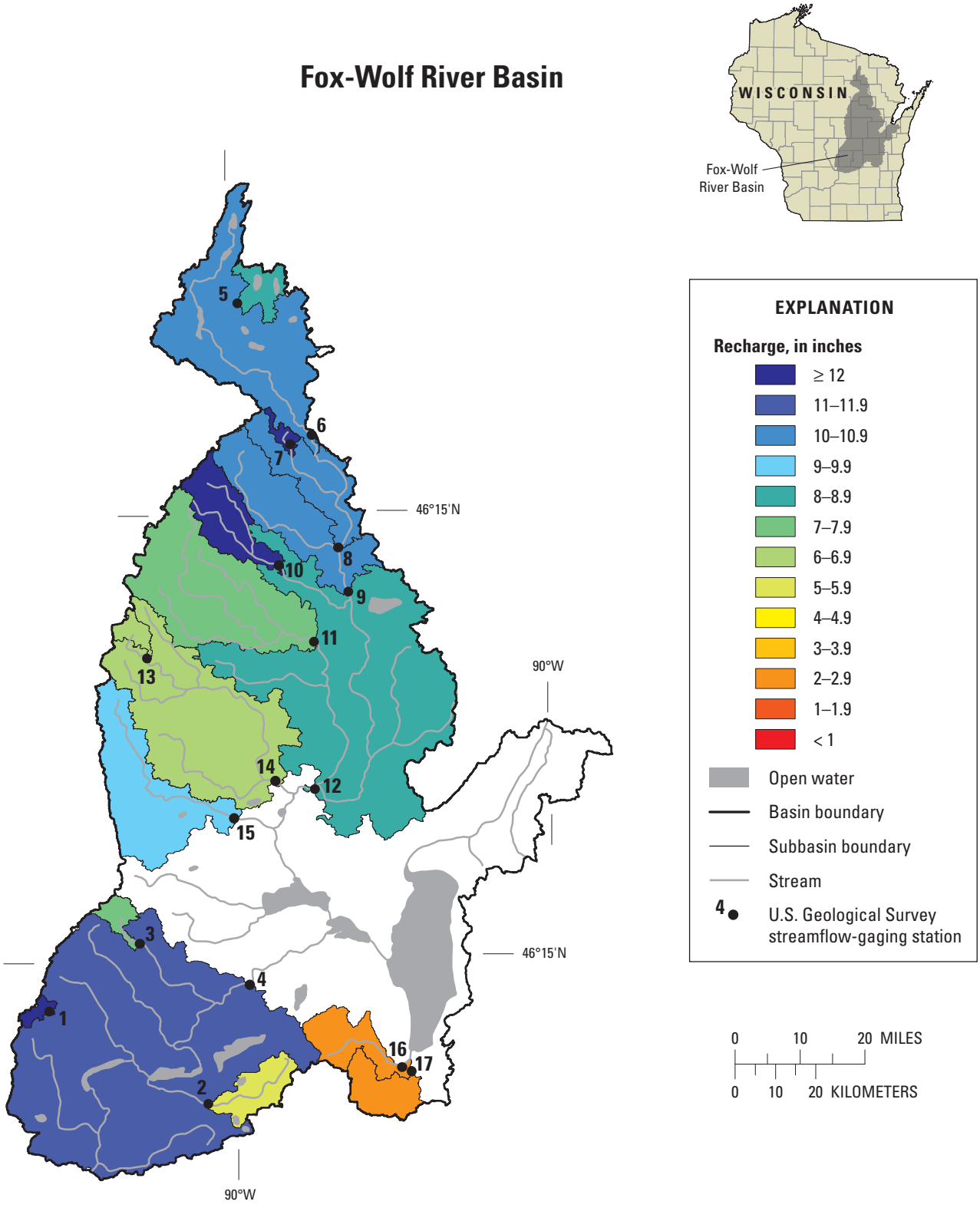
[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

Appendix 7*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Central Wisconsin River Basin—Continued.

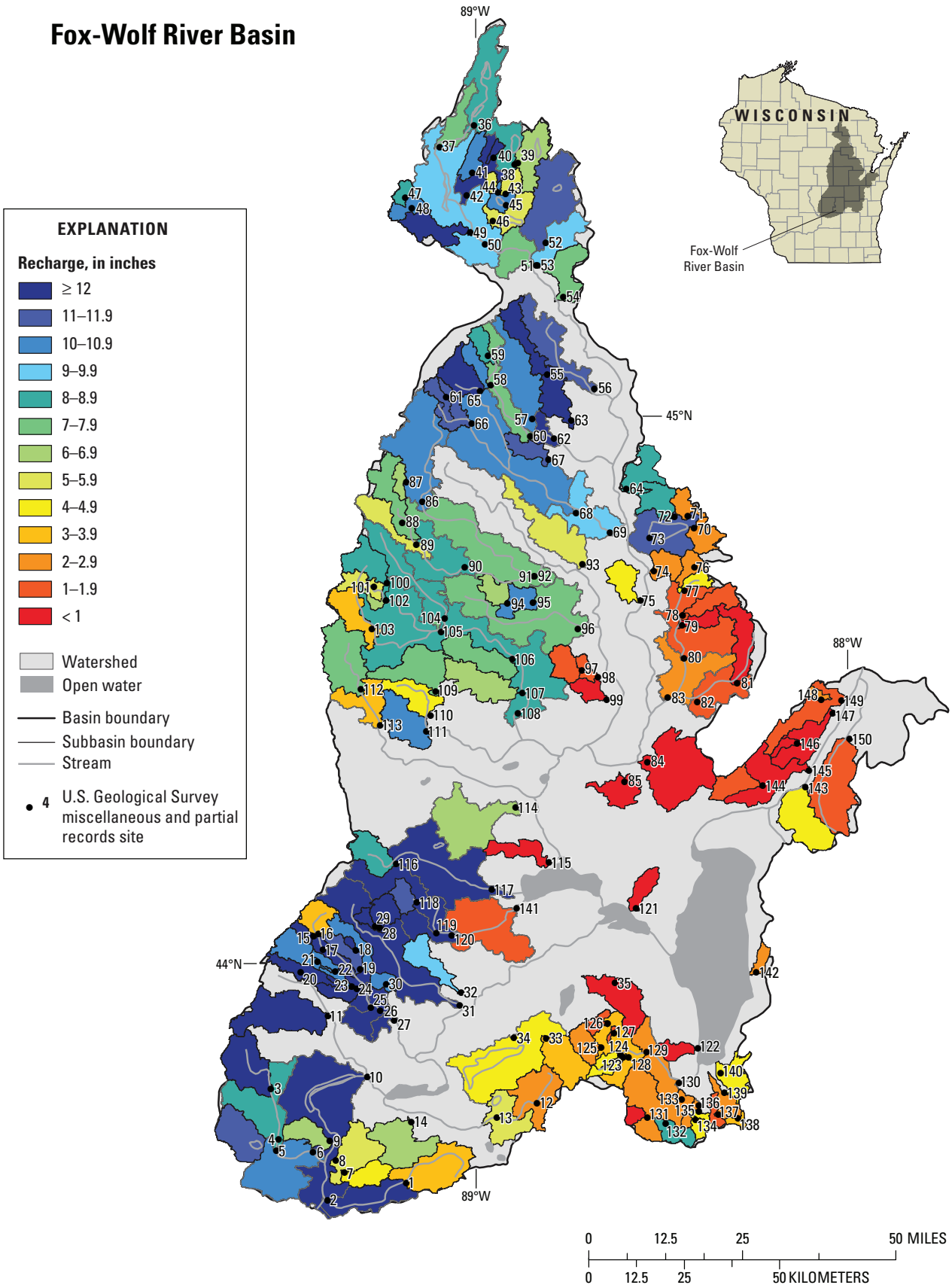
[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
104	05401750	S Br Yellow R nr Marshfield	44°37'24"	90°15'03"	05381000	36	0.0340	relation	3.1	1.2
105	05401755	Yellow R nr Bakerville	44°35'55"	90°13'06"	05402000	102	.0192	relation	30.0	4.0
106	05401770	Yellow R nr Arpin	44°32'26"	90°09'33"	05402000	128	.0228	equation	17.9	1.9
107	05401880	Rocky Ck nr Pittsville	44°28'57"	90°09'02"	05402000	21.9	.0274	equation	3.3	2.0
108	05401890	Yellow R nr Pittsville	44°27'12"	90°09'00"	05402000	180	.0053	relation	44.0	3.3
109	05402170	Hemlock Ck at Vesper	44°29'04"	89°58'17"	05399500	41.2	.0010	relation	1.3	.4
110	05402300	Hemlock Ck nr Dexterville	44°25'00"	90°02'51"	05402000	77.2	.0197	equation	9.9	1.7
111	05402400	Yellow R at Finley	44°12'50"	90°07'12"	05402000	379	.0502	equation	81.7	2.9
112	05403250	White Ck nr Friendship	43°49'32"	89°52'35"	05401535	63.8	.4280	relation	46.9	10.0
113	05403300	S Fk Lemonweir R at Tomah	43°59'52"	90°29'41"	05403500	35.4	.1080	relation	13.5	5.2
114	05403308	Mud Ck at Tomah	44°00'50"	90°30'18"	05405000	7.04	.4340	relation	4.2	8.1
115	05403396	Allen Ck nr Oakdale	43°58'24"	90°20'52"	05403500	7.44	.1200	relation	5.0	9.1
116	05403400	Bear Ck nr Camp Douglas	43°58'36"	90°18'47"	05403500	33.2	.1590	relation	20.6	8.4
117	05403480	Lemonweir R Tr at Camp Williams	43°57'04"	90°13'11"	05403500	14.1	.2870	relation	7.8	7.5
118	05403520	Webster Ck nr New Lisbon	43°51'23"	90°10'25"	05408000	11.6	.2460	relation	6.1	7.1
119	05403550	One Mile Ck nr Mauston	43°45'50"	90°04'45"	05405000	30.4	.3440	relation	12.0	5.4
120	05403576	Lyndon Ck at Lyndon Station	43°42'33"	89°42'33"	05401535	6.11	.2130	relation	1.5	3.3
121	05403586	Plainville Ck nr Wisconsin Dells	43°42'32"	89°47'15"	05401535	6.9	.1520	relation	2.3	4.5
122	05403601	Witches Gulch nr Wisconsin Dells	43°40'42"	89°47'30"	05401535	6.76	.1281	equation	2.2	4.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.



Appendix 8–*A*. Locations of streamflow-gaging stations in the Fox-Wolf River Basin and spatial distribution of average annual recharge.



Appendix 8–*B*. *L*ocations of miscellaneous and partial-record sites in the Fox-Wolf River Basin and spatial distribution of estimated average annual recharge.

Appendix 8*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Fox-Wolf River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	04072750	Lawrence Ck nr Westfield	13.44	1969–1973	ex rec	--	16	16.7	--	--	--
2	04073050	Grand R nr Kingston	73.5	1969–1975	ex rec	--	28	5.2	--	--	--
3	04073405	W Br White R nr Wautoma	38.9	1964–1965	ex rec	--	21	7.3	--	--	--
4	04073500	Fox R at Berlin	1,340	1970–1999	BFI	0.8720	1,100	11.4	1,300	13.0	560
5	04074538	Swamp Ck at Mole Lake	46.3	1978–1986	ex rec	--	29	8.5	--	--	14
6	04074950	Wolf R at Langlade	468	1970–1999	BFI	.7820	350	10.2	450	13.1	240
7	04075200	Evergreen Ck nr Langlade	8.09	1968–1973	ex rec	--	10	17.6	--	--	8.2
8	04075500	Wolf R nr Keshena	616	1928–1962	ex rec	--	460	10.1	--	--	310
9	04077400	Wolf R nr Shawano	816	1970–1999	BFI	.7950	620	10.3	780	13.0	420
10	04077630	Red R nr Morgan	114	1970–1999	ex rec	--	110	13.1	--	--	74
11	04078500	Embarrass R nr Embarrass	384	1970–1999	BFI	.6220	200	7.2	330	11.7	110
12	04079000	Wolf R at New London	2,260	1970–1999	BFI	.7560	1,470	8.8	1,900	11.7	790
13	04079602	Little Wolf R nr Galloway	22.6	1974–1979	ex rec	--	11	6.4	--	--	6.9
14	04080000	Little Wolf R at Royalton	507	1915–1985	ex rec	--	240	6.4	--	--	140
15	04081000	Waupaca R nr Waupaca	265	1917–1985	ex rec	--	180	9.1	--	--	120
16	04083000	W Br Fond Du Lac R at Fond Du Lac	83.1	1940–1954	ex rec	--	14	2.2	--	--	--
17	04083500	E Br Fond Du Lac R at Fond Du Lac	78.4	1940–1954	ex rec	--	14	2.5	--	--	4.0

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	04072400	Fox R nr Pardeeville	43°35'04"	89°13'39"	04073500	41	0.0720	relation	10.5	3.5
2	04072480	Fox R nr Portage	43°33'16"	89°25'53"	04073500	71.9	.2597	relation	39.0	7.4
3	04072660	Neenah Ck nr Oxford	43°45'50"	89°34'36"	04081000	33.9	--	relation	36.0	14.4
4	04072700	Neenah Ck nr Briggsville	43°40'08"	89°33'24"	04081000	80.3	.3690	relation	50.0	8.5
5	04072706	So Br Neenah Ck nr Briggsville	43°38'53"	89°36'00"	04073500	28.77	.8270	equation	25.3	11.9
6	04072715	Neenah Ck nr Endeavor	43°38'41"	89°28'07"	04073500	157.4	.6599	equation	127.3	11.0
7	040727265	Spring Ck nr Anacker	43°36'21"	89°23'12"	04073500	17.4	.1157	equation	5.4	4.2
8	04072728	French Ck nr Anacker	43°37'42"	89°24'31"	04073500	24.35	.1812	equation	9.7	5.4
9	04072732	Good Earth Ck nr Endeavor	43°39'57"	89°25'28"	04073500	16.48	.2368	equation	7.5	6.2
10	04072743	Fox R at Montello	43°47'08"	89°19'32"	04073500	398.2	.3679	equation	300.0	10.2
11	04072790	Wfield Ck nr Harrisville	43°54'04"	89°25'34"	05401535	48	1.0525	equation	48.3	13.7
12	04072942	Grand R nr Fairwater	43°43'53"	88°53'10"	04073050	24.6	.0700	relation	4.5	2.5
13	04073023	Grand R at Markasan	43°42'22"	88°59'25"	04073050	57.3	.1147	relation	17.0	4.0
14	04073100	Belle Fountain Ck nr Kingston	43°41'57"	89°12'44"	04073500	37.4	.1550	relation	17.5	6.4
15	04073180	Mecan R nr Richford	44°03'04"	89°27'50"	05401535	2.98	4.1499	equation	5.8	[2]26.4
16	04073185	Schmudlach Ck nr Richford	44°03'17"	89°27'03"	05401535	13.1	.0980	equation	3.7	3.9
17	04073190	Mecan R at Richford	44°01'33"	89°27'53"	05401535	21.6	1.0965	equation	21.9	13.7
18	04073207	W Br Little Pine Ck nr Richford	44°01'27"	89°21'08"	05401535	5.78	.9951	equation	5.4	12.7
19	04073220	Little Pine Ck nr Richford	43°59'18"	89°20'31"	05401535	11.4	.8719	equation	10.1	12.0
20	04073240	Chaffee Ck nr Coloma	43°59'01"	89°29'51"	05401535	4.28	2.5283	equation	6.5	[2]20.5
21	04073260	S Br Wedde Ck nr Richford	44°00'10"	89°27'13"	05401535	16	.5844	equation	11.6	9.8
22	04073270	S Br Wedde Ck nr Richford	43°59'05"	89°24'25"	05401535	17.7	.6869	equation	14.0	10.7
23	04073290	Wedde Ck nr Richford	43°57'19"	89°21'53"	05401535	26	.6249	equation	19.7	10.3
24	04073300	Chaffee Ck nr Neshkoro	43°57'02"	89°21'04"	05401535	46.3	.6900	relation	48.0	14.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	04073310	Mecan R nr Harrisville	43°54'57"	89°18'53"	05401535	98	1.1019	equation	102.5	14.2
26	04073318	Mecan R nr Germania	43°54'35"	89°17'25"	05401535	107	.9990	equation	106.5	13.5
27	04073330	Mecan R nr Neshkoro	43°53'29"	89°15'13"	05401535	122	.8398	equation	111.2	12.4
28	04073396	White R at Wautoma	44°03'54"	89°17'26"	05401535	13.7	1.3508	equation	21.0	[2]20.8
29	04073400	Bird Ck at Wautoma	44°04'06"	89°18'08"	05401535	4.14	2.0000	relation	10.5	[2]34.4
30	04073420	Lunch Ck nr Neshkoro	43°57'35"	89°16'30"	05401050	18.3	.4590	relation	14.5	10.8
31	04073440	White R nr Princeton	43°55'03"	89°05'01"	04073500	131	1.0863	equation	136.7	14.2
32	04073450	Sucker Ck nr Berlin	43°56'30"	89°04'47"	04073500	20.6	.3380	relation	14.7	9.7
33	04073464	Silver Ck at Ripon	43°51'14"	88°51'36"	04073050	26.7	.2554	relation	7.8	4.0
34	04073472	Puchyan R nr Green Lk	43°51'24"	88°56'40"	04073050	105	.0683	relation	34.0	4.4
35	04073900	Eightmile Ck at Fisk	43°57'20"	88°40'44"	04073500	22.9	.0012	equation	.7	.4
36	04074290	Wolf R nr Nashville	45°34'20"	89°01'07"	04074950	42.8	.4190	equation	26.6	8.4
37	04074350	Wolf R nr Nashville	45°31'55"	89°06'43"	04074950	60.77	.3389	equation	34.1	7.6
38	04074508	Swamp Ck nr Crandon	45°30'03"	88°54'11"	04074950	24.2	.2473	equation	11.3	6.3
39	04074520	Swamp Ck nr Crandon	45°29'52"	88°54'40"	04074950	39.2	.4057	equation	23.9	8.3
40	04074542	Gliske Ck nr Mole Lk	45°30'42"	88°58'02"	04074950	2.43	1.2692	equation	2.5	14.2
41	04074560	Squaw Ck nr Post Lk	45°29'02"	89°01'32"	04074950	9.15	.7168	equation	7.3	10.8
42	04074600	Swamp Ck nr Post Lk	45°26'27"	89°02'27"	04074950	76.5	.8574	equation	69.9	12.4
43	04074653	Pickerel Ck nr Mole Lk	45°26'37"	88°56'11"	04074950	6.13	.2010	equation	2.5	5.5
44	04074654	Pickerel Ck Tr nr Mole Lk	45°26'46"	88°57'26"	04074950	2.16	.2382	equation	.9	5.9
45	04074657	Pickerel Ck nr Mole Lk	45°25'16"	88°56'08"	04074950	14.3	.3704	equation	8.2	7.8
46	04074666	Pickerel Ck nr Kole Lk	45°23'31"	88°58'20"	04074950	78.43	.2250	equation	35.7	6.2
47	04074685	Hunting R at Elcho	45°26'20"	89°12'18"	04074950	3.39	.4258	equation	2.0	8.1
48	04074700	Hunting R nr Elcho	45°25'10"	89°11'15"	05394500	10.7	.6010	relation	7.8	9.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
49	04074750	Hunting R at Pearson	45°22'17"	89°01'56"	04074950	35.4	1.0842	equation	36.0	13.8
50	04074753	Wolf R nr Pickerel	45°20'56"	88°59'39"	04074950	298	.4394	equation	197.5	9.0
51	04074780	Wolf R at Lily	45°18'29"	88°51'27"	04074950	332	.4191	equation	215.2	8.8
52	04074850	Lily R nr Lily	45°20'59"	88°49'52"	04071000	45.6	.5460	relation	39.0	11.6
53	04074880	Lily R at Lily	45°18'27"	88°51'14"	04071000	70.2	.4649	equation	46.5	9.0
54	04074910	Ninemile Ck at Hollister	45°14'50"	88°47'15"	04071000	21.6	.3856	equation	12.7	8.0
55	04075300	Elton Ck nr Langlade	45°06'08"	88°49'59"	04074950	25.17	.9077	equation	23.2	12.5
56	04075350	Evergreen R nr Langlade	45°04'28"	88°42'31"	04074950	54.6	.7786	equation	47.1	11.7
57	04075803	W Br Wolf R nr Neopit	45°01'06"	88°52'27"	04078500	41.8	.6728	equation	33.2	10.8
58	04075807	Little W Br Wolf R nr Zoar	45°05'02"	88°58'55"	04074950	9.19	.6219	equation	6.8	10.1
59	04075809	Rabe Ck nr Polar	45°08'23"	88°59'20"	04074950	7.2	.4648	equation	4.6	8.6
60	04075850	Little W Br Wolf R nr Neopit	44°59'11"	88°52'49"	04078500	45.84	.4039	equation	28.0	8.3
61	04075905	W Branch Red R nr Phlox	45°03'42"	89°06'08"	04078500	5.11	.8422	equation	4.4	11.6
62	04076080	W Br Wolf R at Neopit	44°58'54"	88°49'01"	04078500	98.6	.5650	relation	115.0	15.8
63	04076400	Little W Br Ck nr Neopit	45°00'54"	88°46'11"	04078500	17	.4190	relation	17.5	14.0
64	04077150	Wolf R Tr #1 at Keshena	44°53'03"	88°37'41"	04071000	6.6	.4758	equation	4.2	8.7
65	04077550	Red R nr Antigo	45°04'22"	89°00'44"	05397500	20.6	2.5900	relation	41.5	[2]27.4
66	04077595	W Branch Red R at Mattoon	45°00'44"	89°02'03"	04078500	22	.4580	relation	18.5	11.4
67	04077670	Miller Ck nr Neopit	44°56'34"	88°49'55"	04078500	10.9	.7656	equation	9.0	11.2
68	04077675	Red R at Gresham	44°50'28"	88°45'40"	04078500	159	.5862	equation	120.9	10.3
69	04077700	Red R at Thornton	44°48'10"	88°40'24"	04071000	195	.5566	equation	144.9	10.1
70	04077800	Pickerel Ck at Cecil	44°48'32"	88°27'02"	04071000	13.2	.0653	relation	2.0	2.0
71	04077820	Duchess Ck nr Cecil	44°49'53"	88°28'02"	04071000	8.34	.0860	relation	1.6	2.6
72	04077830	Loon Lk nr Cecil	44°49'51"	88°30'06"	04071000	15.6	.4291	equation	9.6	8.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
73	04077871	Shawano Lk Outlet nr Shawano	44°47'29"	88°34'07"	04071000	71.2	0.7051	equation	58.6	11.2
74	04078005	Wolf R Tr nr Shawano	44°43'45"	88°33'30"	04071000	12.7	.0318	equation	2.0	2.2
75	04078010	Wolf R Tr nr Belle Plaine	44°40'29"	88°35'43"	04071000	14.8	.1118	equation	4.5	4.2
76	04078022	W Br Shioc R at Bonduel	44°44'04"	88°27'06"	04071000	5.44	.0720	relation	1.2	3.0
77	04078028	W Br Shioc R nr Bonduel	44°41'31"	88°28'44"	04071000	16.5	.1151	equation	5.1	4.2
78	04078036	E Br Shioc R nr Navarino	44°38'43"	88°29'05"	04071000	16.5	.0190	equation	2.0	1.7
79	04078039	Mink Ck nr Navarino	44°37'36"	88°29'11"	04071000	7.58	.0057	equation	.5	.9
80	04078050	Shioc R at Nichols	44°33'54"	88°28'58"	04071000	92.2	.0088	relation	10.0	1.5
81	04078054	Black Ck at Seymore	44°30'55"	88°20'41"	04071000	22.9	.0050	relation	.2	.1
82	04078055	Black Ck at Black Ck	44°28'55"	88°27'03"	04071000	44.7	.0150	relation	3.2	1.0
83	04078057	Shioc R nr Shiocton	44°29'30"	88°31'41"	04071000	184	.0288	equation	29.3	2.2
84	04078080	Bear Ck at Stephensville	44°22'15"	88°35'05"	04079000	62.5	.0230	relation	3.5	.8
85	04078085	Black Otter Ck at Hortonville	44°20'03"	88°38'42"	04081000	15.9	.0040	relation	1.2	1.0
86	04078092	M Br Embarrass R nr Eland	44°52'00"	89°10'05"	04078500	66.5	.5898	equation	49.8	10.2
87	04078098	Railroad Ck nr Birnamwood	44°54'11"	89°12'36"	04078500	2.87	.2470	equation	1.5	6.9
88	04078100	S Br Embarrass R nr Wittenberg	44°49'37"	89°13'20"	04078500	26.4	.2860	relation	15.0	7.7
89	04078109	S Br Embarrass R nr Wittenberg	44°47'07"	89°11'03"	04078500	50.5	.2646	equation	24.8	6.7
90	04078190	S Br Embarrass R at Tigerton	44°44'30"	89°03'25"	04078500	90.5	.3270	relation	57.0	8.6
91	04078298	Embarrass R at Caroline	44°43'23"	88°52'31"	04078500	239	.3020	relation	135.0	7.7
92	04078300	Embarrass R at Caroline	44°43'25"	88°52'26"	04078500	239	.3160	equation	132.9	7.6
93	04078490	Mill Ck nr Pella	44°44'40"	88°44'48"	04078500	40.6	.2060	relation	15.5	5.2
94	04078600	N Br Pigeon R nr Marion	44°40'21"	88°56'46"	04078500	10.8	.2040	relation	5.3	6.7
95	04078605	N Br Pigeon R at Marion	44°40'29"	88°52'42"	04078500	19.6	.3030	relation	12.0	8.3
96	04078650	Pigeon R at Clintonville	44°37'20"	88°45'40"	04078500	109	.2916	relation	64.0	8.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
97	04078780	Bear Ck nr Bear Ck	44°32'44"	88°45'08"	04078500	14.2	0.0178	equation	1.7	1.6
98	04078785	Bear Ck at Bear Ck	44°31'54"	88°42'37"	04078500	19.7	.0210	relation	2.0	1.4
99	04078800	Bear Ck nr Sugar Bush	44°29'21"	88°41'18"	04078500	30.6	.0110	relation	.8	.4
100	04079600	Little Wolf R at Galloway	44°42'50"	89°15'47"	04078500	21.3	.2870	relation	12.8	8.2
101	04079603	Holt Ck nr Galloway	44°42'24"	89°17'53"	04078500	8.18	.1760	equation	3.1	5.2
102	04079607	Holt Ck nr Galloway	44°40'54"	89°15'57"	04078500	16.7	.2321	equation	7.5	6.1
103	04079630	Flume Ck nr Rosholt	44°37'40"	89°18'16"	04081000	19.2	.1870	relation	4.6	3.3
104	04079650	Comet Ck nr Big Falls	44°38'46"	89°06'44"	04078500	40.2	.3280	relation	26.0	8.8
105	04079657	Comet Ck nr Big Falls	44°37'15"	89°07'18"	04078500	42.6	.3433	equation	23.9	7.6
106	04079800	Whitcomb Ck nr Big Falls	44°34'05"	88°56'07"	04078500	27.4	.3900	relation	15.5	7.7
107	04079840	Blake Ck at Symco	44°30'16"	88°54'36"	04078500	30.1	.2522	equation	14.3	6.4
108	04079845	Little Wolf R at Manawa	44°27'57"	88°55'19"	04078500	311	.3410	relation	205.0	9.0
109	04079880	S Br Little Wolf R at Iola	44°30'33"	89°08'16"	04081000	30	.4140	relation	17.0	7.7
110	04079892	S Br Little Wolf R at Scandinavia	44°27'50"	89°09'08"	04081000	50.9	.4050	relation	24.5	6.5
111	04079900	Peterson Ck nr Scandinavia	44°26'03"	89°09'48"	04081000	25.6	.4760	relation	20.0	10.6
112	04080800	Tomorrow R nr Nelsonville	44°30'51"	89°20'02"	04081000	46	.3520	relation	25.0	7.4
113	04080895	Tomorrow R at Amherst	44°26'49"	89°17'05"	04081000	80.1	.3060	relation	34.0	5.8
114	04081100	Walla Walla Ck nr Weyauwega	44°17'20"	88°55'53"	04081000	52.4	.3050	relation	24.0	6.2
115	04081400	Alder Ck nr Fremont	44°11'04"	88°50'44"	04081000	14.2	.0017	relation	.3	.3
116	04081408	Humphrey Ck nr Wild Rose	44°11'05"	89°14'45"	04081000	20.6	.3120	relation	12.5	8.2
117	04081425	Pine R at Poy Sippi	44°08'09"	88°59'46"	04081000	99.4	.6730	relation	93.0	12.7
118	04081440	Rattlesnake Ck nr Mt Morris	44°06'45"	89°11'32"	04081000	20.4	.5900	relation	17.5	11.7
119	04081450	Willow Ck nr Redgranite	44°03'19"	89°08'32"	04081000	34.8	.6790	relation	42.0	16.4
120	04081456	Willow Ck at Redgranite	44°02'58"	89°06'11"	04081000	48.8	1.2000	relation	61.0	[2]17.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
121	04081800	Daggets Ck nr Butte Des Morts	44°05'48"	88°37'16"	04073500	10.6	0.0001	equation	0.1	0.1
122	04082650	Anderson Ck nr N Fond du Lac	43°49'53"	88°28'00"	04073500	8.01	.0048	equation	.5	.8
123	04082813	W Br Fond du Lac R at Rosendale	43°48'54"	88°39'00"	04073500	5.2	.1193	equation	1.6	4.2
124	04082817	W Br Fond du Lac Tr at Rosendale	43°49'10"	88°40'00"	04073500	2.85	.1480	equation	1.0	4.7
125	04082826	W Br Fond du Lac R Tr nr Rosendale	43°50'06"	88°43'00"	04073500	12.2	.0514	equation	2.5	2.8
126	04082831	Tr of Fond du Lac R nr Rosendale	43°52'49"	88°42'00"	04073500	5.59	.0099	equation	.5	1.2
127	04082841	W Br Fond Du Lac R Tr nr Rosendale	43°51'45"	88°41'00"	04073500	2.58	.0204	equation	.3	1.7
128	04082866	W Br Fond du Lac R Tr nr Rosendale	43°48'54"	88°38'00"	04073500	7.77	.0970	equation	2.2	3.8
129	04082871	W Br Fond du Lac R nr Rosendale	43°49'31"	88°36'00"	04073500	55.2	.0701	equation	13.6	3.4
130	04082916	W Br Fond du Lac R nr Rosendale	43°45'58"	88°31'00"	04073500	78.5	.0536	equation	17.0	2.9
131	04083025	E Br Fond du Lac R nr Fond du Lac	43°42'08"	88°36'00"	04073500	4.71	.0027	equation	.2	.6
132	04083160	Campground Ck nr Oakfield	43°41'24"	88°33'10"	04073050	9.57	.4980	equation	6.3	9.0
133	04083295	E Br Fond du Lac R nr Fond du Lac	43°44'52"	88°30'00"	04073500	53.1	.0630	equation	12.4	3.2
134	04083425	Parsons Ck nr Fond du Lac	43°41'50"	88°28'31"	04073500	5.7	.1267	equation	1.8	4.4
135	04083435	E Br Fond du Lac R Tr nr Fond du Lac	43°42'45"	88°28'00"	04073500	5.87	.1469	equation	2.0	4.7
136	04083455	E Br Fond du Lac R nr Fond du Lac	43°43'24"	88°28'00"	04073500	73.7	.0466	equation	14.8	2.7
137	04083900	De Neveu Ck nr Fond du Lac	43°42'21"	88°25'00"	04073500	2.65	.0136	equation	.3	1.3
138	04083935	De Neveu Ck at Eden	43°41'55"	88°21'00"	04073500	2.82	.0863	equation	.7	3.5
139	04084020	De Neveu Ck nr Fond du Lac	43°44'46"	88°24'00"	04073500	16.4	.0460	equation	3.2	2.6
140	04084124	Taycheedah Ck nr Fond du Lac	43°47'02"	88°24'00"	04073050	14.1	.1130	equation	4.3	4.2
141	04081475	Willow Ck nr Auroraville	44°06'01"	88°03'00"	04086000	114	.3897	equation	69.6	8.3
142	04084200	Lk Winnebago Tr at Brothertown	43°58'17"	88°18'35"	04073500	5.1	.0380	equation	.9	2.3
143	04084940	Plum Ck nr Wrightstown	44°19'02"	88°10'20"	04085200	35	.1225	equation	11.4	4.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

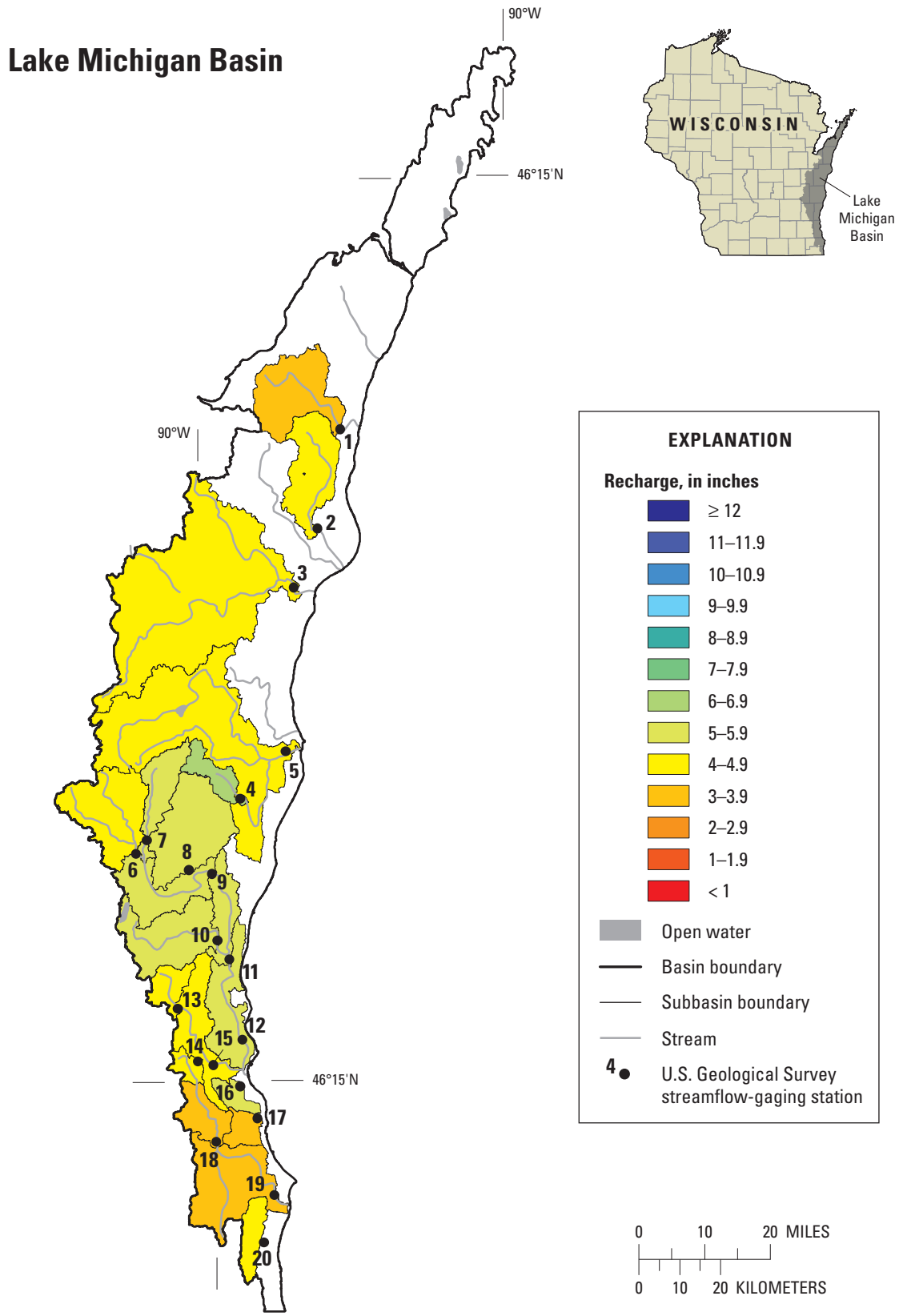
Appendix 8*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Fox-Wolf River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

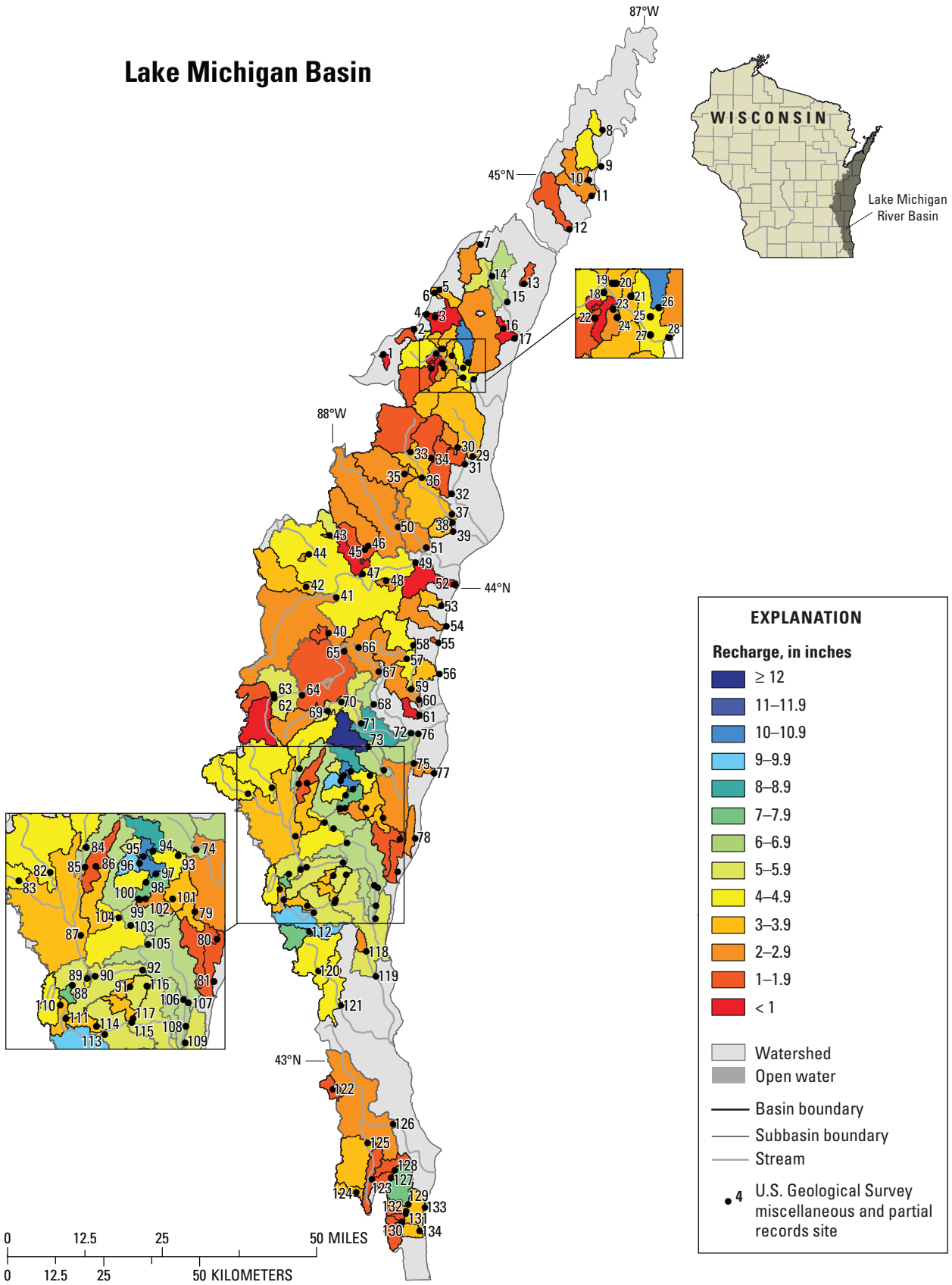
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
144	04085030	Apple Ck nr Kaukauna	44°19'17"	88°17'00"	04079000	15.2	0.0170	equation	1.7	1.5
145	04085051	Apple Ck nr Wrightstown	44°20'56"	88°09'41"	04079000	48.1	.0090	equation	4.1	1.2
146	04085064	N Br Ashwaubenon Ck nr Freedom	44°23'57"	88°11'28"	04079000	3.13	.0003	equation	.0	.2
147	04085070	Ashwaubenon Ck at De Pere	44°27'17"	88°05'43"	04079000	26.6	.0004	equation	.4	.2
148	04085076	Dutchman Ck Tr nr De Pere	44°28'53"	88°07'29"	04079000	2.41	.0337	equation	.4	2.1
149	04085080	Dutchman Ck nr De Pere	44°28'43"	88°04'21"	04079000	28.1	.0131	equation	2.9	1.4
150	04085110	E R at Co Hwy Pp nr De Pere	44°24'21"	88°03'12"	04085200	51.6	.0090	equation	4.4	1.2

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 9–*A*. Locations of streamflow-gaging stations in the Lake Michigan Basin and spatial distribution of average annual recharge.



Appendix 9–*B*. Locations of miscellaneous and partial-record sites in the Lake Michigan Basin and spatial distribution of estimated average annual recharge.

Appendix 9*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Lake Michigan Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	04085200	Kewaunee R nr Kewaunee	127	1970–1995	BFI	0.4120	36	3.8	91	9.7	14
2	04085281	E Twin R at Mishicot	110	1973–1996	BFI	.4590	35	4.3	--	--	12
3	04085427	Manitowoc R at Manitowoc	526	1973–1996	BFI	.4950	160	4.3	330	8.5	30
4	04085813	Onion R at Hingham	37.2	1979–1980	ex rec	--	17	6.2	--	--	--
5	04086000	Sheboygan R at Sheboygan	418	1970–1999	BFI	.5120	150	4.7	290	9.4	52
6	04086150	Milwaukee R at Kewaskum	138	1969–1981	BFI	--	45	4.4	--	--	15
7	04086200	E Br Milwaukee R at New Fane	54.1	1969–1981	BFI	--	20	5.0	--	--	8.5
8	04086340	N Br Milwaukee R nr Fillmore	148	1969–1981	ex rec	--	60	5.5	--	--	28
9	04086360	Milwaukee R at Waubeka	432	1969–1981, 1994	ex rec	--	180	5.7	--	--	76
10	04086500	Cedar Ck nr Cedarburg	120	1970–1999	BFI	.5240	51	5.8	100	11.3	19
11	04086600	Milwaukee R nr Cedarburg	607	1983–1999	BFI	.5700	260	5.8	460	10.3	120
12	04087000	Milwaukee R at Milwaukee	696	1970–1999	BFI	.5500	290	5.7	530	10.4	120
13	04087030	Menomonee R at Menomonee Falls	34.7	1976–1999	BFI	.4180	12	4.7	30	11.7	4.2
14	04087088	Underwood Ck at Wauwatosa	18.2	1976–1998	BFI	.3900	6.0	4.5	15	11.2	3.1
15	04087120	Menomonee R at Wauwatosa	123	1970–1999	BFI	.3620	40	4.4	110	12.3	18
16	04087160	Kinnickinnic R at Milwaukee	20.4	1977–1982	ex rec	--	8.0	5.3	--	--	--
17	04087204	Oak Ck at South Milwaukee	25	1970–1999	BFI	.2560	6.0	3.3	24	13.0	2.0
18	04087220	Root R nr Franklin	49.2	1970–1999	BFI	.3030	13	3.6	45	12.4	5.0
19	04087240	Root R at Racine	190	1970–1999	BFI	.3220	51	3.6	160	11.4	11
20	04087257	Pike R nr Racine	38.5	1972–1999	BFI	.3590	13	4.6	37	13.0	5.6

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	040851405	Lk Mich Tr nr Champion	44°34'43"	87°53'00"	04085200	12.4	0.0032	equation	0.6	0.6
2	04085143	Lk Mich Tr nr Dyckesville	44°38'03"	87°47'00"	04085200	5.19	.0075	equation	.4	[2]1.0
3	04085146	Red R nr Dyckesville	44°39'37"	87°43'00"	04085200	12.8	.0043	equation	.7	[2] .8
4	04085147	Red R nr Dyckesville	44°40'04"	87°44'36"	04085200	13.7	.0053	equation	.9	[2] .9
5	04085150	Renard Ck nr Brussels	44°43'16"	87°42'00"	04085200	6	.0792	equation	1.5	3.4
6	04085154	Renard Ck nr Brussels	44°42'54"	87°43'00"	04085200	7.88	.0661	equation	1.8	3.1
7	04085158	Keyes Ck nr Little Sturgeon	44°49'13"	87°34'00"	04085200	14.4	.0291	equation	2.2	2.1
8	04085163	Heins Ck nr Baileys Harbor	45°04'08"	87°10'00"	04085200	4.48	.1663	equation	1.6	5.0
9	04085170	Hibbard Ck at Jacksonport	44°59'16"	87°10'31"	04085200	16.4	.1510	equation	5.4	4.5
10	04085171	Logan Ck nr Jacksonport	44°57'28"	87°13'00"	04085200	14.7	.0466	equation	2.9	[2]2.6
11	04085172	Whitefish Bay Ck nr Jacksonport	44°55'22"	87°12'00"	04085200	18.6	.0285	equation	2.8	[2]2.1
12	04085174	Lilly Bay Ck nr Sturgeon Bay	44°50'59"	87°17'00"	04085200	20.4	.0084	equation	1.6	[2]1.1
13	04085179	Stoney Ck nr Maplewood	44°43'43"	87°26'00"	04085200	12.6	.0145	equation	1.3	[2]1.4
14	04085184	Ahnapee Ck nr Kolberg	44°44'55"	87°32'00"	04085200	21.7	.1751	equation	8.5	5.3
15	04085186	Ahnapee Ck at Forestville	44°41'24"	87°29'14"	04085200	32	.1390	relation	15.0	6.4
16	04085190	Silver Ck nr Algoma	44°37'49"	87°30'03"	04085200	58.2	--	relation	10.0	[2]2.3
17	040851906	Silver Ck nr Algoma	44°36'27"	87°28'00"	04085200	63.1	.0012	equation	1.9	[2] .4
18	04085193	Kewaunee R Tr nr Luxemburg	44°34'37"	87°43'00"	04085200	10.6	.0034	equation	.5	[2] .7
19	040851933	Kewaunne R nr Luxemburg	44°35'19"	87°42'00"	04085200	20.8	.0371	equation	3.6	2.4
20	040851939	Kewaunee R Tr nr Luxemburg	44°35'19"	87°41'00"	04085200	5.96	.0847	equation	1.6	3.5
21	040851943	Kewaunee R nr Luxemburg	44°34'18"	87°40'00"	04085200	31.5	.0605	equation	7.1	3.1
22	040851947	School Ck nr Luxemburg	44°32'42"	87°44'00"	04085200	14.6	.0144	equation	1.5	[2]1.4
23	040851951	School Ck nr Luxemburg	44°33'20"	87°42'00"	04085200	23.7	.0054	equation	1.5	[2] .9
24	040851955	Luxemburg Ck at Luxemburg	44°32'41"	87°41'00"	04085200	2.78	.0780	relation	.6	2.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	040851959	Kewaunee R nr Luxemburg	44°32'41"	87°38'00"	04085200	67.2	0.0582	equation	15.1	3.1
26	040851967	Casco Ck at Casco	44°33'21"	87°37'00"	04085200	10.1	.0830	relation	8.0	10.8
27	040851983	Scarboro Ck nr Luxemburg	44°31'16"	87°38'00"	04085200	20	.0910	equation	5.5	3.8
28	040851990	Kewaunee R nr Luxemburg	44°31'00"	87°36'00"	04085200	112	.1049	equation	34.6	4.2
29	04085244	E Twin R nr Tisch Mills	44°20'32"	87°36'37"	04085200	49.7	.1070	relation	14.0	3.8
30	04085250	E Twin R Tr nr Stangelville	44°21'51"	87°39'29"	04085200	7.43	.0316	equation	1.2	2.1
31	040852508	Tisch Mills Ck at Tisch Mills	44°19'40"	87°38'10"	04085200	16.3	.0239	equation	2.2	1.9
32	04085270	Jambo Ck nr Mishicot	44°15'43"	87°40'52"	04085200	19.3	.0204	equation	2.5	1.7
33	04085306	Neshoto R nr Denmark	44°21'26"	87°48'22"	04085200	39.2	.1020	relation	3.2	1.1
34	04085314	Buck Ck nr Cooperstown	44°20'30"	87°44'30"	04085200	20.1	.0146	equation	2.1	1.5
35	04085322	Devils R nr Denmark	44°18'31"	87°49'36"	04085200	29.6	.0338	equation	4.9	2.3
36	04085323	Devils R nr Denmark	44°17'52"	87°46'19"	04085200	36.3	.0790	equation	9.4	3.5
37	04085330	W Twin R nr Francis Ck	44°12'54"	87°40'50"	04085200	150	.0940	relation	39.8	3.6
38	040853315	W Twin R Tr nr Francis Ck	44°11'48"	87°40'50"	04085200	2.43	.1785	equation	.9	5.1
39	04085334	W Twin R Tr nr Rockwood	44°10'33"	87°40'47"	04085200	4.88	--	relation	1.2	3.3
40	04085392	Jordan Ck at New Holstein	43°57'12"	88°04'35"	04086000	3.3	.0154	equation	.4	1.4
41	04085396	S Br Manitowoc R nr Collins	44°02'01"	88°03'00"	04086000	114	.0511	equation	24.2	2.9
42	04085400	Killsnake R nr Chilton	44°03'33"	88°08'36"	04086000	29.4	.0480	relation	8.5	3.9
43	04085403	Spring Ck at Brillion	44°10'22"	88°04'00"	04086000	8.17	.1630	equation	3.0	5.0
44	04085404	N Br Manitowoc R Tr at Hilbert	44°07'53"	88°08'00"	04086000	5.3	.0494	equation	1.0	2.7
45	04085408	Mud Ck at Reeddsville	44°08'54"	87°56'46"	04086000	32.2	.0283	equation	4.9	2.1
46	04085410	Mud Ck nr Reedsville	44°08'21"	87°57'26"	04086000	42	.0110	relation	5.5	1.8
47	040854103	Mud Ck nr Collins	44°05'03"	87°57'58"	04086000	58.8	.0005	equation	1.1	[2].3
48	040854108	Manitowoc R Tr at Valders	44°04'05"	87°53'33"	04086000	5.06	.0571	equation	1.1	2.9
49	04085415	Manitowoc R nr Clark Mills	44°06'27"	87°47'57"	04086000	410	.0648	equation	101.1	3.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
50	04085420	Branch R nr Cato	44°11'20"	87°51'04"	04085200	78.8	0.0720	relation	15.1	2.6
51	040854245	Branch R at Br	44°08'26"	87°45'55"	04085200	106	.0416	equation	20.2	2.6
52	04085435	Silver Ck nr Manitowoc	44°03'17"	87°40'50"	04086000	21.2	.0061	equation	1.4	[2] .9
53	04085438	Pine Ck at Newton	44°00'31"	87°43'19"	04086000	6.6	--	relation	1.7	3.4
54	04085440	Point Ck nr Newton	43°57'43"	87°42'31"	04086000	18.7	.0474	equation	3.7	2.7
55	040854423	Centerville Ck at Centerville	43°55'30"	87°44'00"	04086000	3.12	.0217	equation	.4	[2]1.7
56	04085445	Sevenmile Ck at Haven	43°51'14"	87°44'00"	04086000	5.6	.0622	equation	1.2	3.0
57	04085450	Pigeon R nr Howards Grove	43°53'30"	87°50'02"	04086000	18.5	.0426	equation	3.4	2.5
58	04085454	Meeme Ck nr Cleveland	43°55'20"	87°48'45"	04086000	18.2	.1101	equation	5.6	4.1
59	04085458	Pigeon R at Howards Grove	43°49'20"	87°49'28"	04086000	48.7	.1110	equation	15.2	4.2
60	04085460	Pigeon R nr Howards Grove	43°47'49"	87°48'02"	04086000	65	.0370	equation	11.6	2.4
61	04085462	Pigeon R Tr nr Kohler	43°45'50"	87°48'00"	04086000	4.57	.0035	equation	.2	.7
62	04085480	Sheboygan R nr Fond du Lac	43°48'33"	88°15'04"	04086000	27.4	.0020	equation	.9	.5
63	040854801	Sheboygan R Tr at Mtcalvary	43°49'06"	88°15'05"	04086000	12.7	.0109	equation	1.2	1.2
64	04085482	Sheboygan R at St Cloud	43°48'51"	88°09'52"	04086000	73	.0620	relation	16.2	3.0
65	04085497	Sheboygan R at Kiel	43°54'43"	88°01'45"	04086000	153	.0150	relation	12.6	1.1
66	04085510	Sheboygan R Tr nr Kiel	43°55'12"	87°59'02"	04086000	15.4	.0431	equation	2.9	2.5
67	04085600	Sheboygan R nr Lk Mich	43°51'46"	87°55'22"	04086000	185	.0524	equation	40.2	3.0
68	04085700	Sheboygan R Tr nr Plymouth	43°47'26"	87°56'31"	04086000	6.51	.3150	relation	2.9	6.1
69	04085748	Mullet R at Greenbush	43°46'39"	88°05'05"	04086000	24.4	.0471	equation	4.8	2.7
70	04085751	Mullet R at Glenbeulah	43°47'51"	88°02'28"	04086000	30	--	relation	13.2	6.0
71	04085770	Mullet R at Plymouth	43°44'50"	87°58'52"	04086000	53	.1919	equation	22.1	5.7
72	04085778	Mullet R at Sheboygan Falls	43°43'21"	87°49'37"	04086000	78.2	.2047	relation	50.0	8.7
73	04085800	Onion R nr Waldo	43°41'39"	87°57'37"	04086000	20.7	.6140	relation	20.5	13.5
74	04085810	Onion R at Hingham	43°38'28"	87°54'53"	04086000	36.2	--	relation	16.0	6.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
75	04085830	Onion R at Gibbsville	43°39'16"	87°49'18"	04086000	82	0.2050	relation	24.0	4.0
76	04085950	Onion R at Sheboygan Falls	43°43'16"	87°48'19"	04086000	98	.1184	equation	32.1	4.5
77	04086005	Black R nr Oostburg	43°37'56"	87°45'32"	04086000	5.38	.0558	equation	1.1	2.8
78	04086013	Sucker Ck nr Lk Church	43°29'05"	87°49'22"	04087000	6.35	.0486	equation	1.2	2.7
79	040860146	Sauk Ck Tr nr Random Lk	43°31'59"	87°55'16"	04087000	2.68	.0770	equation	.7	3.3
80	04086015	Sauk Ck Tr nr Random Lk	43°29'05"	87°52'13"	04087000	17.9	.0260	equation	2.6	2.0
81	04086020	Sauk Ck at Port Washington	43°24'45"	87°52'49"	04087000	27.4	.0160	equation	2.5	[2]1.2
82	04086100	Milwaukee R at Campbellsport	43°36'26"	88°15'52"	05424000	51.4	.0120	relation	17.0	4.5
83	04086130	W Br Milwaukee R nr Campbell-sport	43°35'40"	88°20'20"	04087000	27.4	.1159	equation	8.7	4.3
84	04086170	E Br Milwaukee R at Dundee	43°38'58"	88°10'36"	04086200	26.3	.1541	equation	9.6	5.0
85	04086177	E Br Milwaukee R nr Dundee	43°36'58"	88°10'52"	04087000	36.2	--	relation	16.0	6.0
86	04086185	E Br Milwaukee R nr Beechwood	43°36'58"	88°09'16"	04086200	8.45	.0197	equation	1.0	1.7
87	04086210	Milwaukee R at Kewaskum	43°29'51"	88°11'41"	04087000	215	.0907	equation	62.3	3.9
88	04086226	Silver Ck nr W Bend	43°24'41"	88°13'00"	04087000	2.34	.3899	equation	1.3	7.7
89	04086237	Milwaukee R at W Bend	43°25'21"	88°10'52"	04087000	236	--	relation	94.0	5.4
90	04086240	Milwaukee R nr W Bend	43°25'34"	88°09'42"	04087000	238	.1368	equation	85.6	4.9
91	04086260	Milwaukee R Tr nr Newburg	43°24'23"	88°04'49"	04087000	2.03	.0840	equation	.5	3.4
92	04086270	Milwaukee R at Newburg	43°26'04"	88°02'55"	04087000	265	--	relation	110.0	5.6
93	04086280	N Br Milwaukee R Tr at Adell	43°37'50"	87°57'29"	04087000	4.23	.1210	relation	1.4	4.5
94	04086285	N Br Milwaukee R nr Cascade	43°38'25"	88°01'03"	04087000	19.5	.3880	equation	11.5	8.0
95	04086292	Chambers Ck nr Cascade	43°37'51"	88°02'29"	04087000	2.89	.1920	equation	1.1	5.3
96	04086296	Melius Ck nr Batavia	43°37'12"	88°03'00"	04087000	4.02	.6329	equation	3.0	10.0
97	04086300	N Br Milwaukee R nr Cascade	43°36'03"	88°00'43"	04087000	34.2	.4650	equation	26.0	10.3
98	04086306	Batavia Ck nr Batavia	43°35'11"	88°02'07"	04087000	6.94	.1267	equation	2.2	4.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
99	040863075	N Br Milwaukee R nr Random Lk	43°33'25"	88°03'10"	04087000	51.4	0.3428	equation	28.9	7.6
100	04086315	Mink Ck nr Batavia	43°33'28"	88°03'20"	04087000	19	.2436	equation	8.8	6.3
101	04086319	Silver Ck at Random Lk	43°33'26"	87°58'27"	04087000	11.7	.0930	relation	2.9	3.4
102	04086322	Silver Ck nr Batavia	43°33'25"	88°02'15"	04087000	18.7	.0549	equation	4.0	2.9
103	04086326	N Br Milwaukee R nr Random Lk	43°30'45"	88°04'28"	04087000	103.53	.2394	equation	49.0	6.4
104	04086330	Stony Ck at Boltonville	43°31'33"	88°06'13"	04087000	17.9	.0605	equation	4.0	3.0
105	04086350	N Br Milwaukee R nr Fillmore	43°28'45"	88°02'05"	04087000	149	.1821	equation	61.6	5.6
106	04086404	Milwaukee R at Saukville	43°22'55"	87°57'15"	04087000	457	--	relation	203.0	6.0
107	04086405	Milwaukee R at Saukville	43°22'31"	87°57'34"	04086500	461	.2021	equation	205.8	6.1
108	04086409	Milwaukee R at Grafton	43°20'11"	87°56'57"	04087000	8.53	.2586	equation	4.0	6.4
109	04086415	Milwaukee R at Grafton	43°18'27"	87°57'08"	04087000	476	.1967	equation	209.7	6.0
110	04086420	Cedar Cr nr W Bend	43°22'41"	88°14'47"	04086500	10.3	.1611	equation	3.8	5.0
111	04086425	Cedar Cr nr Slinger	43°21'13"	88°14'01"	04086500	13.9	.0759	equation	3.5	3.4
112	04086450	Cedar Cr Tr #3 nr Rockfield	43°16'50"	88°09'29"	04086500	10.7	.3680	equation	6.1	7.7
113	04086460	Cedar Cr nr Jackson	43°19'25"	88°08'32"	04086500	53.6	.2930	relation	36.0	9.1
114	04086465	Cedar Cr Tr nr Jackson	43°20'25"	88°09'41"	04086500	4.06	.0824	equation	1.0	3.5
115	04086475	Cedar Ck nr Jackson	43°20'40"	88°04'39"	04086500	84.3	.1755	equation	33.8	5.4
116	04086478	Cedar Ck Tr nr Newburg	43°24'23"	88°02'26"	04086500	2.58	.1845	equation	1.0	5.2
117	04086485	Cedar Ck Tr nr Jackson	43°21'05"	88°04'28"	04086500	13.8	.0965	equation	3.9	3.8
118	04086700	Pigeon Ck at Mequon	43°13'57"	87°59'01"	04087000	11.6	.0399	equation	2.1	2.4
119	04086800	Milwaukee R at Brown Deer	43°10'39"	87°57'20"	04087000	656	.1627	equation	263.5	5.5
120	04087020	Menomonee R at Menomonee Falls	43°11'32"	88°07'58"	04087120	30.7	.1530	relation	10.7	4.7
121	04087040	Menomonee R at Butler	43°06'51"	88°03'56"	04087120	60.6	.1420	relation	18.0	4.0
122	040872162	Tr To Root R Tr nr Muskego	42°55'25"	88°05'46"	04087240	3.07	.0108	equation	.3	1.2

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

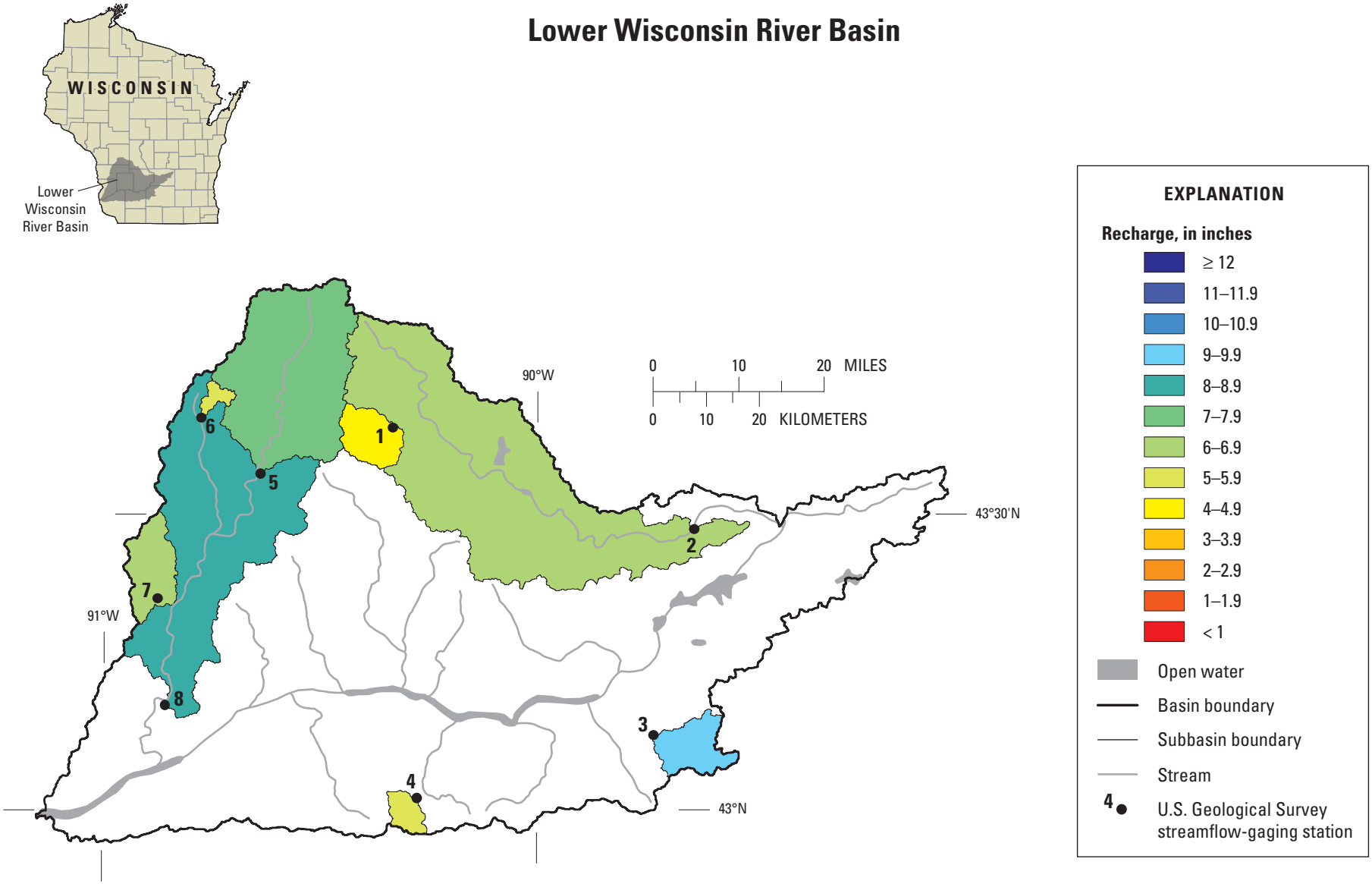
Appendix 9*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lake Michigan Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

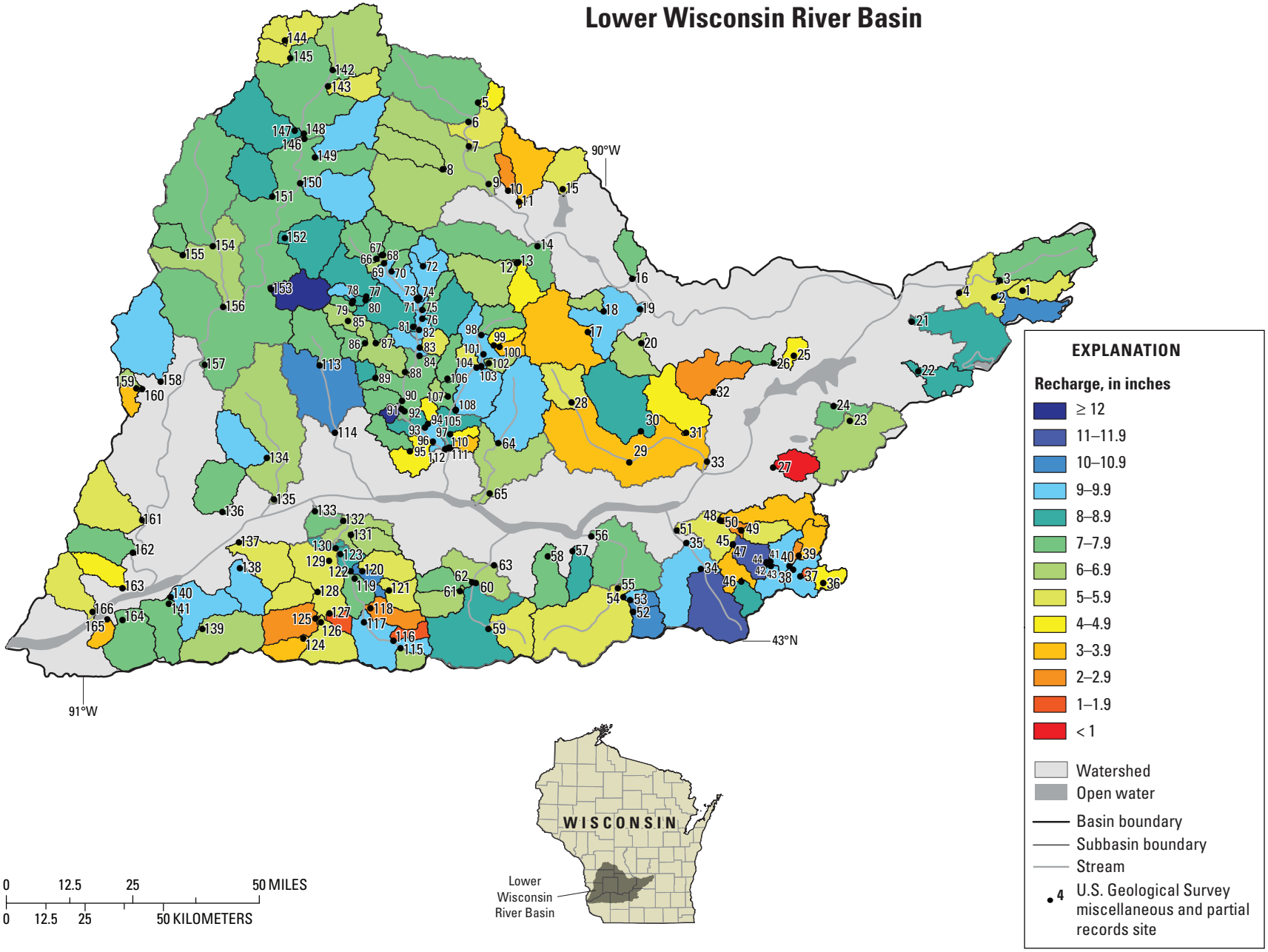
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
123	04087224	E Branch Root R Canal nr Sturtevant	42°43'09"	87°58'56"	04087240	5.51	0.0196	equation	.7	1.6
124	04087227	W Br Root R Canal at Union Grove	42°41'23"	88°01'56"	04087240	3.94	.0801	equation	1.0	3.4
125	040872325	Root R Canal nr Raymond	42°48'02"	87°59'32"	04087240	54.8	.0788	equation	14.4	3.6
126	04087235	Root R nr Caledonia	42°50'30"	87°54'50"	04087240	150	.0310	relation	34.0	3.1
127	04087238	Hoods Ck nr Sturtevant	42°43'14"	87°55'23"	04087240	3.38	.0089	equation	.3	1.1
128	040872383	Hoods Ck nr Sturtevant	42°44'19"	87°54'40"	04087240	8.84	.0085	equation	.7	1.1
129	04087248	Pike R nr Sturtevant	42°39'38"	87°52'23"	04087257	17.9	.3422	equation	9.8	7.5
130	04087251	Pike Ck Tr nr Somers	42°37'16"	87°53'42"	04087257	2.09	.0228	equation	.3	1.8
131	04087252	Pike Ck nr Somers	42°38'23"	87°52'54"	04087257	13.08	.0219	equation	1.7	1.8
132	04087254	Pike Ck Tr nr Somers	42°38'39"	87°52'54"	04087257	2.71	.0384	equation	.5	2.3
133	040872635	Pike R nr Kenosha	42°39'11"	87°49'24"	04087257	45.9	.1613	equation	17.4	5.1
134	04087269	Pike Ck at Kenosha`	42°35'58"	87°50'25"	04087257	2.37	.1073	equation	.7	3.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 10–*A*. Locations of streamflow-gaging stations in the Lower Wisconsin River Basin and spatial distribution of average annual recharge.



Appendix 10–*B*. Locations of miscellaneous and partial-record sites in the Lower Wisconsin River Basin and spatial distribution of estimated average annual recharge.

Appendix 10*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Lower Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total streamflow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	05404116	S Br Baraboo R at Hillsboro	39.1	1989–1999	ex rec	--	12	4.1	--	--	66
2	05405000	Baraboo R nr Baraboo	609	1970–1999	BFI	0.6400	270	6.0	430	9.56	170
3	05406500	Black Earth Ck at Black Earth	45.6	1970–1999	BFI	.8420	32	9.5	38	11.3	23
4	05406640	Otter Ck nr Highland	16.8	1971–1975	ex rec	--	6.5	5.3	--	--	--
5	05408000	Kickapoo R at La Farge	266	1970–1999	BFI	.7540	140	7.4	190	9.9	110
6	05408500	Knapp Ck nr Bloomingdale	8.44	1955–1969	ex rec	--	3.3	5.3	--	--	2.3
7	05409890	Nederlo Ck nr Gays Mills	9.46	1935–1960; 1979–1981	ex rec	--	4.6	6.6	--	--	3.8
8	05410490	Kickapoo R at Steuben	687	1970–1999	BFI	.8430	454	9.0	540	10.7	320

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
1	05404025	Middle Br Duck Ck nr Rio	43°29'54"	89°11'30"	05405000	7.72	0.1795	equation	3.0	5.3
2	05404027	Middle Br Duck Ck nr Rio	43°29'20"	89°14'47"	05405000	28	.4963	equation	18.9	9.1
3	05404030	N Br Duck Ck nr Pardeeville	43°30'47"	89°14'10"	05405000	33.6	.5220	relation	18.5	7.5
4	05404033	Duck Ck at Wyocena	43°29'45"	89°18'54"	05405000	79.6	.2220	relation	32.2	5.5
5	05404050	Cleaver Ck Tr nr Elroy	43°46'00"	90°14'57"	05405000	4.16	.1166	equation	1.3	4.1
6	05404080	Baraboo R at Elroy	43°44'23"	90°16'02"	05405000	59.4	.2935	equation	30.9	7.1
7	05404100	Baraboo R nr Union Center	43°42'18"	90°15'59"	05405000	73.1	.2870	relation	29.0	5.4
8	05404118	Hills Ck nr Hillsboro	43°40'19"	90°19'02"	05405000	16.2	.2612	equation	7.7	6.5
9	05404123	Baraboo R at Wonewok	43°39'08"	90°13'40"	05405000	174	.2702	equation	88.6	6.9
10	05404125	Gardner Ck at Wonewoc	43°38'32"	90°11'24"	05405000	4.45	.0623	equation	1.0	3.0
11	05404127	Crossman Ck nr Lavalle	43°37'36"	90°10'08"	05405000	19.9	.1018	equation	5.8	4.0
12	05404133	Mcglynn Ck nr Cazenovia	43°32'24"	90°10'23"	05405000	23.9	.2624	equation	11.5	6.5
13	05404134	Mcglynn Ck nr Ironton	43°32'27"	90°10'12"	05405000	33.5	.1169	equation	10.7	4.3
14	05404137	Little Baraboo R nr Lavalle	43°33'50"	90°07'59"	05405000	69	.2099	equation	30.2	6.0
15	05404140	W Br Big Ck nr La Valle	43°38'41"	90°05'01"	05405000	11.9	.1718	equation	4.5	5.2
16	05404175	Copper Ck nr Reedsburg	43°31'05"	89°56'53"	05405000	8.25	.3500	equation	4.5	7.4
17	05404200	Narrows Ck at Loganville	43°26'32"	90°02'06"	05405000	40.1	.1440	relation	11.5	3.9
18	05404205	Narrows Ck Tr nr Rock Springs	43°28'20"	90°00'14"	05405000	4.57	.2402	equation	2.0	6.0
19	05404250	Narrows Ck nr Rock Springs	43°28'31"	89°56'02"	05405000	68.1	.2000	equation	29.1	5.8
20	05404400	Seeley Ck nr N Freedom	43°25'37"	89°55'51"	05405000	12.4	.2518	equation	5.8	6.3
21	05405560	Rocky Run nr Poynette	43°27'21"	89°24'24"	05405000	32.9	.4129	equation	20.2	8.3
22	05405600	Rowan Ck at Poynette	43°23'11"	89°23'43"	05406500	10.4	.5030	relation	6.8	8.9
23	05405800	Spring Ck at Lodi	43°19'00"	89°31'40"	05405000	37	.5750	relation	18.0	6.6
24	05405812	Spring Ck nr Lodi	43°20'14"	89°33'34"	05405000	45.5	.3094	equation	24.2	7.2
25	05405820	Wisconsin R Tr nr Merrimac	43°24'33"	89°38'08"	05405000	2.82	.1224	equation	0.9	4.2
26	05405850	Wisconsin R Tr nr Merrimac	43°23'56"	89°40'30"	05405000	3.16	.3390	equation	1.7	7.2

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
27	05406060	Blum'S Ck at Roxbury	43°15'06"	89°40'34"	05406500	9.27	0.0035	equation	.5	.7
28	05406110	Honey Ck nr Plain	43°20'38"	90°03'58"	05405000	14	.1807	equation	5.5	5.3
29	05406200	Honey Creek Nr Plain	43°15'31"	89°57'15"	05406500	55.93	.1630	relation	14.6	3.5
30	05406220	N Br Honey Ck nr Leland	43°18'10"	89°55'55"	05405000	35.3	.3902	equation	21.1	8.1
31	05406230	E Br Honey Ck nr Witwen	43°18'02"	89°50'41"	05405000	23	.1529	equation	8.4	4.9
32	05406240	Otter Ck nr Prairie Du Sac	43°21'30"	89°47'30"	05405000	17.9	.0339	equation	3.0	2.2
33	05406300	Honey Ck nr Sauk City	43°15'35"	89°48'16"	05405000	187	.2350	relation	62.3	4.5
34	05406400	E Br Blue Mounds Ck nr Black Earth	43°06'30"	89°49'00"	05406500	29	.6790	relation	24.1	11.3
35	05406430	Blue Mounds Ck nr Mazomanie	43°08'41"	89°50'40"	05406500	55	.5707	equation	40.4	10.0
36	05406450	Black Earth Ck nr Cross Plains	43°05'16"	89°34'52"	05406500	3.32	.1428	equation	1.1	4.6
37	054064509	Black Earth Ck nr Cross Plains	43°05'49"	89°37'32"	05406500	9.53	--	relation	1.2	[2]1.7
38	05406455	Black Earth Ck at Cross Plains	43°06'25"	89°38'22"	05406500	11.3	.5464	equation	7.9	9.4
39	054064685	Brewery Cr nr Cross Plains	43°07'33"	89°37'40"	05406500	9.3	.1061	equation	2.8	4.0
40	05406475	Brewery Cr nr Cross Plains	43°06'43"	89°38'46"	05406500	12.5	.0571	equation	2.7	2.9
41	05406487	Black Earth Ck nr Cross Plains	43°07'05"	89°40'57"	05406500	27	.5833	equation	19.8	9.9
42	05406489	Black Earth Ck above Garfoot Ck	43°06'56"	89°41'18"	05406500	33	--	relation	22.5	9.3
43	054064915	Garfoot Ck nr Cross Plains	43°06'43"	89°40'54"	05406500	3.91	.6284	equation	2.9	9.9
44	05406494	Black Earth Ck nr Cross Plains	43°07'02"	89°41'24"	05406500	39.1	--	relation	24.7	8.6
45	05406510	Black Earth Ck atVermont Ck	43°08'34"	89°45'18"	05406500	48.4	.4909	equation	32.8	9.2
46	05406513	Vermont Cr nr Black Earth	43°05'24"	89°44'19"	05406500	6.1	.4338	equation	3.7	8.3
47	05406515	Vermont Ck at Mouth	43°08'33"	89°45'18"	05406500	14.9	--	relation	6.2	5.7
48	05406524	Halfway Prairie Cr at Mazomanie	43°10'37"	89°46'48"	05406500	16.7	--	relation	4.9	4.0
49	05406527	Marsh Valley Cr nr Black Earth	43°09'45"	89°44'19"	05406500	8.1	.2172	equation	3.5	5.9
50	054065295	Marsh Valley Cr at Mazomanie	43°10'34"	89°46'40"	05406500	10.5	--	relation	4.0	5.2
51	05406548	Black Earth Ck nr Mazomanie	43°09'46"	89°51'46"	05406500	105	--	relation	41.1	5.3

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
52	05406573	Trout Ck nr Barneveld	43°02'52"	89°56'48"	05406500	8.37	--	relation	6.3	10.2
53	05406575	Trout Ck at Co Hwy T nr Barneveld	43°03'52"	89°57'10"	05406500	12.1	--	relation	9.3	10.4
54	05406577	Trout Ck nr Ridgeway	43°04'08"	89°57'57"	05406500	13.5	--	relation	9.6	9.7
55	05406580	Mill Ck nr Barneveld	43°04'54"	89°58'35"	05406500	66.5	0.2084	equation	29.0	5.9
56	05406600	Mill Ck nr Spring Green	43°09'15"	90°01'38"	05406500	96.8	.5570	relation	56.2	7.9
57	05406605	Lowery Ck nr Spring Green	43°08'00"	90°03'52"	05406500	8.76	.4405	equation	5.4	8.4
58	05406615	Rush Ck nr Spring Green	43°07'33"	90°06'41"	05406500	13.9	--	relation	7.2	7.0
59	05406643	Flint Ck nr Clyde	43°01'24"	90°13'35"	05406500	16.7	.1871	equation	6.7	5.5
60	05406646	Otter Ck nr Highland	43°05'18"	90°15'03"	05406500	60.5	.4065	equation	37.3	8.4
61	054066478	Tr To Otter Ck Tr nr Highland	43°04'36"	90°16'50"	05406500	10.3	.2367	equation	4.6	6.1
62	05406648	Otter Ck Tr nr Highland	43°05'21"	90°15'26"	05406500	19.8	.3692	equation	11.4	7.8
63	05406650	Otter Ck nr Clyde	43°06'48"	90°12'53"	05406500	95.6	.3530	relation	49.0	7.0
64	05406680	Bear Ck nr Plain	43°17'09"	90°12'29"	05406500	37.5	.4964	equation	25.4	9.2
65	05406700	Bear Ck nr Lone Rock	43°12'54"	90°13'27"	05406500	65.5	.3400	relation	29.3	6.1
66	05406704	Pine R nr Yuba	43°32'42"	90°26'45"	05408000	9.64	.3521	equation	5.3	7.5
67	05406706	Pine R Tr nr Yuba	43°33'03"	90°26'03"	05408000	7.37	.3691	equation	4.1	7.6
68	05406708	Tr To Pine R Tr nr Yuba	43°33'02"	90°25'57"	05408000	8.13	.3493	equation	4.5	7.4
69	05406710	Pine R at Yuba	43°32'22"	90°25'50"	05408000	27.2	--	relation	12.6	6.3
70	05406711	Indian Ck nr Yuba	43°31'40"	90°24'57"	05408000	2.59	.3308	equation	1.3	7.1
71	05406714	Pine R nr Hub City	43°29'24"	90°22'00"	05408000	41.1	.4987	equation	28.0	9.2
72	05406716	Melancthon Ck nr Yuba	43°32'08"	90°21'15"	05408000	4.66	.5505	equation	3.2	9.3
73	05406717	Melancthon Ck nr Hub City	43°29'25"	90°21'39"	05408000	14.3	.5225	equation	9.8	9.3
74	05406718	Pine R nr Hub City	43°29'13"	90°21'50"	05408000	55.5	.5159	equation	38.7	9.5
75	05406719	Soules Ck at Hub City	43°28'25"	90°21'20"	05408000	4.4	.3733	equation	2.5	7.6
76	05406722	Hawkins Ck at Hub City	43°27'40"	90°21'20"	05408000	15.2	.4852	equation	10.0	8.9
77	05406732	W Br Pine R nr Bloom City	43°29'30"	90°27'50"	05408000	14.6	.4353	equation	9.1	8.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.v

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
78	05406735	W Br Pine R Tr nr Bloom City	43°29'10"	90°29'24"	05408000	2.47	0.5801	equation	1.7	9.5
79	05406737	Tr To W Br Pine R Tr nr Bloom City	43°28'57"	90°29'30"	05408000	2.59	.3728	equation	1.4	7.5
80	05406740	W Br Pine R Tr at Bloom City	43°29'12"	90°27'56"	05408000	6.13	.4881	equation	4.0	8.8
81	05406743	W Br Pine R nr Rockbridge	43°26'58"	90°22'22"	05408000	37.6	--	relation	23.1	8.3
82	05406745	Pine R at Rockbridge	43°26'43"	90°21'43"	05408000	117	--	relation	79.1	9.2
83	05406748	S Buck Ck at Buck Ck	43°25'13"	90°21'37"	05408000	4.95	.2267	equation	2.1	5.9
84	05406750	Pine R nr Buck Ck	43°24'30"	90°21'40"	05408000	128	.5020	relation	90.7	9.6
85	05406752	Fancy Ck nr Bloom City	43°27'26"	90°29'58"	05408000	4.14	.3020	equation	2.1	6.8
86	05406765	Fancy Ck Tr nr Gillingham	43°25'35"	90°27'58"	05408000	6.21	.3763	equation	3.5	7.7
87	05406770	Fancy Ck Tr at Gillingham	43°25'36"	90°26'45"	05408000	2.28	.3682	equation	1.3	7.4
88	05406780	Fancy Ck nr Richland Center	43°23'08"	90°23'20"	05408000	28.4	--	relation	14.5	6.9
89	05406781	Horse Ck nr Gillingham	43°22'37"	90°26'44"	05408000	3.44	.4684	equation	2.2	8.5
90	05406789	Brush Ck at Richland Center	43°20'42"	90°23'41"	05408000	6.77	.3558	equation	3.7	7.5
91	05406793	Center Ck at Richland Center	43°20'02"	90°23'41"	05408000	2.57	.2882	equation	1.2	6.6
92	05406795	Pine R at Richland Center	43°19'50"	90°23'20"	05408000	190	--	relation	110.0	7.9
93	05406820	Pine R nr Richland Center	43°18'29"	90°20'58"	05408000	198	.5150	relation	129.0	8.8
94	05406825	Spring Ck nr Richland Center	43°18'47"	90°20'36"	05408000	2.74	.1648	equation	1.0	4.9
95	05406845	Ash Ck nr Richland Center	43°16'28"	90°22'42"	05408000	7.95	.3246	equation	4.2	7.2
96	05406850	Ash Ck nr Richland Center	43°17'16"	90°20'03"	05408000	18.4	.2510	relation	6.5	4.8
97	05406851	Pine R at Twin Bluffs	43°16'37"	90°18'38"	05408000	224	.4694	equation	152.8	9.3
98	05406853	Willow Ck nr Loyd	43°26'17"	90°14'30"	05408000	9.28	.3159	equation	4.8	7.1
99	05406858	Willow Ck Tr nr Loyd	43°25'25"	90°13'00"	05408000	3.67	.1305	equation	1.2	4.4
100	05406860	Tr To Willow Ck Tr nr Loyd	43°25'16"	90°12'21"	05408000	3.52	.1061	equation	1.0	3.9
101	05406863	Willow Ck Tr nr Loyd	43°24'41"	90°14'12"	05408000	9.96	.3148	equation	5.2	7.1
102	05406864	Willow Ck Tr nr Loyd	43°23'54"	90°13'36"	05408000	2.63	.3141	equation	1.3	6.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
103	05406865	Willow Ck nr Richland Center	43°23'41"	90°14'30"	05408000	32.4	0.5145	equation	22.3	9.3
104	05406867	Willow Ck Tr nr Loyd	43°23'33"	90°14'59"	05408000	2.94	.2290	equation	1.3	5.8
105	05406875	Willow Ck nr Richland Center	43°19'54"	90°17'27"	05408000	54.7	.5014	equation	37.5	9.3
106	05406877	Little Willow Ck nr Neptune	43°22'35"	90°18'24"	05408000	6.71	.3397	equation	3.6	7.3
107	05406879	Little Willow Ck Tr nr Ithaca	43°21'05"	90°18'19"	05408000	2.32	.3205	equation	1.2	6.9
108	05406882	Little Willow Ck nr Richland Center	43°19'55"	90°17'22"	05408000	13.9	.3332	equation	7.5	7.3
109	05406885	Willow Ck Tr nr Sextonville	43°17'52"	90°18'04"	05408000	2.29	.1360	equation	.7	4.4
110	05406886	Willow Ck at Sextonville	43°16'47"	90°18'09"	05408000	79.5	.4597	equation	52.5	9.0
111	05406889	Willow Ck Tr at Sextonville	43°16'44"	90°18'02"	05408000	2.95	.0725	equation	.7	3.2
112	05406890	Willow Ck nr Richland Center	43°16'44"	90°18'12"	05408000	82.5	.5150	relation	47.7	7.9
113	05407003	Mill Ck nr Boaz	43°23'38"	90°33'14"	05408000	19.5	.3564	equation	11.0	7.6
114	05407013	Mill Ck nr Boaz	43°17'57"	90°31'24"	05408000	61.5	.5220	equation	43.2	9.5
115	054070182	Foreman Hollow nr Montfort	42°59'45"	90°23'42"	05406500	4.88	.2676	equation	2.3	6.4
116	054070187	Blue R Tr nr Highland	43°00'24"	90°24'30"	05406500	3.93	.0088	equation	.3	1.1
117	05407021	Blue R nr Highland	43°01'53"	90°27'53"	05406500	29.8	.3902	equation	17.7	8.1
118	054070215	Big Rock Br nr Highland	43°03'08"	90°27'12"	05406500	9.42	.0575	equation	2.0	2.9
119	05407023	Blue R nr Muscoda	43°05'37"	90°29'03"	05406500	50	.3542	equation	28.6	7.8
120	05407024	Six Mile Br nr Muscoda	43°06'18"	90°28'09"	05406500	11.3	.2107	equation	4.8	5.8
121	05407026	Big Spring Br nr Muscoda	43°04'40"	90°25'03"	05406500	7.26	.1738	equation	2.8	5.2
122	05407029	Big Spring Br nr Muscoda	43°06'15"	90°29'30"	05406500	12	.3454	equation	6.6	7.4
123	05407030	Blue R nr Blue R	43°07'41"	90°30'44"	05406500	79.6	.4486	equation	51.9	8.9
124	05407037	Fennimore Fk nr Castle Rock	43°00'33"	90°34'56"	05414000	7.1	.1031	equation	2.1	3.9
125	05407040	Fennimore Fk nr Castle Rock	43°02'12"	90°33'31"	05414000	23.3	.0281	equation	3.5	2.0
126	05407042	Fennimore Fk Tr nr Castle Rock	43°01'53"	90°32'53"	05414000	15.5	.1734	equation	6.0	5.2
127	05407044	Fennimore Fk Tr at Castle Rock	43°02'40"	90°31'54"	05414000	3.73	.0186	equation	.4	1.6

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
128	05407045	Fennimore Fk Tr nr Blue R	43°04'31"	90°33'17"	05414000	10.7	0.1989	equation	4.4	5.6
129	05407050	Fennimore Fk nr Blue R	43°07'06"	90°32'00"	05414000	77.2	.4180	relation	34.0	6.0
130	05407054	Blue R nr Boscobel	43°08'12"	90°31'13"	05406500	161	.4081	equation	101.4	8.6
131	05407061	Sand Br nr Muscoda	43°09'19"	90°29'29"	05406500	8.42	.2787	equation	4.1	6.6
132	05407063	Blue R nr Blue R	43°10'30"	90°30'21"	05406500	186	--	relation	87.0	6.4
133	05407064	Blue R at Blue R	43°11'20"	90°33'40"	05406500	193	.3515	equation	112.9	7.9
134	05407078	W Fk Knapp Ck nr Excelsior	43°15'47"	90°39'17"	05410500	17.1	.4970	equation	11.4	9.1
135	05407080	Knapp Ck nr Wport	43°12'19"	90°38'25"	05410500	85.1	.5290	relation	46.0	7.3
136	05407100	Richland Ck nr Plugtown	43°11'12"	90°44'24"	05410500	19.2	.5880	relation	11.1	7.9
137	05407130	Saunders Ck at Boscobel	43°08'39"	90°42'27"	05413500	17.1	--	relation	6.5	5.2
138	05407200	Crooked Ck nr Boscobel	43°06'27"	90°42'19"	05413500	12.9	.6680	relation	8.8	9.3
139	05407250	Big Green R nr Wauzeka	43°01'16"	90°46'34"	05413500	22.5	.2489	equation	10.5	6.4
140	05407260	Big Green R nr Wauzeka	43°03'54"	90°50'18"	05413500	48.4	.3916	equation	29.1	8.2
141	05407280	Little Green R nr Wauzeka	43°03'22"	90°50'29"	05413500	16.5	.3730	equation	9.5	7.8
142	05407360	Kickapoo R at Wilton	43°48'40"	90°31'56"	05408000	34.9	--	relation	17.8	6.9
143	05407380	Pee Ck nr Wilton	43°47'21"	90°32'27"	05408000	9.87	.2180	equation	4.2	5.8
144	05407400	Morris Ck Tr nr Norwalk	43°51'10"	90°37'32"	05383000	4.59	.2150	relation	1.8	5.3
145	05407411	Morris Tr at Norwalk	43°49'41"	90°36'55"	05408000	19.9	--	relation	8.4	5.7
146	05407470	Kickapoo R at Ontario	43°43'18"	90°35'15"	05408000	117	--	relation	58.0	6.7
147	05407490	Brush Ck at Ontario	43°43'32"	90°36'19"	05408000	31.2	.3957	equation	18.7	8.1
148	05407500	Kickapoo R at Ontario	43°42'52"	90°35'13"	05408000	151	--	relation	84.0	7.6
149	05407710	Billings Ck nr Ontario	43°41'16"	90°33'56"	05408000	23	--	relation	16.8	9.9
150	05407800	Warner Ck nr La Farge	43°39'06"	90°35'40"	05408000	24.9	.5100	equation	17.0	9.3
151	05407900	Weistee Ck nr La Farge	43°37'55"	90°38'52"	05408000	18	.4540	equation	11.5	8.7
152	05408200	Bear Ck nr La Farge	43°34'27"	90°37'24"	05408000	23.4	.3980	equation	14.0	8.1
153	05408300	Camp Ck nr Viola	43°30'07"	90°38'59"	05408000	16	.6526	equation	12.3	10.4
154	05408700	W Fk Kickapoo R nr Viroqua	43°33'44"	90°45'45"	05408500	63.5	.4490	relation	33.0	7.1

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

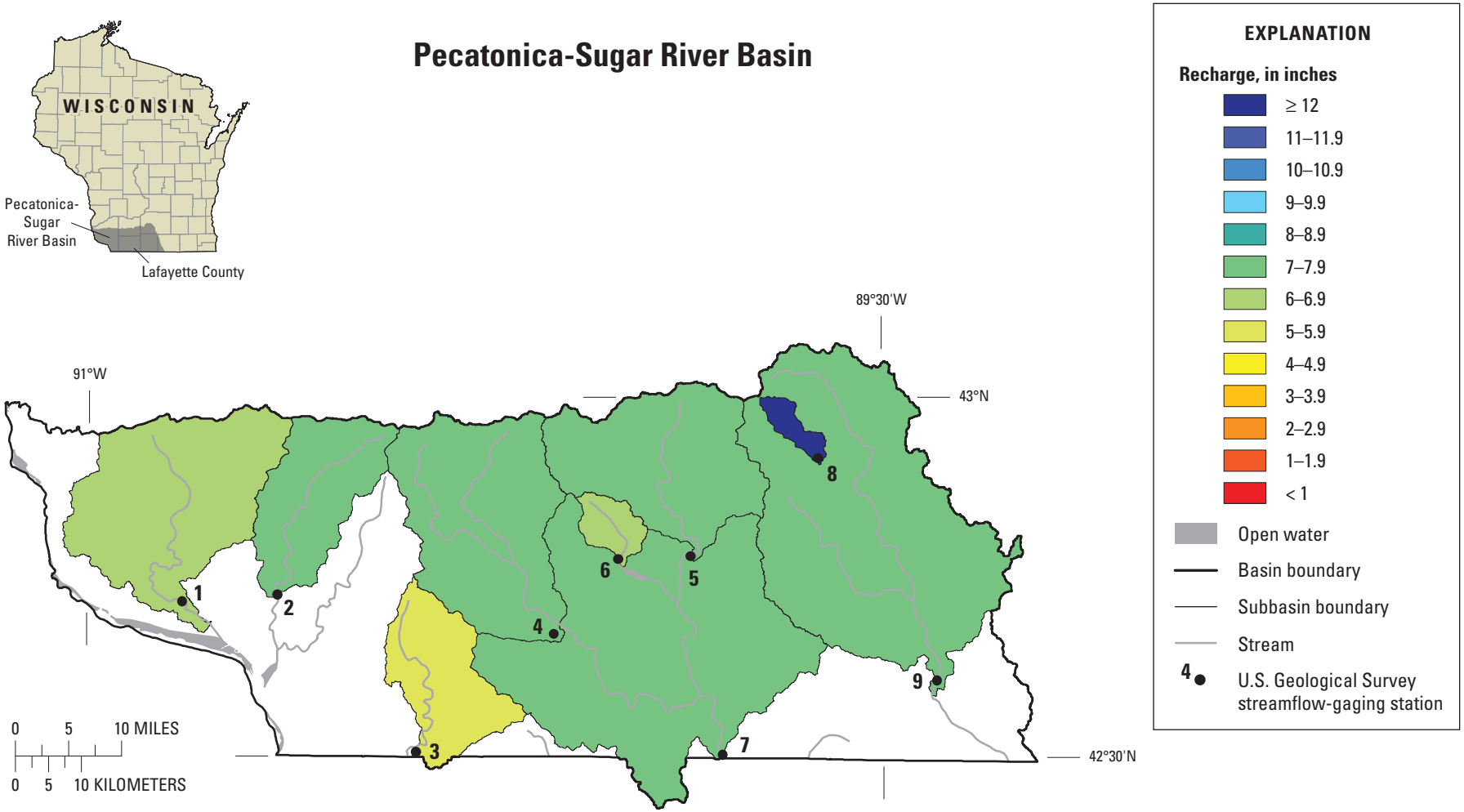
Appendix 10*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Lower Wisconsin River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

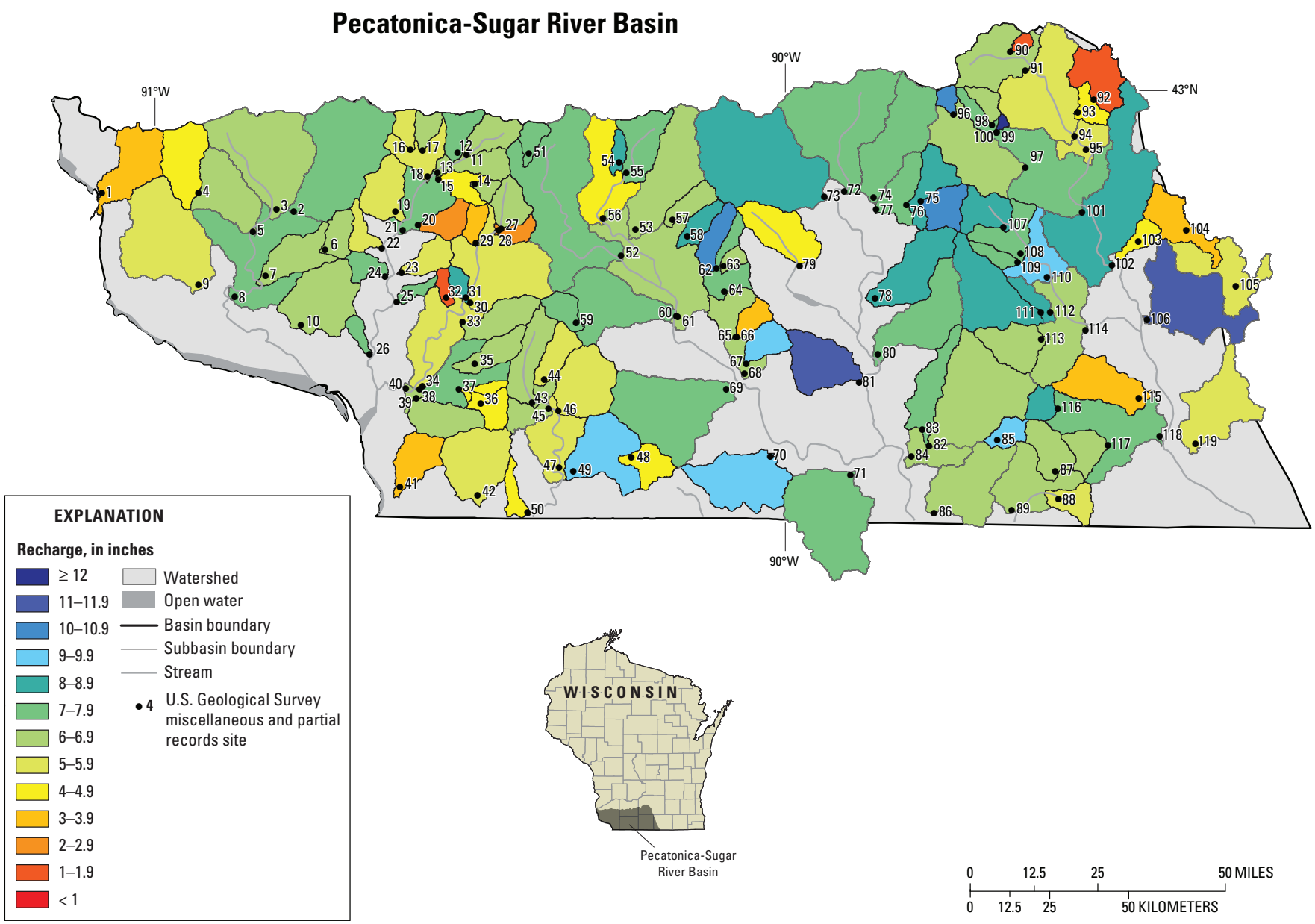
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
155	05408800	Bishops Ck nr Viroqua	43°32'55"	90°49'15"	05408000	7.27	0.4090	relation	4.0	7.5
156	05409000	W Fk Kickapoo R nr Readstown	43°28'35"	90°44'30"	05408000	106	--	relation	53.0	6.8
157	05409500	Kickapoo R at Soldiers Grove	43°23'40"	90°46'35"	05408000	530	--	relation	284.0	7.3
158	05409800	Tainter Ck nr Gays Mills	43°22'13"	90°51'41"	05408000	38.3	.5150	relation	27.6	9.8
159	05409860	S Fk Nederlo Ck nr Gays Mills	43°21'36"	90°54'31"	05409890	4.11	--	relation	1.2	4.0
160	05409870	Nederlo Ck nr Gays Mills	43°21'30"	90°53'49"	05409890	6.7	--	relation	2.4	4.9
161	05410600	Pine Ck nr Steuben	43°10'25"	90°53'39"	05413500	26.6	.4860	relation	9.8	5.0
162	05410650	Plum Ck nr Wauzeka	43°07'41"	90°54'42"	05413500	16.4	.3656	equation	9.3	7.7
163	05410750	Little Kickapoo Ck nr Wauzeka	43°04'41"	90°55'51"	05413500	9.94	.1378	equation	3.4	4.6
164	05410850	Millville Ck nr Wauzeka	43°01'55"	90°55'50"	05413500	16.3	.3845	equation	9.5	7.9
165	05410910	Dutch Hollow Ck nr Wauzeka	43°02'02"	90°57'34"	05413500	4.57	.0780	equation	1.1	3.4
166	05411000	Gran Grae Ck nr Wauzeka	43°02'36"	90°59'15"	05413500	17.1	.3800	relation	6.3	5.0

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 11–*A*. Locations of streamflow-gaging stations in the Pecatonica-Sugar River Basin and spatial distribution of average annual recharge.



Appendix 11–*B*. Locations of miscellaneous and partial-record sites in the Pecatonica-Sugar River Basin and spatial distribution of estimated average annual recharge.

Appendix 11*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Pecatonica-Sugar River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi^2, square mile; ft^3/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi^2)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft^3/s)	Recharge (inches)	Total streamflow (ft^3/s)	Total streamflow (inches)	[2]Q90 (ft^3/s)
1	05413500	Grant R at Burton	269	1970–1999	BFI	0.7560	140	6.8	180	9.1	84
2	05414000	Platte R nr Rockville	142	1970–1999	BFI	.7450	78	7.5	110	10.1	44
3	05415000	Galena R at Buncombe	125	1948–1992	ex rec	--	52	5.6	--	--	28
4	05432500	Pecatonica R at Darlington	273	1970–1999	BFI	.6900	140	7.1	210	10.4	75
5	05433000	E Br Pecatonica R nr Blanchardville	221	1970–1999	BFI	.7760	130	8.0	170	10.4	78
6	05433500	Yellowstone R nr Blanchardville	28.5	1955–1979	ex rec	--	14	6.7	--	--	8.0
7	05434500	Pecatonica R at Martintown	1034	1970–1999	BFI	.7510	600	7.9	810	10.6	330
8	05436000	Mt Vernon Ck nr Mt Vernon	16.4	1955–1980	ex rec	--	18	14.9	--	--	14
9	05436500	Sugar R nr Brodhead	523	1970–1999	BFI	.7490	290	7.6	400	10.3	180

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 11*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Pecatonica-Sugar River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
1	05411510	Sandy Ck nr Bagley	42°52'45"	91°04'30"	05413500	18.9	0.0290	relation	5.3	3.8
2	05413000	Grant R nr Lancaster	42°51'37"	90°46'22"	05413500	50.9	.3407	equation	28.5	7.6
3	05413100	Little Grant R nr Lancaster	42°51'47"	90°47'59"	05413500	45.5	.3540	relation	21.8	6.5
4	05413140	Blake Fk at Bloomington	42°52'51"	90°55'22"	05413500	17.9	.2260	relation	6.5	4.9
5	05413250	Blake Fk nr Beetown	42°50'11"	90°50'11"	05413500	39.7	.1900	equation	16.3	5.6
6	05413400	Pigeon Ck nr Lancaster	42°48'59"	90°43'24"	05413500	6.93	.4390	relation	3.2	6.3
7	05413415	Pigeon Ck nr Beetown	42°47'11"	90°48'59"	05413500	21	.2788	equation	10.4	6.7
8	05413430	Grant R nr Beetown	42°45'43"	90°51'51"	05413500	195	.2911	equation	103.5	7.2
9	05413450	Rattlesnake Ck nr Cassville	42°46'28"	90°55'18"	05413500	44.7	.2060	relation	17.4	5.3
10	05413600	Boice Ck nr Potosi	42°43'43"	90°45'35"	05413500	26.3	.3480	relation	12.9	6.7
11	05413700	Platte R nr Livingston	42°55'38"	90°30'06"	05414000	9.67	.3035	equation	4.9	6.9
12	05413720	Platte R Tr nr Livingston	42°55'49"	90°30'57"	05414000	6.78	.3201	equation	3.5	7.1
13	05413750	Plate R nr Stitzer	42°54'23"	90°32'48"	05414000	27	.2963	equation	13.9	7.0
14	05413770	Crow Br nr Livingston	42°53'37"	90°29'18"	05414000	2.17	.2920	equation	1.0	6.3
15	05413780	Crow Br nr Stitzer	42°53'56"	90°32'45"	05414000	8.89	.2420	relation	3.0	4.6
16	05413790	Leggett Ck nr Stitzer	42°56'00"	90°35'25"	05414000	4.45	.2051	equation	1.8	5.6
17	05413805	Newell Ck nr Stitzer	42°55'57"	90°34'14"	05414000	4.64	.2518	equation	2.1	6.2
18	05413810	Leggett Ck nr Stitzer	42°54'08"	90°33'45"	05414000	18.4	.2009	equation	7.6	5.6
19	05413850	Platte R Tr #2 nr Lancaster	42°51'42"	90°36'46"	05414000	13.3	.1726	equation	5.1	5.2
20	05413880	Bacon Br nr Ellenboro	42°50'46"	90°34'38"	05414000	7.56	.0850	relation	1.6	2.9
21	05413900	Platte R nr Lancaster	42°50'22"	90°36'06"	05414000	90.8	.2990	relation	39.8	6.0
22	05413930	Austin Br nr Ellenboro	42°49'07"	90°38'03"	05414000	5.52	.4810	relation	4.1	10.1
23	05413960	Willow Br nr Ellenboro	42°47'27"	90°36'08"	05414000	7.88	.1846	equation	3.1	5.3
24	05413970	Mcpherson Br nr Ellenboro	42°47'09"	90°37'43"	05414000	5.12	.4147	equation	3.0	8.0
25	05413980	Culver Br nr Ellenboro	42°45'26"	90°36'35"	05414000	3.11	.3377	equation	1.6	7.2

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 11*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Pecatonica-Sugar River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
26	05414030	Platte R Tr #3 nr Tennyson	42°41'46"	90°39'08"	05414000	7.19	0.3353	equation	3.8	7.2
27	05414060	Little Platte R at Arthur	42°50'33"	90°26'49"	05414000	9	.2743	equation	4.3	6.6
28	05414070	Little Platte R Tr at Arthur	42°50'30"	90°26'51"	05414000	3.48	.0564	equation	.7	2.8
29	05414080	Little Platte R Tr nr Arthur	42°49'33"	90°29'11"	05414000	4.44	.1022	equation	1.3	3.9
30	05414150	Little Platte R nr Platteville	42°45'23"	90°29'40"	05414000	54	.1870	relation	22.2	5.6
31	05414200	Bear Br nr Platteville	42°45'46"	90°30'06"	05414000	2.72	.3770	relation	1.7	8.5
32	05414205	Young Br nr Platteville	42°45'43"	90°31'56"	05414000	2.34	.0820	relation	.3	2.0
33	05414210	Roundtree Br at Platteville	42°44'02"	90°30'22"	05414000	12.5	.4750	relation	5.7	6.2
34	05414220	Little Platte R nr Dickeyville	42°39'34"	90°34'07"	05414000	96.6	.2270	relation	42.1	5.9
35	05414227	Blockhouse Ck at Platteville	42°41'10"	90°29'12"	05415000	8.19	.2501	equation	3.8	6.2
36	05414242	French Ck nr Georgetown	42°38'25"	90°28'38"	05415000	5.76	.1571	equation	2.1	4.9
37	05414245	French Ck nr Georgetown	42°39'23"	90°30'40"	05415000	9.94	.1497	equation	3.5	4.8
38	05414250	Blockhouse Ck nr Dickeyville	42°39'22"	90°34'24"	05415000	36.3	.2330	relation	16.9	6.3
39	05414265	Mcadam Br nr Dickeyville	42°38'45"	90°34'42"	05414000	13.2	.2665	equation	6.3	6.5
40	05414270	Little Platte R nr Dickeyville	42°39'24"	90°35'40"	05414000	148	.2168	equation	67.0	6.1
41	05414759	Menominee R nr Kieler	42°32'34"	90°36'09"	05414000	12	.1450	relation	3.5	4.0
42	05414800	Sinsinawa R nr Hazel Green	42°32'02"	90°28'53"	05415000	24.9	.2040	relation	9.8	5.3
43	05414890	Galena R nr Cuba City	42°38'27"	90°23'49"	05415000	15.2	.2704	equation	7.4	6.6
44	05414900	Pats Ck nr Elk Grove	42°40'03"	90°22'40"	05415000	8.5	.1910	relation	3.5	5.6
45	05414910	Galena R nr Cuba City	42°38'03"	90°22'16"	05415000	33.2	.2435	equation	15.5	6.3
46	05414925	Madden Br nr Cuba City	42°37'53"	90°21'20"	05415000	21.9	.2017	equation	9.2	5.7
47	05414935	Galena R nr Benton	42°34'00"	90°21'14"	05415000	71	.2240	relation	29.4	5.6
48	05414950	Shullsburg Br at Shullsburg	42°34'44"	90°14'26"	05415000	7.72	.1330	relation	2.8	4.9
49	05414970	Shullsburg Br at Lead Mine	42°33'42"	90°19'54"	05415000	31.1	.4000	equation	18.8	8.2
50	05415038	Scrabble Br nr Hazel Green	42°30'52"	90°24'10"	05415000	4.69	.2050	relation	1.7	4.9

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 11*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Pecatonica-Sugar River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
51	05432050	Pecatonica R Tr nr Livingston	42°55'46"	90°24'13"	05432500	4.32	0.2450	relation	2.3	7.2
52	05432100	Pecatonica R nr Mineral Point	42°48'43"	90°15'30"	05432500	68.8	.2480	relation	35.6	7.0
53	05432170	Mineral Point Br nr Mineral Point	42°50'31"	90°14'07"	05432500	32.1	.2425	equation	14.9	6.3
54	05432207	E Pecatonica R Tr nr Linden	42°55'13"	90°15'42"	05432500	2.03	.1970	relation	1.3	8.7
55	05432219	Pedler Ck nr Linden	42°54'27"	90°14'59"	05432500	13.6	.2290	relation	7.5	7.5
56	05432230	E Pecatonica R nr Mifflin	42°51'18"	90°17'12"	05432500	39.8	.2095	equation	17.2	5.9
57	05432270	Brewery Ck at Mineral Point	42°51'13"	90°10'38"	05432500	6.74	.2220	relation	3.3	6.7
58	05432300	Rock Br nr Mineral Point	42°50'02"	90°09'15"	05432500	4.83	.2480	relation	3.0	8.4
59	05432350	Bonner Br at Belmont	42°44'02"	90°19'42"	05432500	5.62	.2580	relation	2.9	7.0
60	05432400	Bonner Br at Calamine	42°44'31"	90°10'15"	05432500	34.5	.3232	equation	18.7	7.4
61	05432410	Pecatonica R at Calamine	42°44'28"	90°10'08"	05432500	232	.2543	equation	115.1	6.7
62	05432508	Otter Ck nr Waldwick	42°47'49"	90°06'28"	05432500	8.36	.3830	relation	6.4	10.4
63	05432512	Otter Ck Tr nr Waldwick	42°47'58"	90°05'48"	05432500	2.36	.2948	equation	1.1	6.6
64	05432514	Otter Ck nr Fayette	42°46'13"	90°05'43"	05432500	19.8	.3069	equation	10.3	7.1
65	05432518	Otter Ck nr Fayette	42°43'06"	90°04'40"	05432500	30.6	.2780	equation	15.3	6.8
66	05432520	Otter Ck Tr nr Fayette	42°43'06"	90°04'34"	05432500	5.25	.0640	equation	1.2	3.1
67	05432522	Otter Ck Tr nr Darlington	42°41'15"	90°03'40"	05432500	8.21	.1750	relation	5.6	9.3
68	05432525	Otter Ck nr Darlington	42°40'32"	90°03'51"	05432500	49.3	.2420	relation	24.3	6.7
69	05432550	Ames Br nr Darlington	42°39'26"	90°05'34"	05432500	44.3	.2610	relation	23.8	7.3
70	05432600	Wolf Ck at Gratiot	42°34'49"	90°01'27"	05432500	27.6	.1740	relation	18.8	9.3
71	05432645	Spafford Ck nr S Wayne	42°33'30"	89°53'51"	05432500	43.4	.2410	relation	23.1	7.2
72	05432740	Pecatonica R nr Hollandale	42°53'11"	89°54'26"	05433000	52.8	.3097	equation	28.2	7.3
73	05432800	Dodge Br at Hollandale	42°52'49"	89°56'18"	05432500	66	.3440	relation	40.5	8.3
74	05432900	Blue Mounds Br nr Hollandale	42°52'46"	89°51'38"	05433000	31	.3782	equation	18.2	8.0
75	05432924	Pleasant Vallet Br Tr nr Blanchard-ville	42°52'30"	89°47'13"	05433000	9.83	.6977	equation	7.7	10.7

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 11*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Pecatonica-Sugar River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
76	05432928	Pleasant Valley Br nr Blanchardville	42°52'13"	89°48'33"	05433000	21.5	0.5345	equation	15.0	9.5
77	05432940	Pleasant Valley Br nr Hollandale	42°51'54"	89°51'26"	05433000	33	.3349	equation	18.2	7.5
78	05433200	Sawmill Ck nr Blanchardville	42°45'46"	89°51'33"	05433000	21.9	.3931	equation	13.0	8.1
79	05433400	Yellowstone R nr Waldwick	42°48'01"	89°58'38"	05433000	18.7	.1430	equation	6.5	4.8
80	05433620	Dougherty Ck at Argyle	42°41'53"	89°51'18"	05433000	27.1	.3545	equation	15.3	7.7
81	05433700	Whiteside Ck nr Argyle	43°40'10"	89°53'13"	05432500	19.9	.4100	relation	17.0	11.6
82	05434260	Skinner Ck nr Browntown	42°35'32"	89°46'30"	05432500	47.3	.2880	equation	24.3	7.0
83	05434300	Jordan Ck nr Browntown	42°36'38"	89°47'08"	05432500	14.3	.3410	relation	7.7	7.3
84	05434317	Skinner Ck at Browntown	42°34'48"	89°48'09"	05432500	71	.3030	relation	34.0	6.5
85	05435030	Honey Ck nr Monroe	42°35'54"	89°40'05"	05432500	4.74	.5740	relation	3.3	9.5
86	05435100	Honey Ck nr Martintown	42°30'51"	89°46'03"	05432500	32.8	--	relation	16.3	6.8
87	05435290	Richland Ck nr Monroe	42°33'41"	89°34'39"	05436500	10.9	.2880	relation	5.6	7.0
88	05435300	Twin Grove Br nr Monroe	42°31'47"	89°34'22"	05436500	6.43	.2500	relation	2.7	5.7
89	05435325	Richland Ck at Clarno	42°31'02"	89°38'46"	05436500	39.3	.2720	equation	19.5	6.7
90	05435900	Sugar R Tr nr Pine Bluff	43°02'48"	89°38'42"	05436500	7.42	.0261	equation	1.1	1.9
91	05435910	Sugar R at Riley	43°01'31"	89°37'18"	05436500	14.2	.2852	equation	7.1	6.8
92	05435936	Badger Mill Ck nr Verona	42°59'31"	89°30'49"	05436500	14.9	.0207	equation	1.9	1.7
93	05435943	Badger Mill Ck at Verona	42°58'38"	89°32'21"	05436500	20.3	.1770	relation	7.0	4.7
94	05435950	Sugar R nr Verona	42°56'58"	89°32'40"	05436500	82.7	.1940	relation	33.1	5.4
95	05435959	Sugar R at Paoli	42°56'01"	89°31'35"	05436500	88.7	.2580	relation	35.2	5.4
96	05435970	W Br Sugar R nr Mt Horeb	42°58'28"	89°44'05"	05436500	2.5	.6048	equation	1.8	9.7
97	05435980	W Br Sugar R nr Mt Vernon	42°54'47"	89°37'19"	05436500	32.7	--	relation	16.2	6.7
98	05435983	Fryes Feeder nr Mt. Vernon	42°57'46"	89°40'28"	05436500	4.56	.2879	equation	2.2	6.6
99	05435991	Mt Vernon Ck at Mt Vernon	42°57'15"	89°40'04"	05436500	9.27	.3250	equation	4.9	7.2
100	05435993	Mt Vernon Ck at Mt Vernon	42°57'15"	89°40'01"	05436500	9.29	1.4151	equation	10.6	[2]15.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

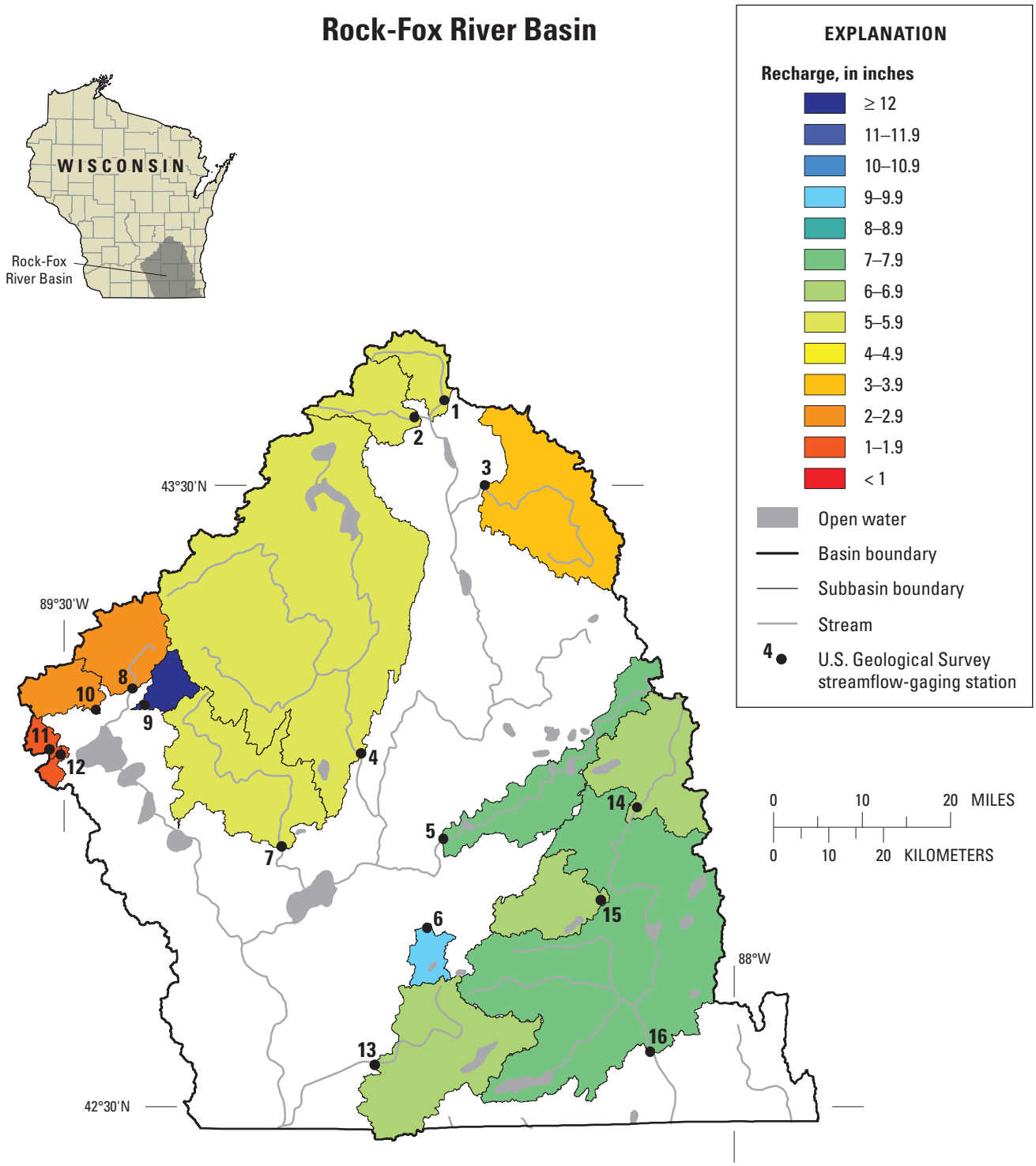
Appendix 11*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Pecatonica-Sugar River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

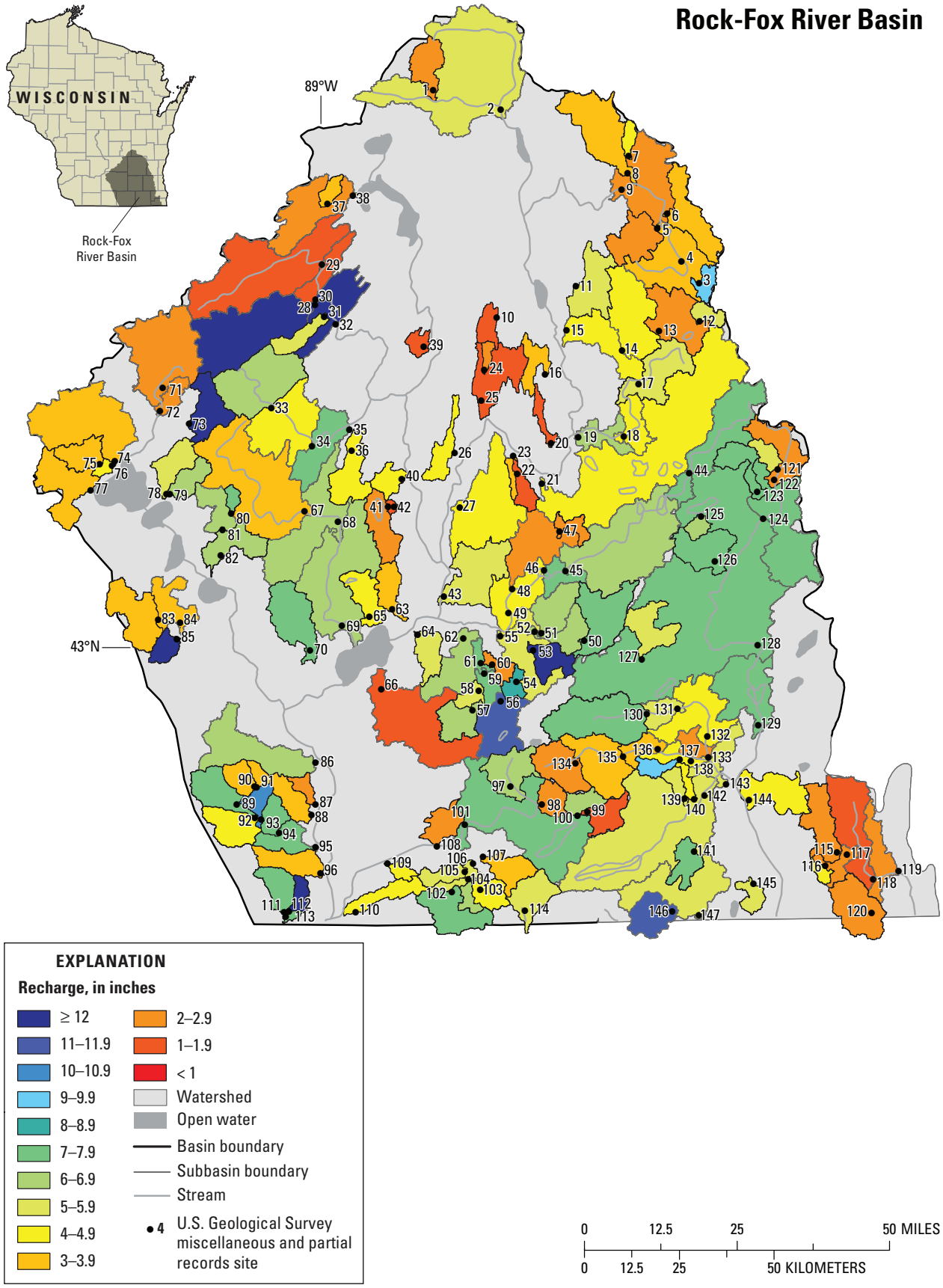
Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
101	05436076	Sugar R at Belleville	42°51'40"	89°32'01"	05436500	172	0.4260	relation	94.3	7.4
102	05436190	Sugar R nr Dayton	42°47'59"	89°29'12"	05436500	233	.3334	equation	133.1	7.8
103	05436200	Gill Ck nr Bklyn	42°49'38"	89°26'43"	05436500	3.33	.2070	relation	1.2	4.9
104	05436215	Allen Ck at Bklyn	42°50'24"	89°22'09"	05436500	10.8	.1320	relation	2.5	3.1
105	05436225	Allen Ck at Evansville	42°46'30"	89°17'34"	05436500	27.5	.1280	relation	9.6	4.7
106	05436250	Allen Ck nr Albany	42°44'11"	89°25'57"	05436500	70.5	.2570	relation	46.8	9.0
107	05436270	Little Sugar R nr New Glarus	42°50'39"	89°39'24"	05436500	10.5	.4950	equation	6.9	9.0
108	05436281	Little Sugar R at New Glarus	42°48'52"	89°37'49"	05436500	22.4	.3930	relation	13.0	7.9
109	05436285	Legler School Br at New Glarus	42°48'13"	89°38'07"	05436500	4.01	.3872	equation	2.3	7.7
110	05436300	Little Sugar R nr New Glarus	42°47'11"	89°35'21"	05436500	39.6	.3760	relation	24.5	8.4
111	05436360	W Br Litle Sugar R at Monticello	42°44'46"	89°35'57"	05436500	29	.4409	equation	18.4	8.6
112	05436362	W Br Little Sugar R at Monticello	42°44'43"	89°35'02"	05436500	33.6	.4460	relation	21.1	8.5
113	05436380	Burgy Ck nr Monticello	42°42'52"	89°35'56"	05436500	14	.2568	equation	6.6	6.4
114	05436400	Little Sugar R nr Monticello	42°43'30"	89°31'44"	05436500	118	.3490	relation	67.6	7.8
115	05436440	Searles Ck nr Brodhead	42°38'43"	89°26'47"	05436500	19.3	.0659	equation	4.5	3.2
116	05436510	Sylvester Ck nr Monroe	42°38'03"	89°34'21"	04073500	6.06	.3300	relation	3.7	8.3
117	05436542	Juda Br at Juda	42°35'30"	89°29'43"	05436500	8.13	.3570	relation	3.6	6.0
118	05436600	Sylvester Cr nr Brodhead	42°36'07"	89°24'51"	05436500	44.7	.2880	relation	24.4	7.4
119	05436700	Taylor Ck nr Brodhead	42°35'35"	89°21'29"	05436500	26.1	.1630	relation	11.1	5.8

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.



Appendix 12–*A*. Locations of streamflow-gaging stations in the Rock-Fox River Basin and spatial distribution of average annual recharge.



Appendix 12–*B*. Locations of miscellaneous and partial-record sites in the Rock-Fox River Basin and spatial distribution of estimated average annual recharge.

Appendix 12*C*. Average annual base flow and corresponding recharge, 1970–99, for streamflow-gaging stations in the Rock-Fox River Basin.

[USGS, U.S. Geological Survey; ID, identification number; mi², square mile; ft³/s, cubic foot per second; BFI, Baseflow Index; ex rec, extended record; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Drainage area (mi²)	Period of analysis (water years[1])	Base flow method	Base flow index	Base flow (ft³/s)	Recharge (inches)	Total streamflow (ft³/s)	Total streamflow (inches)	[2]Q90 (ft³/s)
1	05423000	W Br Rock R nr Waupun	40.7	1950–1981	ex rec	--	17	5.7	--	--	3.2
2	05423500	S Br Rock R at Waupun	63.6	1970–1999	ex rec	--	25	5.3	--	--	9.5
3	05424000	E Br Rock R nr Mayville	179	1950–1970	ex rec	--	50	3.8	--	--	18
4	05426000	Crawfish R at Milford	762	1970–1999	BFI	0.6010	320	5.8	530	9.4	87
5	05426250	Bark R nr Rome	122	1980–1999	ex rec	--	66	7.4	--	--	28
6	05427000	Whitewater Ck at Whitewater	22.8	1927, 1944–1954	ex rec	--	16	9.5	--	--	11
7	05427507	Koshkonong Ck nr Rockdale	150	1978–1982	ex rec	--	62	5.6	--	--	28
8	05427718	Yahara R at Windsor	73.6	1970–1999	ex rec	--	15	2.7	--	--	9.2
9	05427800	Token Ck nr Madison	24.3	1976–1980	ex rec	--	22	12.3	--	--	16
10	05427900	Sixmile Ck nr Waunakee	41.1	1977–1981	ex rec	--	8.2	2.7	--	--	4.5
11	05427943	Pheasant Br nr Middleton	9.61	1978–1981	ex rec	--	1.0	1.4	--	--	--
12	05427948	Pheasant Br at Middleton	18.3	1975–1999	BFI	.3460	1.5	1.1	5.0	3.7	.80
13	05431486	Turtle Ck nr Clinton	2.57	1970–1999	BFI	.6720	97	6.6	50	10.0	56
14	05543830	Fox R at Waukesha	126	1970–1999	BFI	.5730	64	6.9	110	12.3	28
15	05544200	Mukwonago R at Mukwonago	74.1	1974–1998	BFI	.6050	33	6.0	55	10.1	22
16	05545750	Fox R at New Munster	811	1970–1998	BFI	.6260	420	7.1	670	11.3	190

[1] Water year is a 12-month period from October 1 through September 30, and is designated by the calendar year in which it ends (for example, the 2004 water year occurred October 1, 2003 through September 30, 2004).

[2] Discharge that is exceeded 90 percent of the time.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
1	05423300	S Branch Rock R Tr nr Waupun	43°39'46"	88°48'55"	05423500	12.6	--	relation	2.2	2.4
2	05423510	W Branch Rock R nr Waupun	43°38'04"	88°41'08"	05423500	113	0.1824	equation	46.5	5.6
3	05423800	E Branch Rock R Tr nr Slinger	43°23'06"	88°18'29"	04086500	4.42	1.6090	relation	3.1	9.5
4	05423825	E Branch Rock R at Allenton	43°25'01"	88°20'29"	05424000	28.1	--	relation	7.1	3.4
5	05423840	E Branch Rock R Tr #2 nr Nenno	43°27'51"	88°23'15"	05424000	17.3	.0579	equation	3.8	3.0
6	05423850	Kohlsville R nr Kohlsville	43°29'02"	88°22'03"	05424000	20	.0686	equation	4.8	3.2
7	05423890	E Branch Rock R Tr nr Lomira	43°34'00"	88°26'24"	05424000	3.7	--	relation	1.3	4.8
8	05423947	Kummel Ck nr Theresa	43°32'32"	88°26'33"	05424000	28.7	.0617	equation	6.5	3.1
9	05423960	E Branch Rock R at Theresa	43°31'08"	88°27'15"	05424000	140	--	relation	31.7	3.1
10	05424071	Dead Ck Tr nr Clyman	43°20'34"	88°42'00"	05426000	5.3	.0188	equation	.6	1.6
11	05424085	Wildcat Ck nr Iron Ridge	43°23'07"	88°32'46"	05426000	21	--	relation	9.1	5.9
12	05424093	Rubicon Ck nr Slinger	43°19'56"	88°18'32"	04087000	5.24	.0800	relation	2.0	5.2
13	05424097	Rubicon R at Hartford	43°19'12"	88°23'15"	04087000	27.8	.0820	relation	6.0	2.9
14	05424100	Rubicon R nr Hartford	43°17'36"	88°27'32"	04086500	60	--	relation	16.1	3.6
15	05424150	Rubicon R nr Hustisford	43°19'25"	88°33'56"	05426000	80.5	.0960	equation	23.6	4.0
16	05424158	Baker Ck nr Lebanon	43°15'41"	88°36'29"	05426000	8.63	.0863	equation	2.3	3.6
17	05424190	Ashippun R nr Alderly	43°14'46"	88°25'44"	05426000	18.6	.1890	equation	7.5	5.5
18	05424200	Ashippun R nr Oconomowoc	43°10'21"	88°27'32"	05426000	33.8	.3330	relation	12.8	5.1
19	05424250	Ashippun R nr Monterey	43°10'20"	88°32'48"	05426000	44.6	.1781	equation	17.8	5.4
20	05424270	Rock R Tr nr Ixonia	43°09'52"	88°35'58"	05426000	3.74	.0077	equation	.3	1.0
21	05425300	Oconomowoc R nr Pipersville	43°06'30"	88°37'05"	05426000	123	.1433	equation	44.7	4.9
22	05425320	Rock R Tr nr Pipersville	43°07'21"	88°39'54"	05426000	5.31	.0229	equation	.7	1.8
23	05425340	Rock R Tr nr Watertown	43°08'51"	88°40'20"	05426000	8.39	.0365	equation	1.4	2.3
24	05425392	Clyman Ck nr Clyman	43°16'11"	88°43'28"	05426000	2.38	.0592	equation	.5	2.9

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
25	05425400	Silver Ck nr Watertown	43°13'35"	88°43'54"	05426000	21.9	0.0870	relation	3.2	2.0
26	05425520	Rock R Tr nr Milford	43°09'11"	88°47'04"	05426000	9.88	.1426	equation	3.4	4.7
27	05425560	Johnson Ck at Johnson Ck	43°04'34"	88°46'33"	05426000	43.9	.0130	equation	14.2	4.4
28	05425580	Crawfish R nr Fall R, X	43°21'52"	89°02'55"	05426000	54.2	--	relation	49.3	12.4
29	05425600	N Br Crawfish R nr Columbus	43°25'13"	89°02'07"	05426000	69.1	--	relation	5.2	1.0
30	05425650	N Br Crawfish R nr Fall R	43°22'17"	89°02'54"	05426000	80	.0151	equation	9.0	1.5
31	05425700	Robbins Ck nr Columbus	43°20'48"	89°01'55"	05426000	8.01	.0920	relation	3.1	5.3
32	05425716	Crawfish R at Columbus	43°20'09"	89°00'34"	05426000	164	--	relation	83.2	6.9
33	05425830	Maunesha R nr Sun Prairie	43°13'11"	89°08'06"	05426000	34.45	--	relation	17.5	6.9
34	05425840	Maunesha R at Marshall	43°09'57"	89°03'28"	05426000	70.6	.1060	relation	28.9	5.6
35	05425847	Maunesha R at Waterloo	43°11'18"	88°59'09"	05426000	91.3	--	relation	40.9	6.1
36	05425860	Stony Bk nr Waterloo	43°09'30"	88°58'56"	05426000	14.2	.1463	equation	5.0	4.8
37	05425898	Beaver Ck Tr nr Randolph	43°30'19"	89°01'24"	05423500	4.58	--	relation	1.2	3.6
38	05425900	Beaver Ck nr Randolph	43°31'00"	88°58'23"	05423500	34.3	.0431	equation	6.5	2.6
39	05425926	Beaverdam R Tr at Reeseville	43°18'13"	88°50'28"	05426000	3.51	.0216	equation	.4	1.7
40	05425960	Crawfish R Tr nr Lk Mills	43°07'02"	88°53'10"	05426000	5.11	.1384	equation	1.7	4.6
41	05425983	Rock Ck at Lk Mills	43°04'43"	88°54'48"	05426000	15	.0397	equation	2.7	2.4
42	05425988	Rock Ck at Lk Mills	43°04'43"	88°54'06"	05426000	15.7	--	relation	2.0	1.7
43	05426045	Deer Ck nr Fort atkinson	42°57'05"	88°48'34"	05426000	23.9	.1882	equation	9.7	5.5
44	05426060	Bark R at Hartland	43°07'11"	88°20'07"	05426000	30.2	.4340	relation	16.0	7.2
45	05426200	Bark R nr Sullivan	42°59'03"	88°34'30"	05426000	104.7	.2570	relation	54.0	7.0
46	05426230	Bark R at Rome	42°59'10"	88°36'58"	05426000	114	.3313	equation	64.0	7.6
47	05426260	Duck Cr nr Sullivan	43°02'28"	88°35'07"	05426000	7.44	--	relation	1.3	2.4
48	05426300	Duck Ck nr Sullivan	42°57'41"	88°40'41"	05426000	33.1	.1150	relation	5.8	2.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
49	05426330	Bark R at Hebron	42°55'38"	88°41'07"	05426000	163	0.1159	equation	53.4	4.4
50	05426400	Scuppernong R nr Palmyra	42°53'10"	88°32'29"	05426000	24.8	.4500	relation	13.0	7.1
51	05426425	Scuppernong R above Mud Ck	42°53'53"	88°37'24"	05426000	35.24	.2875	equation	17.9	6.9
52	05426430	Scuppernong R Below Mud Ck	42°54'02"	88°38'13"	05426000	50.4	.2319	equation	23.1	6.2
53	05426437	Spring Ck nr Whitewater	42°52'26"	88°38'23"	05426000	10.1	1.1277	equation	10.2	13.7
54	05426450	Steel Bk Tr nr Whitewater	42°49'48"	88°40'23"	05426000	3.19	.4692	equation	2.0	8.5
55	05426460	Bark R nr Hebron	42°53'40"	88°42'06"	05426000	254	.1608	equation	99.5	5.3
56	05426900	Whitewater Ck nr Whitewater	42°48'14"	88°42'11"	05431486	20.6	--	relation	17.3	11.4
57	05427008	Spring Bk nr Whitewater	42°47'29"	88°45'28"	05431486	11.05	.2473	equation	5.1	6.3
58	05427010	Spring Bk at Whitewater	42°49'08"	88°44'41"	05431486	16.28	--	relation	7.1	5.9
59	05427013	Whitewater Ck at Whitewater	42°50'34"	88°44'02"	05431486	42.7	.3170	relation	23.5	7.5
60	05427014	Whitewater Ck Tr nr Whitewater	42°51'18"	88°43'08"	05431486	3.95	--	relation	.8	2.8
61	05427017	Whitewater Ck nr Whitewater	42°51'26"	88°44'26"	05431486	49.39	.3061	equation	26.2	7.2
62	05427037	Whitewater Ck at Cold Spring	42°53'33"	88°46'22"	05431486	70	--	relation	31.6	6.1
63	05427130	Rock R Tr nr Busseyville	42°56'05"	88°54'28"	05426000	8.73	.0922	equation	2.4	3.7
64	05427200	Allen Ck nr Fort atkinson	42°53'54"	88°51'35"	05431486	10.2	.0700	relation	4.2	5.6
65	05427223	Rock R Tr nr Busseyville	42°55'27"	88°57'07"	05426000	9.83	.1158	equation	3.0	4.2
66	05427230	Otter Ck nr Milton	42°49'19"	88°55'52"	05426000	47.4	.0360	relation	3.6	1.0
67	05427350	Koshkonong Cr nr Deerfield	43°04'25"	89°04'25"	05426000	68.6	.3440	relation	21.2	4.2
68	05427430	Koshkonong Ck at London	43°03'31"	89°00'35"	05426000	108	.2369	equation	50.9	6.4
69	05427510	Koshkonong Ck nr Busseyville	42°54'44"	89°00'15"	05426000	161	.2348	equation	76.1	6.4
70	05427550	Saunders Ck at Albion	42°52'43"	89°03'57"	05431486	21.2	.2430	relation	12.2	7.8
71	05427640	Yahara R at Deforest	43°14'58"	89°20'37"	05406500	39.2	--	relation	7.2	[2]2.5
72	05427700	Yahara R nr Deforest	43°12'59"	89°20'58"	05406500	48.6	.1010	relation	8.5	[2]2.4

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi^2, square mile; $ft^3/s/mi^2$, cubic foot per second per square mile; ft^3/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi^2)	Base flow factor ($ft^3/s/mi^2$)	Base flow method	Base flow (ft^3/s)	Recharge (inches)
73	05427767	Token Ck nr Token Ck	43°11'53"	89°17'35"	05406500	4.78	--	relation	9.4	[2]26.7
74	05427910	Sixmile Ck nr Waunakee	43°08'49"	89°26'13"	05406500	48.3	0.0987	equation	14.2	4.0
75	05427927	Spring Ck nr Waunakee	43°08'34"	89°27'56"	05406500	9.95	--	relation	2.3	3.1
76	05427930	Spring Ck nr Waunakee	43°08'25"	89°26'32"	05406500	12.6	--	relation	4.6	5.0
77	05427952	Pheasant Br at Middleton	43°06'22"	89°29'01"	05406500	24.5	--	relation	5.8	3.2
78	05428600	W Br Starkweather Ck at Madison	43°06'00"	89°20'18"	05426000	10.08	--	relation	3.8	5.1
79	05428650	E Br Starkweather Ck at Madison	43°05'58"	89°19'54"	05426000	7.41	--	relation	3.5	6.4
80	05429570	Door Ck Tr at Cottage Grove	43°04'19"	89°12'52"	05426000	2.73	--	relation	1.5	7.5
81	05429580	Door Ck nr Cotage Grove	43°02'54"	89°13'54"	05426000	12.24	--	relation	5.4	6.0
82	05429600	Door Ck nr Mcfarland	43°00'46"	89°14'08"	05426000	26.7	.1240	relation	12.0	6.1
83	05430040	Oregon Br nr Oregon	42°55'24"	89°21'22"	05436500	21.4	.0609	equation	4.8	3.1
84	05430055	Oregon Br nr Oregon	42°55'10"	89°18'50"	05436500	27.9	.0974	equation	8.1	3.9
85	05430085	Rutland Br Badfish Ck nr Bklyn	42°53'45"	89°19'15"	05436500	5.94	1.0575	equation	5.7	13.1
86	05430300	Marsh Ck nr Janesville	42°43'15"	89°03'30"	05436500	35.8	.4320	relation	18.0	6.8
87	05430400	Fisher Ck nr Janesville	42°39'44"	89°03'31"	05436500	3.93	.0453	equation	.7	2.5
88	05430450	Markham Ck nr Janesville	42°38'48"	89°04'00"	05436500	9.99	.0792	equation	2.5	3.5
89	05430525	Bass Ck at Footville	42°39'45"	89°12'32"	05436500	14	--	relation	7.4	7.2
90	05430530	Stevens Ck nr Footville	42°41'16"	89°10'31"	05436500	7.22	.0741	equation	1.8	3.3
91	05430535	Stevens Ck Tr nr Footville	42°41'13"	89°10'13"	05436500	3.18	.1095	equation	.9	4.0
92	05430560	Bass Ck Tr at Hanover	42°38'36"	89°10'29"	05436500	14.7	.1069	equation	4.4	4.1
93	05430580	Bass Ck at Hanover	42°38'31"	89°09'44"	05436500	47	.2165	equation	20.8	6.0
94	05430600	Bass Ck nr Janesville	42°37'20"	89°07'45"	05436500	57.9	.2920	relation	26.9	6.3
95	05430610	Bass Ck at Afton	42°36'04"	89°03'36"	05436500	65.5	.2483	equation	31.3	6.5
96	05430650	Rock R Tr nr Beloit	42°33'53"	89°03'04"	05436500	12.3	.0806	equation	3.2	3.5

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

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Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
97	05431005	Turtle Ck nr Delavan	42°40'59"	88°41'16"	05431486	14.2	--	relation	7.3	7.0
98	05431010	Turtle Ck Tr nr Delavan	42°39'27"	88°37'42"	05431486	6.59	0.0286	equation	1.0	2.0
99	05431015	Jackson Ck nr Elkhorn	42°38'45"	88°32'29"	05431486	9.69	--	relation	1.4	2.0
100	05431016	Johnson Ck at Mounds Rd nr Elkhorn	42°38'27"	88°33'39"	05431486	16.8	.1041	equation	5.0	4.0
101	05431070	Turtle Ck nr Allens Grove	42°37'51"	88°46'30"	05431486	111	.2848	equation	57.6	7.0
102	05431200	Little Turtle Ck nr Allens Grove	42°32'12"	88°48'04"	05431486	18.2	.3160	equation	9.6	7.2
103	05431250	Ladd Ck nr Allens Grove	42°32'20"	88°44'50"	05431486	6.35	--	relation	2.0	4.3
104	05431300	Ladd Ck nr Allens Grove	42°33'14"	88°46'12"	05431486	12.6	.1895	equation	5.1	5.5
105	05431350	Little Turtle Ck Tr nr Allens Grove	42°33'53"	88°46'35"	05431486	6.46	.1707	equation	2.4	5.1
106	05431400	Little Turtle Ck at Allens Grove	42°34'33"	88°45'40"	05431486	42.4	.0810	relation	19.1	6.1
107	05431420	Little Turtle Ck Tr nr Allens Grove	42°35'06"	88°44'28"	05431486	11.2	--	relation	3.1	3.8
108	05431480	Spring Bk nr Clinton	42°36'04"	88°49'44"	05431486	10	.0523	equation	2.0	2.8
109	05431600	Turtle Ck Tr # 4 at Shopiere	42°34'38"	88°55'24"	05431486	3.32	.1198	equation	1.0	4.2
110	05431740	Spring Bk nr Beloit	42°30'37"	88°59'05"	05431486	9.33	.1618	equation	3.4	5.0
111	05437180	E Fk Raccoon Ck nr Beloit	42°30'41"	89°07'16"	05436500	10.6	.1890	relation	6.1	7.8
112	05437200	E Fk Racoon Ck Tr nr Beloit	42°30'44"	89°06'40"	05436500	4.64	.1140	relation	4.4	12.9
113	05437210	E Fk Raccoon Ck nr Beloit	42°30'15"	89°07'02"	05436500	16.2	.2350	relation	9.5	8.0
114	054382832	Raccoon Ck nr Sharon	42°30'33"	88°39'47"	05431486	11.2	--	relation	4.9	5.9
115	05527662	Brighton Ck nr Paddock Lk	42°34'57"	88°04'04"	05545750	16.6	.0572	equation	3.6	2.9
116	05527672	Salem Br nr Salem	42°33'48"	88°05'29"	05545750	3.77	.1237	equation	1.2	4.3
117	05527675	Brighton Ck nr Bristol	42°34'42"	88°02'56"	05545750	25.5	.0562	equation	5.5	2.9
118	05527700	Des Plaines R nr Kenosha	42°32'37"	88°00'04"	05545750	56.2	.0210	equation	7.4	1.8
119	05527720	Des Plaines R nr Pleasant Priarie	42°33'14"	87°57'08"	05545750	71.5	.0331	equation	12.0	2.3

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[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

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Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
120	05527895	Dutch Gap Canal nr Benet Lk	42°29'43"	88°00'18"	05545750	16.1	0.0364	equation	2.8	2.3
121	055437888	Fox R Tr nr Sussex	43°07'17"	88°09'54"	05543830	5.39	.2276	equation	2.3	5.9
122	055437901	Fox R nr Sussex	43°06'27"	88°10'20"	05543830	22.01	.0578	equation	4.8	3.0
123	055437907	Fox R Tr nr Sussex	43°05'27"	88°12'19"	05543830	10.5	.3694	equation	5.9	7.7
124	05543800	Fox R nr Waukesha at Watertown Rd	43°03'12"	88°11'41"	05543830	77.4	.1150	relation	36.1	6.3
125	05543808	Zion Ck nr Pewaukee	43°03'27"	88°18'50"	05545750	3.4	.3046	equation	1.7	6.8
126	05543850	Pebble Ck nr Waukesha	42°59'39"	88°17'22"	05543830	17.3	.3360	relation	9.4	7.4
127	05544080	Jericho Ck nr Jericho	42°51'32"	88°25'57"	05545750	12.2	.1625	equation	4.5	5.0
128	05544320	Fox R at Big Bend	42°52'34"	88°12'38"	05545750	322	.2410	relation	168.0	7.1
129	05544350	Fox R at Waterford	42°45'46"	88°12'48"	05545750	357	.2787	equation	187.4	7.1
130	05544838	Honey Ck at E Troy	42°46'53"	88°25'31"	05431486	40.9	.2979	equation	21.3	7.1
131	05544850	Honey Ck nr E Troy	42°47'18"	88°22'00"	05431486	48.4	--	relation	19.8	5.6
132	05544970	Honey Ck at Honey Ck	42°44'54"	88°18'36"	05431486	74.2	--	relation	27.7	5.1
133	05544990	Honey Ck nr Burlington	42°43'09"	88°18'03"	05545750	84.8	--	relation	29.3	4.7
134	05545080	Sugar Ck nr Elkhorn	42°42'54"	88°33'44"	05431486	27.2	--	relation	5.0	2.5
135	05545109	Sugar Ck nr Spring Prairie	42°43'21"	88°28'17"	05431486	54.8	--	relation	13.6	3.4
136	05545110	Suger Ck nr Troy	42°43'55"	88°24'21"	05431486	60.9	--	relation	16.6	3.7
137	05545118	Sugar Ck Tr nr Honey Lk	42°43'01"	88°21'50"	05431486	4.95	--	relation	3.4	9.3
138	05545120	Sugar Ck nr Vienna	42°42'54"	88°20'31"	05431486	76.4	.2080	relation	28.0	5.0
139	05545203	White R Tr at Lyons	42°39'43"	88°21'21"	05431486	4.11	.1722	equation	1.5	5.1
140	05545208	White R Tr nr Lyons	42°39'40"	88°20'15"	05431486	2.9	.1298	equation	.9	4.4
141	05545240	White R Tr nr Pell Lk	42°35'14"	88°20'23"	05431486	10.5	.3455	equation	5.7	7.4
142	05545300	White R at Burlington	42°39'57"	88°19'03"	05431486	110	.2715	relation	46.0	5.7

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

Appendix 12*D*. Average annual base flow and corresponding recharge, 1970–99, for partial-record stations in the Rock-Fox River Basin—Continued.

[USGS, U.S. Geological Survey; ID, identification number; dd°mm'ss", degrees, minutes, seconds; mi², square mile; ft³/s/mi², cubic foot per second per square mile; ft³/s, cubic foot per second; equation, statewide regression equation; relation, established relation line with index station; R, River; Bk, Brook; Br, Branch; Fk, Fork; Ck, Creek; Tr, Tributary; nr, near; N, North; S, South; E, East; W, West; --, not determined in historical low-flow reports. See references for full list of low-flow reports.]

Map number	USGS station ID	Station name	Latitude (dd°mm'ss")	Longitude (dd°mm'ss")	Index station[1]	Drainage area (mi²)	Base flow factor (ft³/s/mi²)	Base flow method	Base flow (ft³/s)	Recharge (inches)
143	05545329	Honey Ck at Burlington	42°40'53"	88°16'34"	05545750	288	0.1888	equation	123.0	5.8
144	05545600	Hoosier Ck nr Burlington	42°39'30"	88°14'01"	05545750	20.7	.1250	relation	6.6	4.3
145	05545955	Basset Ck nr Twin Lks	42°32'27"	88°13'40"	05545750	5.09	.2007	equation	2.1	5.5
146	05548150	N Br Nippersink Ck nr Genoa City	42°30'15"	88°23'01"	05431486	13.6	.5660	relation	11.6	11.6
147	05548170	N Br Nippersink Ck at Genoa City	42°29'51"	88°20'00"	05431486	41.7	.3237	equation	22.7	7.4

[1] Low-flow discharge measurements at partial-record stations were compared to one or more nearby USGS gaging stations to establish a relation between measured discharge and concurrent daily discharge. The nearby gaging station that provided the best relation with the partial-record station was chosen as the index station and was associated with nearby miscellaneous measurement sites.

[2] Mismatch between surface-water and ground-water drainage area.

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